

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

Paper No.: _____

DATE : 3/14/11TO SPE OF : ART UNIT 2857SUBJECT : Request for Certificate of Correction for Appl. No.: 12211733 Patent No.: 7848900CofC mailroom date: 02/24/11

Please respond to this request for a certificate of correction within 7 days.

FOR IFW FILES:

Please review the requested changes/corrections as shown in the **COCIN** document(s) in the IFW application image. No new matter should be introduced, nor should the scope or meaning of the claims be changed.

Please complete the response (see below) and forward the completed response to scanning using document code **COCX**.

FOR PAPER FILES:

Please review the requested changes/corrections as shown in the attached certificate of correction. Please complete this form (see below) and forward it with the file to:

Certificates of Correction Branch (CofC)**Randolph Square – 9D10-A****Palm Location 7580****You can fax the Directors/SPE response to 571-270-9990***Lamonte Newsome***Certificates of Correction Branch****571-272-3421****Thank You For Your Assistance****The request for issuing the above-identified correction(s) is hereby:**

Note your decision on the appropriate box.

☐ **Approved**

All changes apply.

☐ **Approved in Part**Specify below which changes **do not** apply.☒ **Denied**

State the reasons for denial below.

Comments: see petition decision mailed to applicant onMay 19, 2011./Eliseo Ramos-Feliciano/
Supervisory Patent Examiner2857**SPE****Art Unit**



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE CA 92614

MAILED
MAY 19 2011
OFFICE OF PETITIONS

In re Application of	:	
Steinberg, et al.	:	
Application No. 12/211,733	:	DECISION ON PETITION
Filed: September 16, 2008	:	UNDER 37 CFR 1.78(a)(6)
Patent No. 7,848,900	:	
Issued: December 7, 2000	:	

This is a decision on the petition under 37 CFR 1.78(a)(3), filed February 24, 2011, which is being treated as a petition under 37 CFR 1.78(a)(6) to accept an unintentionally delayed claim under 35 U.S.C. § 119(e) for the benefit of priority to prior-filed provisional application No. 60/994,011.

The petition is **DISMISSED**.

A petition under 37 CFR 1.78(a)(6) is only applicable to those applications filed on or after November 29, 2000. Further, the petition is appropriate only after expiration of the period specified in 37 CFR 1.78(a)(5)(ii) **and must be filed during the pendency of the nonprovisional application**. As set forth in MPEP 1481.03, "A Certificate of Correction is NOT a valid mechanism for adding or correcting a priority claim under 35 U.S.C. 119(e) after a patent has been granted on an application filed on or after November 29, 2000." Here, the petition was filed after the issuance of the patent. Accordingly, the petition must be dismissed.

Further correspondence with respect to this matter should be addressed as follows:

By mail: Mail Stop PETITIONS
 Commissioner for Patents
 Post Office Box 1450
 Alexandria, VA 22313-1450

By hand: Customer Service Window
Mail Stop Petitions
Randolph Building
401 Dulany Street
Alexandria, VA 22314

By fax: (571) 273-8300
ATTN: Office of Petitions

Any inquiries concerning this decision may be directed to Petitions Attorney Cliff Congo at (571) 272-3207.



Chris Bottorff
Petitions Examiner
Office of Petitions

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

Paper No.: _____

DATE : 3/14/11

TO SPE OF : ART UNIT 2857

SUBJECT : Request for Certificate of Correction for Appl. No.: 12211733 Patent No.: 7848900

CofC mailroom date: 02/24/11

Please respond to this request for a certificate of correction within 7 days.

FOR IFW FILES:

Please review the requested changes/corrections as shown in the **COCIN** document(s) in the IFW application image. No new matter should be introduced, nor should the scope or meaning of the claims be changed.

Please complete the response (see below) and forward the completed response to scanning using document code **COCX**.

FOR PAPER FILES:

Please review the requested changes/corrections as shown in the attached certificate of correction. Please complete this form (see below) and forward it with the file to:

**Certificates of Correction Branch (CofC)
Randolph Square – 9D10-A
Palm Location 7580**

Patent Application No. 12211733, Patent No. 7848900

Lamonte Newsome

**Certificates of Correction Branch
571-272-3421**

Thank You For Your Assistance

The request for issuing the above-identified correction(s) is hereby:

Note your decision on the appropriate box.

☐ **Approved**

All changes apply.

☐ **Approved in Part**

Specify below which changes **do not apply.**

☐ **Denied**

State the reasons for denial below.

Comments: _____

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

SPE

Art Unit

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Steinberg, et al.
Patent No.	:	7,848,900
Issued	:	December 7, 2010
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	:	Elias Desta
Art Unit	:	2857

PETITION TO CORRECT AN UNINTENTIONALLY DELAYED PRIORITY CLAIM
PERSUANT TO 37 C.F.R. 1.78(a)(3)

Mail Stop Petition

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Submitted herewith is a Certificate of Correction to correct the "Related U.S. Application Data" portion of the patent and the first sentence(s) in the specification to identify the correct claim of priority for the above-identified application.

Pursuant to 37 C.F.R. § 1.78(a)(3)(i), this Certificate of Correction corrects the required reference to the earlier-filed U.S. non-provisional application from which the above-identified patent application claims priority.

In particular, the Certificate of Correction shows the correct priority claim by listing the application number, which should be 60/994,011 instead of 60/944,011.

Background

The application for U.S. Patent No. 7,848,900 is U.S. Patent Application No. 12/211,733 (hereinafter referred to as "the '733 application"). When the '733 application on September 16, 2008, the '733 application was accompanied by an Application Data Sheet that claimed benefit of a provisional application filed on September 17, 2007.

The Application Data Sheet, however listed the provisional patent application serial number as 60/944,011 rather than the correct serial number of 60/994,011.

On April 10, 2009, Applicant filed a Supplemental Application Data Sheet that repeated the incorrect serial number.

Error Correctable By Certificate of Correction

M.P.E.P. § 1481.03(II)(B) states that when a delayed claim of priority under 35 U.S.C. 120 to a prior filed, non-provisional application is to be corrected in a patent via a Certificate of Correction, the following are required:

- (i) The reference required by 35 U.S.C. 120 to the prior-filed application, which is being submitted in the attached Certification of Correction.
- (ii) The surcharge set forth in § 1.17(t), which is submitted herewith.
- (iii) A statement that the entire delay between the date the claim was due and the date the claim was filed was unintentional, which is submitted herewith.

All requirements set forth in 37 C.F.R. 1.78(a)(1) were met in the '733 application which became the patent to be corrected. Furthermore, if all the above-stated requirements are satisfied, a Certificate of Correction can be used to amend the patent to make reference to a prior application in the chain of priority.

It is Clear From The Record That Priority is Appropriate

It is clear from the record of the patent and the parent application(s) that priority is appropriate. Provisional Application No. 60/994,011 lists the same inventors and was filed on the specified date of September 17, 2007.

Accordingly, Applicants submit that a Certificate of Correction is an appropriate mechanism for correcting the 35 U.S.C. § 120 priority claim. M.P.E.P. § 1481.03.

The following documents from the patent and parent applications clearly show that priority is appropriate:

(1) The '733 application was filed on September 16, 2008, which was during the pendency of Provisional Application No. 60/994,011.

(2) Provisional Application No. 60/994,011 was filed on the date listed in the Application Data Sheet and the Supplemental Application Data Sheet.

(3) Provisional Application No. 60/994,011 lists the same inventors as the '733 application.

Accordingly, Applicant would like to clarify in the record that the chain of priority for U.S. Patent No. 7,848,900 includes U.S. Provisional Patent Application No. 60/994,011.

Statement of Unintentional Delay

A statement is being submitted herewith by John R. King, an attorney of record under 37 C.F.R. § 1.78, that the entire delay between the date the corrected benefit claim was due and the date the corrected benefit claim was filed was unintentional; and

Conclusion

If further issues exist with respect to the present application, the Commissioner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved.

In addition, The Commissioner is hereby authorized to charge the petition fee set forth in 37 C.F.R. § 1.17(t) to Deposit Account No. 11-1410.

Please charge any additional fees, including any fees for extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 2-24-2011

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

10765116:ad
022411

Electronic Patent Application Fee Transmittal

Application Number:	12211733			
Filing Date:	16-Sep-2008			
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING			
First Named Inventor/Applicant Name:	John Douglas Steinberg			
Filer:	John R. King/Amy Durrant			
Attorney Docket Number:	EFACT.005A			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Priority accept. unintent. delayed claim	1454	1	1410	1410
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Certificate of correction	1811	1	100	100

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1510

Electronic Acknowledgement Receipt

EFS ID:	9524954
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Quyen Lieu
Filer Authorized By:	John R. King
Attorney Docket Number:	EFACT.005A
Receipt Date:	24-FEB-2011
Filing Date:	16-SEP-2008
Time Stamp:	17:44:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 1510
RAM confirmation Number	4684
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	EFACT-005A_statement.pdf	27883 975ac9e4451c506358d60e3d6c8812a2d129eb06	no	1
Warnings:					
Information:					
2	Request for Certificate of Correction	EFACT-005A_certofcorection.pdf	55940 25aed0119ddb94d94d0a2858a731da77e0fab0	no	2
Warnings:					
Information:					
3	Petition for review by the Office of Petitions.	EFACT-005A_petition.pdf	135353 a27d459b606509366ece931f58480d3e11085f73	no	4
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	31947 ffed81cc7b28f51051bb80b8c918d0ffe1064195	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			251123		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

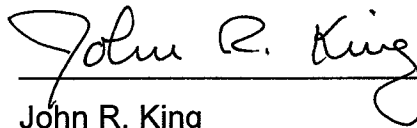
Applicant : Steinberg, et al.
App. No. : 12/211,733
Filed : September 16, 2008
For : SYSTEM AND METHOD FOR
CALCULATING THE THERMAL
MASS OF A BUILDING
Examiner : Elias Desta
Art Unit : 2857

STATEMENT OF JOHN R. KING OF UNINTENTIONAL DELAY
UNDER 37 C.F.R 1.78

I, John R. King, do hereby state as follows:

1. I am a citizen of the United States.
2. I am a partner at Knobbe, Martens, Olson & Bear, LLP, and am an attorney of record in the above-identified patent application.
3. I have been involved with this patent application since its filing.
4. The delay between the date the priority claim was due and the date the corrected priority claim was filed was unintentional.

Date: 2-24-2011



John R. King
Registration No. 34,362
Attorney of Record

Knobbe Martens Olson & Bear LLP

Intellectual Property Law

2040 Main Street
Fourteenth Floor
Irvine, CA 92614
Tel 949-760-0404
Fax 949-760-9502
www.kmob.com

John R. King
949-721-2998
jking@kmob.com

February 24, 2011

ATTN: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re: Title: SYSTEM AND METHOD FOR CALCULATING THE THERMAL
MASS OF A BUILDING
Letters Patent No. 7,848,900
Issued: December 7, 2010
Our Reference: EFACT.005A

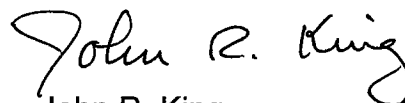
Dear Sir:

Enclosed for filing is a Certificate of Correction in connection with the above-identified patent.

As the errors cited in the Certificate of Correction were incurred through the fault of the Applicant, the amount of \$100 will be paid via EFS Web. Please charge any additional fees to our Deposit Account No. 11-1410.

Respectfully submitted,

Knobbe, Martens, Olson & Bear, LLP



John R. King
Registration No. 34,362
Customer No. 20,995

Enclosures

10765651:ad
022411

San Diego
858-836-9000

San Francisco
415-954-4114

Los Angeles
310-551-3450

Riverside
951-781-9231

Seattle
206-405-2000

Washington, DC
202-640-6400

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,848,900
APPLICATION NO. : 12/211733
ISSUE DATE : December 7, 2010
INVENTOR(S) : Steinberg, et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Add Title page Item (60) for Related U.S. Application Data, "Provisional application No. 60/994,011, filed on September 17, 2007."

In Column 1, Lines 7- 8, please change "U.S. Provisional Application No. 60/944,011" to -- U.S. Provisional Application No. 60/994,011 - -.

10765527:ad
022411

MAILING ADDRESS OF SENDER:

John R. King
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 Main Street, 14th Floor
Irvine, California 92614

DOCKET NO. EFACT.005A



KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

MAILED

JAN 27 2011

OFFICE OF PETITIONS

Applicant: Steinberg, et al.

Appl. No.: 12/211,733

Filing Date: September 16, 2008

Title: System And Method For Calculating The Thermal Mass Of A Building

Attorney Docket No.: JSTEIN.005A

Pub. No.: 2010/0070084 A1

Pub. Date: March 18, 2010

This is a decision on the request for correction of patent application publication under 37 CFR 1.221(b), received on May 13, 2010, for the above-identified application.

Applicant requests that the application be republished because the patent application publication contains material errors on the front page of the publication wherein the benefit claim data to provisional application 60/944011 is not printed.

The request is dismissed.

37 CFR 1.221 (b) is applicable “only when the Office makes a material mistake which is apparent from Office records.... Any request for a corrected publication or revised patent application publication other than provided as provided in paragraph (a) of this section must be filed within two months from the date of the patent application publication. This period is not extendable.” A material mistake must affect the public’s ability to appreciate the technical disclosure of the patent application publication, to determine the scope of the patent application publication, or to determine the scope of the provisional rights that an applicant may seek to enforce upon issuance of a patent.¹

The error in the benefit claim on the front page of the publication is an Office mistake, but it is not a material mistake as required by 37 CFR 1.221(b). The correct benefit claim is in the first line of the specification, as required by 37 CFR 1.78. The error in the benefit claim on the front page of the publication is not a material mistake because it does not affect the public’s ability to appreciate the technical disclosure of the patent application publication, to determine the scope of the patent application publication or to determine the scope of the provisional rights that an applicant may seek to enforce upon issuance of a patent. The first line of the specification

¹Changes to Implement Eighteen-Month Publication of Patent Applications, 65 FR 57023, 57038 (Sept. 20, 2000), 1239, Off. Gaz. Pat. Office Notices 63, 75 (Oct. 10, 2000) (final rule).

contains the proper benefit claim, thus one can read and understand the application and properly use the patent application publication as a prior art reference.

It is noted that provisional application 60/944011 for which benefit is claim has an earlier filing date than September 17, 2007.

It would greatly benefit the Office if **applicant did not provide copies of papers**, which were previously submitted and/or **a complete copy of the pre-grant publication**, as it unnecessarily increases the cost to the Office. See 37 CFR 1.4(b). A request for corrected publication need only point out what was printed incorrectly in the application, where the error occurs in the publication and where the correct text or drawing is found in the application papers. Marked up relevant copies of the applications papers and the pre-grant publication may facilitate processing of the request, where it is not readily apparent where the error occurs. If it is not clear why the error is a material error, further explanation may be warranted.

The applicant is advised that a “request for republication of an application previously published” may be filed under 37 CFR 1.221(a). Such a request for republication “must include a copy of the application compliance with the Office’s electronic filing system requirements and be accompanied by the publication fee set forth in § 1.18(d) and the processing fee set forth in § 1.17(i).” If the request for republication does not comply with the electronic filing system requirements, the republication will not take place and the publication fee set forth in § 1.18(d) will be refunded. The processing fee will be retained.

A Quick Start Guide for filing a request for a Pre-Grant Publication, such as a request for republication, may be found on the link below:

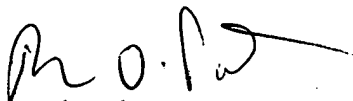
<http://www.uspto.gov/patents/process/file/efs/guidance/index.jsp>

OR

http://www.uspto.gov/ebc/portal/efs/pgpub_quickstart.pdf

Any request for republication under 37 CFR 1.221(a), must be submitted via the EFS system, as a “Pre-Grant Publication.”

Inquiries relating to this matter may be directed to Mark Polutta (571) 272-7709.



Mark Polutta
Senior Legal Advisor
Office of Patent Legal Administration
Office of the Deputy Commissioner
for Patent Examination Policy



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/211,733	12/07/2010	7848900	EFACT.005A	9030

20995 7590 11/17/2010
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 32 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

John Douglas Steinberg, Millbrae, CA;
Scott Douglas Hublou, Redwood City, CA;

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Multiple sheets used when necessary)</i>	Application No.	12/211733	
	Filing Date	09-16-2008	
	First Named Inventor	Steinberg, John Douglas et al	
	Art Unit	2857	
SHEET 2 OF 3		Examiner	Desta, Elias
		Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
/E.D./	30	6,695,218	02-24-2004	Fleckenstein	
	31	6,726,113	04-27-2004	Guo	
	32	6,731,992	05-04-2004	Ziegler	
	33	6,734,806	05-11-2004	Cratsley	
	34	6,772,052	08-03-2004	Amundsen	
	35	6,785,592	08-31-2004	Smith	
	36	6,785,630	08-31-2004	Kolk	
	37	6,789,739	09-14-2004	Howard Rosen	
	38	6,853,959	02-08-2005	Ikeda, et al.	
	39	6,868,293	03-15-2005	Schurr	
	40	6,868,319	03-15-2005	Kipersztok, et al.	
	41	6,882,712	04-19-2005	Iggulden, et al.	
	42	6,889,908	05-10-2005	Crippen, et al.	
	43	6,891,838	10-10-2005	Petite, et al.	
	44	6,991,029	01-31-2006	Orfield, et al.	
	45	7,009,493	03-07-2006	Howard	
	46	7,031,880	04-18-2006	Seem, et al.	
	47	7,039,532	05-02-2006	Hunter	
	48	7,089,088	08-08-2006	Terry, et al.	
	49	7,130,719	10-31-2006	Ehlers, et al.	
	50	7,130,832	10-31-2006	Bannai, et al.	
	51	7,167,079	01-23-2007	Smyth, et al.	
	52	7,187,986	03-06-2007	Johnson, et al.	
	53	7,205,892	04-17-2007	Luebke, et al.	
	54	7,215,746	05-08-2007	Iggulden, et al.	
	55	7,231,424	06-11-2007	Bodin, et al.	
	56	7,232,075	06-19-2007	Rosen	
	57	2003/0040934 A1	02-27-2003	Skidmore, et al.	
	58	2005/0222889 A1	10-06-2005	Lai, et al.	

Examiner Signature	/Elias Desta/	Date Considered	10/08/2010
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

T¹ - Place a check mark in this area when an English language Translation is attached.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20995

7590

10/18/2010

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/211,733

09/16/2008

John Douglas Steinberg

EFAC1.005A

9030

TITLE OF INVENTION: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional

YES

\$755

\$300

\$0

\$1055

01/18/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
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DESTA, ELIAS

2857

702-130000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Knobbe, Martens,2 Olson & Bear, LLP

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

EcoFactor, Inc.

Millbrae, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 11-1410 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

John R. King

Date

10-26-2010

Typed or printed name

John R. King

Registration No.

34,362

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Steinberg, et al.
Appl. No.	:	12/211,733
Filed	:	September 16, 2008
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	:	Elias Desta
Group Art Unit	:	2857

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Statement of Reasons for Allowance in the Notice of Allowance mailed October 18, 2010, Applicant respectfully submits the following comments.

Applicant respectfully disagrees with the Examiner's statement of reasons for allowance to the extent that the limitations recited by the Examiner are not present in all of the claims. Also, to the extent that there is any implication that the patentability of the claims rests on the recitation of a single feature, Applicant respectfully disagrees with the Examiner's Statement because it is the combination of features that makes the claims patentable.

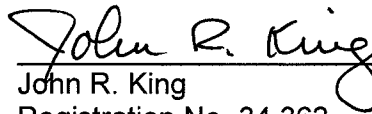
Applicant submits that the claims of the present application are allowable because each of the claims recites a combination of features that are not taught or suggested by the prior art.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 10-26-2010

By:


John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

Electronic Patent Application Fee Transmittal				
Application Number:		12211733		
Filing Date:		16-Sep-2008		
Title of Invention:		SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
First Named Inventor/Applicant Name:		John Douglas Steinberg		
Filer:		John R. King/Amy Durrant		
Attorney Docket Number:		EFACT.005A		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	755	755
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1055

Electronic Acknowledgement Receipt

EFS ID:	8707038
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Heide Young
Filer Authorized By:	John R. King
Attorney Docket Number:	EFACT.005A
Receipt Date:	26-OCT-2010
Filing Date:	16-SEP-2008
Time Stamp:	17:58:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 1055
RAM confirmation Number	4610
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	EFACT-005A_issuefee.pdf	101580 7db073a2a7c1c3e9520d854989e0fc9051f6cd00	no	1
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	EFACT-005A_comments.pdf	39563 fc28de726690304d473d9f8c99bae3629e33924a	no	1
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	31865 c63a788fd890b418da9d7423288185350da8e2a8	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			173008		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

20995 7590 10/18/2010

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

DESTA, ELIAS

ART UNIT

PAPER NUMBER

2857

DATE MAILED: 10/18/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/211,733

09/16/2008

John Douglas Steinberg

EFACT.005A

9030

TITLE OF INVENTION: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	01/18/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20995 7590 10/18/2010

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/211,733	09/16/2008	John Douglas Steinberg	EFACT.005A	9030

TITLE OF INVENTION: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	01/18/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
DESTA, ELIAS	2857	702-130000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/211,733	09/16/2008	John Douglas Steinberg	EFAC005A	9030
20995	7590	10/18/2010	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			DESTA, ELIAS	
			ART UNIT	PAPER NUMBER
			2857	
DATE MAILED: 10/18/2010				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 32 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 32 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	12/211,733	STEINBERG ET AL.	
	Examiner	Art Unit	
	ELIAS DESTA	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 9/16/2010.
2. ☒ The allowed claim(s) is/are 8-14.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>2/5/2010, 9/16/2010</u>. 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|--|--|

/Mohamed Charioui/
Primary Examiner, Art Unit 2857

9/29/10

Detailed Action

Response to Argument

1. Applicant's remarks, see amendment, filed 9/16/2010, with respect to the rejection of claims 1-7 and 15-20 under 35 U.S.C. 103 and the rejection of claims 15-20 under 35 U.S.C. 112 have been fully considered and accepted. The examiner acknowledges the cancellation of claims 1-7 and 15-20, and the amendment to claim 8 to correct minor informality. Claims 8-14 are now allowed. The information disclosure statements (IDS) submitted on 2/5/2010 and 9/16/2010 are being considered by the examiner. No other issue remains.

Allowance

2. Claims 8-14 are allowed. The following is an examiner's statement of reasons for allowance:

In reference to claim 8: None of the references considered in this and the previous office action include "...one or more processors are configured to calculate one or more first rates of change in temperature at said first location for periods during which the status of the HVAC system is "on" and wherein said one or more processors are further configured to calculate one or more second rates of change in temperature at said first location for periods during which the status of the HVAC system is "off", and to relate said first and second calculated rates of change to said outside temperature measurements."

The remaining claims 9-14 depend on claim 8 and include further limitation.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS DESTA whose telephone number is (571)272-2214. The examiner can normally be reached on M-Fri (10:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)-272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 12/211,733
Art Unit: 2857

Page 4

Elias Desta
Examiner
Art Unit 2857

- /E.D. /

/Mohamed Charioui/
Primary Examiner, Art Unit 2857



UNITED STATES PATENT AND TRADEMARK OFFICE

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 United States Patent and Trademark Office
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 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 9030

SERIAL NUMBER 12/211,733	FILING or 371(c) DATE 09/16/2008 RULE	CLASS 236	GROUP ART UNIT 2857	ATTORNEY DOCKET NO. EFACT.005A	
APPLICANTS John Douglas Steinberg, Millbrae, CA; Scott Douglas Hublou, Redwood City, CA; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 09/25/2008					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/ELIAS DESTA/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance E.D. Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 18	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES					
TITLE SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING					
FILING FEE RECEIVED 527	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	6637	(700/276-278 or 702/130 or 702/182 or 236/91d or 165/200 or 165/287 or 165/58).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L2	673	L1 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L3	658	L2 and (control same system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L4	280	L3 and (outside same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L5	12	L4 and (compare same outside same expected same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L6	158306	(heat with capacity) or (thermal with mass)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L7	1439	L6 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13

L8	8411	control same (HVAC or (heating with ventilat\$4 with air with condition\$3)) same system	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L9	1965	L8 and (temperature with (measurement\$1 or data))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L10	141	L9 and ((database or memory or store) same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L11	116	L10 and @ad< "20080916"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L12	38	L11 and (expected with temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L13	24	L12 and (processor or calculate same (rate same of same change same temperature))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L14	6	L13 and (outside same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L15	12	((("5818347") or ("4403644") or ("7216015") or ("20080083234")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/09/27 13:13
L16	4	(US-20080083234-\$).did. or (US-7216015-\$ or US-5818347-\$ or US-4403644-\$).did.	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13

L17	49	(US-20090099699-\$ or US-20020134849-\$ or US-20050270151-\$).did. or (US-4873649-\$ or US-4897798-\$ or US-5244146-\$ or US-5395042-\$ or US-5833134-\$ or US-4843084-\$ or US-4884214-\$ or US-4931948-\$ or US-5230482-\$ or US-5386461-\$ or US-6220518-\$ or US-6241156-\$ or US-4258615-\$ or US-4335320-\$ or US-4386649-\$ or US-4407445-\$ or US-4530395-\$ or US-4607787-\$ or US-4829447-\$ or US-4886110-\$ or US-4941325-\$ or US-4947928-\$ or US-5179524-\$ or US-5197668-\$ or US-5199637-\$ or US-5203497-\$).did. or (US-5211332-\$ or US-5226590-\$ or US-5271558-\$ or US-5303767-\$ or US-5309730-\$ or US-5310111-\$ or US-5314004-\$ or US-5316073-\$ or US-5326026-\$ or US-5364304-\$ or US-5381950-\$ or US-5394324-\$ or US-5410230-\$ or US-5413278-\$ or US-5464369-\$ or US-5467921-\$ or US-5485954-\$ or US-5495887-\$ or US-5501265-\$ or US-5531801-\$).did.	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L18	49	L17 and (hvac or (heating with venti\$6 with air with conditioning))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L19	1	L18 and zip	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13

L20	126	("4674027") or ("5572438") or ("5717609") or ("5818347") or ("6145751") or ("6178362") or ("6351693") or ("6400996") or ("6437692") or ("6478233") or ("6480803") or ("6483906") or ("6536675") or ("6542076") or ("6549130") or ("6574537") or ("6580950") or ("6594825") or ("6595430") or ("6598056") or ("6619555") or ("6622097") or ("6622115") or ("6622925") or ("6622926") or ("6628997") or ("6633823") or ("6643567") or ("6671586") or ("6695218") or ("6726113") or ("6731992") or ("6734806") or ("6772052") or ("6785592") or ("6785630") or ("6789739") or ("6853959") or ("6868293") or ("6868319") or ("6882712") or ("6889908") or ("6891838") or ("6991029") or ("7009493") or ("7031880") or ("7039532") or ("7089088") or ("7130719") or ("7130832") or ("7167079") or ("7187986") or ("7205892") or ("7215746") or ("7231424") or ("7232075") or ("20030040934") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/09/27 13:13
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		("20050222889") or ("20050288822") or ("20070043477") or ("20090099699") or ("20090125151")).PN.				
L21	0	L20 and HAVC	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L22	43	L20 and HVAC	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L23	0	L22 and (rate\$1 near3 change near out\$side near temperature\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L24	0	L22 and (rate\$1 near3 change near out\$side)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L25	10	L22 and (rate\$1 near3 change)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L26	7	L22 and (rate\$1 near3 change) and (in\$side and out\$side)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L27	0	L22 and ("on" same "off")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/27 13:13
L28	2	(US-20050288822-\$).did. or (US-6789739-\$).did.	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L29	1	(US-20050288822-\$).did. or (US-6789739-\$).did. and (electric with meter)	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13

L30	0	L29 and meter	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L31	35	HVAC same (electric with meter)	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L32	126	(("4674027") or ("5572438") or ("5717609") or ("5818347") or ("6145751") or ("6178362") or ("6351693") or ("6400996") or ("6437692") or ("6478233") or ("6480803") or ("6483906") or ("6536675") or ("6542076") or ("6549130") or ("6574537") or ("6580950") or ("6594825") or ("6595430") or ("6598056") or ("6619555") or ("6622097") or ("6622115") or ("6622925") or ("6622926") or ("6628997") or ("6633823") or ("6643567") or ("6671586") or ("6695218") or ("6726113") or ("6731992") or ("6734806") or ("6772052") or ("6785592") or ("6785630") or ("6789739") or ("6853959") or ("6868293") or ("6868319") or ("6882712") or ("6889908") or ("6891838") or ("6991029") or ("7009493") or ("7031880") or ("7039532") or ("7089088") or ("7130719") or ("7130832") or ("7167079") or ("7187986") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/09/27 13:13

		("7205892") or ("7215746") or ("7231424") or ("7232075") or ("20030040934") or ("20050222889") or ("20050288822") or ("20070043477") or ("20090099699") or ("20090125151")).PN.				
L33	0	L31 and L32	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L34	12	L32 and (electric same meter)	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L35	0	L34 and L29	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L36	8	L34 and HVAC	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13
L37	7	L36 and temperature	US-PGPUB; USPAT	OR	ON	2010/09/27 13:13


9/ 27/ 2010 1:17:20 PM

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<i>Index of Claims</i> 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant					<input type="checkbox"/> CPA					<input checked="" type="checkbox"/> T.D.					<input type="checkbox"/> R.1.47				
CLAIM		DATE																	
Final	Original	09/26/2009	07/29/2010	09/27/2010															
-	1	✓	✓	-															
-	2	✓	✓	-															
-	3	✓	✓	-															
-	4	✓	✓	-															
-	5	✓	✓	-															
-	6	✓	✓	-															
-	7	✓	✓	-															
1	8	✓	O	=															
2	9	✓	O	=															
3	10	✓	O	=															
4	11	✓	O	=															
5	12	✓	O	=															
6	13	✓	O	=															
7	14	✓	O	=															
-	15	✓	✓	-															
-	16	✓	✓	-															
-	17	✓	✓	-															
-	18	✓	✓	-															
-	19	✓	✓	-															
-	20	✓	✓	-															

Search Notes 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

SEARCHED			
Class	Subclass	Date	Examiner
702	130, 182	9/27/2010	E.D.
700	276, 277, 278	9/27/2010	E.D.
236	91D	9/27/2010	E.D.
165	58, 200, 287	9/27/2010	E.D.

SEARCH NOTES		
Search Notes	Date	Examiner
Method of search: EAST, GOOGLE, IEEE Explore, Springer dbm, CRC	9/27/2010	E.D.
Text or key word searches: see EAST search history.	9/27/2010	E.D.

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
702	182	9/27/2010	E.D.
700	276, 277, 278	9/27/2010	E.D.
236	91D	9/27/2010	E.D.
165	58, 200, 287		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 1 OF 1	Attorney Docket No.	EFACT.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
/E.D./	1	Honeywell Programmable Thermostat Owner's Guide, www.honeywell.com/yourhome / 2004	_____
/E.D./	2	Honeywell, "W7600/W7620 Controller Reference Manual, HW0021207, October, 1992	_____

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Examiner Signature	/Elias Desta/	Date Considered	09/27/2010
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

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SHEET 1 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
/E.D./	1	4,674,027	06-16-1987	Thomas J. Beckey	
	2	5,572,438	11-05-1996	Ehlers, et al.	
	3	5,717,609	02-10-1998	Packa, et al.	
	4	5,818,347	10-06-1998	Dolan et al.	
	5	6,145,751	11-14-2000	Ahmed	
	6	6,178,362	01-23-2001	Woolard, et al.	
	7	6,351,693	02-26-2002	Monie	
	8	6,400,996	06-04-2002	Hoffberg, et al.	
	9	6,437,692	08-20-2002	Petite, et al.	
	10	6,478,233	11-12-2002	Shah	
	11	6,480,803	11-12-2002	Pierret, et al.	
	12	6,483,906	11-19-2002	Lggulden, et al.	
	13	6,536,675	03-25-2003	Pesko, et al.	
	14	6,542,076	04-01-2003	Joao	
	15	6,549,130	04-15-2003	Joao	
	16	6,574,537	06-02-2003	Kipersztok, et al.	
	17	6,580,950	06-17-2003	Johnson	
	18	6,594,825	07-15-2003	Goldschmidtli, et al.	
	19	6,595,430	07-22-2003	Shah	
	20	6,598,056	07-22-2003	Hull, et al.	
	21	6,619,555	09-16-2003	Howard B. Rosen	
	22	6,622,097	09-16-2003	Robert R. Hunter	
	23	6,622,115	09-16-2003	Brown, et al.	
	24	6,622,925	09-23-2003	Carner, et al.	
	25	6,622,926	09-23-2003	Sartain, et al.	
	26	6,628,997	09-30-2003	Fox, et al.	
	27	6,633,823	10-14-2003	Bartone, et al.	
	28	6,643,567	11-04-2003	Kolk et al.	
	29	6,671,586	12-30-2003	Davis, et al.	

Examiner Signature	/Elias Desta/	Date Considered	10/08/2010
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

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SHEET 2 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
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/E.D./	30	6,695,218	02-24-2004	Fleckenstein	
	31	6,726,113	04-27-2004	Guo	
	32	6,731,992	05-04-2004	Ziegler	
	33	6,734,806	05-11-2004	Cratsley	
	34	6,772,052	08-03-2004	Amundsen	
	35	6,785,592	08-31-2004	Smith	
	36	6,785,630	08-31-2004	Kolk	
	37	6,789,739	09-14-2004	Howard Rosen	
	38	6,853,959	02-08-2005	Ikeda, et al.	
	39	6,868,293	03-15-2005	Schurr	
	40	6,868,319	03-15-2005	Kipersztok, et al.	
	41	6,882,712	04-19-2005	Iggulden, et al.	
	42	6,889,908	05-10-2005	Crippen, et al.	
	43	6,891,838	10-10-2005	Petite, et al.	
	44	6,991,029	01-31-2006	Orfield, et al.	
	45	7,009,493	03-07-2006	Howard	
	46	7,031,880	04-18-2006	Seem, et al.	
	47	7,039,532	05-02-2006	Hunter	
	48	7,089,088	08-08-2006	Terry, et al.	
	49	7,130,719	10-31-2006	Ehlers, et al.	
	50	7,130,832	10-31-2006	Bannai, et al.	
	51	7,167,079	01-23-2007	Smyth, et al.	
	52	7,187,986	03-06-2007	Johnson, et al.	
	53	7,205,892	04-17-2007	Luebke, et al.	
	54	7,215,746	05-08-2007	Iggulden, et al.	
	55	7,231,424	06-11-2007	Bodin, et al.	
	56	7,232,075	06-19-2007	Rosen	
	57	2003/0040934 A1	02-27-2003	Skidmore, et al.	
	58	2005/0222889 A1	10-06-2005	Lai, et al.	

Examiner Signature	/Elias Desta/	Date Considered	10/08/2010
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/E.D./	59	2005/0288822 A1	12-29-2005	Rayburn, Ronald	
	60	2007/0043477 A1	02-22-2007	Elhers, et al.	
	61	2009/0099699 A1	04-16-2009	Steinberg et al.	
	62	2009/0125151 A1	05-14-2009	Seinberg et al.	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
/E.D./	63	ARNES, et al., "How Ambient Intelligence Will Improve Habitability and Energy Efficiency in Buildings", 2005, research paper, Center for the Built Environment, Controls and Information Technology	
	64	Comverge SuperStat Flyer (no date provided)	
	65	Control4 Wireless Thermostat Brochure , 2006	
	66	Cooper Power Systems Web Page , 2000-2009	
	67	EnerNoc Web Page , 10/28/2009	
	68	Enerwise Website , 10/28/2009	
	69	JOHNSON CONTROLS, Touch4 building automation system brochure, 2007	
	70	KILICOTTE, et al., "Dynamic Controls for Energy Efficiency and Demand Response: Framework Concepts and a New Construction Study Case in New York", Proceedings of the 2006 ACEEE Summer Study of Energy Efficiency in Buildings, Pacific Grove, CA, August 13-18, 2006	
	71	LIN, et al., "Multi-Sensor Single-Actuator Control of HVAC Systems", 2002	
	72	PIER, Southern California Edison, "Demand Responsive Control of Air Conditioning via Programmable Communicating Thermostats Draft Report" , 2006	
	73	Proliphix Thermostat Brochure , (No date provided)	
	74	WANG, et al., "Opportunities to Save Energy and Improve Comfort by Using Wireless Sensor Networks in Buildings," (2003), Center for Environmental Design Research	
	75	WETTER, et al., "A comparison of deterministic and probabilistic optimization algorithms for nonsmooth simulation-based optimization", Building and Environment 39, 2004, Pages 989-999	

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Examiner Signature	/Elias Desta/	Date Considered	10/08/2010
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SHEET 1 OF 1	Attorney Docket No.	EFACT.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	1	Honeywell Programmable Thermostat Owner's Guide, www.honeywell.com/yourhome	
	2	Honeywell, "W7600/W7620 Controller Reference Manual, HW0021207, October, 1992	

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Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

T¹ - Place a check mark in this area when an English language Translation is attached.

Electronic Patent Application Fee Transmittal				
Application Number:		12211733		
Filing Date:		16-Sep-2008		
Title of Invention:		SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
First Named Inventor/Applicant Name:		John Douglas Steinberg		
Filer:		John R. King/Amy Durrant		
Attorney Docket Number:		EFACT.005A		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	8435839
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Lori Larson
Filer Authorized By:	John R. King
Attorney Docket Number:	EFACT.005A
Receipt Date:	16-SEP-2010
Filing Date:	16-SEP-2008
Time Stamp:	17:32:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	4247
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		EFACT-005A_response.pdf	288101	yes	7
			a8c036f5bf3ca64d762f9aedb9a6ab2a46c57941		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	3	
	Applicant Arguments/Remarks Made in an Amendment		4	7	
Warnings:					
Information:					
2		EFACT-005A_IDS.pdf	80840	yes	2
			b183e3219fee4f64adc283e1603151d87c06042f		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	1	
	Information Disclosure Statement (IDS) Filed (SB/08)		2	2	
Warnings:					
Information:					
3	NPL Documents	EFACT-005A_ref1.pdf	2407105	no	64
			3068f9898ba8bbf4317649b3ae6f95057dc16542		
Warnings:					
Information:					
4	NPL Documents	EFACT-005A_ref2.pdf	1761303	no	32
			f925e957c2c638a8402923787acc2087d948c40c		
Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	30394	no	2
			a6ded4c0322a6a3d761d41f4a3b8632adc805a88		
Warnings:					
Information:					
Total Files Size (in bytes):			4567743		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Steinberg, et al.
App. No	: 12/211,733
Filed	: September 16, 2008
For	: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	: Elias Desta
Art Unit	: 2857
Conf No.	: 9030

RESPONSE TO AUGUST 5, 2010 OFFICE ACTION**Mail Stop Amendment**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action mailed August 5, 2010, Applicants respectfully submit the following amendments and comments.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 4 of this paper.

AMENDMENTS TO THE CLAIMS

Please amend Claim 8 as indicated below. In addition, please cancel Claims 1-7 and 15-20 without prejudice as indicated below.

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Currently Amended) A system for calculating a value for an operational efficiency of an heating, ventilation, and air conditioning (HVAC) system comprising:
 - at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;
 - one or more databases that store at least said temperatures measured at said first location over time; and
 - one or more processors that receive outside temperature measurements from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein said one or more processors are configured to calculate one or more first rates of change in temperature at said first location for periods during which the status of the HVAC system is "on" and wherein said one or more processors are further configured to calculate one or more second rates of

change in temperature at said first location for periods during which the status of the HVAC system is "off", and to relate said first and second calculated rates of change to said outside temperature measurements.

9. (Previously Presented) A system as in claim 8 in which said processors receive temperature of outside temperatures for geographic regions comprising ZIP codes from sources other than said HVAC system.

10. (Original) A system as in claim 8 further comprising a programmable thermostat that communicates with said HVAC control system using the Internet.

11. (Original) A system as in claim 8 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

12. (Original) A system as in claim 8 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

13. (Original) A system as in claim 8 in which said temperature measurements inside said first location occur at only one physical location.

14. (Original) A system as in claim 8 in which the status of said HVAC system includes whether said system is "on" or "off".

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

REMARKS

The August 5, 2010 Office Action was based upon pending Claims 1-20. This Amendment amends Claims 8 and cancels Claims 1-7 and 15-20. Thus, after entry of this Amendment, Claims 8-14 are pending and presented for further consideration.

ISSUES RAISED IN THE OFFICE ACTION

In the August 5, 2010 Office Action, the Examiner stated that Claims 8-14 contained allowable subject matter but objected to Claims 8-14 because Claim 8 needs to end in a period.

Claims 15-20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Furthermore, Claims 1-3 and 5-7 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2005/0288822 to Rayburn (hereinafter "Rayburn") in view of U.S. Patent No. 6,789,739 to Rosen (hereinafter "Rosen").

In addition, Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Rayburn and Rosen, further in view of Smith, et al., U.S. Patent No. 6,785,592.

ALLOWABLE SUBJECT MATTER

The Examiner stated that Claims 8-14 contained allowable subject matter but objected to Claim 8 because Claim 8 needs to end in a period. In response, Applicant has amended Claim 8 to add a period.

OTHER REJECTIONS

While Applicant disagrees with the rejections associated with Claims 1-7 and 15-20, Applicant has canceled these claims so that Claims 8-14 can proceed to allowance. Thus, the rejections made with respect to Claims 1-7 and 15-20 are now moot.

OTHER APPLICATIONS OF ASSIGNEE

Applicant wishes to draw the Examiner's attention to the following applications owned by of the present application's assignee:

Application No.: 12/211,733
Filing Date: September 16, 2008

Inventors	Appl. No.	Filing Date	Attorney Docket No.	Title
Steinberg et al.	60/963,183 Now Expired	08/03/07	EFACT.003PR	System And Method For Using A Network Of Thermostats As Tool To Verify Peak Demand Reduction
Steinberg et al.	60/944,011 Now Expired	09/17/07	EFACT.005PR	System And Method For Calculating The Thermal Mass Of A Building
Steinberg et al.	12/183,990	07/31/08	EFACT.003A	System And Method For Using A Network Of Thermostats As Tool To Verify Peak Demand Reduction
Steinberg et al.	12/183,949	07/31/08	EFACT.004A	System And Method For Using A Network Of Thermostats As Tool To Verify Peak Demand Reduction
Steinberg et al.	12/211,733	09/16/08	EFACT.005A	System And Method For Calculating The Thermal Mass Of A Building
Steinberg et al.	12/211,690	09/16/08	EFACT.006A	System And Method For Evaluating Changes In The Efficiency Of An Hvac System
Steinberg	61/215,816 Now Expired	05/11/09	EFACT.008PR	System, Method And Apparatus For Dynamically Variable Compressor Delay In Thermostat To Reduce Energy Consumption
Steinberg et al.	61/215,657 Now Expired	05/04/10	EFACT.009PR	System, Method And Apparatus For Just-In-Time Conditioning Using A Thermostat
Steinberg et al.	61/215,999 Now Expired	05/12/09	EFACT.007PR	System, Method And Apparatus For Identifying Manual Inputs To And Adaptive Programming Of A Thermostat
Cheung et al.	12/498,142	07/06/09	EFACT.010A	System And Method For Using Ramped Setpoint Temperature Variation With Networked Thermostats To Improve Efficiency
Steinberg	12/502,064	07/13/09	EFACT.011A	System And Method For Using A Networked Electronic Device As An Occupancy Sensor For An Energy Management System
Steinberg et al.	12/773,690	05/04/10	EFACT.009A	System, Method And Apparatus For Just-In-Time Conditioning Using A Thermostat
Steinberg	12/774,580	05/05/10	EFACT.008A	System, Method And Apparatus For Dynamically Variable Compressor Delay In Thermostat To Reduce Energy Consumption

Application No.: 12/211,733
Filing Date: September 16, 2008

Inventors	Appl. No.	Filing Date	Attorney Docket No.	Title
Steinberg et al.	12/778,052	05/11/10	EFACT.007A	System, Method And Apparatus For Identifying Manual Inputs To And Adaptive Programming Of A Thermostat
Steinberg	12/788,246	05/26/10	EFACT.012A	System And Method For Using A Mobile Electronic Device To Optimize An Energy Management System
Steinberg	12/860,821	08/20/10	EFACT.013A	System And Method For Optimizing Use Of Plug-In Air Conditioners And Portable Heaters

Applicant notes that cited references, office actions, responses and notices of allowance currently exist or will exist for the above-referenced matters. Applicant also understands that the Examiner has access to sophisticated online Patent Office computing systems that provide ready access to the full file histories of these matters including, for example, specifications, drawings, pending claims, cited art, office actions, responses, declarations, and notices of allowance.

Rather than submit copies these file histories, Applicant respectfully requests that the Examiner continue to review these file histories online for past, current, and future information about these matters. Also, if the Examiner cannot readily access these file histories, the Applicant would be pleased to provide any portion of any of the file histories at any time upon specific Examiner request.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Submitted concurrently herewith is a Supplemental Information Disclosure Statement citing 2 new references. Applicant respectfully requests the Examiner to consider the pending claims in connection with these references in order to make the references of record.

NO DISCLAIMERS OR DISAVOWALS

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding

Application No.: 12/211,733
Filing Date: September 16, 2008

in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application.

Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

Applicants have endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9-16-2010

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

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INFORMATION DISCLOSURE STATEMENT

Applicant : Steinberg, et al.
App. No : 12/211,733
Filed : September 16, 2008
For : SYSTEM AND METHOD FOR CALCULATING
THE THERMAL MASS OF A BUILDING
Examiner : Desta, Elias
Art Unit : 2857
Conf No. : 9030

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing in the above-identified application is a PTO/SB/08 Equivalent listing two (2) references, of which two (2) are enclosed/submitted.

This Information Disclosure Statement is being filed before the mailing date of a final action and before the mailing of a Notice of Allowance. This Statement is accompanied by the fees set forth in 37 C.F.R. § 1.17(p). The Commissioner is hereby authorized to charge any additional fees which may be required or to credit any overpayment to Account No. 11-1410.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9-16-2010

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/211,733		Filing Date 09/16/2008		<input type="checkbox"/> To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY <input checked="" type="checkbox"/> OR			OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A			N/A	
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A			N/A	
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=		X \$	=		X \$	=
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=		X \$	=
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		SMALL ENTITY OR			OTHER THAN SMALL ENTITY		
AMENDMENT	09/16/2010	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	* 7	Minus	** 20	= 0	X \$26 =	0		X \$	=	
Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$110 =	0		X \$	=	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE	0		TOTAL ADD'L FEE		
(Column 1)			(Column 2)		SMALL ENTITY OR			OTHER THAN SMALL ENTITY		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=		X \$	=	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=		X \$	=	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE			TOTAL ADD'L FEE		
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>										

Legal Instrument Examiner:
/PAMELA YOUNG/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/211,733	09/16/2008	John Douglas Steinberg	EFACT.005A	9030
20995 7590 08/05/2010 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER DESTA, ELIAS	
			ART UNIT 2857	PAPER NUMBER
			NOTIFICATION DATE 08/05/2010	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
efiling@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No.		Applicant(s)	
	12/211,733		STEINBERG ET AL.	
	Examiner		Art Unit	
	ELIAS DESTA		2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/5/2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 8-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/5/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Argument

1. Applicant's arguments (see amendment filed on 2/5/2010) with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. The amendment to the drawing is accepted by the Examiner. The amendment to the rejections of claims 2, 9, 16 under 35 U.S.C. 112 and the objection to claims 1, 8 and 15 is acknowledged and accepted, accordingly the rejections and the objections are withdrawn. The replacement drawing for Figs. 1-13 is accepted by the Examiner. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 2/5/2010 prompted the new ground(s) of rejection presented in this Office action. However, due to a few minor issues and non-art related rejections, the finality of the office action is withdrawn.

Explanation of rejection

Claim Objection

2. Claims 2-7 and 9-14: (see pages 2-4, from 2/5/2010): replace the entry "A system" with "The system".

In reference to claims 8 and 15: (see page 4 from 2/5/2010), the claim should end with a period.

With regard to claim 20: (see page 5, from 2/5/2010): replace the entry "A method" with "The method".

In claim 8: None of the references considered in this and the previous office action include "...one or more processors are configured to calculate one or more first rates of change in temperature at said first location for periods during which the status of the HVAC system is "on" and wherein said one or more processors are further configured to calculate one or more second rates of change in temperature at said first location for periods during which the status of the HVAC system is "off", and to relate said first and second calculated rates of change to said outside temperature measurements."

Claim rejection – 35 U.S.C. 112

3. Claims 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite not clear because in reference to claim 15: (see page 4): in the fifth step, second line, the claim calls for "expected temperature measurements" but it is not clear what temperature measurement is considered because the method includes an outside and inside temperature measurements. Claims 16-20 are also rejected to because of their dependency on an indefinite base claim.

4. Claim 15 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. The remaining claims 16-20 depend on claim 15 and include further limitation.

Claim rejection – 35 U.S.C. 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2857

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rayburn (U.S. PAP 2005/0288822) in view of Rosen (U.S Patent 6,789,739).

In reference to claim 1: Rayburn teaches a system for calculating a value for an effective thermal mass of a building comprising (see Rayburn, Fig. 3 and paragraph 0005): at least one heating, ventilation, and air conditioning (HVAC) control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system (see Rayburn, paragraph 0006), and receives status of said HVAC system; one or more databases that store at least said temperature measurements from said first location over time (see Rayburn, paragraph 0019, to the end); and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements (see Rayburn, paragraph 0019-0020) and said outside temperature measurements (see Rayburn, paragraphs 0023-0025), wherein the one or more processors are configured to calculate one or more rates of change in temperature measurements at said first location and wherein the one or more processors are further configured to relate said calculated rates of change to said outside temperature measurements (see Rayburn, paragraph 0025).

However, Rayburn does not teach and one or more processors that receive outside temperature measurements associated with outside temperatures from at least one source other than said HVAC system.

Rosen teaches a processor receives temperature measurements from sources other than HVAC control systems (see Rosen, column 2, lines 11-15, such as Internet).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the system for calculating an effective thermal mass as taught by Rayburn and incorporate a processor to receive temperature measurements from sources other than the HVAC control system in order to compute a set point temperature inside a building or a structure because having temperature measurement outside the HVAC system would provide a means for precisely control the temperature of the building.

With regard to claim 2: Rayburn in combination Rosen further teaches that processors receive measurements of outside temperatures for geographic regions from sources other than said HVAC system (see Rosen, column 2, lines 11-15, such as Internet, zip codes are information obtainable from respective geographic locations, column 4, lines 40-57).

With regard to claim 3: Rayburn in combination Rosen further comprising receiving temperature measurements from a programmable thermostat that communicates with said HVAC control system using the Internet (see Rosen, column 2, lines 11-15, such as Internet).

With regard to claim 5: Rayburn in combination Rosen further teaches that the system includes a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system (see Rayburn, paragraph 0002).

With regard to claim 6: Rayburn in combination Rosen further teaches that temperature measurements inside the first location occur at only one physical location because the sensor or the thermostat is located in one physical location.

With regard to claim 7: Rayburn in combination Rosen further teaches that the status of said HVAC system includes whether said system is "on" or "off" because it is an inherent feature of a programmable thermostat.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rayburn (U.S. PAP 2005/0288822) and Rosen (U.S. Patent 6,789,793) further in view of Smith et al. (U.S. Patent 6,785,592, hereon Smith).

With regard to claim 4: Rayburn in combination Rosen further teaches that processors receive measurements of outside temperatures for geographic regions from sources other than said HVAC system (see Rosen, column 2, lines 11-15, such as Internet, zip codes are information obtainable from respective geographic locations, column 4, lines 40-57), however, the combination does not teach the processors communicate with said HVAC system using a network that includes an electricity meter.

Smith teaches a system and method for energy management for residential, industrial and commercial applications (see Smith, column 2, lines 50-62). The system includes HVAC system with electricity meters (see Smith, Fig 4, utility rate, and weather applications).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the HVAC system taught by Rayburn in combination Rosen and incorporate a processor that communicate with the HVAC

Art Unit: 2857

system using a network that includes electricity meter because the electric meter information would provide the end user if the system is cost effective in operating the HVAC system.

Response to Argument

8. Applicant's arguments (see amendment filed on 2/5/2010) with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. The Terminal Disclaimer filed 2/5/2010 by the applicant overcomes the obvious-type double patenting issue raised in the previous office action. The finality of the office action is withdrawn because of the new grounds of objections and non-art related rejections noted in this office action.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS DESTA whose telephone number is (571)272-2214. The examiner can normally be reached on M-Fri (10:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)-272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 2857

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elias Desta
Examiner
Art Unit 2857


- /E.D. /
- July 29, 2010

/Mohamed Charioui/
Primary Examiner, Art Unit 2857

<i>Index of Claims</i> 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant				<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47	
CLAIM		DATE							
Final	Original	09/26/2009	07/29/2010						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	O						
	9	✓	O						
	10	✓	O						
	11	✓	O						
	12	✓	O						
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	14	✓	O						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
	19	✓	✓						
	20	✓	✓						

Search Notes 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

SEARCHED			
Class	Subclass	Date	Examiner
702	130, 182	7/29/2010	E.D.
700	276, 277, 278	7/29/2010	E.D.
236	91D	7/29/2010	E.D.
165	58, 200, 287	7/29/2010	E.D.

SEARCH NOTES		
Search Notes	Date	Examiner
Method of search: EAST, GOOGLE, IEEE Explore, Springer dbm, CRC	7/29/2010	E.D.
Text or key word searches: see EAST search history.	7/29/2010	E.D.

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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BIB DATA SHEET

CONFIRMATION NO. 9030

SERIAL NUMBER 12/211,733	FILING or 371(c) DATE 09/16/2008 RULE	CLASS 236	GROUP ART UNIT 2857	ATTORNEY DOCKET NO. EFACT.005A	
APPLICANTS John Douglas Steinberg, Millbrae, CA; Scott Douglas Hublou, Redwood City, CA; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 09/25/2008					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/ELIAS DESTA/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance E.D. Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 18	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES					
TITLE SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING					
FILING FEE RECEIVED 527	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	5865	(700/276-278 or 702/130 or 702/182 or 236/91d or 165/200 or 165/287 or 165/58).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:49
S2	505	S1 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:52
S3	492	S2 and (control same system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:53
S4	204	S3 and (outside same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:53
S5	2	S4 and (compare same outside same expected same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:54
S6	147396	(heat with capacity) or (thermal with mass)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:55
S7	1206	S6 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:55
S8	7281	control same (HVAC or (heating with ventilat\$4 with air with condition\$3)) same system	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:56

S9	1597	S8 and (temperature with (measurement\$1 or data))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:56
S10	109	S9 and ((database or memory or store) same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:58
S11	106	S10 and @ack<"20080916"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:58
S12	34	S11 and (expected with temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:59
S13	22	S12 and (processor or calculate same (rate same of same change same temperature))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 17:01
S14	5	S13 and (outside same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 17:01
S15	11	((("5818347") or ("4403644") or ("7216015") or ("20080083234")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/09/26 18:29
S16	4	(US-20080083234-\$).did. or (US-7216015-\$ or US-5818347-\$ or US-4403644-\$).did.	US-PGPUB; USPAT	OR	ON	2009/09/26 18:29

S17	49	(US-20090099699-\$ or US-20020134849-\$ or US-20050270151-\$).did. or (US-4873649-\$ or US-4897798-\$ or US-5244146-\$ or US-5395042-\$ or US-5833134-\$ or US-4843084-\$ or US-4884214-\$ or US-4931948-\$ or US-5230482-\$ or US-5386461-\$ or US-6220518-\$ or US-6241156-\$ or US-4258615-\$ or US-4335320-\$ or US-4386649-\$ or US-4407445-\$ or US-4530395-\$ or US-4607787-\$ or US-4829447-\$ or US-4886110-\$ or US-4941325-\$ or US-4947928-\$ or US-5179524-\$ or US-5197668-\$ or US-5199637-\$ or US-5203497-\$).did. or (US-5211332-\$ or US-5226590-\$ or US-5271558-\$ or US-5303767-\$ or US-5309730-\$ or US-5310111-\$ or US-5314004-\$ or US-5316073-\$ or US-5326026-\$ or US-5364304-\$ or US-5381950-\$ or US-5394324-\$ or US-5410230-\$ or US-5413278-\$ or US-5464369-\$ or US-5467921-\$ or US-5485954-\$ or US-5495887-\$ or US-5501265-\$ or US-5531801-\$).did.	US-PGPUB; USPAT	OR	ON	2009/09/30 15:22
S18	49	S17 and (hvac or (heating with venti\$6 with air with conditioning))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/30 15:24
S19	1	S18 and zip	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/30 15:24

S21	126	("4674027") or ("5572438") or ("5717609") or ("5818347") or ("6145751") or ("6178362") or ("6351693") or ("6400996") or ("6437692") or ("6478233") or ("6480803") or ("6483906") or ("6536675") or ("6542076") or ("6549130") or ("6574537") or ("6580950") or ("6594825") or ("6595430") or ("6598056") or ("6619555") or ("6622097") or ("6622115") or ("6622925") or ("6622926") or ("6628997") or ("6633823") or ("6643567") or ("6671586") or ("6695218") or ("6726113") or ("6731992") or ("6734806") or ("6772052") or ("6785592") or ("6785630") or ("6789739") or ("6853959") or ("6868293") or ("6868319") or ("6882712") or ("6889908") or ("6891838") or ("6991029") or ("7009493") or ("7031880") or ("7039532") or ("7089088") or ("7130719") or ("7130832") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/07/29 11:13
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		("7167079") or ("7187986") or ("7205892") or ("7215746") or ("7231424") or ("7232075") or ("20030040934") or ("20050222889") or ("20050288822") or ("20070043477") or ("20090099699") or ("20090125151")).PN.				
S22	0	S21 and HAVC	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:13
S23	43	S21 and HVAC	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:14
S24	0	S23 and (rate\$1 near3 change near out\$side near temperature\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:17
S25	0	S23 and (rate\$1 near3 change near out\$side)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:17
S26	10	S23 and (rate\$1 near3 change)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:17
S27	7	S23 and (rate\$1 near3 change) and (in\$side and out\$side)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:17
S28	0	S23 and ("on" same "off")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/07/29 11:19

S29	2	(US-20050288822-\$).did. or (US-6789739-\$).did.	US-PGPUB; USPAT	OR	ON	2010/07/29 11:33
S30	1	(US-20050288822-\$).did. or (US-6789739-\$).did. and (electric with meter)	US-PGPUB; USPAT	OR	ON	2010/07/29 13:39
S31	0	S30 and meter	US-PGPUB; USPAT	OR	ON	2010/07/29 13:40
S32	29	HVAC same (electric with meter)	US-PGPUB; USPAT	OR	ON	2010/07/29 13:41
S33	126	("4674027") or ("5572438") or ("5717609") or ("5818347") or ("6145751") or ("6178362") or ("6351693") or ("6400996") or ("6437692") or ("6478233") or ("6480803") or ("6483906") or ("6536675") or ("6542076") or ("6549130") or ("6574537") or ("6580950") or ("6594825") or ("6595430") or ("6598056") or ("6619555") or ("6622097") or ("6622115") or ("6622925") or ("6622926") or ("6628997") or ("6633823") or ("6643567") or ("6671586") or ("6695218") or ("6726113") or ("6731992") or ("6734806") or ("6772052") or ("6785592") or ("6785630") or ("6789739") or ("6853959") or ("6868293") or ("6868319") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/07/29 13:41

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S34	0	S32 and S33	US-PGPUB; USPAT	OR	ON	2010/07/29 13:41
S35	12	S33 and (electric same meter)	US-PGPUB; USPAT	OR	ON	2010/07/29 13:42
S36	0	S35 and S30	US-PGPUB; USPAT	OR	ON	2010/07/29 13:42
S37	8	S35 and HVAC	US-PGPUB; USPAT	OR	ON	2010/07/29 13:42
S38	7	S37 and temperature	US-PGPUB; USPAT	OR	ON	2010/07/29 13:42

EAST Search History (Interference)

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7/ 29/ 2010 2:48:50 PM

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 1 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
/E.D./	1	4,674,027	06-16-1987	Thomas J. Beckey	
	2	5,572,438	11-05-1996	Ehlers, et al.	
	3	5,717,609	02-10-1998	Packa, et al.	
	4	5,818,347	10-06-1998	Dolan et al.	
	5	6,145,751	11-14-2000	Ahmed	
	6	6,178,362	01-23-2001	Woolard, et al.	
	7	6,351,693	02-26-2002	Monie	
	8	6,400,996	06-04-2002	Hoffberg, et al.	
	9	6,437,692	08-20-2002	Petite, et al.	
	10	6,478,233	11-12-2002	Shah	
	11	6,480,803	11-12-2002	Pierret, et al.	
	12	6,483,906	11-19-2002	Lggulden, et al.	
	13	6,536,675	03-25-2003	Pesko, et al.	
	14	6,542,076	04-01-2003	Joao	
	15	6,549,130	04-15-2003	Joao	
	16	6,574,537	06-02-2003	Kipersztok, et al.	
	17	6,580,950	06-17-2003	Johnson	
	18	6,594,825	07-15-2003	Goldschmidtli, et al.	
	19	6,595,430	07-22-2003	Shah	
	20	6,598,056	07-22-2003	Hull, et al.	
	21	6,619,555	09-16-2003	Howard B. Rosen	
	22	6,622,097	09-16-2003	Robert R. Hunter	
	23	6,622,115	09-16-2003	Brown, et al.	
	24	6,622,925	09-23-2003	Carner, et al.	
	25	6,622,926	09-23-2003	Sartain, et al.	
	26	6,628,997	09-30-2003	Fox, et al.	
	27	6,633,823	10-14-2003	Bartone, et al.	
	28	6,643,567	11-04-2003	Kolk et al.	
	29	6,671,586	12-30-2003	Davis, et al.	

Examiner Signature	/Elias Desta/	Date Considered	07/29/2010
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

T¹ - Place a check mark in this area when an English language Translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 2 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
/E.D./	30	6,695,218	02-24-2004	Fleckenstein	
	31	6,726,113	04-27-2004	Guo	
	32	6,731,992	05-04-2004	Ziegler	
	33	6,734,806	05-11-2004	Cratsley	
	34	6,772,052	08-03-2004	Amundsen	
	35	6,785,592	08-31-2004	Smith	
	36	6,785,630	08-31-2004	Kolk	
	37	6,789,739	09-14-2004	Howard Rosen	
	38	6,853,959	02-08-2005	Ikeda, et al.	
	39	6,868,293	03-15-2005	Schurr	
	40	6,868,319	03-15-2005	Kipersztok, et al.	
	41	6,882,712	04-19-2005	Iggulden, et al.	
	42	6,889,908	05-10-2005	Crippen, et al.	
	43	6,891,838	10-10-2005	Petite, et al.	
	44	6,991,029	01-31-2006	Orfield, et al.	
	45	7,009,493	03-07-2006	Howard	
	46	7,031,880	04-18-2006	Seem, et al.	
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Examiner Signature	/Elias Desta/	Date Considered	07/29/2010
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Multiple sheets used when necessary)</i>	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
SHEET 3 OF 3		Attorney Docket No. JSTEIN.005A

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Examiner Signature /Elias Desta/	Date Considered 07/29/2010
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/211,733	09/16/2008	John Douglas Steinberg	JSTEIN.005A

CONFIRMATION NO. 9030

POA ACCEPTANCE LETTER

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



Date Mailed: 07/16/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/05/2010.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/glstanley/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

REQUEST FOR CORRECTED PUBLICATION NOTICE

Applicant	:	Steinberg, et al.
Appl. No.	:	12/211,733
Filed	:	September 16, 2008
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Art Unit	:	2857
Conf. No.	:	9030

Commissioner for Patents
P.O. Box 1450
Office of Initial Patent Examination
Customer Service Center
Alexandria, VA 22313-1450

Dear Sir:

Applicants hereby request that the Notice of Publication, a copy of which is enclosed, be corrected to reflect the priority data as listed on the attached Supplemental Application Data Sheet, which was filed on April 10, 2009. Presently, the Notice of Publication incorrectly shows no priority data. The following is enclosed as evidence:

Appl. No. : 12/211,733
Filed : September 16, 2008

(X) Copy of Supplemental Application Data Sheet as filed on April 10, 2009

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 5-13-2010

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

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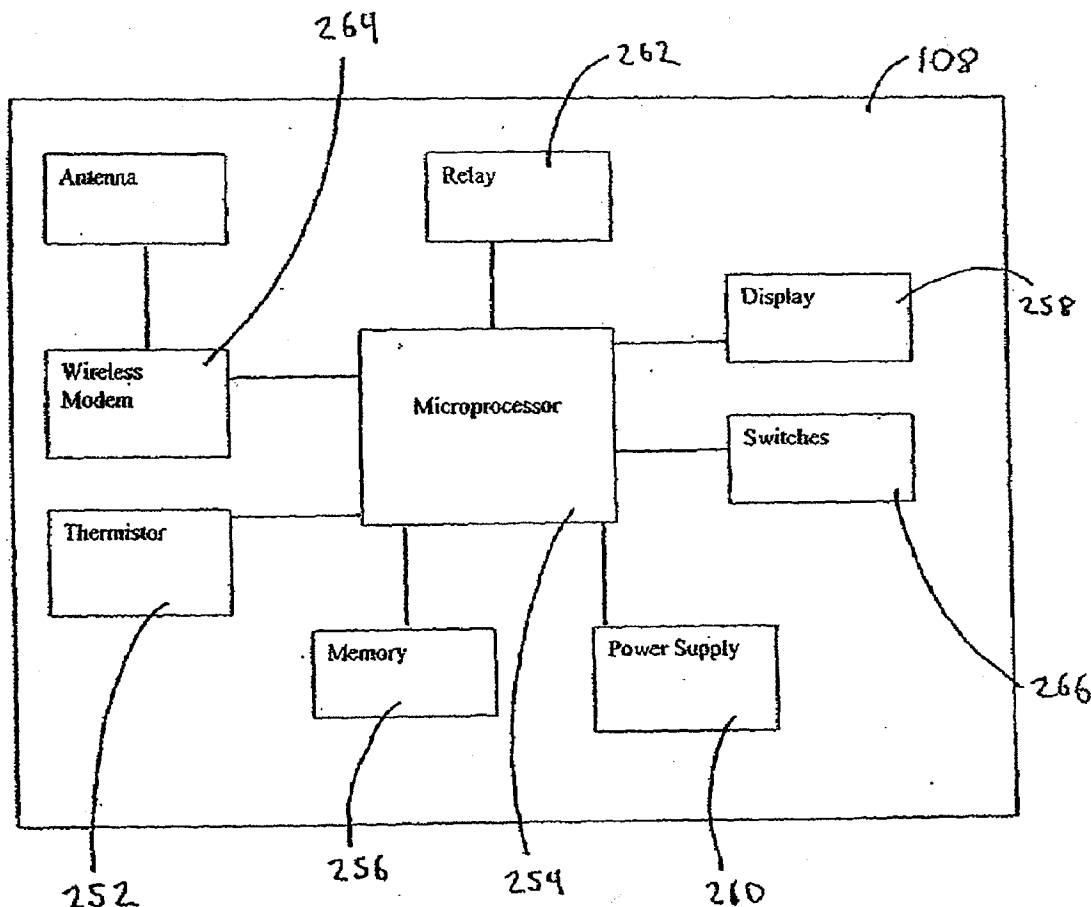
US 20100070084A1

(19) **United States**(12) **Patent Application Publication**
Steinberg et al.(10) **Pub. No.: US 2010/0070084 A1**(43) **Pub. Date: Mar. 18, 2010**(54) **SYSTEM AND METHOD FOR CALCULATING
THE THERMAL MASS OF A BUILDING****Publication Classification**(51) **Int. Cl.**
G05D 23/00

(2006.01)

(52) **U.S. Cl.** 700/276(57) **ABSTRACT**

The invention comprises a system for calculating a value for the effective thermal mass of a building. The climate control system obtains temperature measurements from at least a first location conditioned by the climate system. One or more processors receive measurements of outside temperatures from at least one source other than the control system and compare the temperature measurements from the first location with expected temperature measurements. The expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements. The processors then calculate one or more rates of change in temperature at said first location.

(76) **Inventors:** **John Douglas Steinberg**, Millbrae,
CA (US); **Scott Douglas Hublou**,
Redwood City, CA (US)**Correspondence Address:****KNOBBE MARTENS OLSON & BEAR LLP**
2040 MAIN STREET, FOURTEENTH FLOOR
IRVINE, CA 92614 (US)(21) **Appl. No.:** 12/211,733(22) **Filed:** Sep. 16, 2008

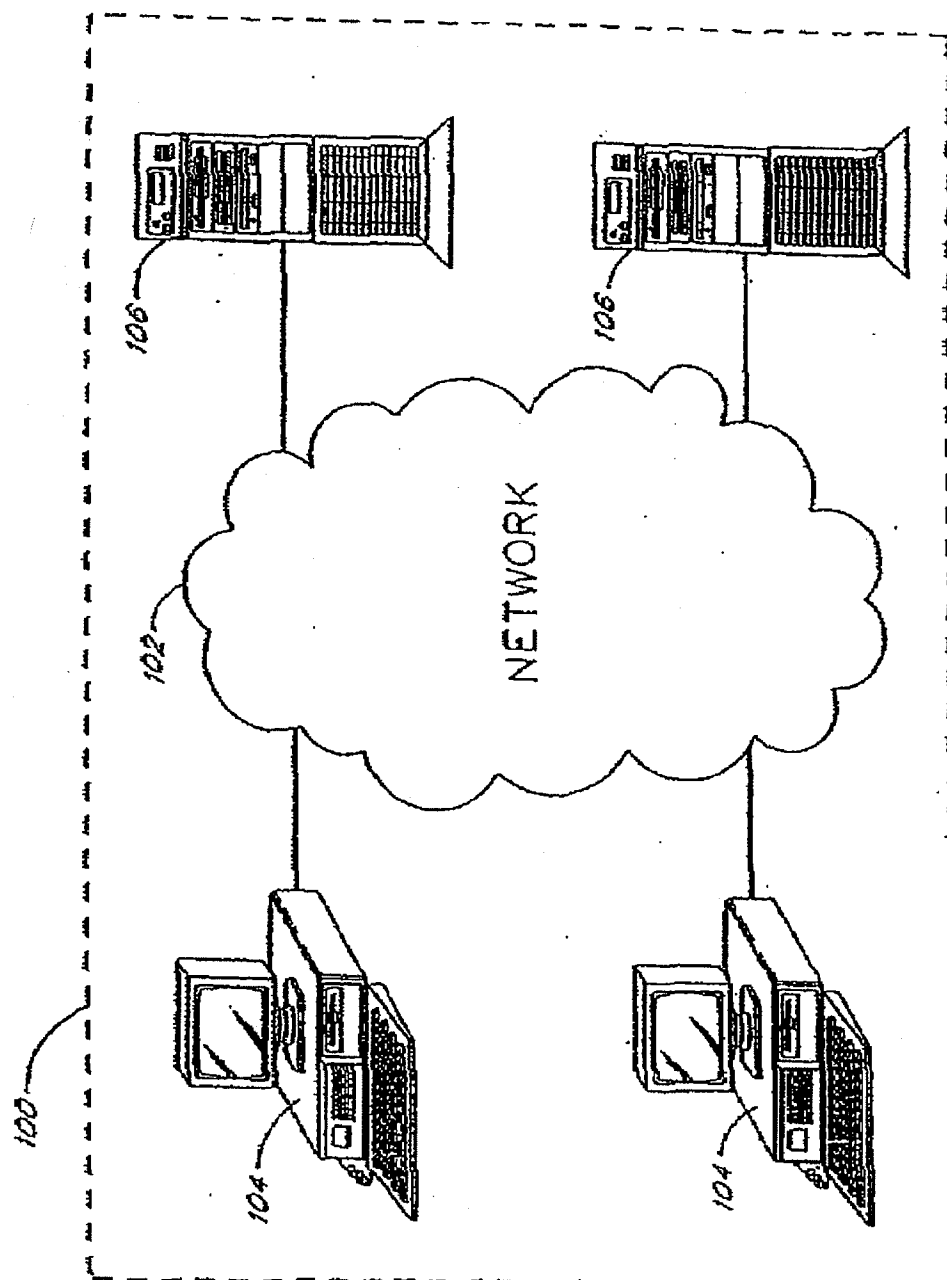


FIG. 1

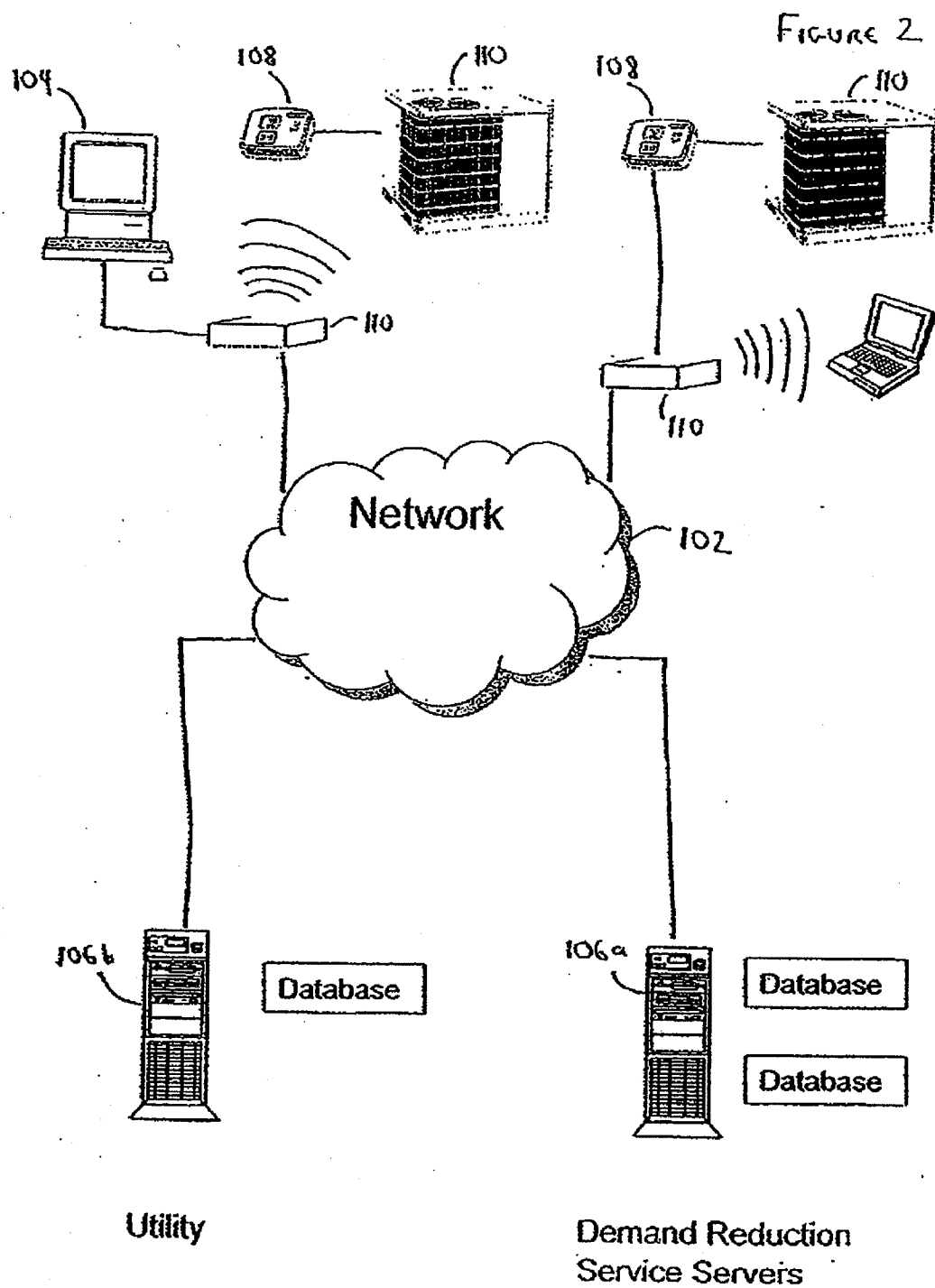


Figure 3

200

204

208

210

202

206

Address:
Square Feet:

Electric Bill:

January
February
March
April
May

\$
\$
\$
\$
\$

Macro #1 would save you
\$347/year

Macro #2 would save you
\$630/year

DO IT

DO IT

Sign up for comfort PDR

DO IT

Sign up for max PDR

DO IT

Mon
Tues
Wed
Thur
Fri
Sat
Sun

78
72
68

FIGURE 4

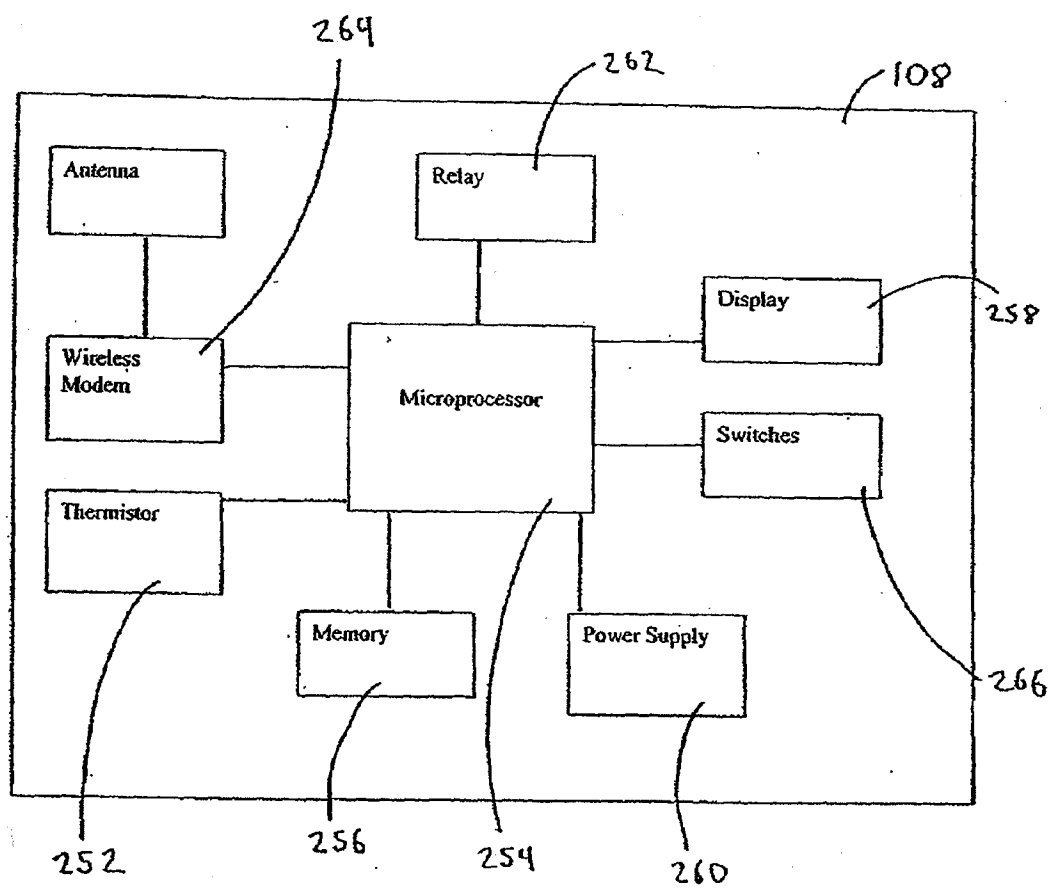


FIGURE 5

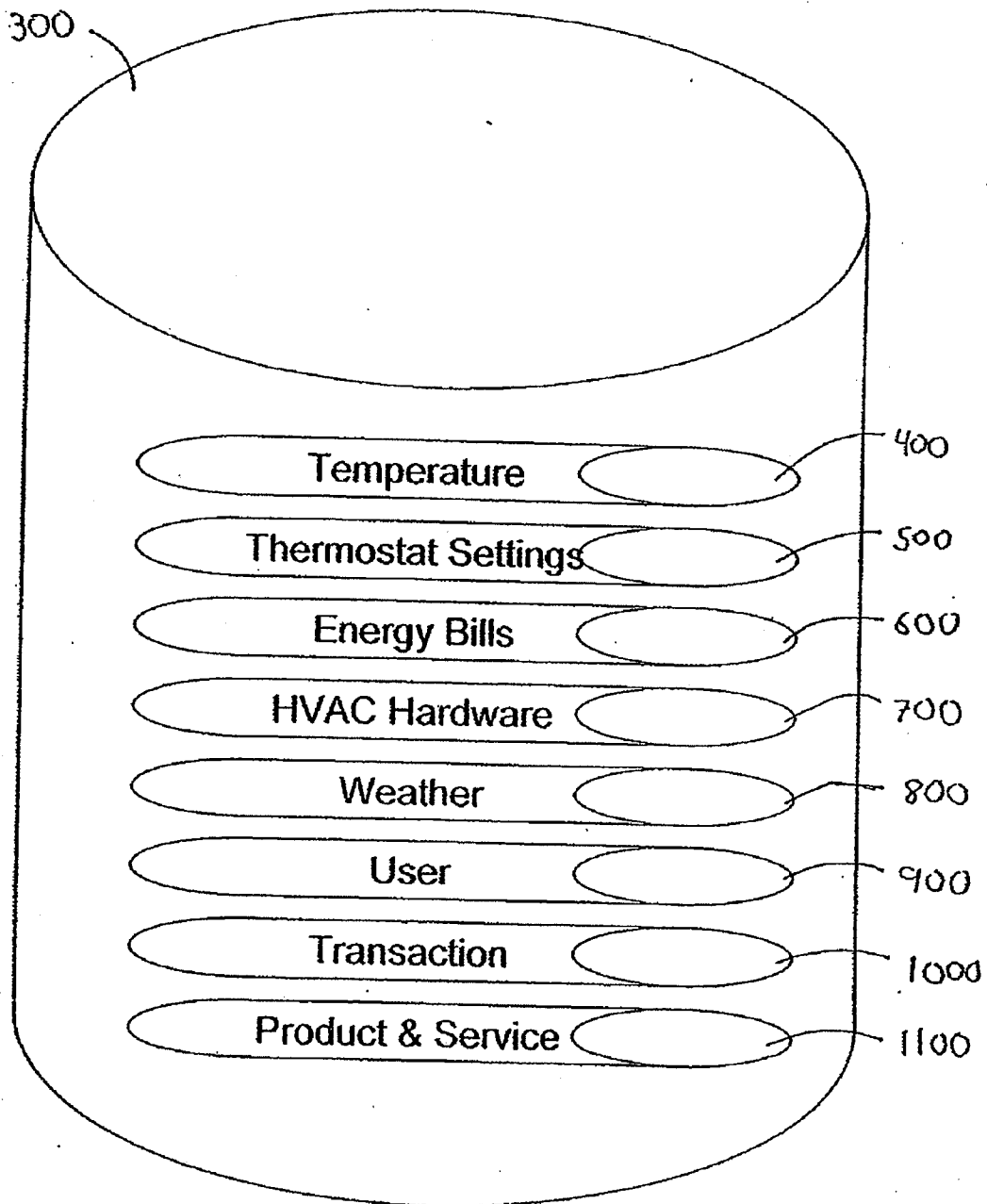


FIG. 6a

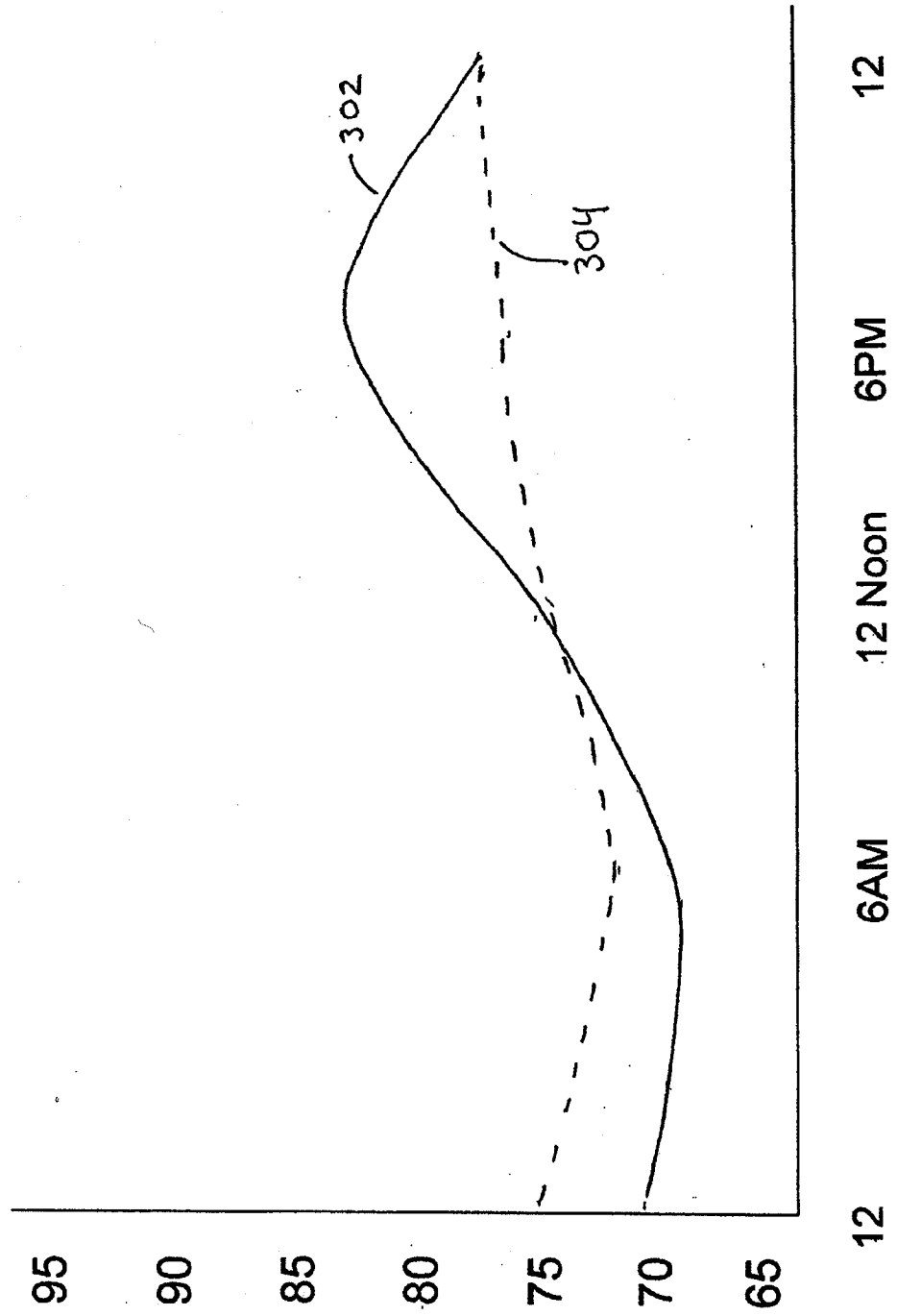


FIG 6b

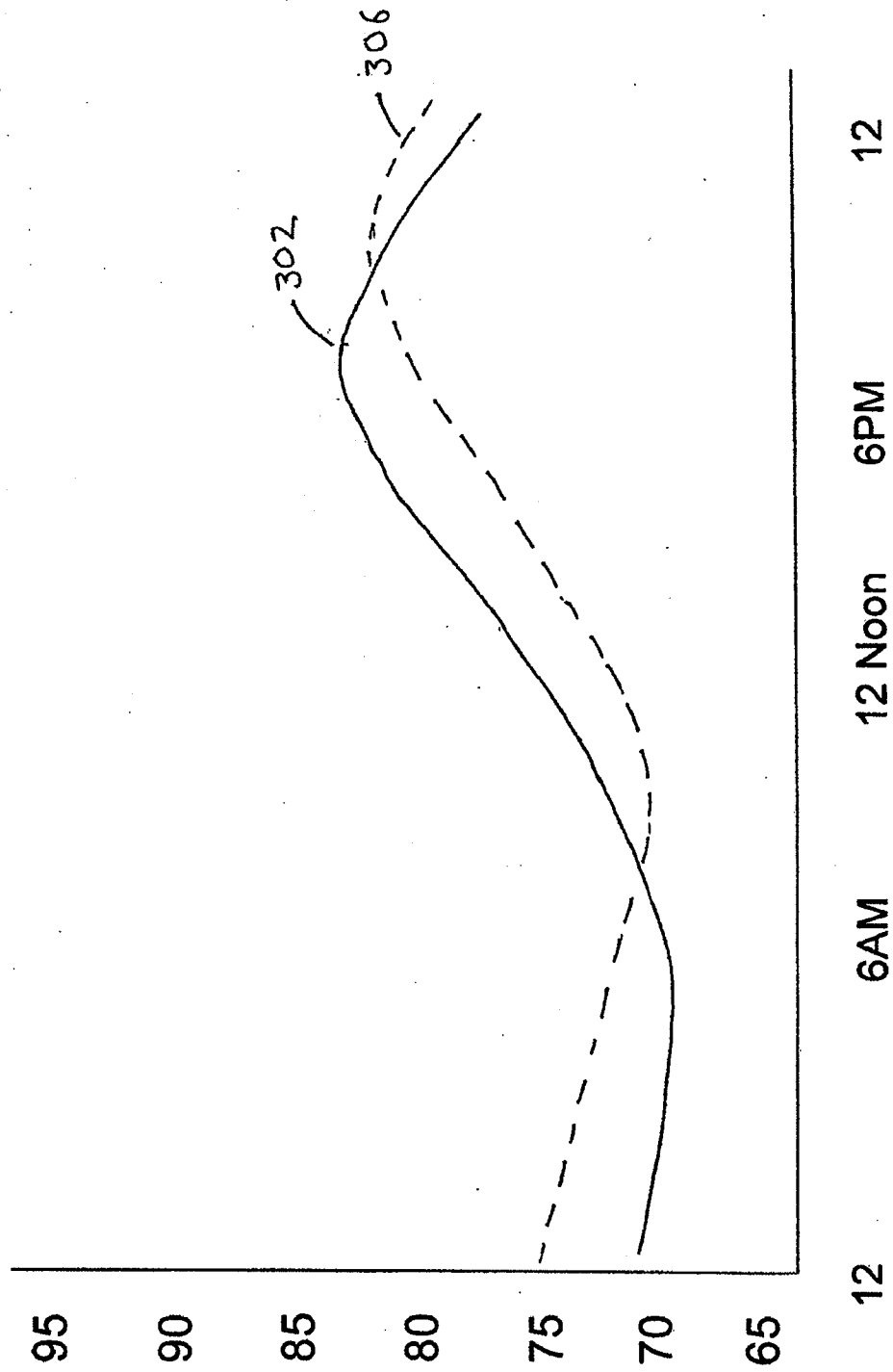


FIG 7a

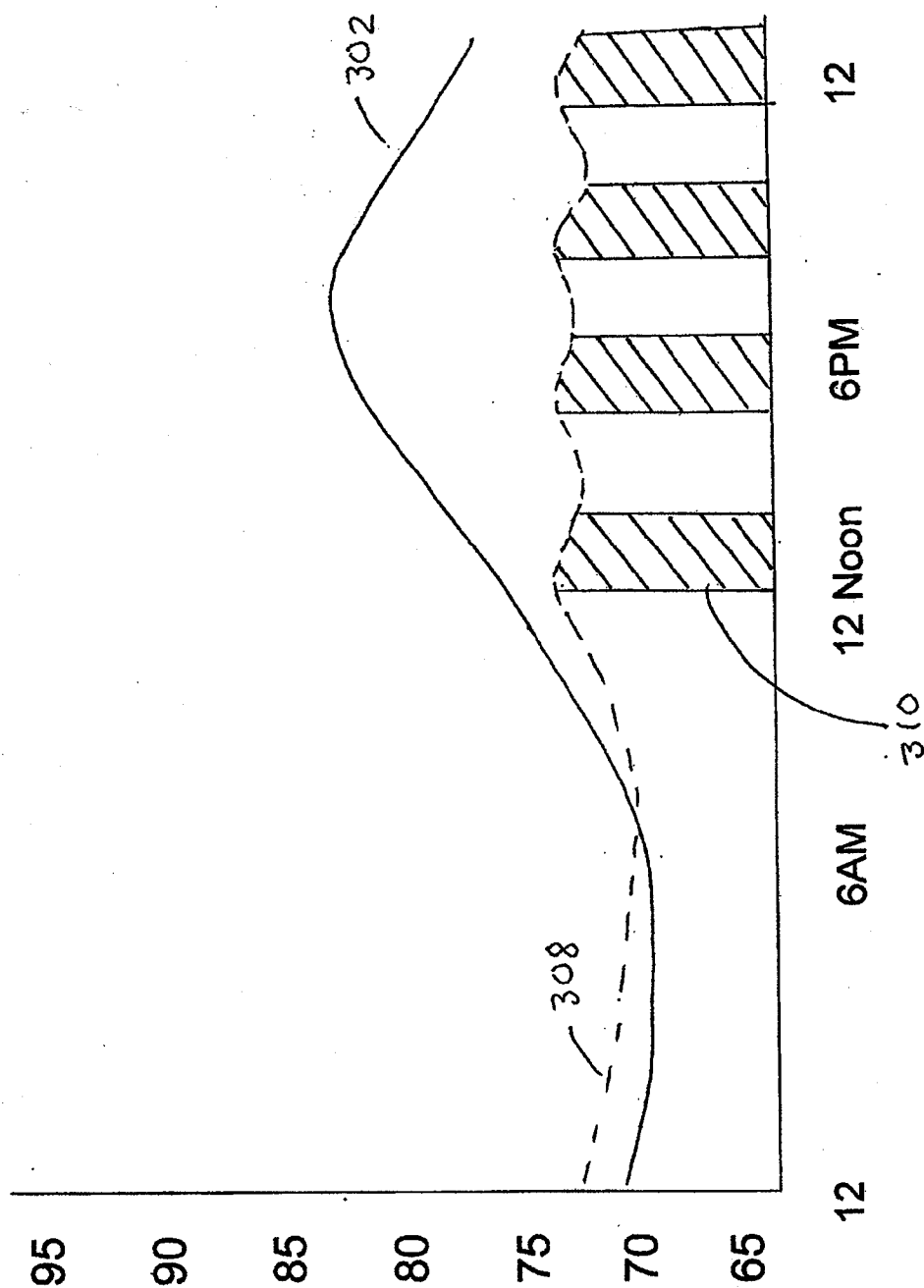


FIG. 7b

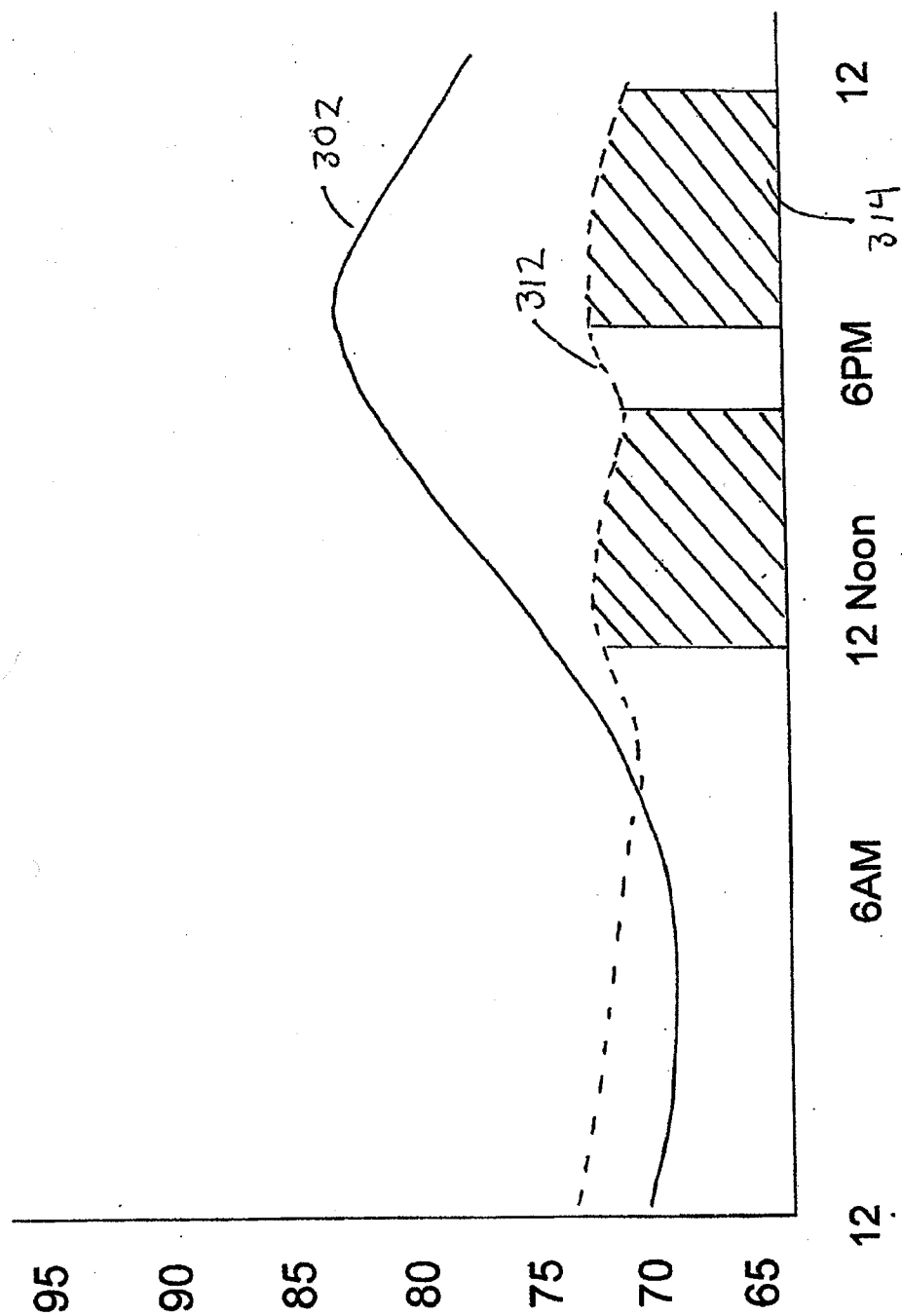
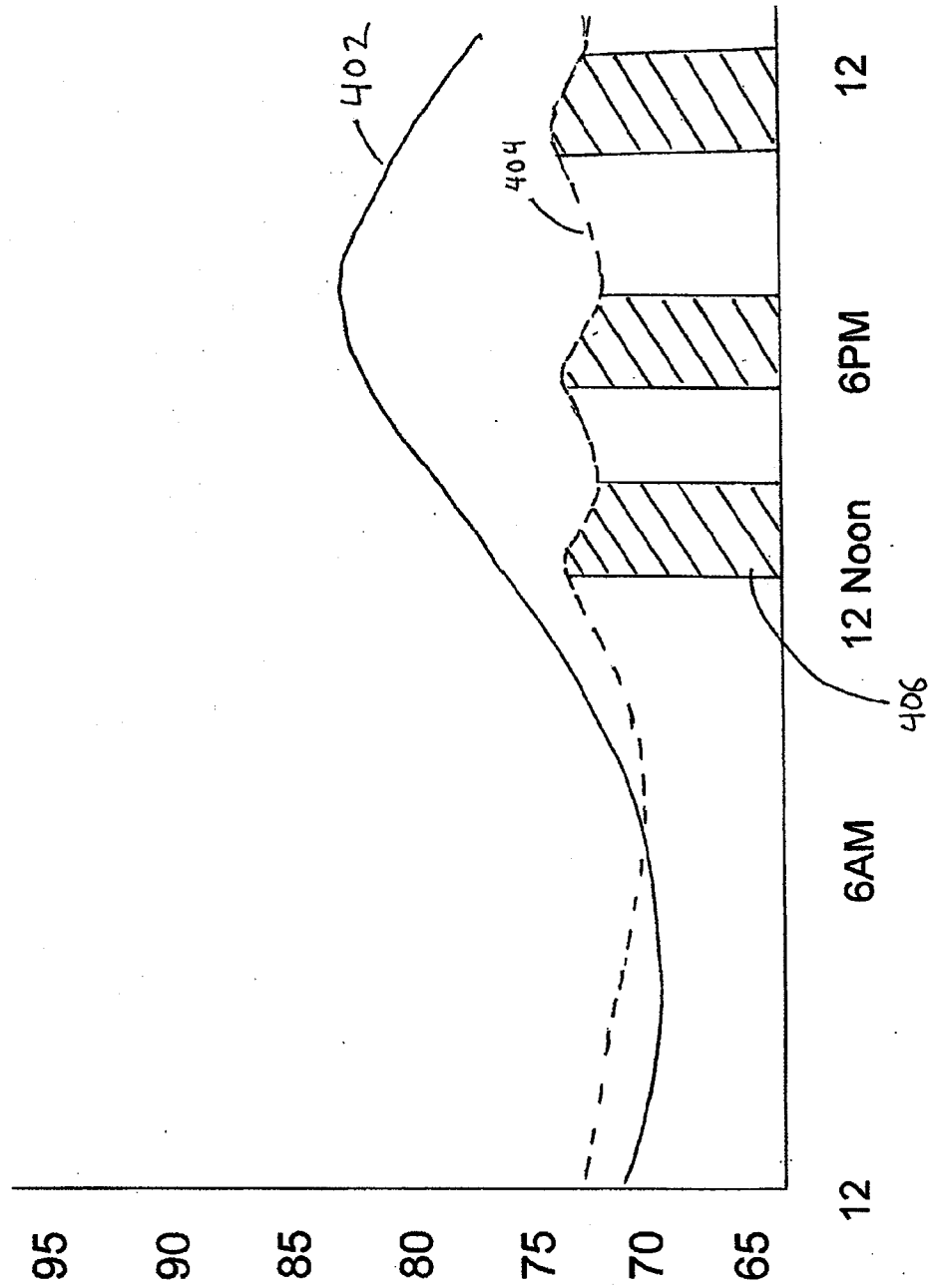


FIG 8a



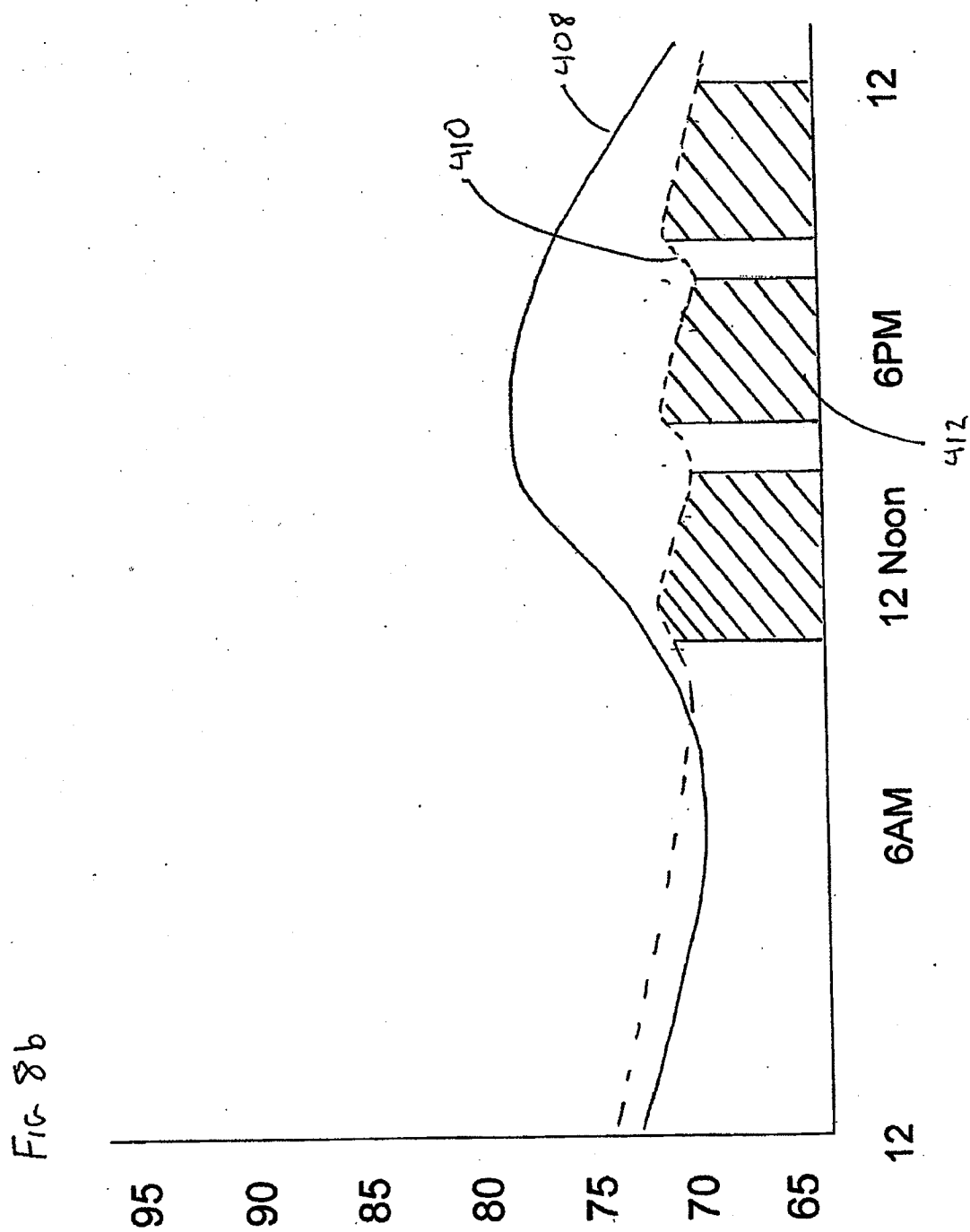


Fig 9a

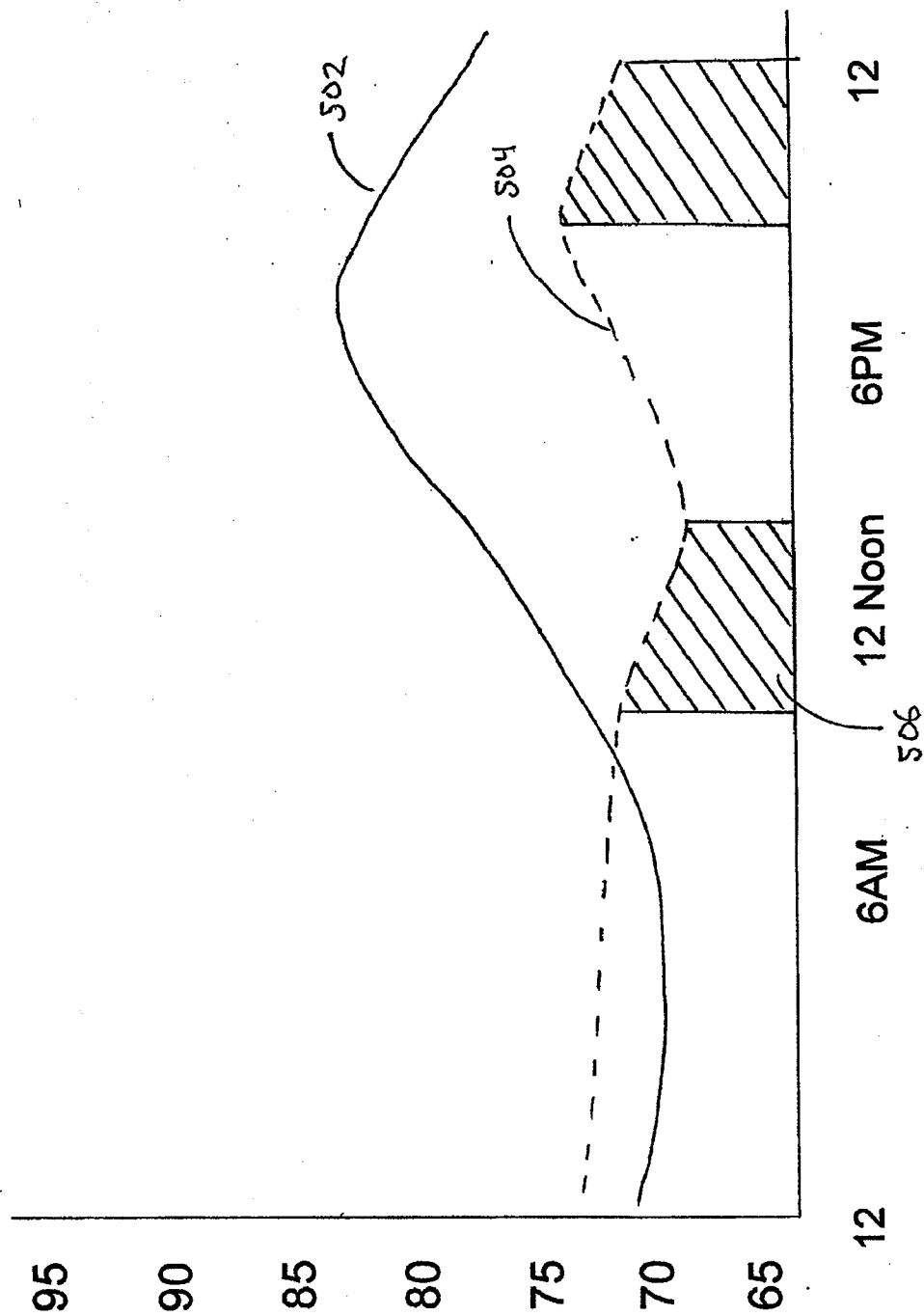


FIG. 9b

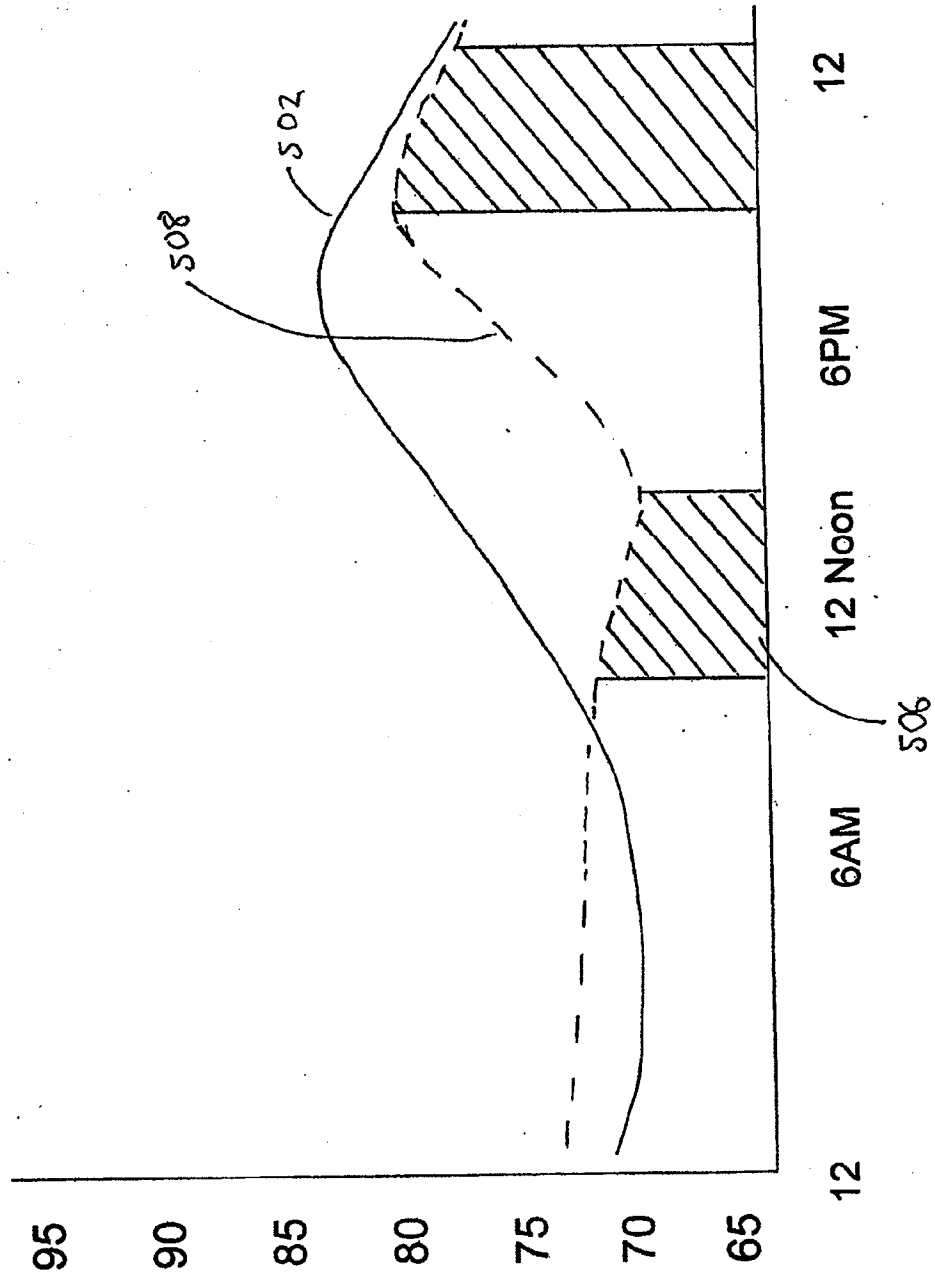
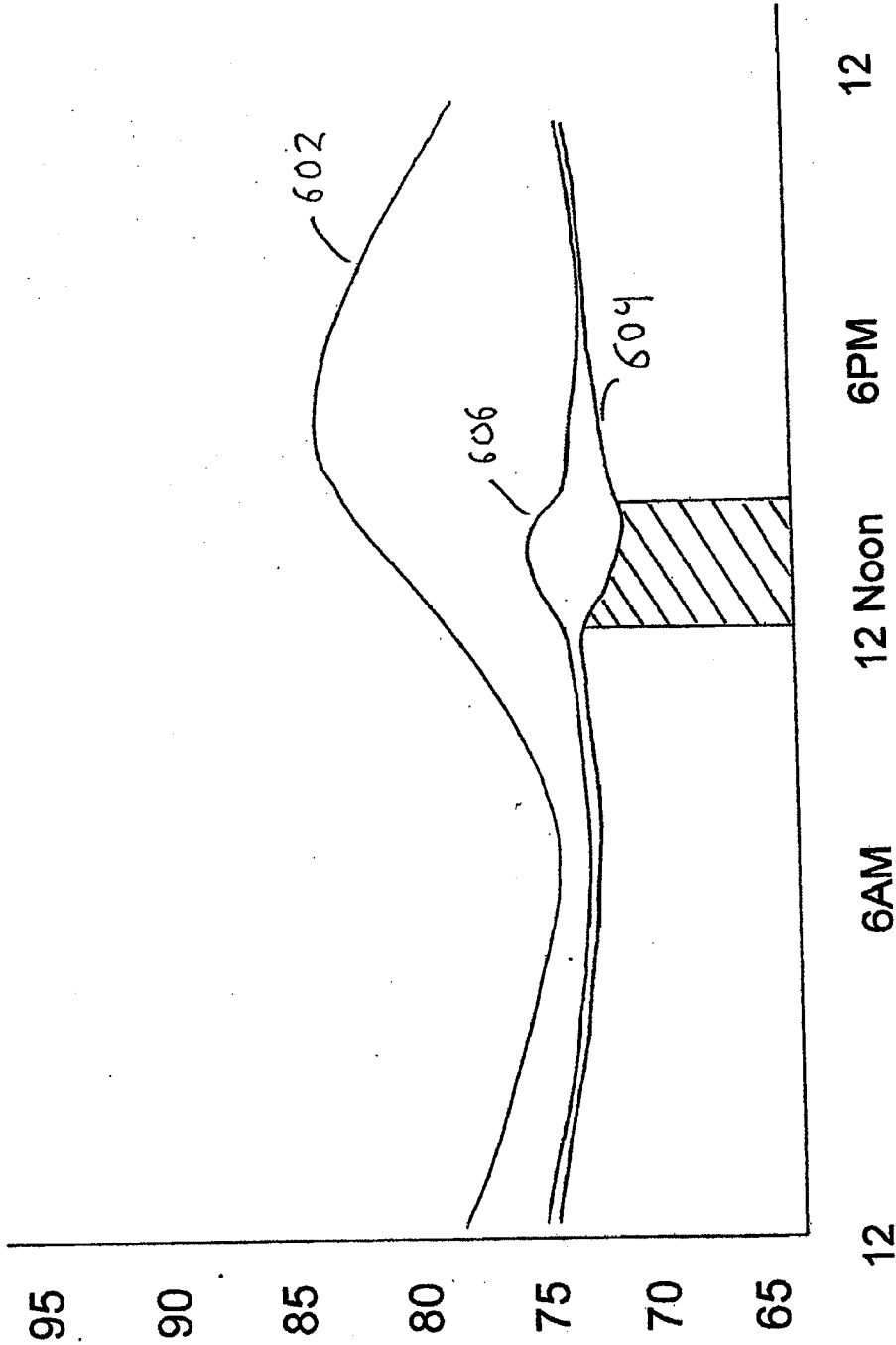


Fig. 10a



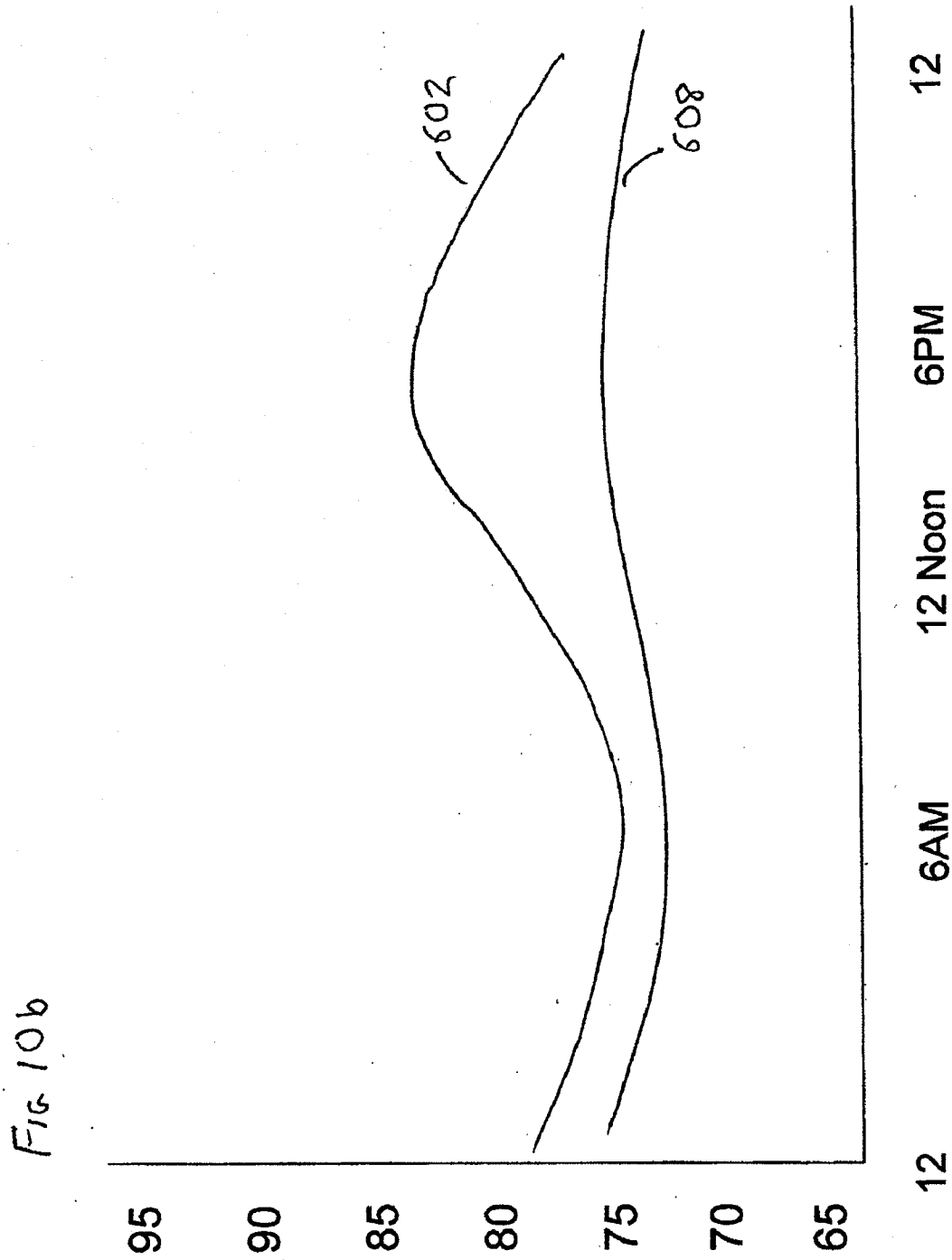
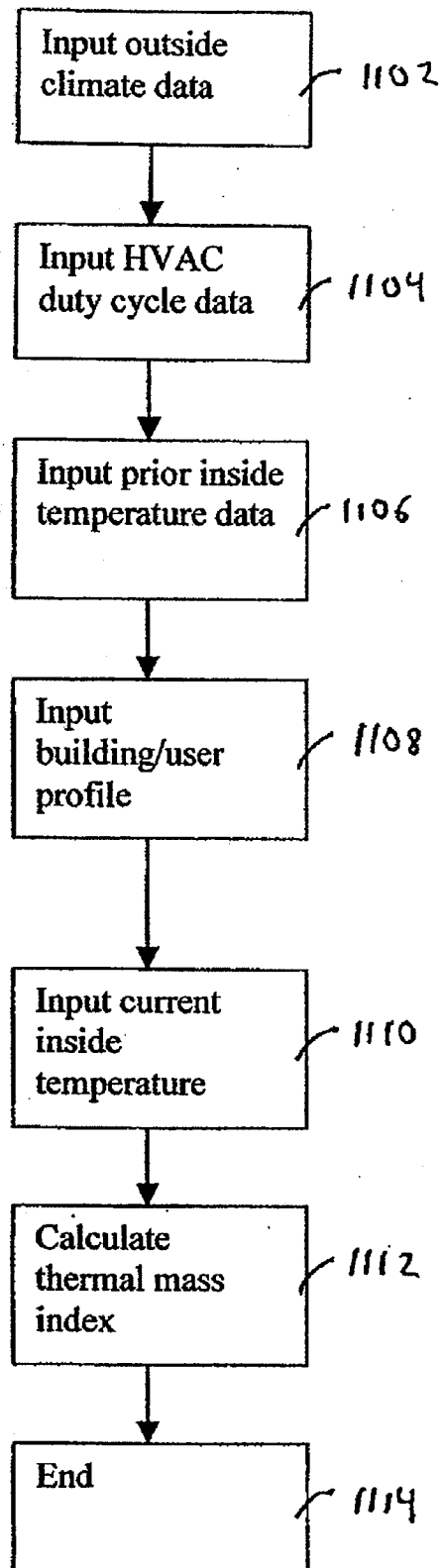


Figure 11



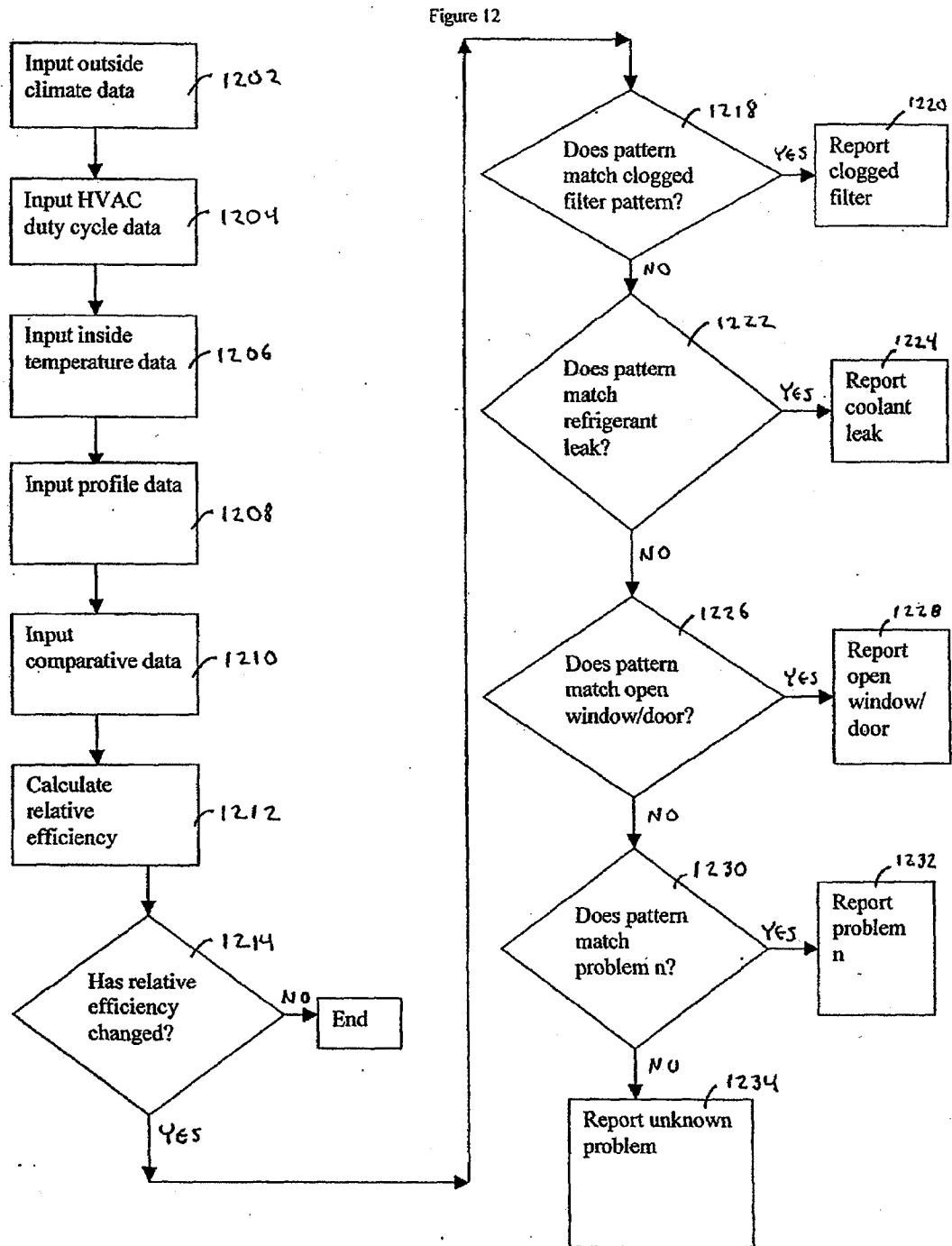
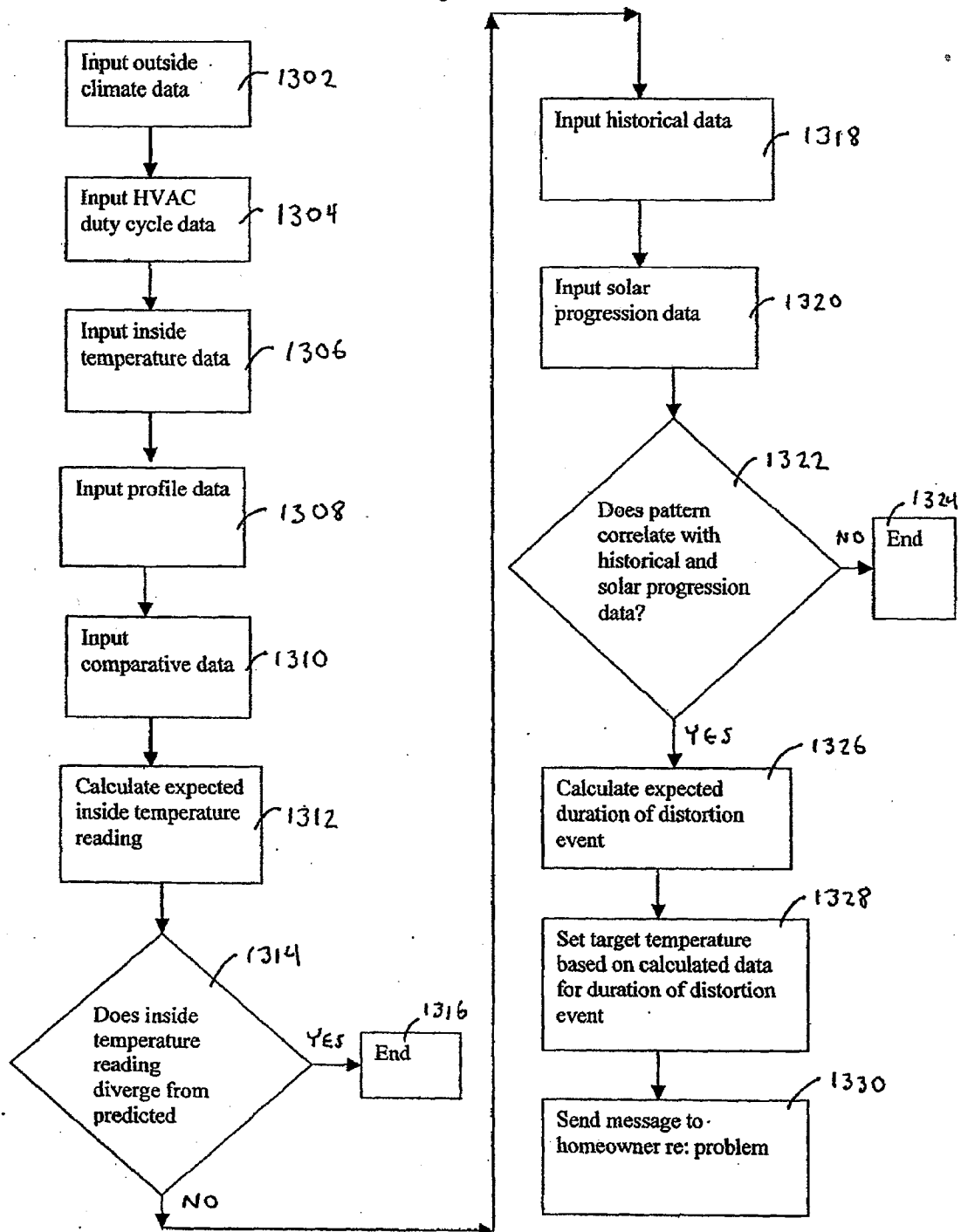


Figure 13



SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 60/944,011, filed Sep. 17, 2007, the entirety of which is incorporated herein by reference and is to be considered part of this specification.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] This invention relates to the use of thermostatic HVAC controls that are connected to a computer network. More specifically, communicating thermostats are combined with a computer network to calculate the thermal mass of a structure.

[0004] 2. Background

[0005] Climate control systems such as heating and cooling systems for buildings (heating, ventilation and cooling, or HVAC systems) have been controlled for decades by thermostats. At the most basic level, a thermostat includes a means to allow a user to set a desired temperature, a means to sense actual temperature, and a means to signal the heating and/or cooling devices to turn on or off in order to try to change the actual temperature to equal the desired temperature. The most basic versions of thermostats use components such as a coiled bimetallic spring to measure actual temperature and a mercury switch that opens or completes a circuit when the spring coils or uncoils with temperature changes. More recently, electronic digital thermostats have become prevalent. These thermostats use solid-state devices such as thermistors or thermal diodes to measure temperature, and microprocessor-based circuitry to control the switch and to store and operate based upon user-determined protocols for temperature vs. time.

[0006] These programmable thermostats generally offer a very restrictive user interface, limited by the cost of the devices, the limited real estate of the small wall-mounted boxes, and the inability to take into account more than two variables: the desired temperature set by the user, and the ambient temperature sensed by the thermostat. Users can generally only set one series of commands per day, and in order to change one parameter (e.g., to change the late-night temperature) the user often has to cycle through several other parameters by repeatedly pressing one or two buttons.

[0007] Because the interface of programmable thermostats is so poor, the significant theoretical savings that are possible with them (sometimes cited as 25% of heating and cooling costs) are rarely realized. In practice, studies have found that more than 50% of users never program their thermostats at all. Significant percentages of the thermostats that are programmed are programmed sub-optimally, in part because, once programmed, people tend to not to re-invest the time needed to change the settings very often.

[0008] A second problem with standard programmable thermostats is that they represent only a small evolutionary step beyond the first, purely mechanical thermostats. Like the first thermostats, they only have two input signals—ambient temperature and the preset desired temperature. The entire

advance with programmable thermostats is that they can shift between multiple present temperatures at different times.

SUMMARY OF THE INVENTION

[0009] There are many other sources of information that could be used to increase comfort, decrease energy use, or both. For example, outside temperature and humidity strongly affect subjective comfort. On a 95 degree, 90 per cent humidity day in August, when people tend to dress in light-weight clothing, a house cooled to 70 degrees will feel cool or even uncomfortably cold. On a below-freezing day in January, when people tend to wear sweaters and heavier clothes, that same 70 degree home will feel too warm. It would therefore be advantageous for a thermostat system to automatically incorporate information about external weather conditions when setting the desired temperature.

[0010] Thermostats are used to regulate temperature for the benefit of the occupants in a given space. (Usually this means people, but it can of course also mean critical equipment, such as in a room filled with computer equipment.) In general, thermostats read temperature from the sensor located within the “four corners” of the thermostat. With a properly designed system, the thermostat may well be located such that the temperature read at the precise location of the thermostat accurately reflects the conditions where the human (or other) occupants tend to be. But there are many reasons and circumstances in which that will not be the case. A single thermostat may produce accurate readings in some circumstances but not others; it may be located in a place far from the occupants, or too far from the ductwork controlled by the thermostat, etc. In one house, for example, the thermostat may be located in a spot that receives direct sunlight on hot afternoons. This could cause the thermostat to sense that the local ambient temperature is extremely high, and as a result signal the A/C to run too long, making the rest of the home too cold, and wasting considerable energy. In another house, the thermostat may be located in a hallway without ductwork or where the nearby ducts have been closed. In such a scenario, the thermostat is likely to (correctly) report cold temperatures in the winter, leading the heating system to overheat the rest of the house and waste considerable energy.

[0011] These problems can be reduced or eliminated through use of additional remote temperature sensors connected to the thermostat's control circuitry. However, such systems require additional hardware, additional thermostat complexity, and skilled installation and configuration.

[0012] It would therefore be desirable for a thermostat system using only a single temperature sensor to take such sub-optimal installations into account and to correct for the erroneous readings generated by such thermostats.

[0013] Different structures will respond to changes in conditions such as external temperature in different ways. For example, houses built 50 or more years ago will generally have little or no insulation, be poorly sealed, and have simple single-glazed windows. Such houses will do a very poor job of retaining internal heat in the winter and rejecting external heat in the summer. In the absence of applications of thermal measures such as heating and air conditioning, the inside temperature in such houses will tend to track outside temperatures very closely. Such houses may be said to have low thermal mass. A house built in recent years, using contemporary techniques for energy efficiency such as high levels of insulation, double-glazed windows and other techniques, will, in the absence of intervention, tend to absorb external

heat and release internal heat very slowly. The newer house can be thought of as having higher thermal mass than the older house.

[0014] A conventional thermostat has no mechanism by which it might take the thermal mass of the structure into account, but thermal mass significantly affects many parameters relating to energy efficiency.

[0015] The cost to an electric utility to produce power varies over time. Indeed, the cost of production between low demand and peak demand periods can vary by as much as an order of magnitude. Traditionally, residential customers paid the same price regardless of time or the cost to produce. Thus consumers have had little financial incentive to reduce consumption during periods of high demand and high production cost. Many electric utilities are now seeking to bring various forms of variable rates to the retail energy markets. Under such schemes, consumers can reduce costs by taking into account not just how much energy they use, but when they use it.

[0016] Thus many consumers now can see real benefits from optimizing not just the total number of kilowatt-hours of electricity consumed, but also optimizing when it is used. The optimum strategy for energy use over time will vary based upon many variables, one of which is the thermal mass of the structure being heated or cooled. In a structure with high thermal mass, heating and cooling can effectively be shifted away from high cost periods to lower cost "shoulder" periods with little or no effect on comfort. If, for example, a utility charges much higher rates on hot summer afternoons, it is likely that pre-cooling a high-thermal mass structure just before the high-cost period and then shutting down the air conditioning during the peak will allow the house to remain comfortable. But in a house with low thermal mass, the benefits of pre-cooling will quickly dissipate, and the house will rapidly become uncomfortable if the air conditioning is shut off. Thus it would be advantageous for a temperature control system to take thermal mass into account when setting desired temperatures.

[0017] Many factors affect the efficiency of HVAC systems. Some may be thought of as essentially fixed, such as the theoretical efficiency of a central air conditioner (often expressed as its SEER rating), the matching of a given system to the characteristics of a given home, the location and size of forced-air ductwork, etc. Other contributors to efficiency are more dynamic, such as clogged filters, refrigerant leaks, duct leakage and "pop-offs," and the like.

[0018] Most of these problems are likely to manifest themselves in the form of higher energy bills. But the "signature" of each different problem can be discerned from the way in which each such problem affects the cycle times of a given HVAC system over time and relative to weather conditions and the performance of other HVAC systems in other houses. If two otherwise identical houses are located next door to each other and have gas furnaces, but one is rated at 50,000 BTUs and the other is rated at 100,000 BTUs, the cycle times for the higher-capacity furnace should be shorter than for the lower-capacity unit. If both of those same houses have identical furnaces, but one has a clogged filter, the cycle times should be longer in the house with the clogged filter. Because cycling of the HVAC system is controlled by the thermostat, those differences in cycle time would be reflected in the data sensed by and control signals generated by the thermostat. It would

be advantageous for a thermostat system to be able to use that information to diagnose problems and make recommendations based upon that data.

[0019] These needs are satisfied by at least one embodiment of the invention that includes a system for calculating a value for the effective thermal mass of a building comprising: at least one HVAC control system that measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time; calculating one or more rates of change in temperature at said first location; and relating said calculated rates of change to said outside temperature measurements.

[0020] Another embodiment includes a system for calculating a value for the operational efficiency of an HVAC system comprising at least one HVAC control system that measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time; calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "on"; calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "off"; and relating said calculated rates of change to said outside temperature measurements.

[0021] A further embodiment includes a system for evaluating changes in the operational efficiency of an HVAC system over time comprising at least one HVAC control system that measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time.

[0022] A further embodiment includes a system for detecting and correcting for anomalous behavior in HVAC control systems comprising a first HVAC control system that measures temperature at at least a first location conditioned by

said first HVAC system, and reporting said temperature measurements as well as the status of said first HVAC control system; at least a second HVAC control system that measures temperature at at least a second location conditioned by said second HVAC system, and reporting said temperature measurements as well as the status of said second HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said first and second HVAC control systems and compare said temperature measurements from said first HVAC controls system and said second HVAC control system and said outside temperature measurements; and one or more databases that store said temperatures measurements.

[0023] In at least one embodiment, the invention comprises a thermostat attached to an HVAC system, a local network connecting the thermostat to a larger network such as the Internet, and one or more additional thermostats attached to the network, and a server in bi-directional communication with a plurality of such thermostats. The server logs the ambient temperature sensed by each thermostat vs. time and the signals sent by the thermostats to their HVAC systems. The server preferably also logs outside temperature and humidity data for the geographic locations for the buildings served by the connected HVAC systems. Such information is widely available from various sources that publish detailed weather information based on geographic areas such as by ZIP code. The server also stores other data affecting the load upon the system, such as specific model of HVAC system, occupancy, building characteristics, etc. Some of this data may be supplied by the individual users of the system, while other data may come from third-party sources such as the electric and other utilities who supply energy to those users.

[0024] Combining these data sources will also allow the server to calculate the effective thermal mass of the structures conditioned by those thermostats. By combining data from multiple thermostats in a given neighborhood, the system can correct for flaws in the location of a given thermostat, and can evaluate the efficiency of a given system, as well as assist in the diagnosis of problems and malfunctions in such systems.

[0025] This and other advantages of certain embodiments of the invention are explained in the detailed description and claims that make reference to the accompanying diagrams and flowcharts.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. 1 shows an example of an overall environment in which an embodiment of the invention may be used.

[0027] FIG. 2 shows a high-level illustration of the architecture of a network showing the relationship between the major elements of one embodiment of the subject invention.

[0028] FIG. 3 shows an embodiment of the website to be used as part of the subject invention.

[0029] FIG. 4 shows a high-level schematic of the thermostat used as part of the subject invention.

[0030] FIG. 5 shows one embodiment of the database structure used as part of the subject invention.

[0031] FIGS. 6a and 6b show graphical representations of inside and outside temperatures in two different homes, one with high thermal mass and one with low thermal mass.

[0032] FIGS. 7a and 7b show graphical representations of inside and outside temperatures in the same homes as in FIGS. 6a and 6b, showing the cycling of the air conditioning systems in those houses.

[0033] FIGS. 8a and 8b show graphical representations of inside and outside temperatures in the same home as in FIGS. 6a and 7a, showing the cycling of the air conditioning on two different days in order to demonstrate the effect of a change in operating efficiency on the parameters measured by the thermostat.

[0034] FIGS. 9a and 9b show the effects of employing a pre-cooling strategy in two different houses.

[0035] FIGS. 10a and 10b show graphical representations of inside and outside temperatures in two different homes in order to demonstrate how the system can correct for erroneous readings in one house by referencing readings in another.

[0036] FIG. 11 is a flowchart illustrating the steps involved in calculating the effective thermal mass of a home using the subject invention.

[0037] FIG. 12 is a flowchart illustrating the steps involved in determining whether an HVAC system has developed a problem that impairs efficiency using the subject invention.

[0038] FIG. 13 is a flowchart illustrating the steps involved in correcting for erroneous readings in one house by referencing readings in another using the subject invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0039] FIG. 1 shows an example of an overall environment 100 in which an embodiment of the invention may be used. The environment 100 includes an interactive communication network 102 with computers 104 connected thereto. Also connected to network 102 are one or more server computers 106, which store information and make the information available to computers 104. The network 102 allows communication between and among the computers 104 and 106.

[0040] Presently preferred network 102 comprises a collection of interconnected public and/or private networks that are linked to together by a set of standard protocols to form a distributed network. While network 102 is intended to refer to what is now commonly referred to as the Internet, it is also intended to encompass variations which may be made in the future, including changes additions to existing standard protocols.

[0041] When a user of the subject invention wishes to access information on network 102, the user initiates connection from his computer 104. For example, the user invokes a browser, which executes on computer 104. The browser, in turn, establishes a communication link with network 102. Once connected to network 102, the user can direct the browser to access information on server 106.

[0042] One popular part of the Internet is the World Wide Web. The World Wide Web contains a large number of computers 104 and servers 106, which store HyperText Markup Language (HTML) documents capable of displaying graphical and textual information. HTML is a standard coding convention and set of codes for attaching presentation and linking attributes to informational content within documents.

[0043] The servers 106 that provide offerings on the World Wide Web are typically called websites. A website is often defined by an Internet address that has an associated electronic page. Generally, an electronic page is a document that organizes the presentation of text graphical images, audio and video.

[0044] In addition to the Internet, the network 102 can comprise a wide variety of interactive communication media. For example, network 102 can include local area networks,

interactive television networks, telephone networks, wireless data systems, two-way cable systems, and the like.

[0045] In one embodiment, computers 104 and servers 106 are conventional computers that are equipped with communications hardware such as modem or a network interface card. The computers include processors such as those sold by Intel and AMD. Other processors may also be used, including general-purpose processors, multi-chip processors, embedded processors and the like.

[0046] Computers 104 can also be handheld and wireless devices such as personal digital assistants (PDAs), cellular telephones and other devices capable of accessing the network.

[0047] Computers 104 utilize a browser configured to interact with the World Wide Web. Such browsers may include Microsoft Explorer, Mozilla, Firefox, Opera or Safari. They may also include browsers used on handheld and wireless devices.

[0048] The storage medium may comprise any method of storing information. It may comprise random access memory (RAM), electronically erasable programmable read only memory (EEPROM), read only memory (ROM), hard disk, floppy disk, CD-ROM, optical memory, or other method of storing data.

[0049] Computers 104 and 106 may use an operating system such as Microsoft Windows, Apple Mac OS, Linux, Unix or the like.

[0050] Computers 106 may include a range of devices that provide information, sound, graphics and text, and may use a variety of operating systems and software optimized for distribution of content via networks.

[0051] FIG. 2 illustrates in further detail the architecture of the specific components connected to network 102 showing the relationship between the major elements of one embodiment of the subject invention. Attached to the network are thermostats 108 and computers 104 of various users. Connected to thermostats 108 are HVAC units 110. The HVAC units may be conventional air conditioners, heat pumps, or other devices for transferring heat into or out of a building. Each user is connected to the server 106 via wired or wireless connection such as Ethernet or a wireless protocol such as IEEE 802.11, a gateway 110 that connects the computer and thermostat to the Internet via a broadband connection such as a digital subscriber line (DSL) or other form of broadband connection to the World Wide Web. Server 106 contains the content to be served as web pages and viewed by computers 104, as well as databases containing information used by the servers.

[0052] In the currently preferred embodiment, the website 200 includes a number of components accessible to the user, as shown in FIG. 3. Those components may include a means to enter temperature settings 202, a means to enter information about the user's home 204, a means to enter the user's electricity bills 206, means to calculate energy savings that could result from various thermostat-setting strategies 208, and means to enable and choose between various arrangements 210 for demand reduction with their electric utility provider as intermediated by the demand reduction service provider.

[0053] FIG. 4 shows a high-level block diagram of thermostat 108 used as part of the subject invention. Thermostat 108 includes temperature sensing means 252, which may be a thermistor, thermal diode or other means commonly used in the design of electronic thermostats. It includes a micropro-

cessor 254, memory 256, a display 258, a power source 260, a relay 262, which turns the HVAC system on and off in response to a signal from the microprocessor, and contacts by which the relay is connected to the wires that lead to the HVAC system. To allow the thermostat to communicate bi-directionally with the computer network, the thermostat also includes means 264 to connect the thermostat to a local computer or to a wireless network. Such means could be in the form of Ethernet, wireless protocols such as IEEE 802.11, IEEE 802.15.4, Bluetooth, cellular systems such as CDMA, GSM and GPRS, or other wireless protocols. The thermostat 250 may also include controls 266 allowing users to change settings directly at the thermostat, but such controls are not necessary to allow the thermostat to function.

[0054] The data used to generate the content delivered in the form of the website is stored on one or more servers 106 within one or more databases. As shown in FIG. 5, the overall database structure 300 may include temperature database 400, thermostat settings database 500, energy bill database 600, HVAC hardware database 700, weather database 800, user database 900, transaction database 1000, product and service database 1100 and such other databases as may be needed to support these and additional features.

[0055] The website will allow users of connected thermostats 250 to create personal accounts. Each user's account will store information in database 900, which tracks various attributes relative to users of the site. Such attributes may include the make and model of the specific HVAC equipment in the user's home; the age and square footage of the home, the solar orientation of the home, the location of the thermostat in the home, the user's preferred temperature settings, whether the user is a participant in a demand reduction program, etc.

[0056] As shown in FIG. 3, the website 200 will permit thermostat users to perform through the web browser substantially all of the programming functions traditionally performed directly at the physical thermostat, such as temperature set points, the time at which the thermostat should be at each set point, etc. Preferably the website will also allow users to accomplish more advanced tasks such as allow users to program in vacation settings for times when the HVAC system may be turned off or run at more economical settings, and set macros that will allow changing the settings of the temperature for all periods with a single gesture such as a mouse click.

[0057] In addition to using the system to allow better signaling and control of the HVAC system, which relies primarily on communication running from the server to the thermostat, the bi-directional communication will also allow the thermostat 108 to regularly measure and send to the server information about the temperature in the building. By comparing outside temperature, inside temperature, thermostat settings, cycling behavior of the HVAC system, and other variables, the system will be capable of numerous diagnostic and controlling functions beyond those of a standard thermostat.

[0058] For example, FIG. 6a shows a graph of inside temperature and outside temperature for a 24-hour period in House A, assuming no HVAC activity. House A has double-glazed windows and is well-insulated. When outside temperature 302 increases, inside temperature 304 follows, but with significant delay because of the thermal mass of the building.

[0059] FIG. 6b shows a graph of inside temperature and outside temperature for the same 24-hour period in House B. House B is identical to House A except that it (i) is located a block away and (ii) has single-glazed windows and is poorly insulated. Because the two houses are so close to each other, outside temperature 302 is the same in FIG. 6a and FIG. 6b. But the lower thermal mass of House B means that the rate at which the inside temperature 306 changes in response to the changes in outside temperature is much greater.

[0060] The differences in thermal mass will affect the cycling behavior of the HVAC systems in the two houses as well. FIG. 7a shows a graph of inside temperature and outside temperature in House A for the same 24-hour period as shown in FIG. 6a, but assuming that the air conditioning is being used to try to maintain an internal temperature of 70 degrees. Outside temperatures 302 are the same as in FIGS. 6a and 6b. Because of the high thermal mass of the house, the air conditioning does not need to run for very long to maintain the target temperature, as shown by shaded areas 310.

[0061] FIG. 7b shows a graph of inside temperature 312 and outside temperature 302 for the same 24-hour period in House B, assuming use of the air conditioning as in FIG. 7a. Because of the lower thermal mass of House B, the air conditioning system in House B has to run longer in order to maintain the same target temperature, as shown by shaded areas 314.

[0062] Because server 106a logs the temperature readings from inside each house (whether once per minute or over some other interval), as well as the timing and duration of air conditioning cycles, database 300 will contain a history of the thermal performance of each house. That performance data will allow the server 106a to calculate an effective thermal mass for each such structure—that is, the speed with the temperature inside a given building will change in response to changes in outside temperature and differences between inside and outside temperatures. Because the server will also log these inputs against other inputs including time of day, humidity, etc. the server will be able to predict, at any given time on any given day, the rate at which inside temperature should change for given inside and outside temperatures.

[0063] The server will also record the responses of each house to changes in outside conditions and cycling behavior over time. That will allow the server to diagnose problems as and when they develop. For example, FIG. 8a shows a graph of outside temperature 402, inside temperature 404 and HVAC cycle times 406 in House A for a specific 24-hour period on date X. Assume that, based upon comparison of the performance of House A on date X relative to House A's historical performance, and in comparison to the performance of House A relative to other nearby houses on date X, the HVAC system in House A is presumed to be operating at normal efficiency, and that House A is in the 86th percentile as compared to those other houses. FIG. 8b shows a graph of outside temperature 408, inside temperature 410 and HVAC cycle times 412 in House A for the 24-hour period on date X+1. House A's HVAC system now requires significantly longer cycle times in order to try to maintain the same internal temperature. If those longer cycle times were due to higher outside temperatures, those cycle times would not indicate the existence of any problems. But because server 106 is aware of the outside temperature, the system can eliminate that possibility as an explanation for the higher cycle times. Because server 106 is aware of the cycle times in nearby houses, it can determine that, for example, on date X+1 the

efficiency of House A is only in the 23rd percentile. The server will be programmed with a series of heuristics, gathered from predictive models and past experience, correlating the drop in efficiency and the time interval over which it has occurred with different possible causes. For example, a 50% drop in efficiency in one day may be correlated with a refrigerant leak, especially if followed by a further drop in efficiency on the following day. A reduction of 10% over three months may be correlated with a clogged filter. Based upon the historical data recorded by the server, the server 106 will be able to alert the homeowner that there is a problem and suggest a possible cause.

[0064] Because the system will be able to calculate effective thermal mass, it will be able to determine the cost effectiveness of strategies such as pre-cooling for specific houses under different conditions. FIG. 9a shows a graph of outside temperature 502, inside temperature 504 and HVAC cycling times 506 in House A for a specific 24-hour period on date Y assuming that the system has used a pre-cooling strategy to avoid running the air conditioning during the afternoon, when rates are highest. Because House A has high thermal mass, the house is capable of "banking" cool, and energy consumed during off-peak hours is in effect stored, allowing the house to remain cool even when the system is turned off. Temperatures keep rising during the period the air conditioning is off, but because thermal mass is high, the rate of increase is low, and the house is still comfortable six hours later. Although the pre-cooling cycle time is relatively long, the homeowner may still benefit because the price per kilowatt during the morning pre-cooling phase is lower than the price during the peak load period. FIG. 9b shows a graph of the same outside temperature 502 in House B as in House A in FIG. 9a for the same 24-hour period and using the same pre-cooling strategy as shown by cycling times 506. But because House B has minimal thermal mass, using additional electricity in order to pre-cool the house does not have the desired effect; inside temperature 508 warms up so fast that the cool that had been banked is quickly lost. Thus the system will recommend that House A pre-cool in order to save money, but not recommend pre-cooling for House B.

[0065] The system can also help compensate for anomalies such as measurement inaccuracies due to factors such as poor thermostat location. It is well-known that thermostats should be placed in a location that will be likely to experience "average" temperatures for the overall structure, and should be isolated from windows and other influences that could bias the temperatures they "see." But for various reasons, not all thermostat installations fit that ideal. FIG. 10a shows a graph of outside temperature 602, the average inside temperature for the entire house 604, and inside temperature as read by the thermostat 606 in House C for a specific 24-hour period on September 15th, assuming that the thermostat is located so that from 4 PM until 5:30 PM on that day the thermostat is in direct sunlight. Until the point at which the sun hits the thermostat, the average inside temperature and temperature as read by the thermostat track very closely. But when the direct sunlight hits the thermostat, the thermostat and the surrounding area can heat up, causing the internal temperature as read by the thermostat to diverge significantly from the average temperature for the rest of the house. Conventional thermostats have no way of distinguishing this circumstance from a genuinely hot day, and will both over-cool the rest of the house and waste considerable energy when it cycles the air conditioner in order to reduce the temperature as sensed by

the thermostat. If the air conditioning is turned off, this phenomenon will manifest as a spike in temperature as measured by the thermostat. If the air conditioning is turned on (and has sufficient capacity to respond to the distorted temperature signal caused by the sunlight), this phenomenon will likely manifest as relatively small changes in the temperature as sensed by the thermostat, but significantly increased HVAC usage (as well as excessively lowered temperatures in the rest of the house, but this result may not be directly measured in a single sensor environment). The subject system, in contrast, has multiple mechanisms that will allow it to correct for such distortions. First, because the subject system compares the internal readings from House C with the external temperature, it will be obvious that the rise in temperature at 4:00 PM is not correlated with a corresponding change in outside temperature. Second, because the system is also monitoring the readings from the thermostat in nearby House D, which (as shown in FIG. 10b) is exposed to the same outside temperature 602, but has no sudden rise in measured internal temperature 608 at 4:00, the system has further validation that the temperature increase is not caused by climatic conditions. And finally, because the system has monitored and recorded the temperature readings from the thermostat in House C for each previous day, and has compared the changing times of the aberration with the progression of the sun, the system can distinguish the patterns likely to indicate solar overheating from other potential causes.

[0066] FIG. 11 illustrates the steps involved in calculating comparative thermal mass, or the thermal mass index. In step 1102, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1104, the server retrieves HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1106, the server retrieves data regarding recent temperature readings as recorded by the thermostat in home X. In step 1108, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning hardware, and other data. In step 1110, the server retrieves the current inside temperature reading as transmitted by the thermostat. In step 1112, the server calculates the thermal mass index for the home under those conditions; that is, for example, it calculates the likely rate of change for internal temperature in home X from a starting point of 70 degrees when the outside temperature is 85 degrees at 3:00 PM on August 10th when the wind is blowing at 5 mph from the north and the sky is cloudy. The server accomplishes this by applying a basic algorithm that weighs each of these external variables as well as variables for various characteristics of the home itself (such as size, level of insulation, method of construction, etc.) and data from other houses and environments.

[0067] FIG. 12 illustrates the steps involved in diagnosing defects in the HVAC system for specific home X. In step 1202, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1204, the server retrieves

HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1206, the server retrieves data regarding current and recent temperature readings as recorded by the thermostat in home X. In step 1208, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning hardware, and other data. In step 1210, the server retrieves comparative data from other houses that have thermostats that also report to the server. Such data may include interior temperature readings, outside temperature for those specific locations, duty cycle data for the HVAC systems at those locations, profile data for the structures and HVAC systems in those houses and the calculated thermal mass index for those other houses. In step 1212, the server calculates the current relative efficiency of home X as compared to other homes. Those comparisons will take into account differences in size, location, age, etc in making those comparisons.

[0068] The server will also take into account that relative efficiency is not absolute, but will vary depending on conditions. For example, a house that has extensive south-facing windows is likely to experience significant solar gain. On sunny winter days, that home will appear more efficient than on cloudy winter days. That same house will appear more efficient at times of day and year when trees or overhangs shade those windows than it will when summer sun reaches those windows. Thus the server will calculate efficiency under varying conditions.

[0069] In step 1214 the server compares the HVAC system's efficiency, corrected for the relevant conditions, to its efficiency in the past. If the current efficiency is substantially the same as the historical efficiency, the server concludes 1216 that there is no defect and the diagnostic routine ends. If the efficiency has changed, the server proceeds to compare the historical and current data against patterns of changes known to indicate specific problems. For example, in step 1218, the server compares that pattern of efficiency changes against the known pattern for a clogged air filter, which is likely to show a slow, gradual degradation over a period of weeks or even months. If the pattern of degradation matches the clogged filter paradigm, the server creates and transmits to the homeowner a message 1220 alerting the homeowner to the possible problem. If the problem does not match the clogged filter paradigm, the system compares 1222 the pattern to the known pattern for a refrigerant leak, which is likely to show a degradation over a period of a few hours to a few days. If the pattern of degradation matches the refrigerant leak paradigm, the server creates and transmits to the homeowner a message 1224 alerting the homeowner to the possible problem. If the problem does not match the refrigerant leak paradigm, the system compares 1226 the pattern to the known pattern for an open window or door, which is likely to show significant changes for relatively short periods at intervals uncorrelated with climatic patterns. If the pattern of degradation matches the open door/window paradigm, the server creates and transmits to the homeowner a message 1228 alerting the homeowner to the possible problem. If the problem does not match the refrigerant leak paradigm, the system continues to step through remaining known patterns N 1230 until either a pattern is matched 1232 or the list has been exhausted without a match 1234.

[0070] FIG. 13 illustrates the steps involved in diagnosing inaccurate thermostat readings due to improper location. In step 1302, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1304, the server retrieves HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1306, the server retrieves data regarding current and recent temperature readings as recorded by the thermostat in home X. In step 1308, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning hardware, and other data. In step 1310, the server retrieves comparative data from other houses that have thermostats that also report to the server. Such data may include interior temperature readings, outside temperature for those specific locations, duty cycle data for the HVAC systems at those locations, profile data for the structures and HVAC systems in those houses and the calculated thermal mass index for those other houses. In step 1312, the server calculates the expected thermostat temperature reading based upon the input data. In step 1314, the server compares the predicted and actual values. If the calculated and actual values are at least roughly equivalent, the server concludes 1316 that there is no thermostat-related anomaly. If the calculated and actual values are not roughly equivalent, the server retrieves additional historical information about past thermostat readings in step 1318. In step 1320, the server retrieves solar progression data, i.e., information regarding the times at which the sun rises and sets on the days being evaluated at the location of the house being evaluated, and the angle of the sun at that latitude, etc. In step 1322, the server compares the characteristics of the anomalies over time, to see if, for example, abnormally high readings began at 3:06 on June 5th, 3:09 on June 6th, 3:12 on June 7th, and the solar progression data suggests that at the house being analyzed, that sun would be likely to reach a given place in that house three minutes later on each of those days. If the thermostat readings do not correlate with the solar progression data, the server concludes 1324 that the sun is not causing the distortion by directly hitting the thermostat. If the thermostat readings do correlate with solar progression, the server then calculates 1326 the predicted duration of the distortion caused by the sun. In step 1328, the server calculates the appropriate setpoint information to be used by the thermostat to maintain the desired temperature and correct for the distortion for the expected length of the event. For example, if the uncorrected setpoint during the predicted event is 72 degrees, and the sun is expected to elevate the temperature reading by eight degrees, the server will instruct the thermostat to maintain a setpoint of 80 degrees. In step 1330, the server sends the homeowner a message describing the problem.

[0071] The system installed in a subscriber's home may optionally include additional temperature sensors at different locations within the building. These additional sensors may be connected to the rest of the system via a wireless system such as 802.11 or 802.15.4, or may be connected via wires. Additional temperature and/or humidity sensors may allow

increased accuracy of the system, which can in turn increase user comfort or energy savings.

[0072] While particular embodiments have been shown and described, it is apparent that changes and modifications may be made without departing from the invention in its broader aspects and, therefore, the invention may be carried out in other ways without departing from the true spirit and scope. These and other equivalents are intended to be covered by the following claims:

What is claimed is:

1. A system for calculating a value for the effective thermal mass of a building comprising:

at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperature measurements from said first location over time; and

one or more processors that receive outside temperature measurements associated with outside temperatures from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein the one or more processors are configured to calculate one or more rates of change in temperature measurements at said first location and wherein the one or more processors are further configured to relate said calculated rates of change to said outside temperature measurements.

2. A system as in claim 1 in which said processors receive measurements of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system.

3. A system as in claim 1 further comprising receiving temperature measurements from a programmable thermostat that communicates with said HVAC control system using the Internet.

4. A system as in claim 1 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

5. A system as in claim 1 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

6. A system as in claim 1 in which said temperature measurements inside said first location occur at only one physical location.

7. A system as in claim 1 in which the status of said HVAC system includes whether said system is "on" or "off".

8. A system for calculating a value for the operational efficiency of an HVAC system comprising:

at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperatures measured at said first location over time; and

one or more processors that receive outside temperature measurements from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein said one or more processors are configured to calculate one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "on" and wherein said one or more processors are further configured to calculate one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "off", and to relate said calculated rates of change to said outside temperature measurements

9. A system as in claim 8 in which said processors receive temperature of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system.

10. A system as in claim 8 further comprising a programmable thermostat that communicates with said HVAC control system using the Internet.

11. A system as in claim 8 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

12. A system as in claim 8 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

13. A system as in claim 8 in which said temperature measurements inside said first location occur at only one physical location.

14. A system as in claim 8 in which the status of said HVAC system includes whether said system is "on" or "off".

15. A method for calculating a value for the operational efficiency of an HVAC system comprising:

storing over time, temperature measurements from at least a first location conditioned by at least one HVAC system;

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "on";

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "off";

relating said calculated rates of change to outside temperature measurements from a location other than said first location;

determining with a computer processor, expected temperature measurements based at least in part upon said calculated rates of change and based at least in part on one or more outside temperature measurements obtained from said location other than said first location,

16. The method as in claim 15 wherein said outside temperatures are for geographic regions such as ZIP codes from sources other than said HVAC system.

17. The method as in claim 15 further comprising communicating with a programmable thermostat associated with said HVAC system using the Internet.

18. The method as in claim 15 further comprising communicating with said HVAC system using a network that includes an electricity meter.

19. The method as in claim 15 further comprising a programmable thermostat that provides the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

20. A method as in claim 15 further comprising receiving the status of said HVAC system wherein said status comprises whether said system is "on" or "off".

* * * * *

SUPPLEMENTAL APPLICATION DATA SHEET**Application Information**

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COPY

Inventor Information

Applicant Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: John
Middle Name:: Douglas
Family Name:: Steinberg
City of Residence:: Millbrae
State or Prov. of Residence:: CA
Country of Residence:: US
Street:: 873 Hacienda Way
City:: Millbrae
State or Province:: CA
Country:: US
Postal or Zip Code:: 94030

COPY

Applicant Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: Scott
Middle Name:: Douglas
Family Name:: Hublou
City of Residence:: Redwood City
State or Prov. of Residence:: CA
Country of Residence:: US
Street:: 747 Lakeview Way
City:: Redwood City
State or Province:: CA
Country:: US
Postal or Zip Code:: 94062

Correspondence Information

Correspondence Customer Number:: 20,995
Phone Number:: (949) 760-0404
Fax Number:: (949) 760-9502
E-Mail Address:: jking@kmob.com

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Street::

City::

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Signature:

John R. King
John R. King, Reg. No. 34,362

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1	Request/Corrected Patent Application Publications	EFACT-005A_request.pdf	1337712 1599a118de5478d9689673fa13affea42ac06ea5	no	32

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



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2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

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The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.


The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Application Number 	Application/Control No. 12/211,733	Applicant(s)/Patent under Reexamination STEINBERG ET AL.	

Document Code - DISQ	Internal Document – DO NOT MAIL
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TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : 02/05/10	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
Angie Walker

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Steinberg, et al.
App. No.	:	12/211,733
Filed	:	September 16, 2008
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	:	Desta, Elias
Art Unit	:	2857
Conf. No.	:	9030

RESPONSE TO OCTOBER 7, 2009 OFFICE ACTION**Mail Stop Amendment**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action mailed October 7, 2009 Applicants respectfully submit the following comments.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Amendments to the Drawings begin on page 6 of this paper. A "Replacement Sheet" for each sheet of drawings can be found in the Appendix.

Remarks/Arguments begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 2, 8, 9, 15 and 16 as indicated below.

1. (Currently Amended) A system for calculating a value for the an effective thermal mass of a building comprising:

at least one heating, ventilation, and air conditioning (HVAC) control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperature measurements from said first location over time; and

one or more processors that receive outside temperature measurements associated with outside temperatures from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein the one or more processors are configured to calculate one or more rates of change in temperature measurements at said first location and wherein the one or more processors are further configured to relate said calculated rates of change to said outside temperature measurements.

2. (Currently Amended) A system as in claim 1 in which said processors receive measurements of outside temperatures for geographic regions comprising such as ZIP codes from sources other than said HVAC system.

3. (Original) A system as in claim 1 further comprising receiving temperature measurements from a programmable thermostat that communicates with said HVAC control system using the Internet.

4. (Original) A system as in claim 1 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

5. (Original) A system as in claim 1 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

6. (Original) A system as in claim 1 in which said temperature measurements inside said first location occur at only one physical location.

7. (Original) A system as in claim 1 in which the status of said HVAC system includes whether said system is "on" or "off".

8. (Currently Amended) A system for calculating a value for the an operational efficiency of an heating, ventilation, and air conditioning (HVAC) system comprising:

at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperatures measured at said first location over time; and

one or more processors that receive outside temperature measurements from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein said one or more processors are configured to calculate one or more first rates of change in temperature at said first location for periods during which the status of the HVAC system is "on" and wherein said one or more processors are further configured to calculate one or more second rates of change in temperature at said first location for periods during which the status of the HVAC system is "off", and to relate said first and second calculated rates of change to said outside temperature measurements

9. (Currently Amended) A system as in claim 8 in which said processors receive temperature of outside temperatures for geographic regions comprising ~~such as~~ ZIP codes from sources other than said HVAC system.

10. (Original) A system as in claim 8 further comprising a programmable thermostat that communicates with said HVAC control system using the Internet.

11. (Original) A system as in claim 8 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

12. (Original) A system as in claim 8 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

13. (Original) A system as in claim 8 in which said temperature measurements inside said first location occur at only one physical location.

14. (Original) A system as in claim 8 in which the status of said HVAC system includes whether said system is "on" or "off".

15. (Currently Amended) A method for calculating a value for the an operational efficiency of an HVAC system comprising:

storing over time, temperature measurements from at least a first location conditioned by at least one HVAC system;

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "on";

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is "off";

relating said calculated rates of change to outside temperature measurements from a location other than said first location;

determining with a computer processor, expected temperature measurements based at least in part upon said calculated rates of change and based at least in part on one or more outside temperature measurements obtained from said location other than said first location,

16. (Currently Amended) The method as in claim 15 wherein said outside temperatures are for geographic regions comprising ~~such as~~ ZIP codes from sources other than said HVAC system.

17. (Original) The method as in claim 15 further comprising communicating with a programmable thermostat associated with said HVAC system using the Internet.

18. (Original) The method as in claim 15 further comprising communicating with said HVAC system using a network that includes an electricity meter.

19. (Original) The method as in claim 15 further comprising a programmable thermostat that provides the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

20. (Original) A method as in claim 15 further comprising receiving the status of said HVAC system wherein said status comprises whether said system is "on" or "off".

Application No.: 12/211,733
Filing Date: September 16, 2008

AMENDMENTS TO THE DRAWINGS

The October 7, 2009 Office Action stated that the previous drawings were acceptable, but that consistent font and type setting would be preferred.

In response, Applicant submitting herewith Replacement Sheets for Figures 1-13 wherein the font and type settings are consistent. These Replacement Sheets replace the originally submitted drawings. Also, Applicant respectfully submits that no new matter is being submitted herewith.

Application No.: 12/211,733
Filing Date: September 16, 2008

REMARKS

The October 7, 2009 Office Action was based upon pending Claims 1-20. This Amendment amends Claims 1, 2, 8, 9, 15 and 16. Thus, after entry of this Amendment, Claims 1-20 are pending and presented for further consideration.

ISSUES RAISED IN THE OFFICE ACTION

The Office Action objected to Claims 1, 8 and 15 based on a few minor informalities.

The Office Action also rejected Claims 2, 9 and 16 under 35 U.S.C. § 112.

In addition, the Office Action provisionally rejected Claims 1-20 based on nonstatutory obviousness-type double patenting over Claims 1, 4, 8, 11, 12 and 15 of copending Application No. 12/183,949.

DRAWINGS

Applicant is submitting herewith Replacement Sheets for Figures 1-13 wherein the font and type settings are consistent. These Replacement Sheets replace the originally submitted drawings. Also, Applicant respectfully submits that no new matter is being submitted herewith.

OBJECTION TO CLAIMS 1, 8 AND 15

The Office Action objected to Claims 1, 8 and 15 based on a few minor informalities. In response, Applicant has revised Claims 1, 8 and 15 as suggested by the Examiner.

REJECTION OF CLAIMS 2, 9 AND 16 UNDER 35 U.S.C. § 112

The Office Action rejected Claims 2, 9 and 16 under 35 U.S.C. § 112. In response, Applicant has revised Claims 2, 9 and 16 as suggested by the Examiner.

Application No.: 12/211,733
Filing Date: September 16, 2008

DOUBLE PATENTING

In addition, the Office Action provisionally rejected Claims 1-20 based on nonstatutory obviousness-type double patenting over Claims 1, 4, 8, 11, 12 and 15 of copending Application No. 12/183,949.

In response, Applicant submits herewith a Terminal Disclaimer in compliance with 37 C.F.R. §1.321(b) and (c). Applicant respectfully requests that the obviousness-type double patenting rejection be withdrawn.

OTHER APPLICATIONS OF ASSIGNEE

Applicant wishes to draw the Examiner's attention to the following co-pending applications of the present application's assignee.

Inventors	Appl. No.	Filing Date	Attorney Docket No.	Title
Steinberg et al.	12/183,990	07/31/08	JSTEIN.003A	System And Method For Using A Network Of Thermostats As Tool To Verify Peak Demand Reduction
Steinberg et al.	12/183,949	07/31/08	JSTEIN.004A	System And Method For Using A Network Of Thermostats As Tool To Verify Peak Demand Reduction
Steinberg et al.	12/211,690	09/16/08	JSTEIN.006A	System And Method For Evaluating Changes In The Efficiency Of An Hvac System
Cheung et al.	12/498,142	07/06/09	JSTEIN.010A	System And Method For Using Ramped Setpoint Temperature Variation With Networked Thermostats To Improve Efficiency
Steinberg	12/502,064	07/13/09	JSTEIN.011A	System And Method For Using A Networked Electronic Device As An Occupancy Sensor For An Energy Management System

Applicant notes that cited references, office actions, responses and notices of allowance currently exist or will exist for the above-referenced matters. Applicant also understands that the Examiner has access to sophisticated online Patent Office computing systems that provide ready access to the full file histories of these matters

Application No.: 12/211,733
Filing Date: September 16, 2008

including, for example, specifications, drawings, pending claims, cited art, office actions, responses, declarations, and notices of allowance.

Applicant respectfully requests that the Examiner continue to review these file histories for past, current, and future information about these matters. Also, if the Examiner cannot readily access these file histories, the Applicant would be pleased to provide any portion of any of the file histories at any time upon specific Examiner request.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Submitted concurrently herewith is a Supplemental Information Disclosure Statement citing 75 new references. Applicant respectfully requests the Examiner to consider the pending claims in connection with these references in order to make the references of record.

NO DISCLAIMERS OR DISAVOWALS

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application.

Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Application No.: 12/211,733
Filing Date: September 16, 2008

CONCLUSION

In view of the forgoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested.

If further issues remain to be resolved, the Examiner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved. Also, please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 2-5-10

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20995
(949) 760-0404

8220015
120709

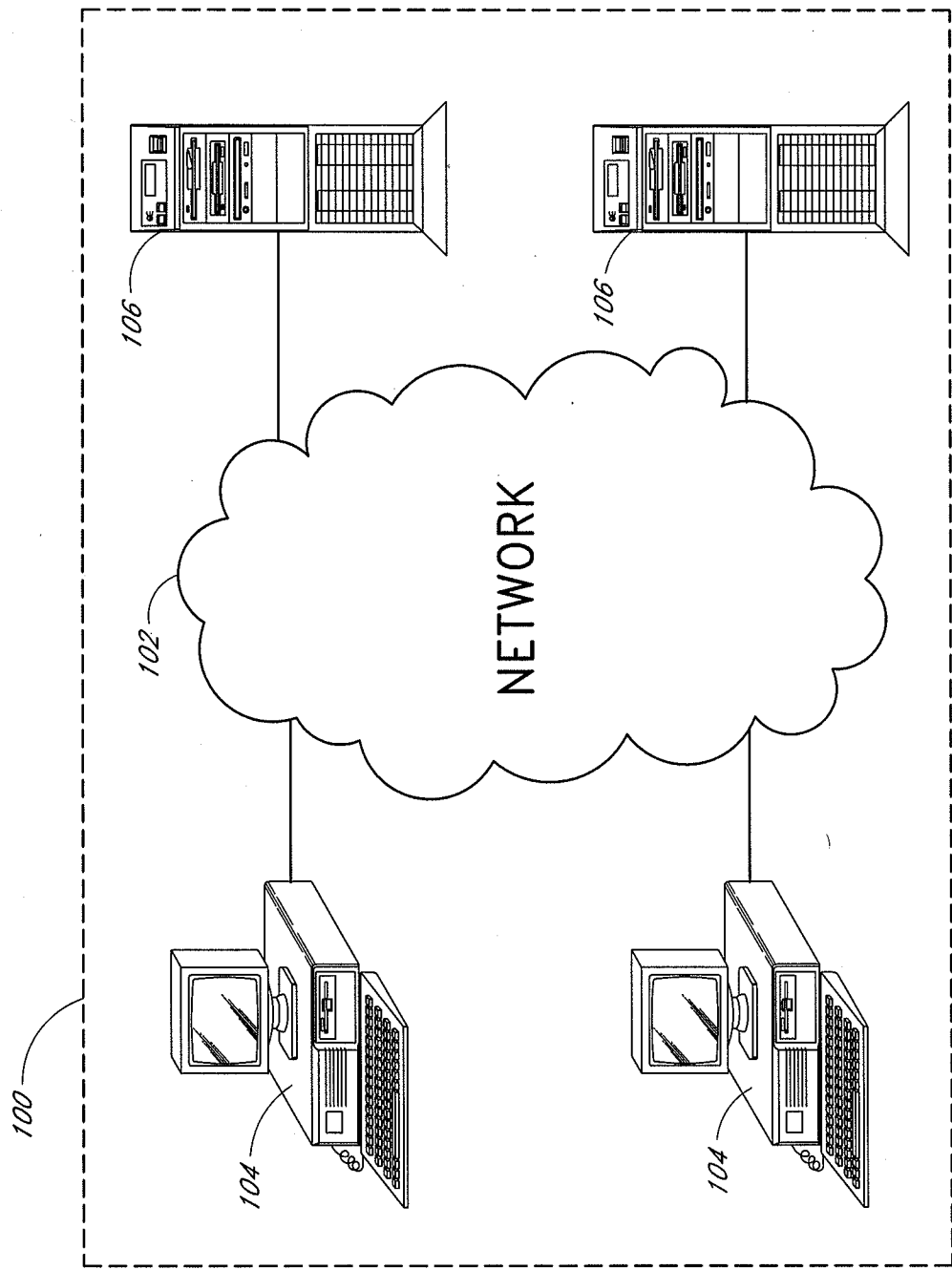


FIG. 1

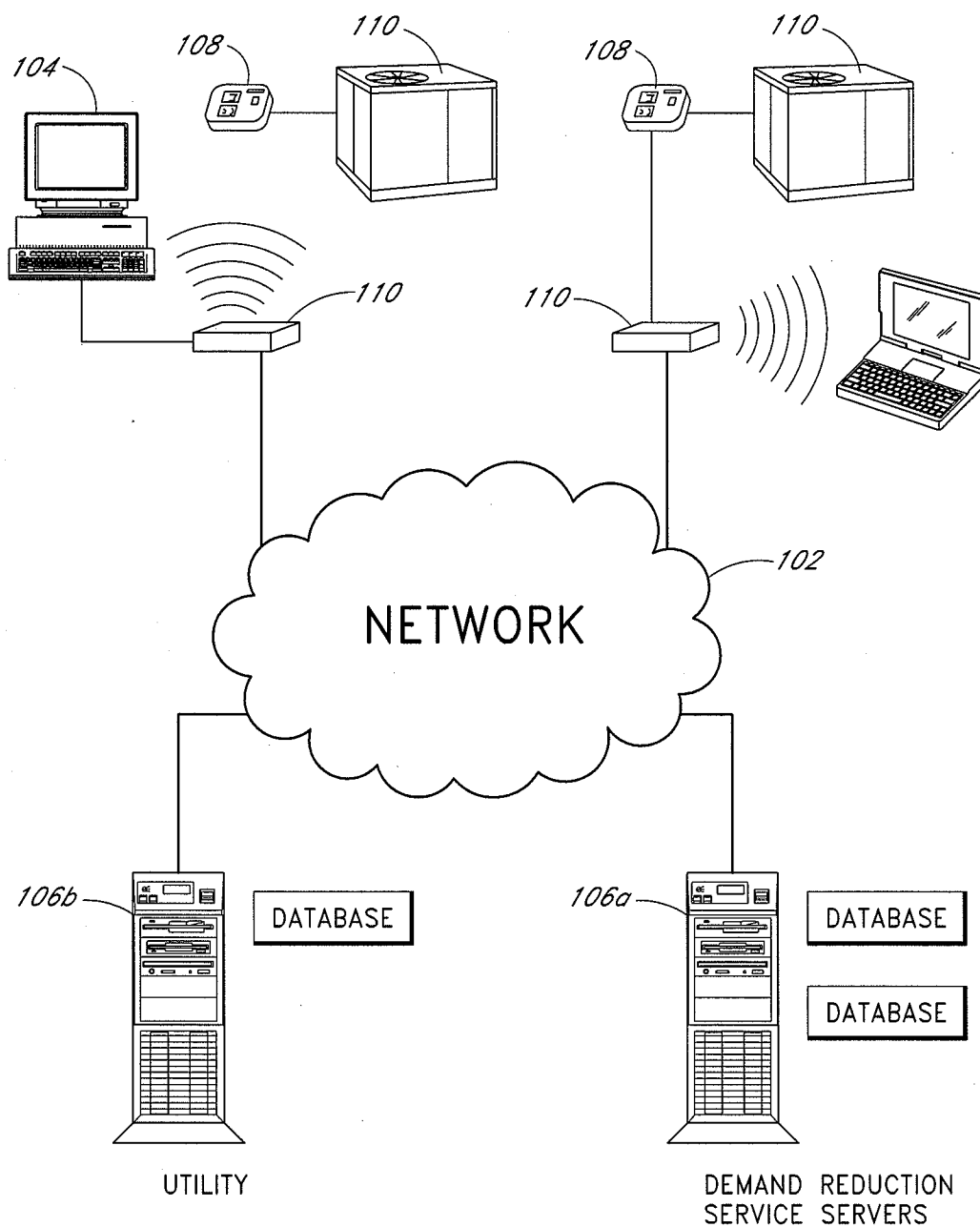


FIG. 2

Address:
Square Feet: _____

Electric Bill:

January	\$ _____
February	\$ _____
March	\$ _____
April	\$ _____
May	\$ _____

Macro #1 would save you
\$347/year DO IT

Macro #2 would save you
\$630/year DO IT

Sign up for comfort PDR
DO IT

Sign up for max PDR
DO IT

Mon	
Tues	
Wed	
Thur	
Fri	
Sat	
Sun	

78

72

68

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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FIG. 3

135

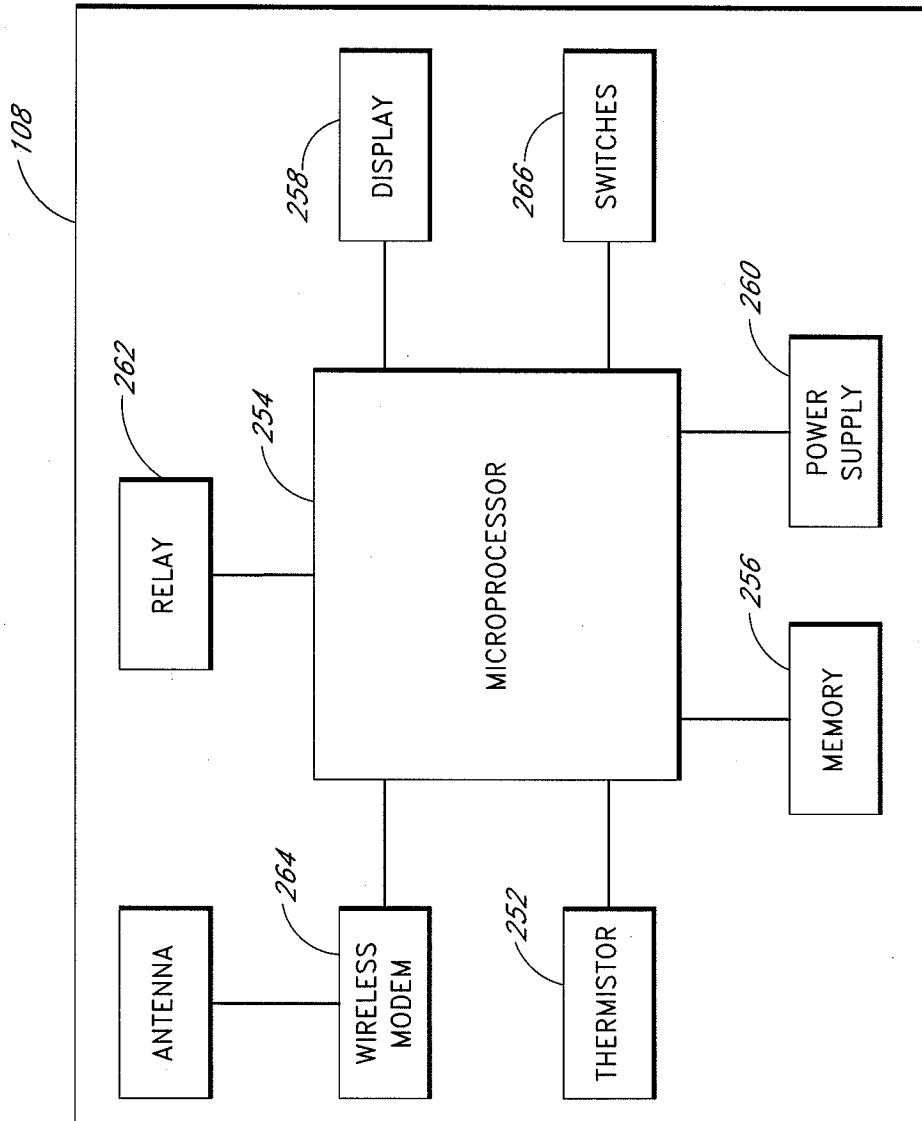


FIG. 4

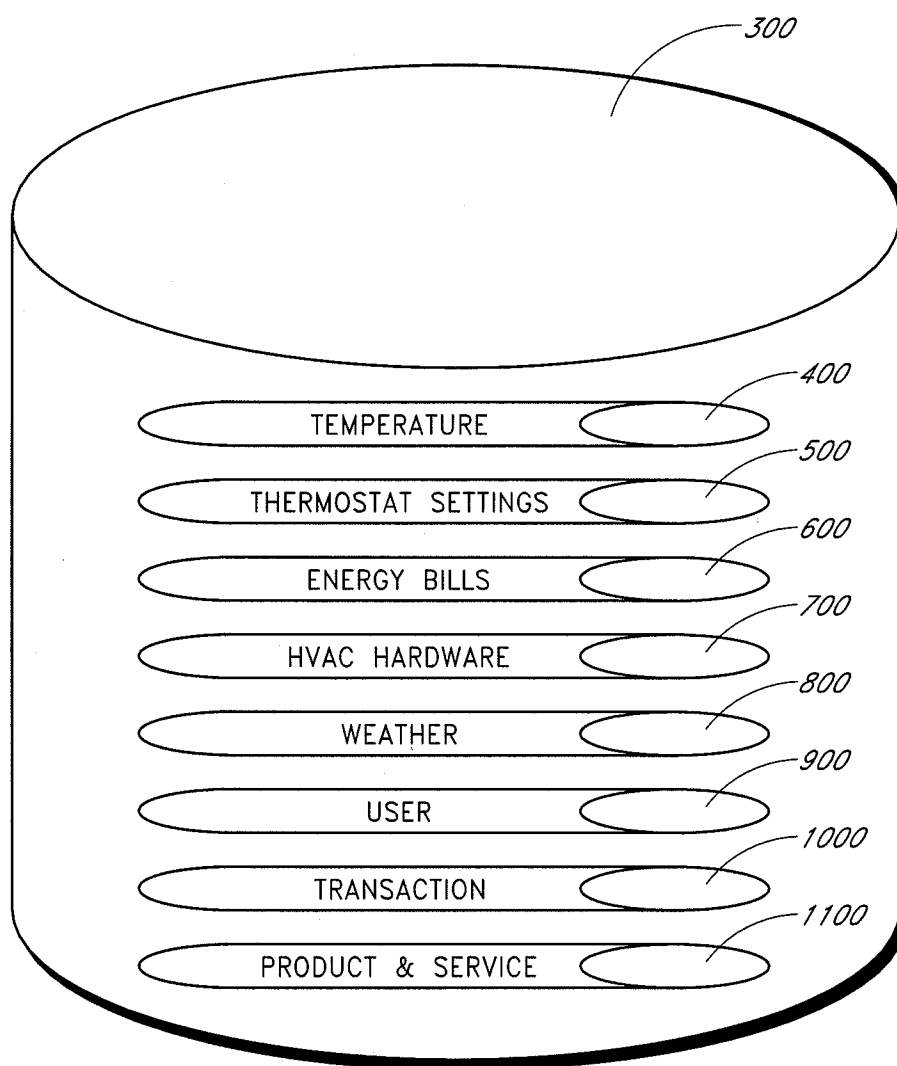


FIG. 5

6/13

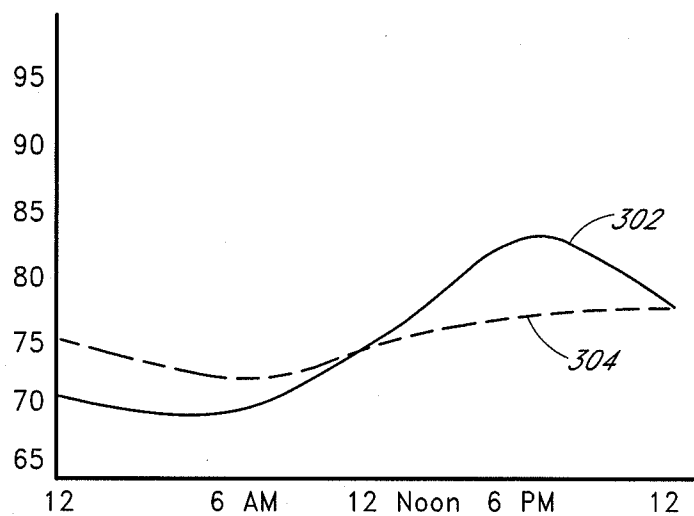


FIG. 6A

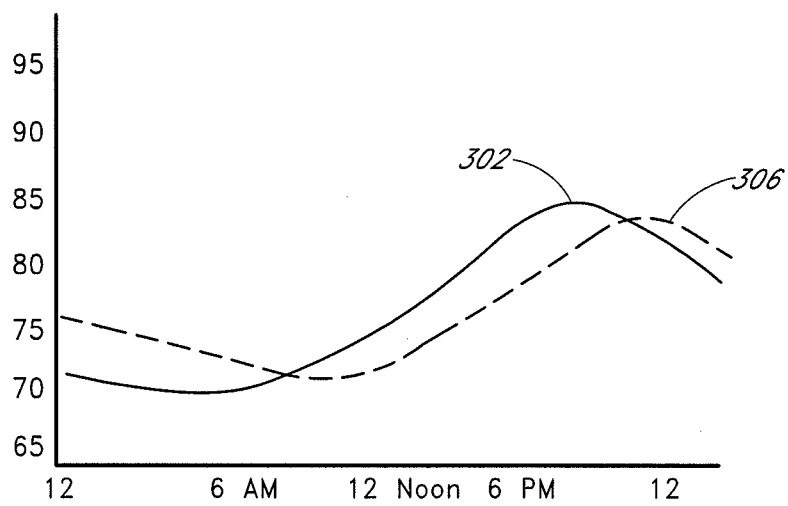


FIG. 6B

7/13

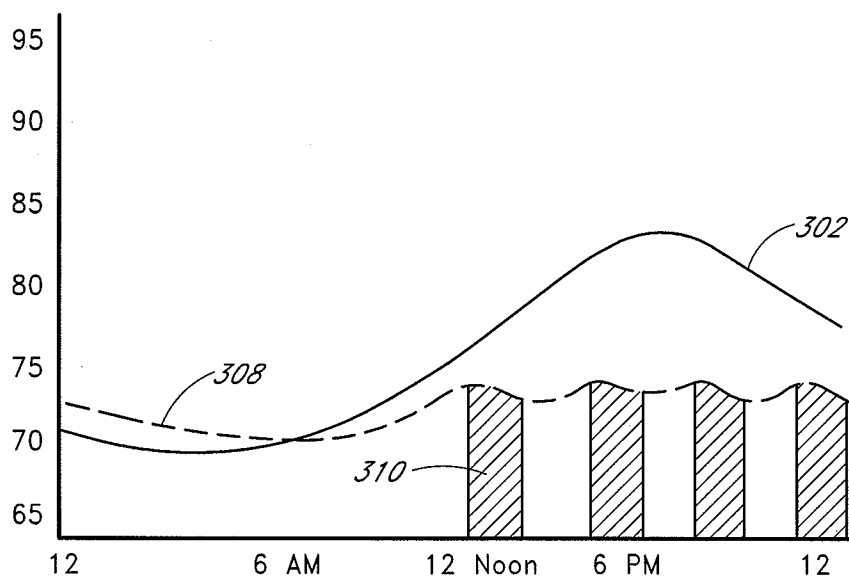


FIG. 7A

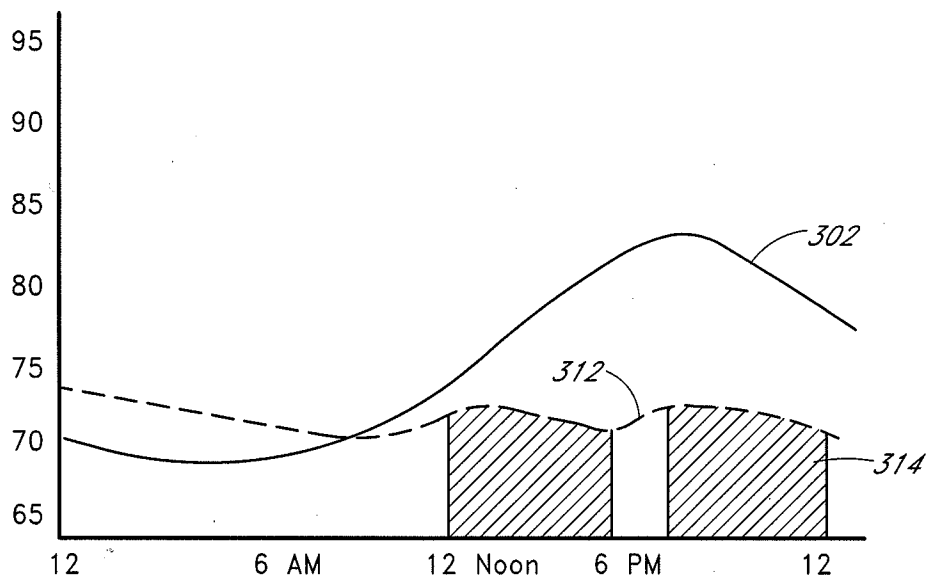


FIG. 7B

8/13

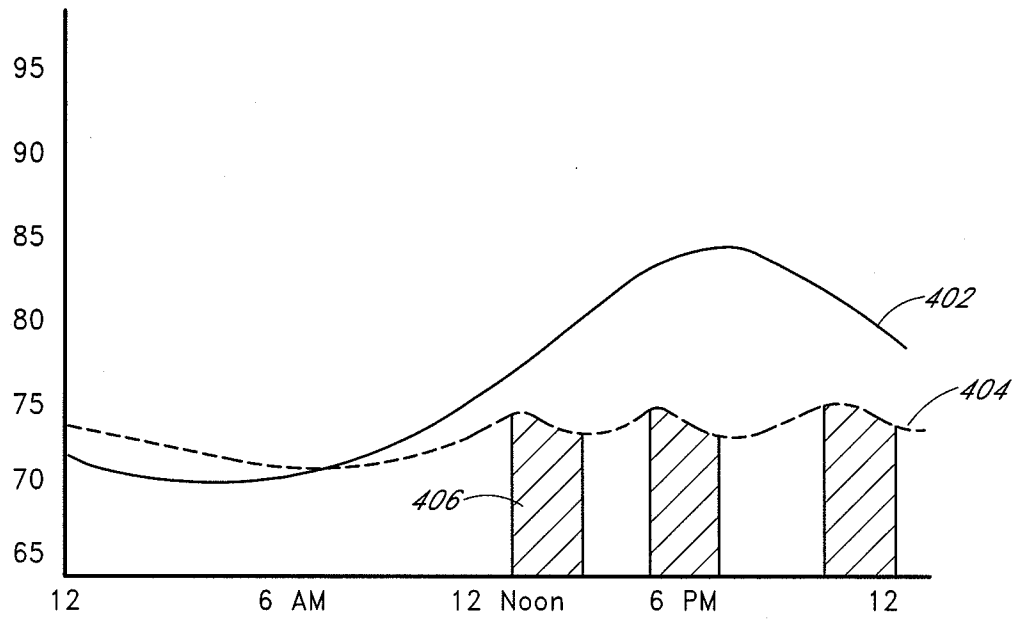


FIG. 8A

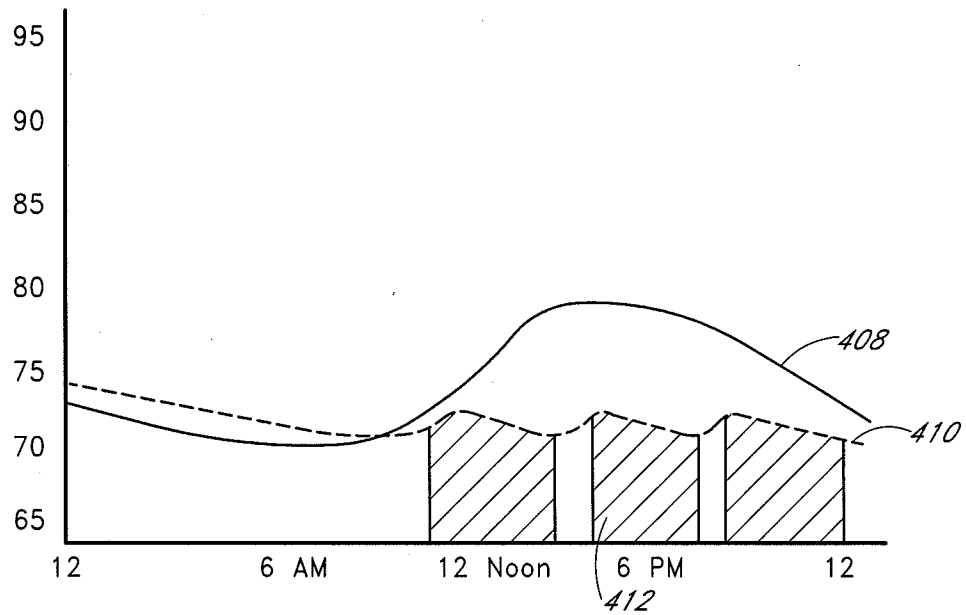


FIG. 8B

9/13

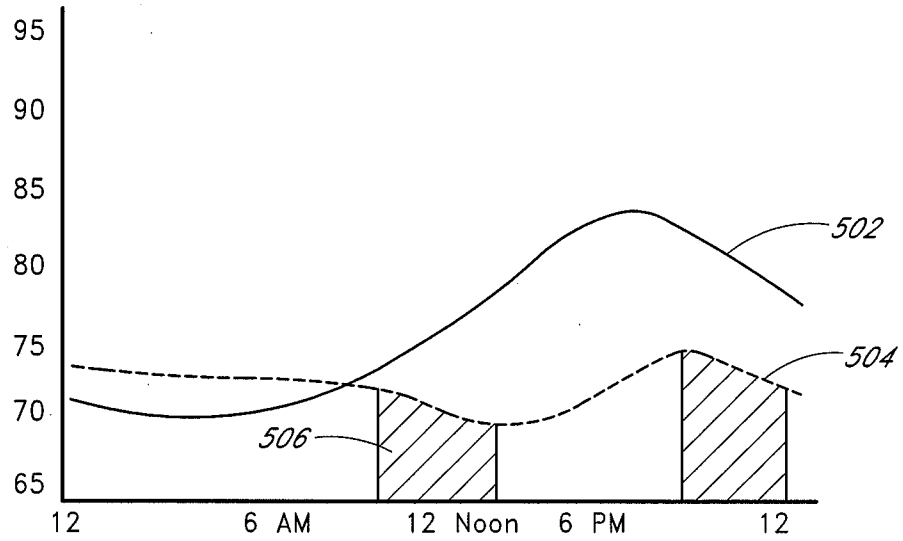


FIG. 9A

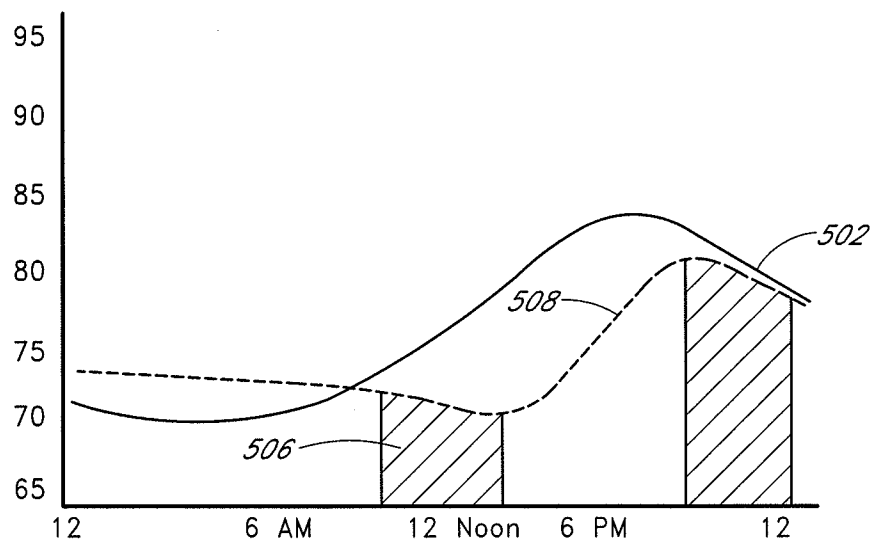


FIG. 9B

10/13

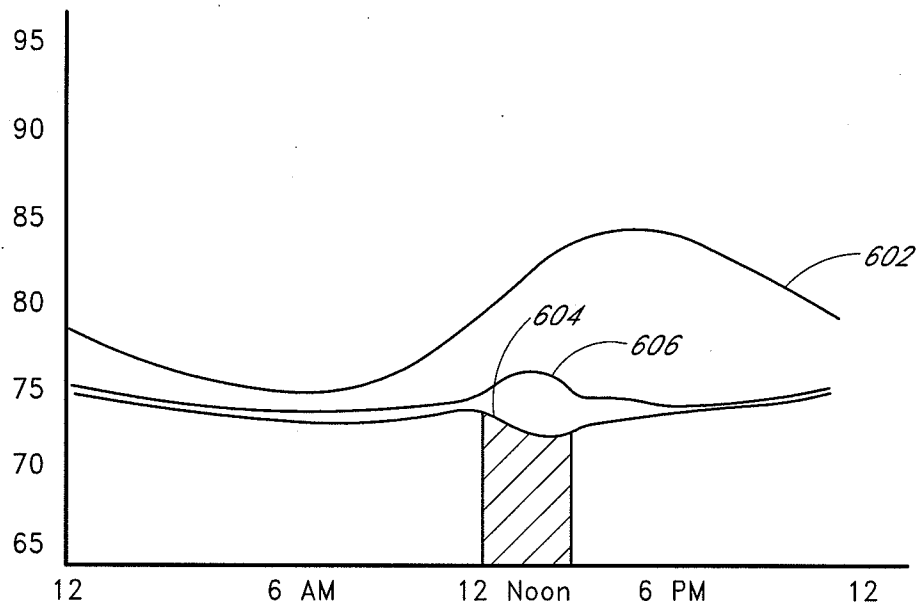


FIG. 10A

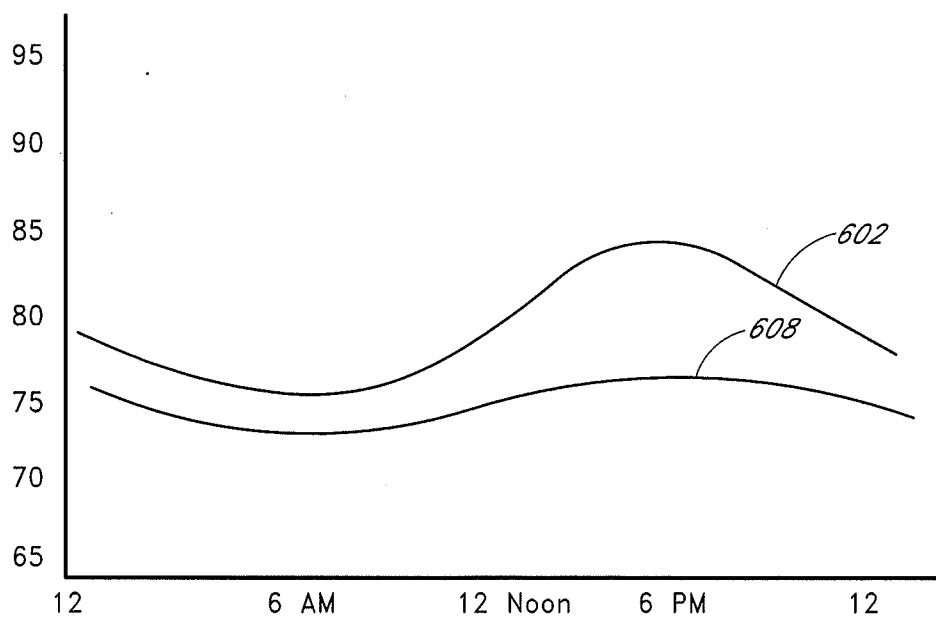


FIG. 10B

11/13

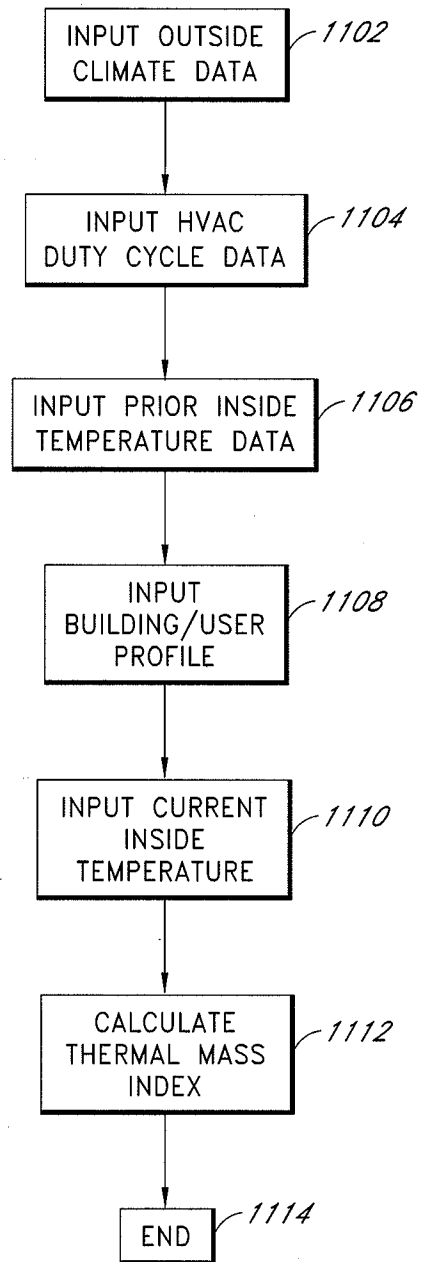


FIG. 11

12/13

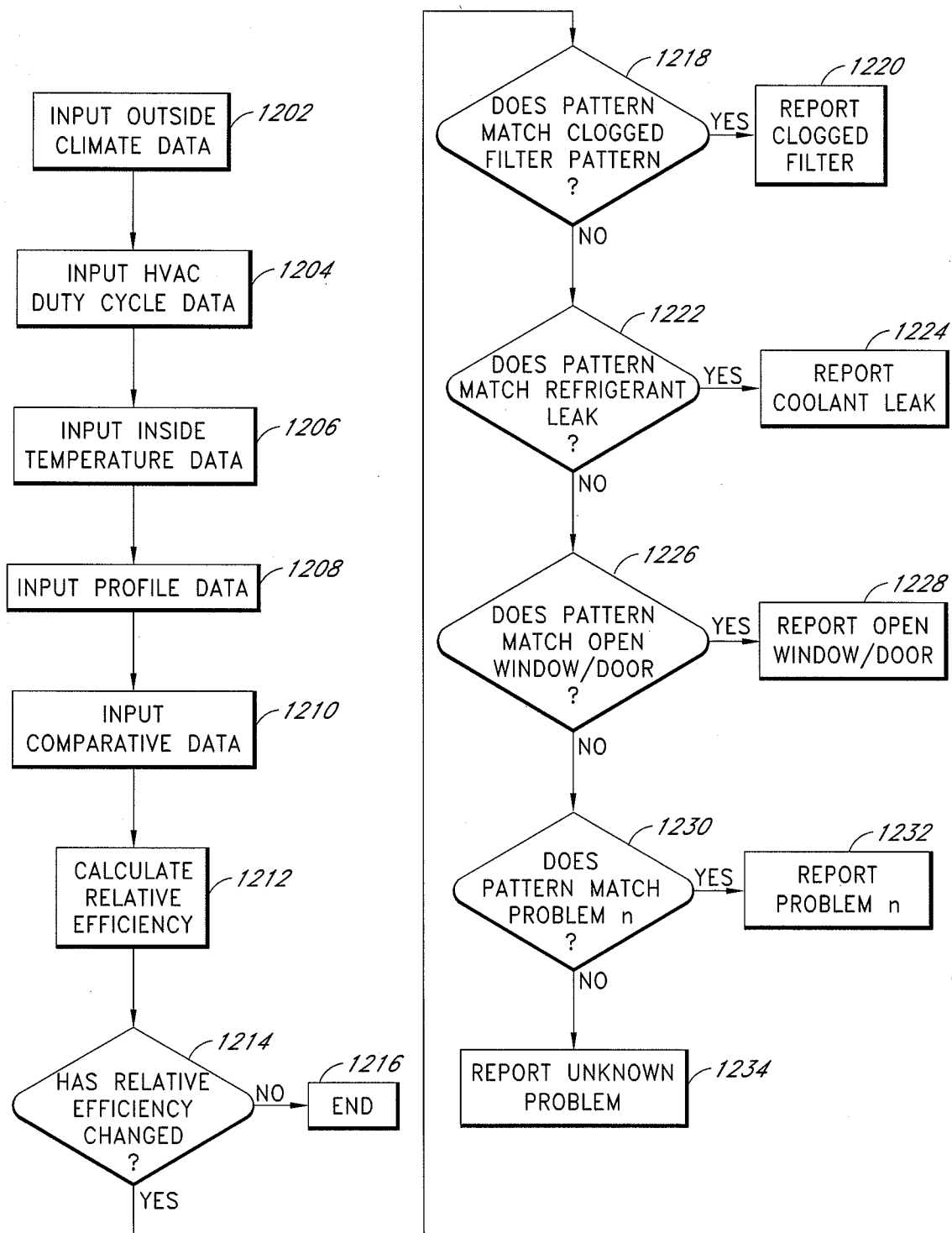


FIG. 12

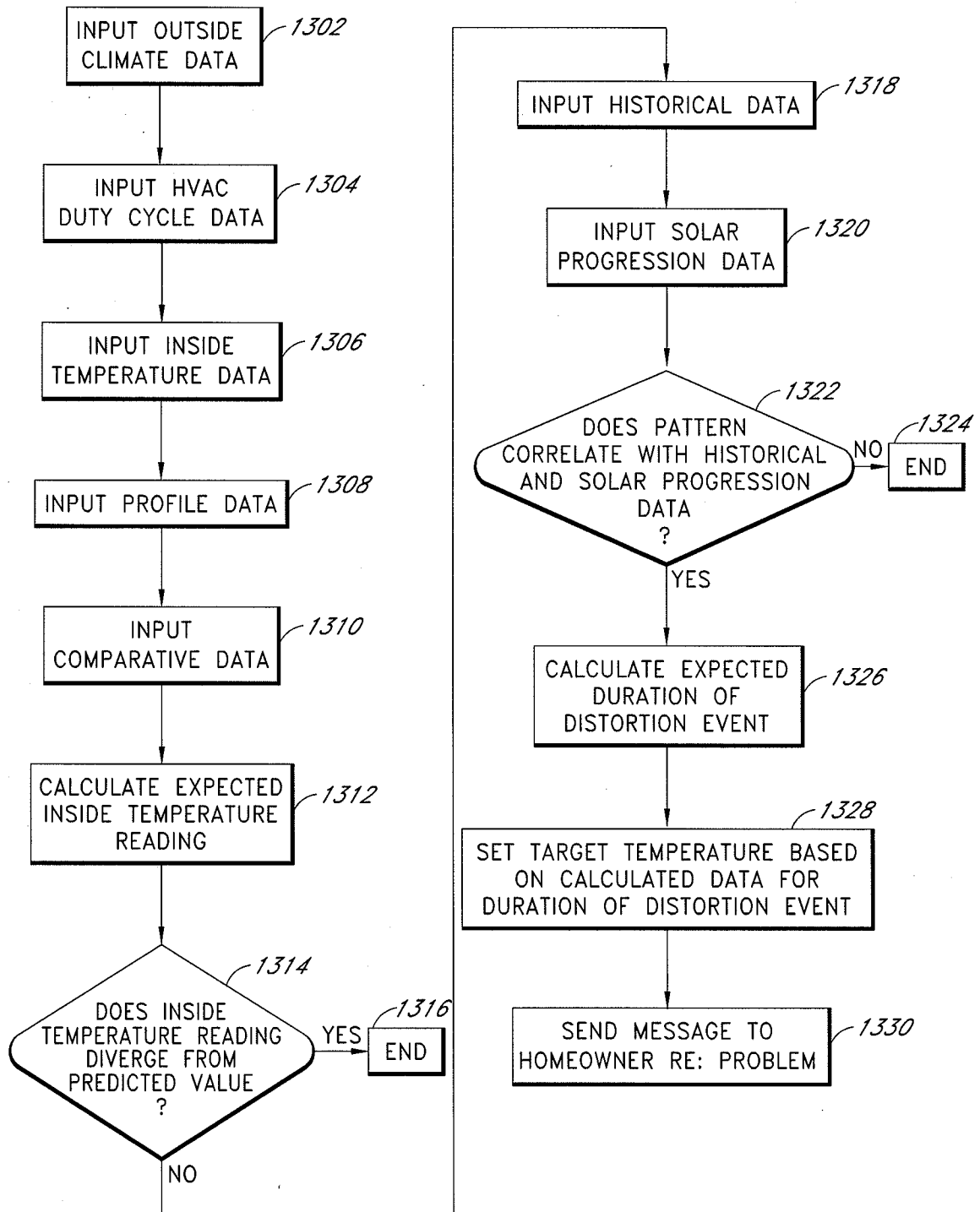


FIG. 13

**REVOCATION
AND
GENERAL POWER OF ATTORNEY**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The undersigned is an empowered representative of the Assignee and hereby appoints the registrants of Knobbe, Martens, Olson & Bear, LLP, **Customer No. 20,995**, as attorneys and agents to represent the Assignee before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned to the Assignee according to the USPTO assignment records or assignment documents supplied with an accompanying Statement Under 37 CFR § 3.73(b). This appointment is to be to the exclusion of the inventor(s) and his attorney(s) in accordance with the provisions of 37 CFR § 3.71.

Submission of this paper in connection with any matter of the below named assignee, together with a statement under 37 CFR 3.73(b), shall serve to revoke any previous powers of attorney in that matter.

A Statement Under 37 CFR § 3.73(b), signed by a registrant of Knobbe, Martens, Olson & Bear, LLP, is attached setting forth a full chain of title for the subject application owned by the Assignee named below.

Please recognize or change the correspondence address for the application identified in the attached Statement to **Customer No. 20,995**.

By: _____

Name: John D. Steinberg

Date: 4/18/10

Title: CEO

Assignee: EcoFactor, Inc.

Address: 423 Broadway, #801
Millbrae, CA 94030

**STATEMENT UNDER 37 CFR § 3.73(b)
ESTABLISHMENT OF ASSIGNEE**

Applicant	:	Steinberg, et al.
App. No.	:	12/211,733
Filed	:	September 16, 2008
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	:	Elias Desta
Group Art Unit	:	2857

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This document is being filed with a copy of a Power of Attorney signed by the Assignee. This Statement sets forth the chain of title of the above-identified application.

EcoFactor, Inc., a corporation, is the Assignee of the entire right, title, and interest of the above-referenced application by virtue of:

The attached copy of the Assignment being forwarded to the Recordation
Branch concurrently under separate cover.

The undersigned is an agent of Customer Number 20,995 and is authorized to act on behalf of the Assignee. Please recognize or change the correspondence address for the above-identified application to **Customer No. 20,995**.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 2-5-10

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

ASSIGNMENT

WHEREAS, We, John Douglas Steinberg, a United States citizen, residing at 873 Hacienda Way, Millbrae, CA 94030; and Scott Douglas Hublou, a United States citizen, residing at 747 Lakeview Way, Redwood City, CA 94062, (hereinafter collectively and individually referred to as "ASSIGNOR") , have invented certain new and useful improvements, technology, inventions, developments ideas or discoveries related to a SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING (collectively hereinafter referred to as the "Work") the Work further including an application for Letters Patent in the United States, Application No. 12/211,733, filed on September 16, 2008 (hereinafter referred to as the "Application");

AND WHEREAS, EcoFactor, Inc. (hereinafter "ASSIGNEE"), a California Corporation, with its principal place of business at 423 Broadway, #801, Millbrae, CA 94030, desires to acquire the entire right, title, and interest in and to the Work including the Application:

NOW, THEREFORE, in consideration to me in hand paid, and other good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR does hereby acknowledge that ASSIGNOR sold, assigned, transferred and set over, and by these presents and does hereby sell, assign, transfer and set over, unto said ASSIGNEE, its successors, legal representatives and assigns, the entire right, title, and interest throughout the world in, to and under the Work and any improvement made thereto including the Application and all provisional applications relating thereto including, but not limited to, U.S. Provisional Application No. 60/944,011, filed September 17, 2007, and any other related intellectual property rights such as, but not limited to, copyright rights, copyrightable subject matter, know how, trade secrets, copyright registrations, reproduction rights, and waives any and all moral rights under 17 U.S.C. § 106A or otherwise, and all divisions, renewals and continuations thereof, and all Letters Patent of the United States which may be granted thereon and all reissues and extensions thereof, and all rights of priority under International Conventions and applications for Letters Patent which may hereafter be filed for said improvements in any country or countries foreign to the United States, and all Letters Patent which may be granted for said improvements in any country or countries foreign to the United States and all extensions, renewals and reissues thereof; and I hereby authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

ASSIGNOR represents and warrants that to the best of ASSIGNOR's knowledge that ASSIGNOR has not entered into any contract or made any commitments that will or may impair the rights assigned to ASSIGNEE in the Work.

ASSIGNOR DOES HEREBY sell, assign, transfer, and convey to ASSIGNEE, its successors, legal representatives, and assigns all claims for damages and all remedies arising out of any violation of the rights assigned hereby that may have accrued prior to the date of assignment to ASSIGNEE, or may accrue hereafter, including, but not limited to, the right to sue for, collect, and retain damages for past infringements of said Letters Patent before or after issuance.

ASSIGNOR DOES HEREBY covenant and agree to promptly provide any tangible property embodying or describing the Work, including without limitation all documents, drawings, prototypes, models, test results, designs, materials, computer programs and data, and the like,

which, if not presently in the possession of ASSIGNEE, will be delivered to ASSIGNEE immediately upon creation thereof.

ASSIGNOR DOES HEREBY covenant and agree to communicate to the ASSIGNEE, its successors, legal representatives and assigns, any facts known to ASSIGNOR respecting the Work, and testify in any legal proceeding, assist in the preparation of any other applications relating to the Work or any improvements made thereto, sign all lawful papers, execute and make all rightful oaths and/or declarations in connection with the Work including any improvements made thereto, any application(s) filed therefrom, and any continuing application(s) filed from aforementioned patent application(s), and generally do everything possible to aid the ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper patent, copyright or other protectable rights for the Work in all countries and ASSIGNOR does hereby appoint ASSIGNEE as ASSIGNOR's attorney-in-fact for the limited purpose of executing all documents and performing all other acts necessary to give effect and legality to this Assignment.

ASSIGNOR DOES HEREBY covenant and agree not to challenge or oppose, on any grounds whatsoever, the validity of this Assignment or to assist or request any third party to contest the validity of this Assignment, and ASSIGNOR further agrees not to contest the validity or enforceability of any intellectual property rights assigned herein, or to assist or request any third party to contest the validity or enforceability of any intellectual property rights assigned herein. Also, no course of conduct or dealing by ASSIGNOR shall act as an amendment, modification or waiver of any provision of this Assignment unless specifically set forth in writing.

IN TESTIMONY WHEREOF, I hereunto sign as follows:

Date

John Douglas Steinberg

Date

Scott Douglas Hublou

INFORMATION DISCLOSURE STATEMENT

Applicants	:	Steinberg, et al.
App. No.	:	12/211,733
Filed	:	September 16, 2008
For	:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	:	Desta, Elias
Art Unit	:	2857
Conf. No.	:	9030

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing in the above-identified application is a PTO/SB/08 Equivalent listing seventy (75) references, of which thirteen (13) are submitted.

This Information Disclosure Statement is being filed before the mailing date of a final action and before the mailing of a Notice of Allowance. This Statement is accompanied by the fees set forth in 37 C.F.R. § 1.17(p). The Commissioner is hereby authorized to charge any additional fees which may be required or to credit any overpayment to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 2-5-10

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20995
(949) 760-0404

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 1 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	4,674,027	06-16-1987	Thomas J. Beckey	
	2	5,572,438	11-05-1996	Ehlers, et al.	
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	21	6,619,555	09-16-2003	Howard B. Rosen	
	22	6,622,097	09-16-2003	Robert R. Hunter	
	23	6,622,115	09-16-2003	Brown, et al.	
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	28	6,643,567	11-04-2003	Kolk et al.	
	29	6,671,586	12-30-2003	Davis, et al.	

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

T¹ - Place a check mark in this area when an English language Translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 2 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	6,695,218	02-24-2004	Fleckenstein	
	31	6,726,113	04-27-2004	Guo	
	32	6,731,992	05-04-2004	Ziegler	
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	35	6,785,592	08-31-2004	Smith	
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	37	6,789,739	09-14-2004	Howard Rosen	
	38	6,853,959	02-08-2005	Ikeda, et al.	
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	40	6,868,319	03-15-2005	Kipersztok, et al.	
	41	6,882,712	04-19-2005	Iggulden, et al.	
	42	6,889,908	05-10-2005	Crippen, et al.	
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	44	6,991,029	01-31-2006	Orfield, et al.	
	45	7,009,493	03-07-2006	Howard	
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	47	7,039,532	05-02-2006	Hunter	
	48	7,089,088	08-08-2006	Terry, et al.	
	49	7,130,719	10-31-2006	Ehlers, et al.	
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	51	7,167,079	01-23-2007	Smyth, et al.	
	52	7,187,986	03-06-2007	Johnson, et al.	
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	55	7,231,424	06-11-2007	Bodin, et al.	
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	57	2003/0040934 A1	02-27-2003	Skidmore, et al.	
	58	2005/0222889 A1	10-06-2005	Lai, et al.	

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/211733
	Filing Date	09-16-2008
	First Named Inventor	Steinberg, John Douglas et al
	Art Unit	2857
(Multiple sheets used when necessary)	Examiner	Desta, Elias
SHEET 3 OF 3	Attorney Docket No.	JSTEIN.005A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	2005/0288822 A1	12-29-2005	Rayburn, Ronald	
	60	2007/0043477 A1	02-22-2007	Elhers, et al.	
	61	2009/0099699 A1	04-16-2009	Steinberg et al.	
	62	2009/0125151 A1	05-14-2009	Seinberg et al.	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	63	ARNES, et al., "How Ambient Intelligence Will Improve Habitability and Energy Efficiency in Buildings", 2005, research paper, Center for the Built Environment, Controls and Information Technology	
	64	Comverge SuperStat Flyer	
	65	Control4 Wireless Thermostat Brochure	
	66	Cooper Power Systems Web Page	
	67	Enernoc Web Page	
	68	Enerwise Website	
	69	JOHNSON CONTROLS, Touch4 building automation system brochure, 2007	
	70	KILICOTTE, et al., "Dynamic Controls for Energy Efficiency and Demand Response: Framework Concepts and a New Construction Study Case in New York", Proceedings of the 2006 ACEEE Summer Study of Energy Efficiency in Buildings, Pacific Grove, CA, August 13-18, 2006	
	71	LIN, et al., "Multi-Sensor Single-Actuator Control of HVAC Systems", 2002	
	72	PIER, Southern California Edison, "Demand Responsive Control of Air Conditioning via Programmable Communicating Thermostats Draft Report"	
	73	Proliphix Thermostat Brochure	
	74	WANG, et al., "Opportunities to Save Energy and Improve Comfort by Using Wireless Sensor Networks in Buildings," (2003), Center for Environmental Design Research	
	75	WETTER, et al., "A comparison of deterministic and probabilistic optimization algorithms for nonsmooth simulation-based optimization", Building and Environment 39, 2004, Pages 989-999	

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010610

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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TERMINAL DISCLAIMER TO OBTAIN A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION

Docket Number (Optional)

In re Application of: Steinberg, et al.

Application No.: 12/211,733

Filed: September 16, 2008

For: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

The owner*, EcoFactor, Inc., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 12/183,949, filed on July 31, 2008, as such term is defined in 35 U.S.C. 154 and 173, and as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of any patent granted on said **reference** application, "as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application," in the event that: any such patent: granted on the pending **reference** application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 34,362

John R. King
Signature

2-5-10
Date

John R. King

Typed or printed name

949-760-0404
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this statement. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	12211733			
Filing Date:	16-Sep-2008			
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING			
First Named Inventor/Applicant Name:	John Douglas Steinberg			
Filer:	John R. King/Amy Durrant			
Attorney Docket Number:	JSTEIN.005A			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with \$0 paid	2251	1	65	65

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Statutory disclaimer	2814	1	70	70
Total in USD (\$)				315

Electronic Acknowledgement Receipt

EFS ID:	6963059
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King
Filer Authorized By:	
Attorney Docket Number:	JSTEIN.005A
Receipt Date:	05-FEB-2010
Filing Date:	16-SEP-2008
Time Stamp:	18:31:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$315
RAM confirmation Number	11923
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		JSTEIN-005A_response.pdf	574089 fdb4abd84600b5850915e0bca186b56f87f7dd1a	yes	23
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	5	
	Drawings-only black and white line drawings		6	6	
	Applicant Arguments/Remarks Made in an Amendment		7	10	
	Drawings-only black and white line drawings		11	23	
Warnings:					
Information:					
2	Power of Attorney	JSTEIN-005A_poa.pdf	43447 237003d227580ff637185413b00321a8f1875d17	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73(b).	JSTEIN-005A_stmnt373.pdf	172201 68bf0b4b545381c669eb731adfa321e7f2cd8277	no	3
Warnings:					
Information:					
4		JSTEIN-005A_ids.pdf	227861 7a885f34465a4dce2e819a4de48d77ba3629883d	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	1	
	Information Disclosure Statement (IDS) Filed (SB/08)		2	4	
Warnings:					
Information:					

5	NPL Documents	JSTEIN-005A_ref1.pdf	1378016	no	16
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Information:					
6	NPL Documents	JSTEIN-005A_ref2.pdf	916999	no	2
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Warnings:					
Information:					
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Information:					
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Information:					
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Information:					
12	NPL Documents	JSTEIN-005A_ref8.pdf	1002115	no	13
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Warnings:					
Information:					
13	NPL Documents	JSTEIN-005A_ref9.pdf	575746	no	11
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Information:					

14	NPL Documents	JSTEIN-005A_ref10.pdf	8671806	no	93
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Information:					
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Warnings:					
Information:					
16	NPL Documents	JSTEIN-005A_ref12.pdf	709717	no	6
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Information:					
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Information:					
18	Terminal Disclaimer Filed	JSTEIN-005A_termdisc.pdf	83075	no	1
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Information:					
19	Fee Worksheet (PTO-875)	fee-info.pdf	33599	no	2
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Warnings:					
Information:					
Total Files Size (in bytes):			21029599		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/211,733		Filing Date 09/16/2008		<input type="checkbox"/> To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY <input checked="" type="checkbox"/> OR			OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=		X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		SMALL ENTITY OR			OTHER THAN SMALL ENTITY		
AMENDMENT	02/05/2010	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	=	0		X \$	=	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	=	0		X \$	=	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE	0		TOTAL ADD'L FEE		
(Column 1)			(Column 2)		SMALL ENTITY OR			OTHER THAN SMALL ENTITY		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=			X \$	=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=			X \$	=	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE			TOTAL ADD'L FEE		
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>										

Legal Instrument Examiner:
/KAREN VESTAL/

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/211,733		Filing Date 09/16/2008		<input type="checkbox"/> To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY <input checked="" type="checkbox"/> OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	* 0	X \$25 =	0	OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0	X \$105 =	0	OR	X \$ =				
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	02/05/2010	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X \$26 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X \$110 =	0	OR	X \$ =	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	Total (37 CFR 1.16(i))	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Independent (37 CFR 1.16(h))	*	Minus	**	=	X \$ =		OR	X \$ =	
<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))										
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

Legal Instrument Examiner:
/GERALDINE STANLEY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/211,733	09/16/2008	John Douglas Steinberg	JSTEIN.005A	9030

20995 7590 10/07/2009
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

DESTA, ELIAS

ART UNIT	PAPER NUMBER
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2857

NOTIFICATION DATE	DELIVERY MODE
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10/07/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No. 12/211,733	Applicant(s) STEINBERG ET AL.	
	Examiner ELIAS DESTA	Art Unit 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/5/2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Drawing

1. The replacement drawing submitted on 2/5/2009 is acknowledged and accepted by the examiner. The same font size and type setting would be preferred in order to keep the same consistency throughout the presentation.

Claim Objection

2. Claims 1, 8 and 15 are objected to because of the following minor informalities: HAVC should be defined at least in the instant claim 1 before its use in the claims. In reference to claim 1: in page 21, "the effective thermal mass" should read "an effective thermal mass", similarly in reference to claims 8 and 15: in page 22 & 23 respectively: "the operational efficiency" should be "an operational efficiency".

Further in reference to claim 8 (see page 22 of the instant application) end of the claim includes the phrase "...said calculated rates of change.." but since there are two rates of change associated with the "on" and "off" position, it is not clear which rates of change the "said calculated rate of change" is referring to. Appropriate corrections are required.

Claim rejection – 35 U.S.C. 112

3. Claims 2, 9 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite because in regard to claims 2, 9 and 16 (page 21, 22 and 23 respectively), the phrase "such as" renders the claim indefinite because it is unclear

Art Unit: 2857

whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 8, 11, 12 and 15 of copending Application No. 12/183,949. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

In reference to claims 1, 8, and 15: the instant claims are anticipated by claim 1 of .Application No. 12/183,949, the instant claims include a HAVC (Heating Ventilation and Air Conditioning) control system with temperature measurement system providing the data to the control system which is equivalent to a thermostat function; a database,

Art Unit: 2857

and a processor to calculate values is equivalent to comparing values and then give an estimation of the rate of change in temperature variable. Further the status of the HAVC system is basically the "on" or "off" state of the HAVC system noted in Application No. 12/183,949. The instant claims 1, 8 and 15 deals with "calculating an effective thermal mass" and "...operational efficiency of an HAVC system"; however, the steps taken after the preamble of the respective claims are anticipated by claim 1 of Application No. 12/183,949. Claims 2, 9 and 16 of the instant application are equivalent to claim 4 of Application No. 12/183,949. Claims 3, 10 and 17 of the instant application are equivalent to claim 11 of Application No. 12/183,949. Claims 4, 11 and 18 of the instant application are equivalent to claim 15 of Application No. 12/183,949. Claims 5, 6, 12, 13 and 19 of the instant application are anticipated by claim 8 of Application No. 12/183,949 because a single family dwelling HAVC system usually includes on thermostat per one HAVC unit even if there is multiple HAVC systems; always a one-to-one application. Claims 7, 14 and 20 of the instant application are equivalent to claim 12 of Application No. 12/183,949.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. Furthermore, the claims in the co-pending applications 12/183,990 and 12/211,690 include an obvious variations of the listing of claims noted in the current application.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Art Unit: 2857

- a. Steve et al. (U.S. PAP 2008/0083234) teaches apparatus and method for logging data from heating, ventilation and air conditioning unit.
 - b. Robert (U.S. Patent 7,216,015) teaches HVAC (heating ventilation and air conditioning system).
 - c. Robert et al. (U.S. Patent 5,818,347) teaches identification of HVAC Systems in a communication network.
 - d. Raymond (U.S. Patent 4,403,644) teaches method and apparatus for room temperature stabilization.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS DESTA whose telephone number is (571)272-2214. The examiner can normally be reached on M-Fri (10:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)-272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2857

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elias Desta
Examiner
Art Unit 2857

- /E.D. /

/Elias Desta/
Examiner, Art Unit 2857

- September 26, 2009

Notice of References Cited	Application/Control No. 12/211,733		Applicant(s)/Patent Under Reexamination STEINBERG ET AL.	
	Examiner ELIAS DESTA		Art Unit 2857	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,818,347	10-1998	Dolan et al.	340/825.52
*	B	US-4,403,644	09-1983	Hebert, Raymond T.	165/10
*	C	US-7,216,015	05-2007	Poth, Robert J.	700/276
*	D	US-2008/0083234	04-2008	Krebs et al.	62/129
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.




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BIB DATA SHEET


CONFIRMATION NO. 9030

SERIAL NUMBER 12/211,733	FILING or 371(c) DATE 09/16/2008 RULE	CLASS 236	GROUP ART UNIT 2857	ATTORNEY DOCKET NO. JSTEIN.005A	
APPLICANTS John Douglas Steinberg, Millbrae, CA; Scott Douglas Hublou, Redwood City, CA; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 09/25/2008					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/ELIAS DESTA/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance E.D. Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 18	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES					
TITLE SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING					
FILING FEE RECEIVED 527	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

<i>Index of Claims</i> 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47			
CLAIM		DATE							
Final	Original	09/26/2009							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
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	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							

Search Notes 	Application/Control No. 12211733	Applicant(s)/Patent Under Reexamination STEINBERG ET AL.
	Examiner ELIAS DESTA	Art Unit 2857

SEARCHED			
Class	Subclass	Date	Examiner
702	130, 182	9/26/2009	E.D.
700	276, 277, 278	9/26/2009	E.D.
236	91D	9/26/2009	E.D.
165	58, 200, 287	9/26/2009	E.D.

SEARCH NOTES		
Search Notes	Date	Examiner
Method of search: EAST, GOOGLE, IEEE Explore, Springer dbm, CRC	9/26/2009	E.D.
Text or key word searches: see EAST search history.	9/26/2009	E.D.

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	5865	(700/276-278 or 702/130 or 702/182 or 236/91d or 165/200 or 165/287 or 165/58).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:49
S2	505	S1 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:52
S3	492	S2 and (control same system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:53
S4	204	S3 and (outside same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:53
S5	2	S4 and (compare same outside same expected same temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:54
S6	147396	(heat with capacity) or (thermal with mass)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:55
S7	1206	S6 and (HVAC or (heating with ventilat\$4 with air with condition\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:55
S8	7281	control same (HVAC or (heating with ventilat\$4 with air with condition\$3)) same system	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:56

S9	1597	S8 and (temperature with (measurement\$1 or data))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:56
S10	109	S9 and ((database or memory or store) same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:58
S11	106	S10 and @ack<"20080916"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:58
S12	34	S11 and (expected with temperature)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 16:59
S13	22	S12 and (processor or calculate same (rate same of same change same temperature))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 17:01
S14	5	S13 and (outside same temperature same measurement\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/26 17:01
S15	11	((("5818347") or ("4403644") or ("7216015") or ("20080083234")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/09/26 18:29
S16	4	(US-20080083234-\$).did. or (US-7216015-\$ or US-5818347-\$ or US-4403644-\$).did.	US-PGPUB; USPAT	OR	ON	2009/09/26 18:29

S17	49	(US-20090099699-\$ or US-20020134849-\$ or US-20050270151-\$).did. or (US-4873649-\$ or US-4897798-\$ or US-5244146-\$ or US-5395042-\$ or US-5833134-\$ or US-4843084-\$ or US-4884214-\$ or US-4931948-\$ or US-5230482-\$ or US-5386461-\$ or US-6220518-\$ or US-6241156-\$ or US-4258615-\$ or US-4335320-\$ or US-4386649-\$ or US-4407445-\$ or US-4530395-\$ or US-4607787-\$ or US-4829447-\$ or US-4886110-\$ or US-4941325-\$ or US-4947928-\$ or US-5179524-\$ or US-5197668-\$ or US-5199637-\$ or US-5203497-\$).did. or (US-5211332-\$ or US-5226590-\$ or US-5271558-\$ or US-5303767-\$ or US-5309730-\$ or US-5310111-\$ or US-5314004-\$ or US-5316073-\$ or US-5326026-\$ or US-5364304-\$ or US-5381950-\$ or US-5394324-\$ or US-5410230-\$ or US-5413278-\$ or US-5464369-\$ or US-5467921-\$ or US-5485954-\$ or US-5495887-\$ or US-5501265-\$ or US-5531801-\$).did.	US-PGPUB; USPAT	OR	ON	2009/09/30 15:22
S18	49	S17 and (hvac or (heating with venti\$6 with air with conditioning))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/30 15:24
S19	1	S18 and zip	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/09/30 15:24

EAST Search History (Interference)

<This search history is empty>

9/ 30/ 2009 3:34:25 PM

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PLUS Search Results for S/N 12211733, Searched Wed Sep 02 16:02:56 EDT 2009
 The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

4873649 99	5531801 81
4897798 99	
5244146 99	
20090099699 99	
5395042 82	
5833134 82	
4843084 82	
4884214 82	
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5230482 82	
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5495887 81	
5501265 81	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Steinberg, et al.
App. No	: 12/211,733
Filed	: September 16, 2008
For	: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
Examiner	: Unknown
Art Unit	: 3744
Conf No.	: 9030

SUBMISSION OF SUPPLEMENTAL ADS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing is a Supplemental Application Data Sheet indicating the Domestic Priority Information. Application No. 60/944,011, filed September 17, 2007, was not listed on the Updated Filing Receipt, though it was listed on the original Application Data Sheet and the Specification.

Therefore, we hereby submit a new Supplemental Application Data Sheet to correctly restore the priority information.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 4-10-09

By: John R. King
John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

Electronic Acknowledgement Receipt

EFS ID:	5135234
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Alexandra Benitez
Filer Authorized By:	John R. King
Attorney Docket Number:	JSTEIN.005A
Receipt Date:	10-APR-2009
Filing Date:	16-SEP-2008
Time Stamp:	15:50:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	JSTEIN-005A_suppADS.pdf	57800 8cc047b5cc5862c1284dc766fdcd43ba4062c471	no	3

Warnings:

Information:

This is not an USPTO supplied ADS fillable form					
2	Miscellaneous Incoming Letter	JSTEIN-005A_submission.pdf	30115	no	1
			06aa36a2bbf69e65c1ae3b615134463c8336509d		
Warnings:					
Information:					
			Total Files Size (in bytes):	87915	
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SUPPLEMENTAL APPLICATION DATA SHEET**Application Information**

Application Number:: 12/211,733
Filing Date:: September 16, 2008
Application Type:: Non-provisional
Suggested Group Art Unit:: 3744
Title:: SYSTEM AND METHOD FOR CALCULATING THE
THERMAL MASS OF A BUILDING
Attorney Docket Number:: JSTEIN.005A
Request for Early Publication?:: NO
Request for Non-Publication?:: NO
Small Entity?:: YES

Inventor Information

Applicant Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: John
Middle Name:: Douglas
Family Name:: Steinberg
City of Residence:: Millbrae
State or Prov. of Residence:: CA
Country of Residence:: US
Street:: 873 Hacienda Way
City:: Millbrae
State or Province:: CA
Country:: US
Postal or Zip Code:: 94030

Applicant Authority Type:: Inventor
Primary Citizenship Country:: US
Status:: Full Capacity
Given Name:: Scott
Middle Name:: Douglas
Family Name:: Hublou
City of Residence:: Redwood City
State or Prov. of Residence:: CA
Country of Residence:: US
Street:: 747 Lakeview Way
City:: Redwood City
State or Province:: CA
Country:: US
Postal or Zip Code:: 94062

Correspondence Information

Correspondence Customer Number:: 20,995
Phone Number:: (949) 760-0404
Fax Number:: (949) 760-9502
E-Mail Address:: jking@kmob.com

Representative Information

Representative Customer Number:: 20,995

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
<u>This Application</u>	<u>Non-provisional</u>	<u>60/944,011</u>	<u>2007-09-17</u>

Foreign Priority Information

Country::	Application Number::	Filing Date::	Priority Claimed::
			No

Assignment Information

Assignee Name:: Not submitted

Street::

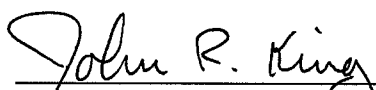
City::

State or Province::

Country::

Postal or Zip Code::

Signature:


John R. King, Reg. No. 34,362

4-10-09
Date

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/211,733	09/16/2008	3744	527	JSTEIN.005A	20	3

CONFIRMATION NO. 9030

UPDATED FILING RECEIPT



20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Date Mailed: 02/17/2009

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

John Douglas Steinberg, Millbrae, CA;
Scott Douglas Hublou, Redwood City, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 09/25/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/211,733**

Projected Publication Date: 03/18/2010

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

Preliminary Class

236

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Please Direct All Correspondence to Customer Number 20,995

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

Applicant : Steinberg, et al.
App. No : 12/211,733
Filed : September 16, 2008
For : SYSTEM AND METHOD FOR
CALCULATING THE THERMAL
MASS OF A BUILDING
Art Unit : 3744
Conf. No. : 9030

**Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

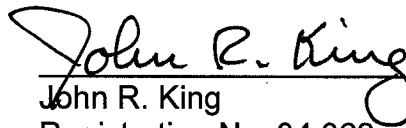
Dear Sir:

In response to the Notice to File Corrected Application Papers mailed December 5, 2008 and enclosed in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are the following.

(X) Replacement Drawings

The present application qualifies for small entity status under 37 CFR § 1.27.

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.



John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

6590305:ad
020409

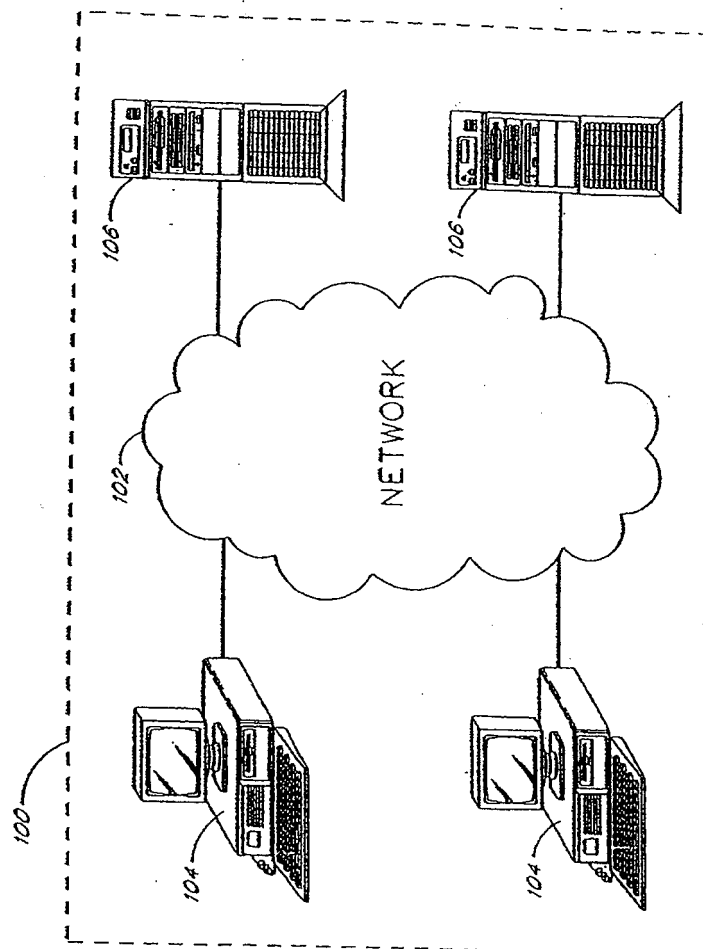


FIG. 1

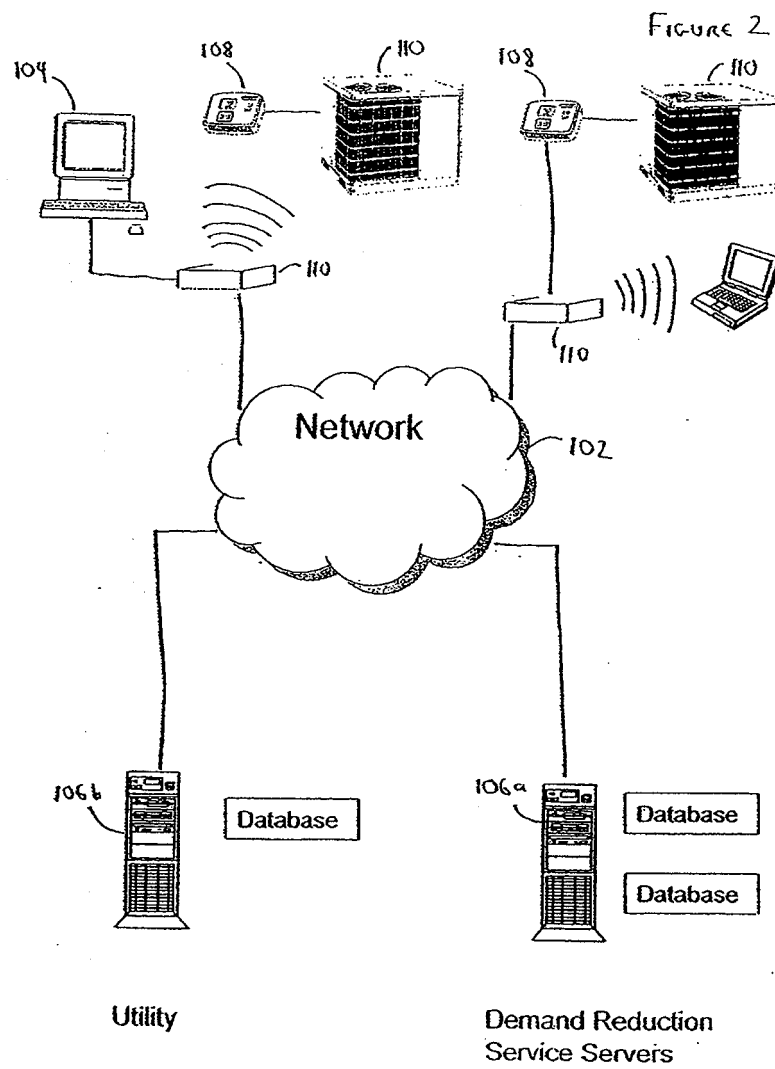


Figure 3

200

204

206

208

210

252

68

72

78

Address:
Square Feet: _____

Electric Bill:
January \$ _____
February \$ _____
March \$ _____
April \$ _____
May \$ _____

Macro #1 would save you
\$347/year

Macro #2 would save you
\$630/year

Sign up for comfort PDR

Sign up for max PDR

Mon
Tues
Wed
Thur
Fri
Sat
Sun

FIGURE 4

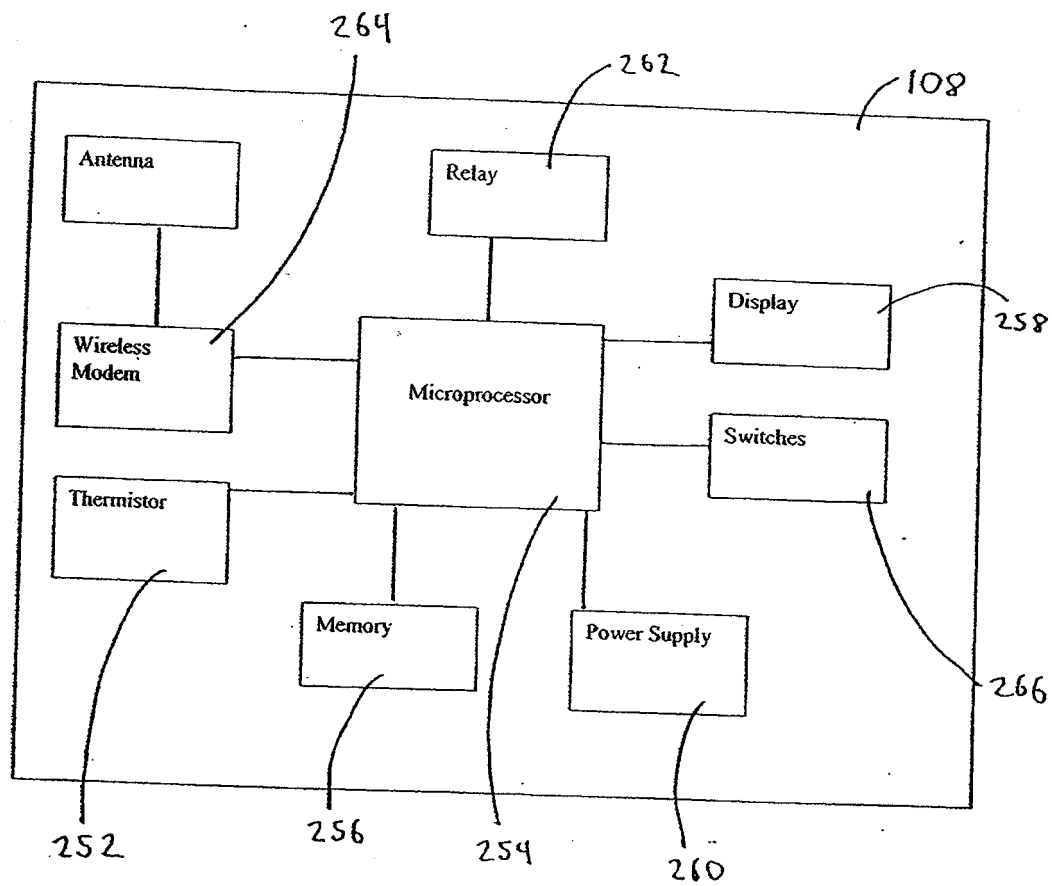


FIGURE 5

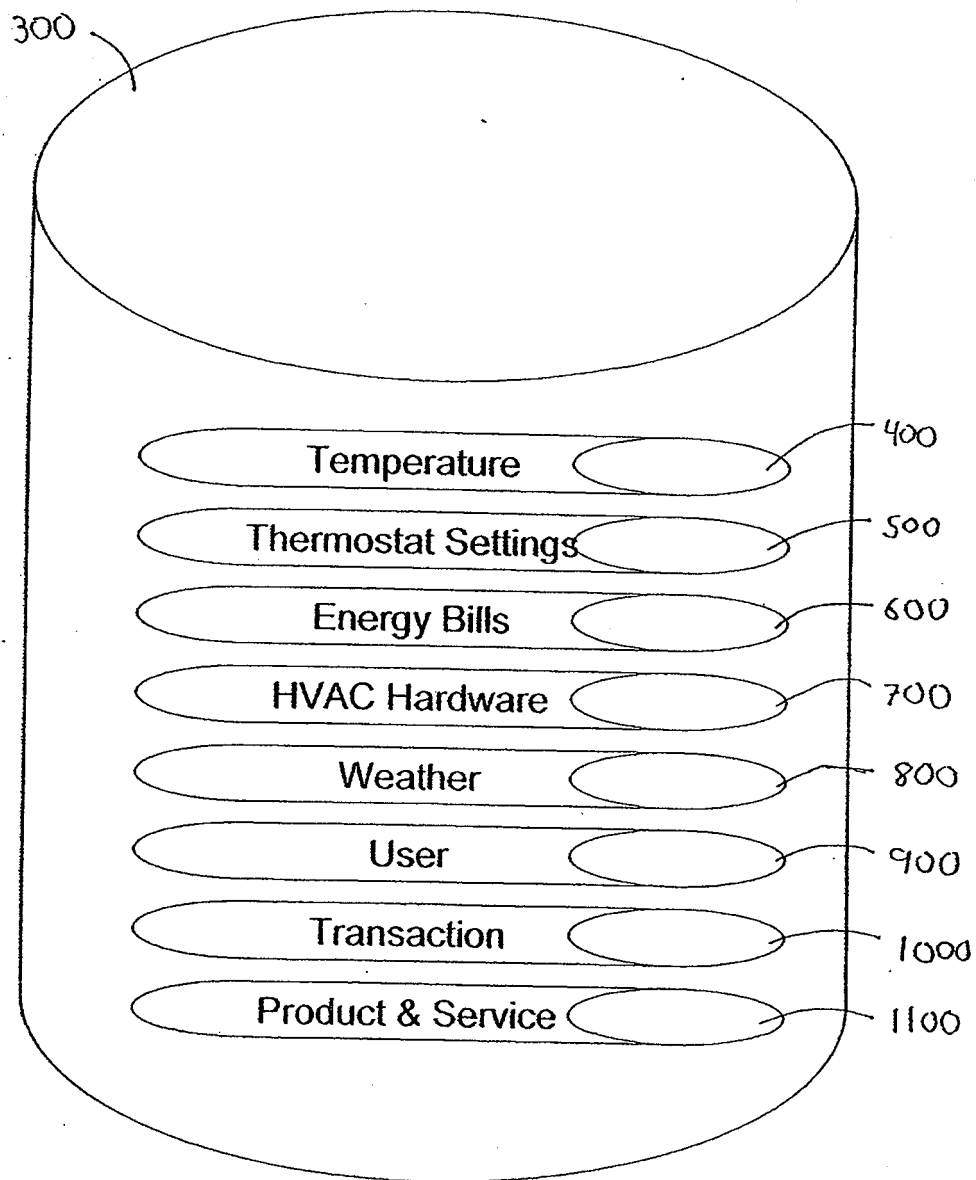


FIG 6a

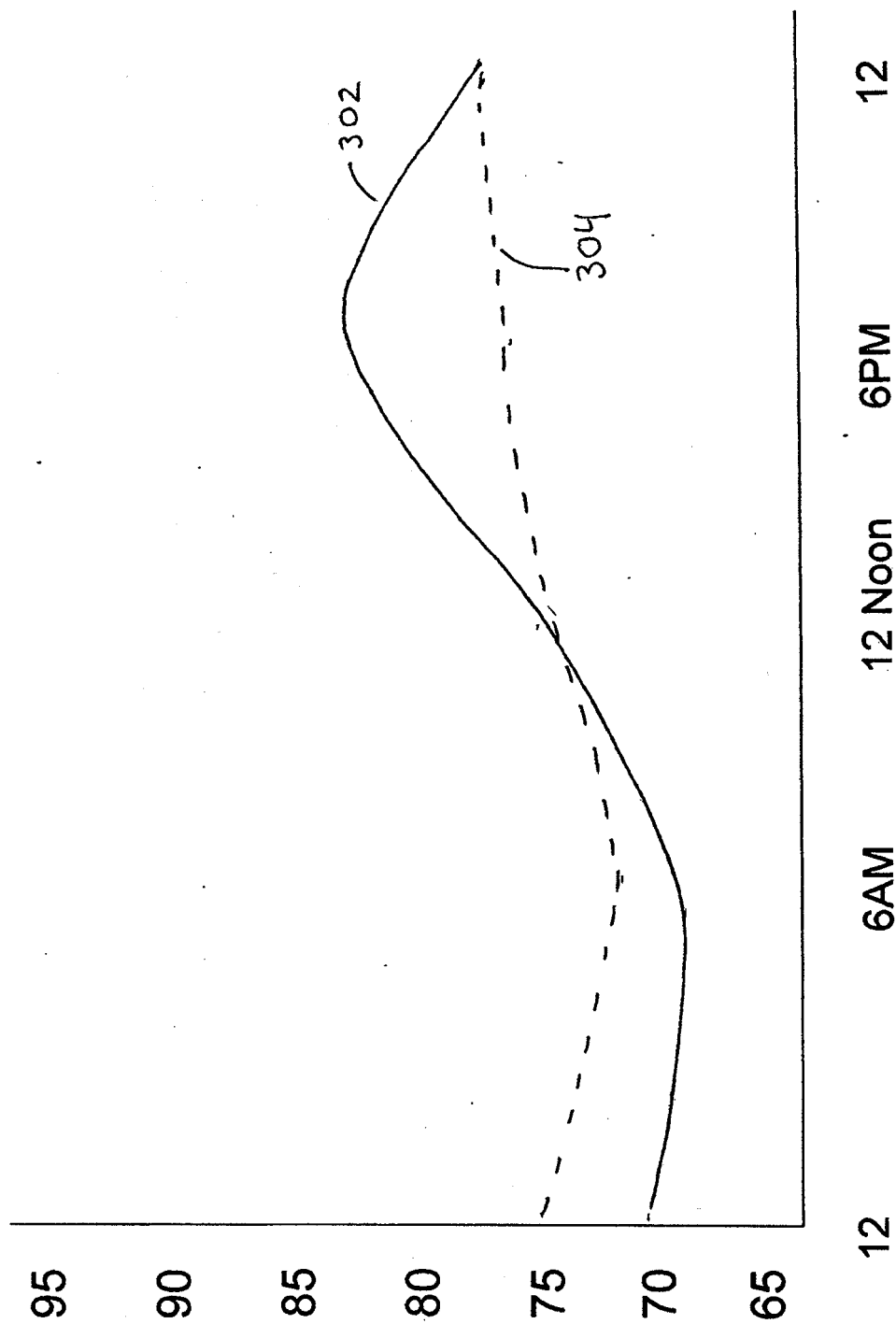


FIG 6b

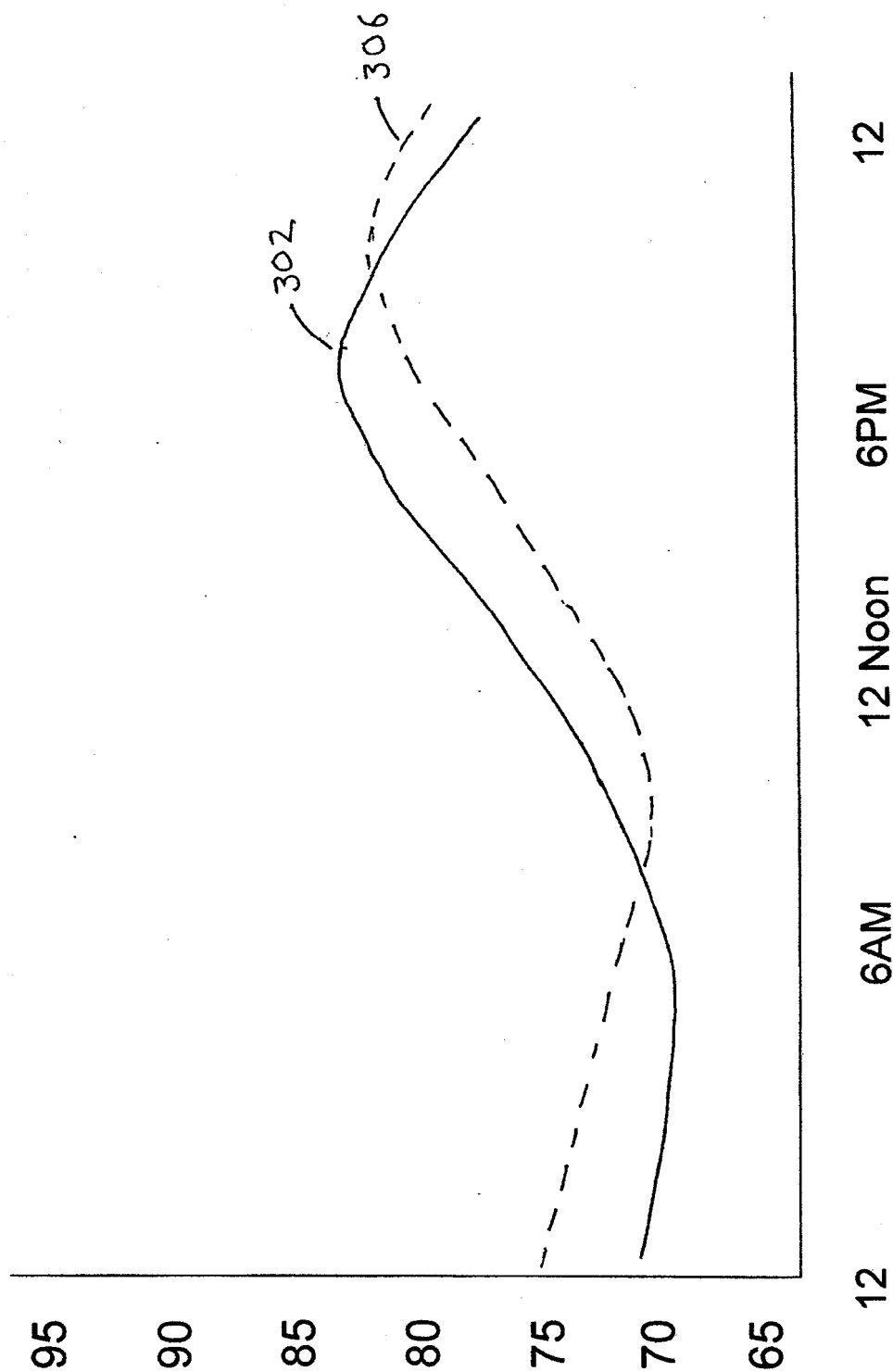


FIG 7a

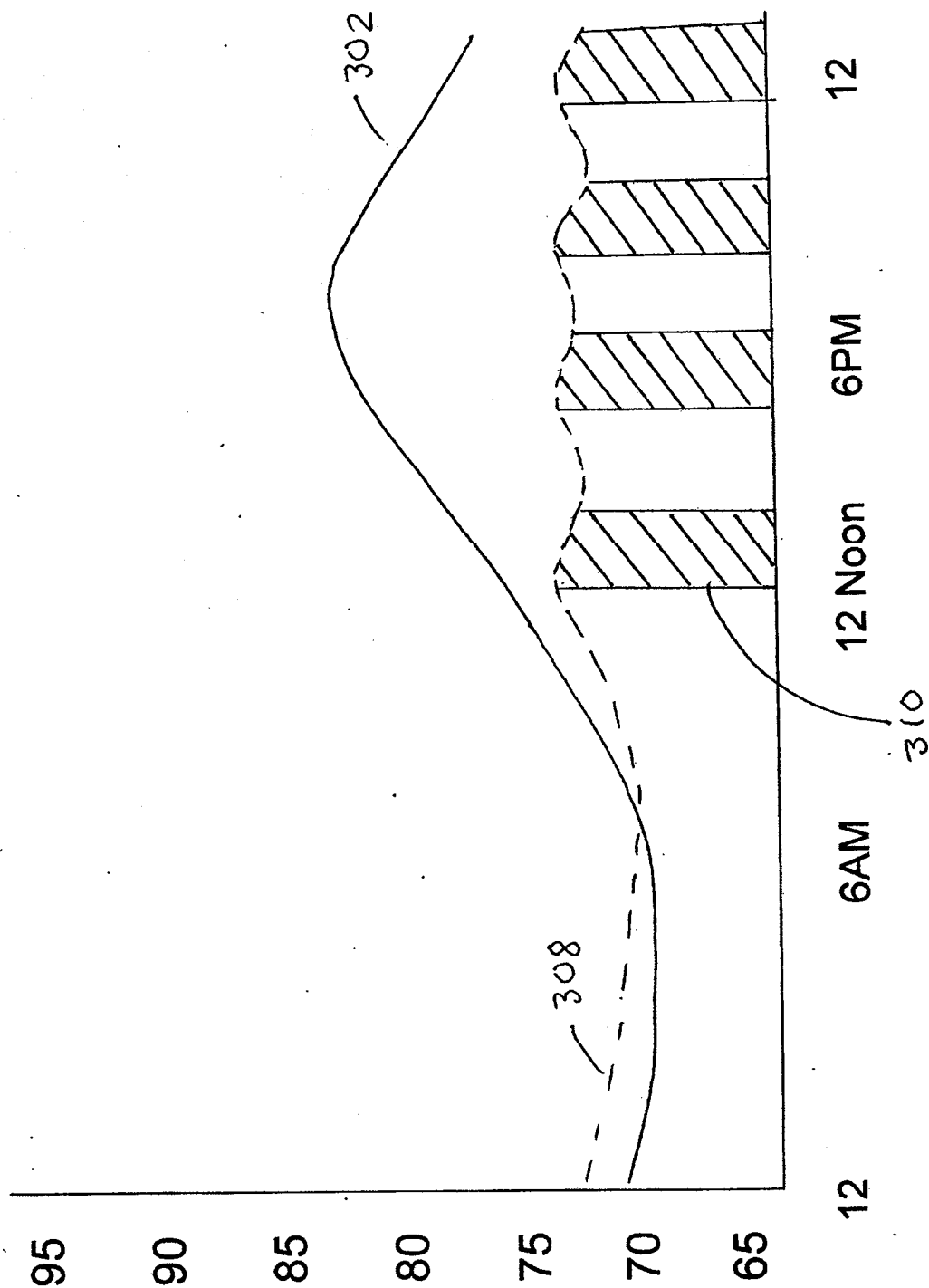


FIG 7b

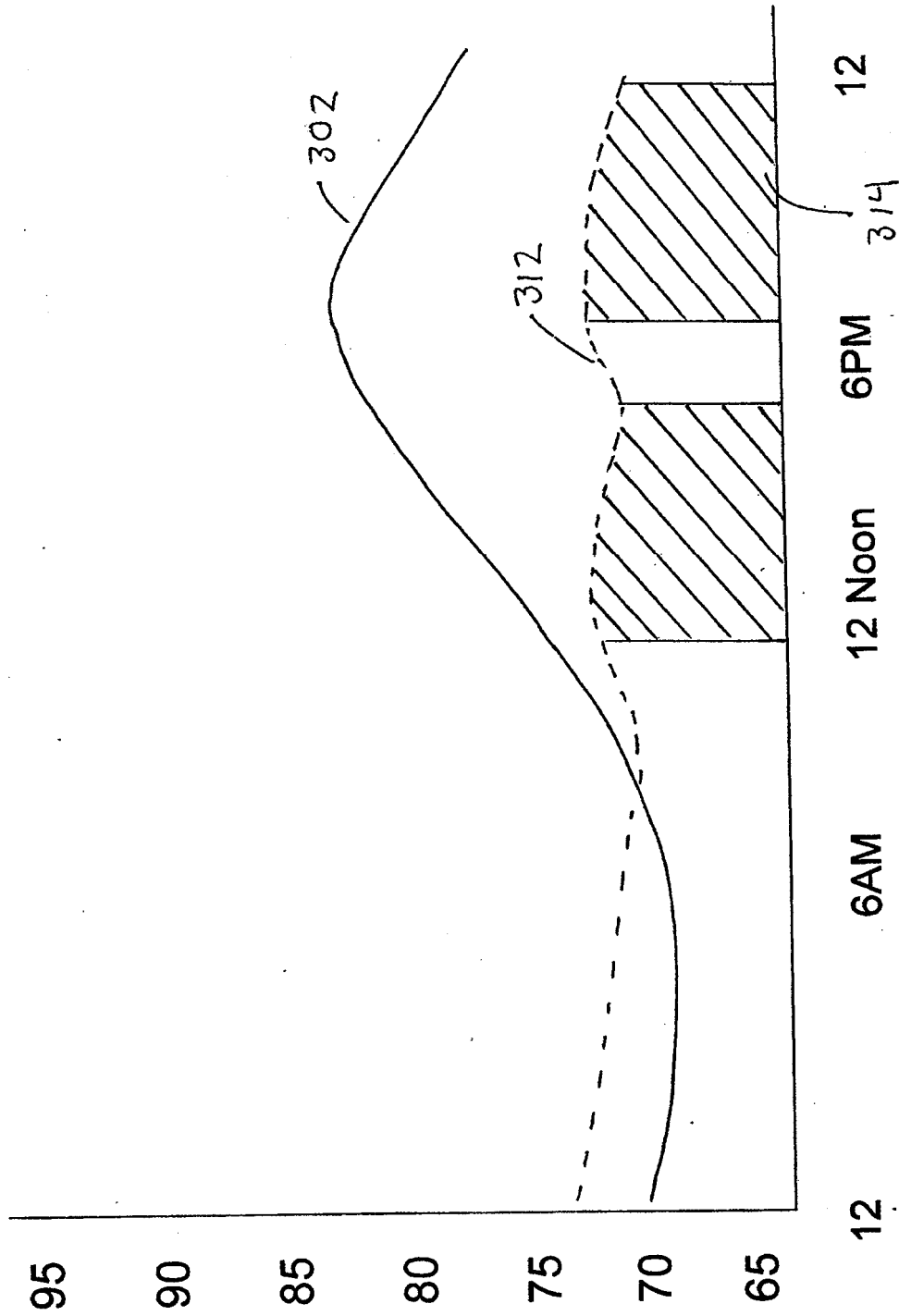


FIG. 8a

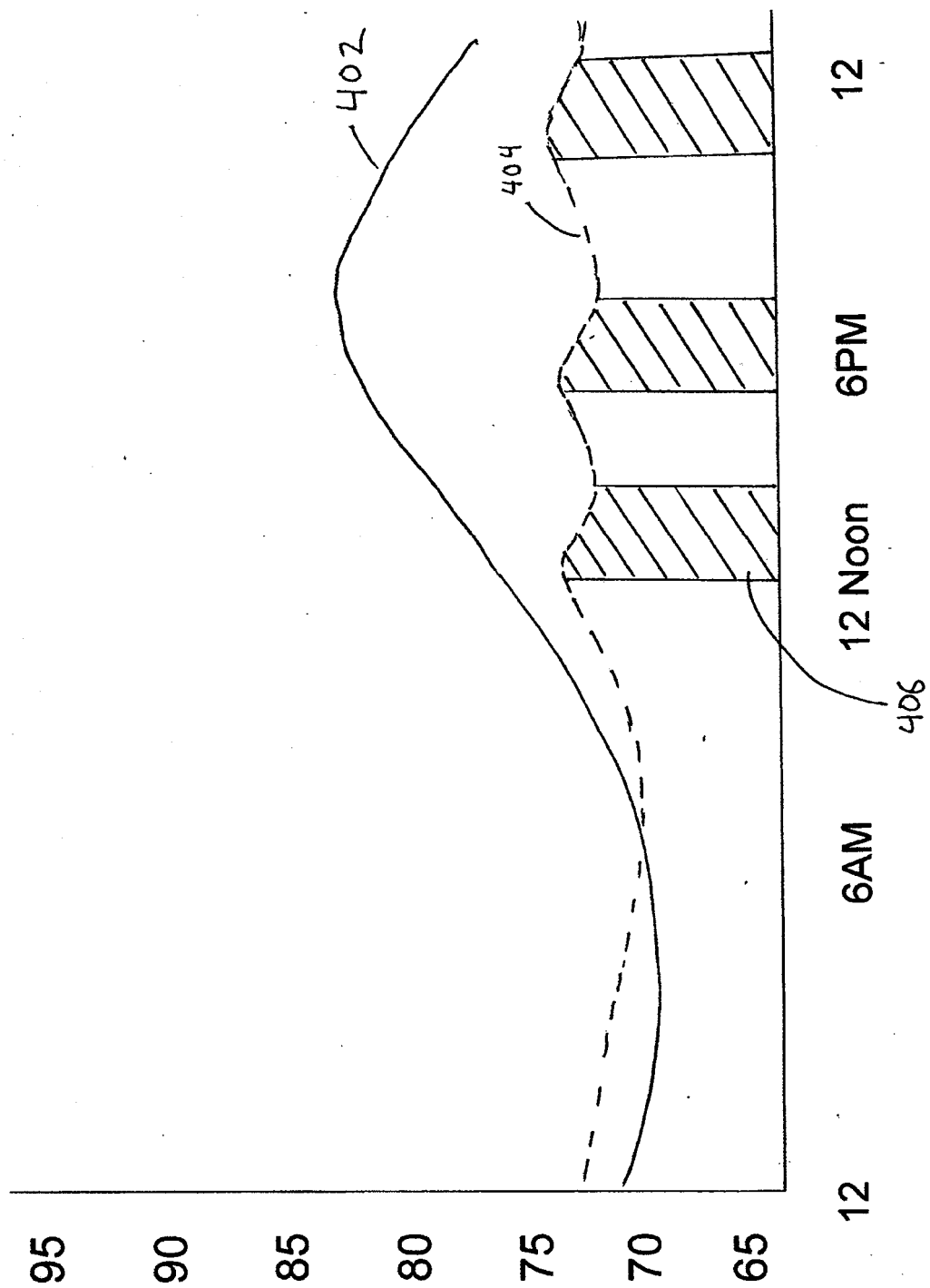


FIG 8b

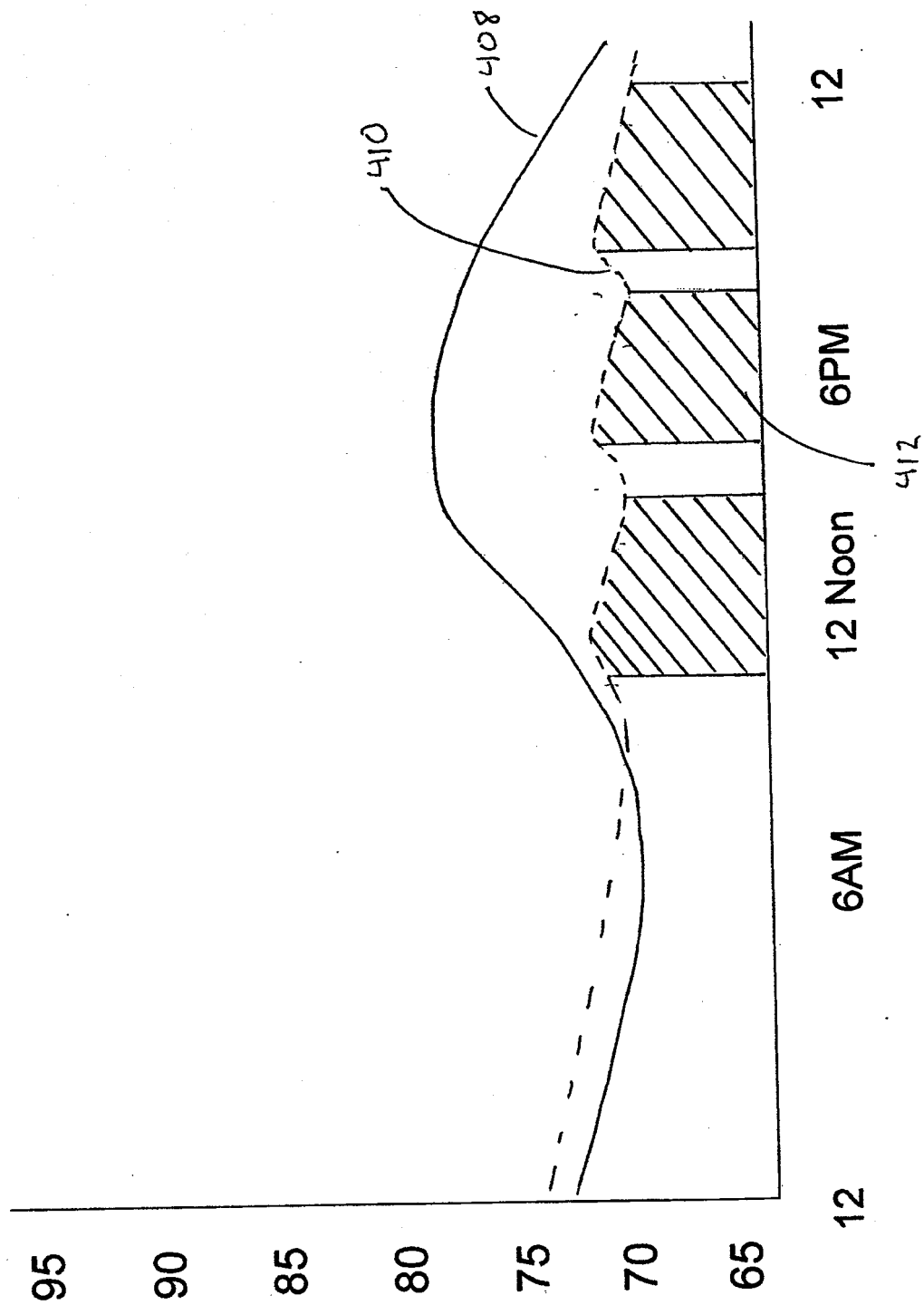


Fig 9a

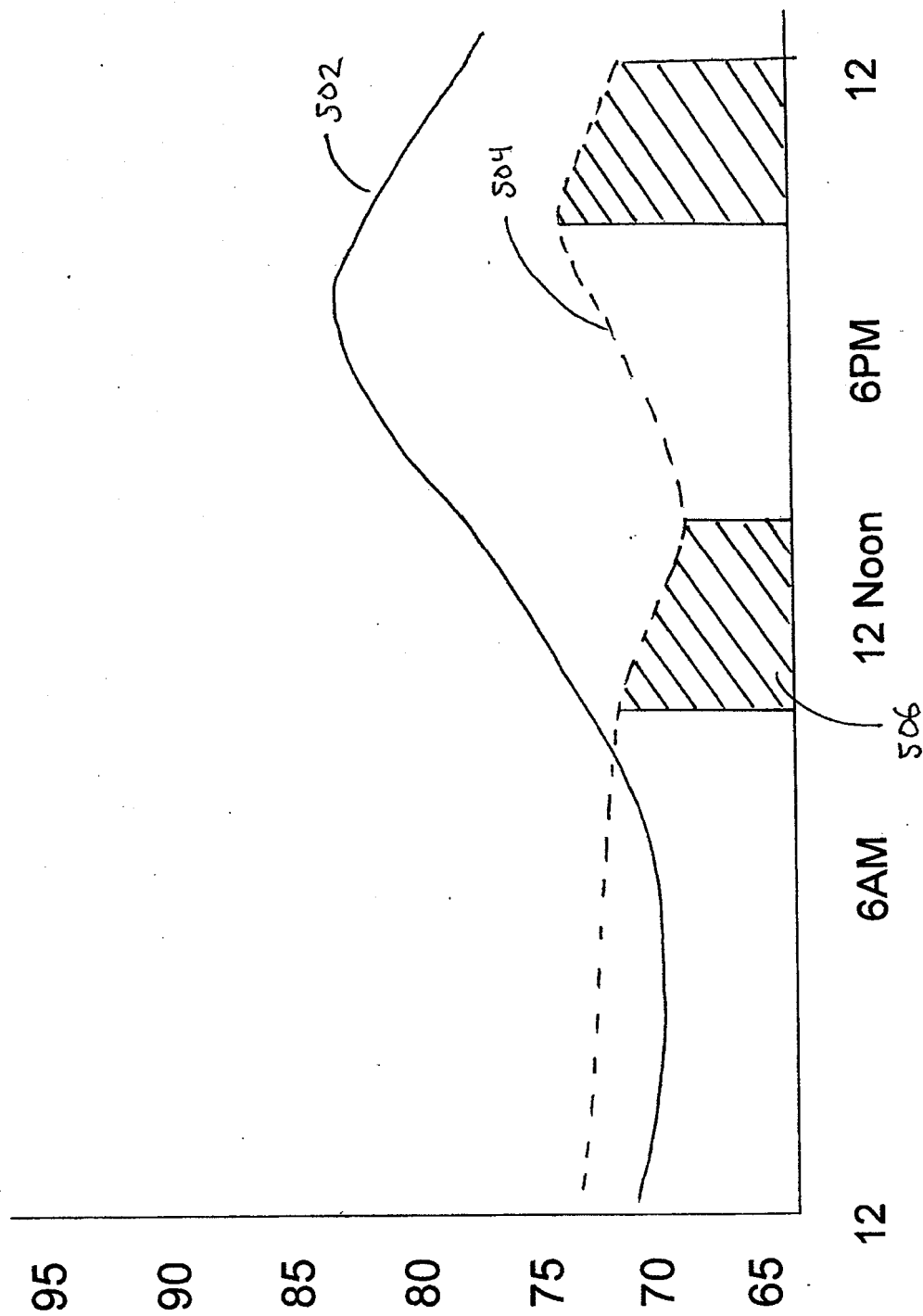


FIG 9b

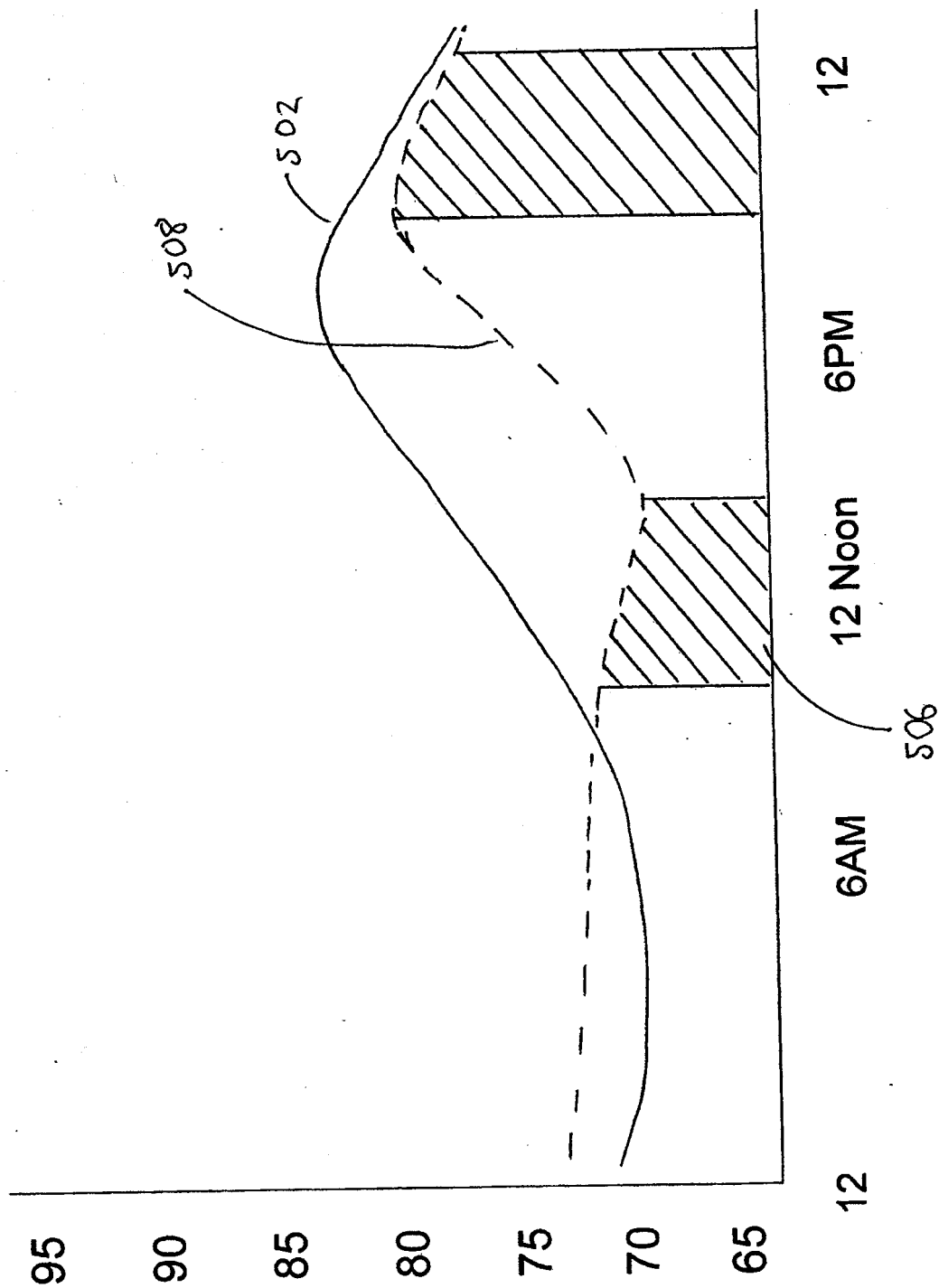


FIG 10a

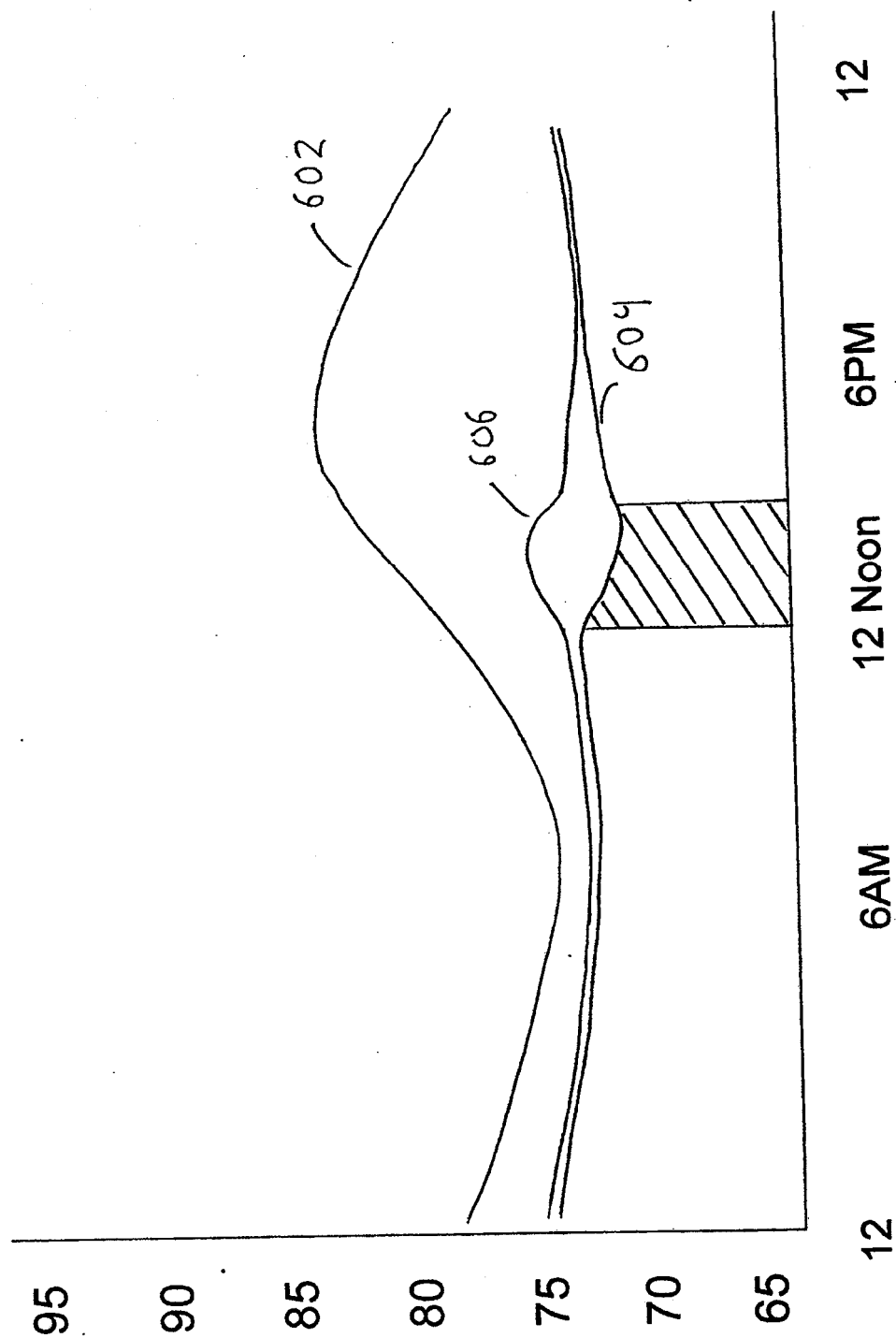


Fig 10b

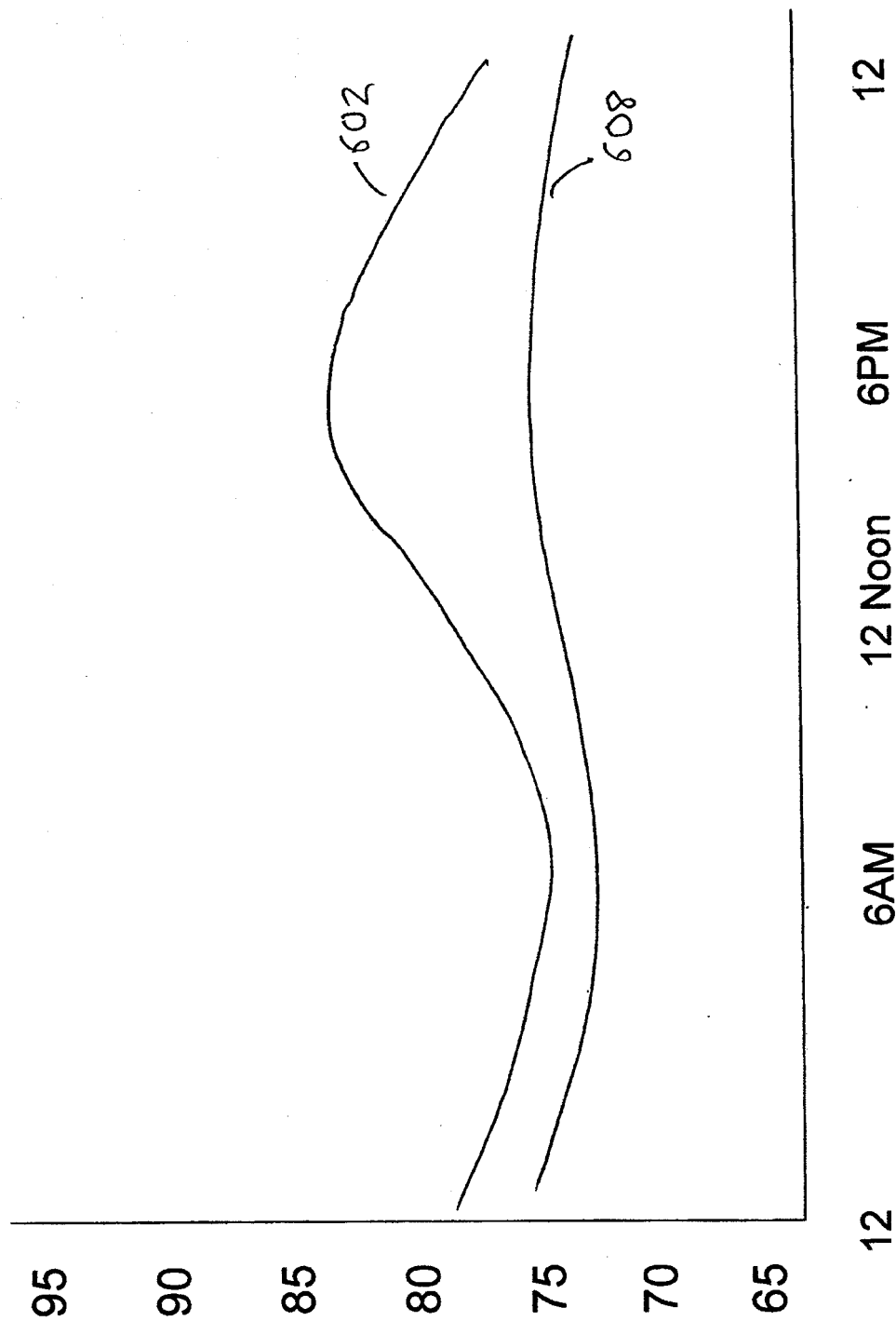
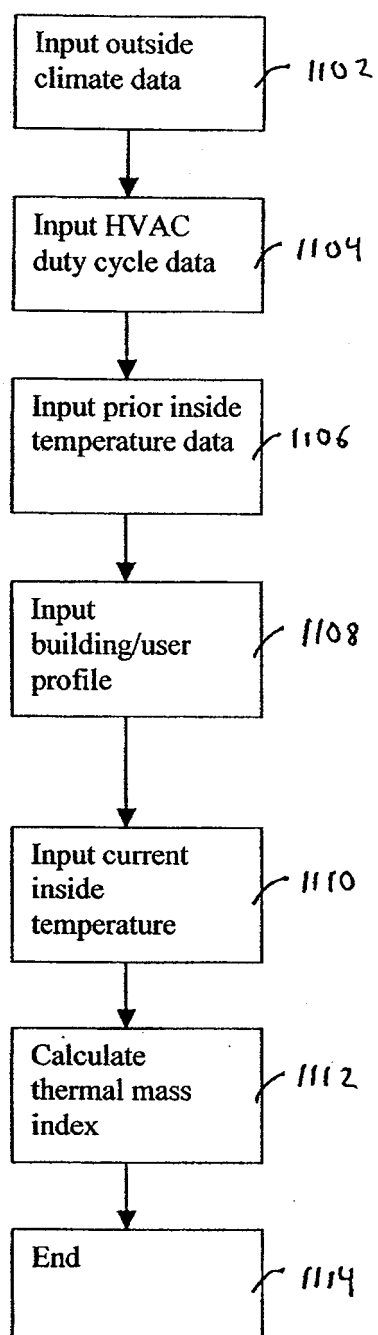


Figure 11



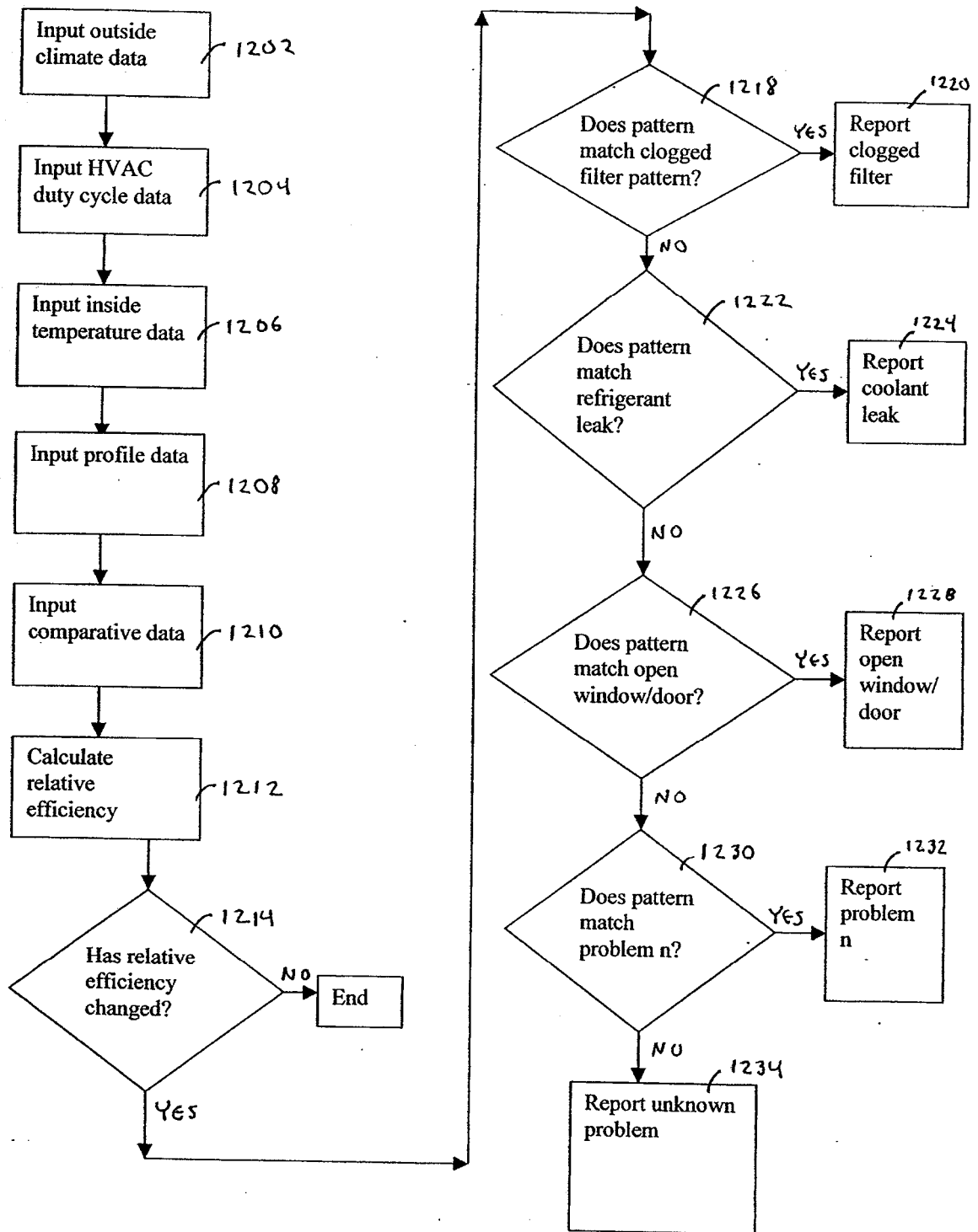
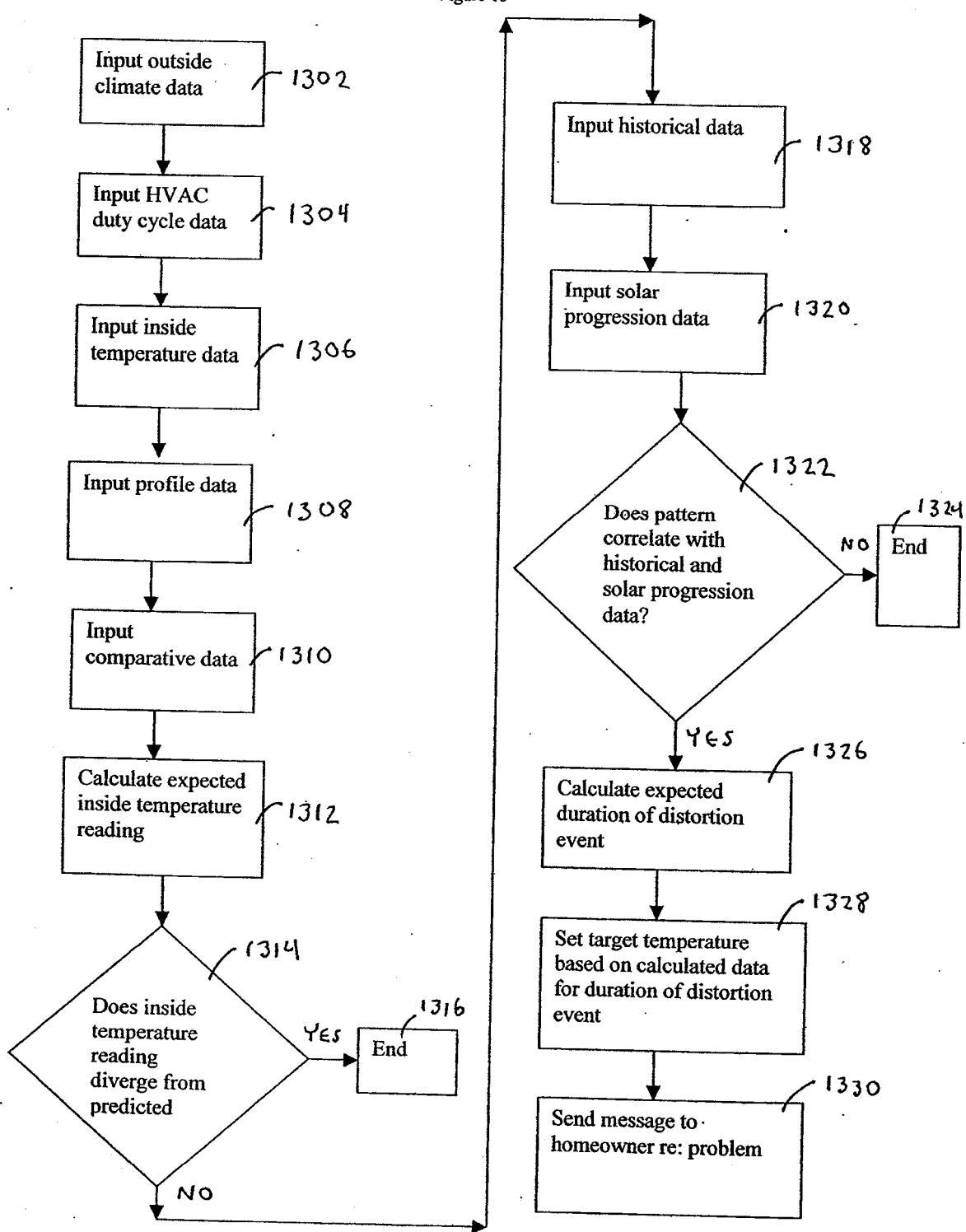


Figure 13



Electronic Acknowledgement Receipt

EFS ID:	4739047
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Nicole Lauer
Filer Authorized By:	John R. King
Attorney Docket Number:	JSTEIN.005A
Receipt Date:	05-FEB-2009
Filing Date:	16-SEP-2008
Time Stamp:	12:56:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	JSTEIN-005A_transmittal.pdf	32063 2a663c354123d01432ca0b65a3559dd5e6518a50	no	1

Warnings:

Information:

2	Drawings-only black and white line drawings	JSTEIN-005A_drawings.pdf	258134 f23706d7b810f3394e8e5c52b278fe3d5319e85a	no	18
Warnings:					
Information:					
Total Files Size (in bytes):			290197		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/211,733	09/16/2008	John Douglas Steinberg	JSTEIN.005A

CONFIRMATION NO. 9030

WITHDRAWAL NOTICE



20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Date Mailed: 12/05/2008

Letter Regarding a New Notice and/or the Status of the Application

If a new notice or Filing Receipt is enclosed, applicant may disregard the previous notice mailed on 09/30/2008. The time period for reply runs from the mail date of the new notice. Within the time period for reply, applicant is required to file a reply in compliance with the requirements set forth in the new notice to avoid abandonment of the application.

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/malemahu/

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/211,733	09/16/2008	3744	527	JSTEIN.005A	20	3

CONFIRMATION NO. 9030

20995
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IRVINE, CA 92614

FILING RECEIPT



OC000000033433416

Date Mailed: 12/05/2008

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Applicant(s)

John Douglas Steinberg, Millbrae, CA;
Scott Douglas Hublou, Redwood City, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 09/25/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/211,733**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

Preliminary Class

236

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/211,733	09/16/2008	John Douglas Steinberg	JSTEIN.005A

CONFIRMATION NO. 9030

FORMALITIES LETTER



OC000000033433417

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Date Mailed: 12/05/2008

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - The drawings must be reasonably free from erasures and must be free from alterations, overwriting, interlineations, folds, and copy marks. See Figure(s) All.
 - The drawings have a line quality that is too light to be reproduced (weight of all lines and letters must be heavy enough to permit adequate reproduction) or text that is illegible (reference characters, sheet numbers, and view numbers must be plain and legible) see 37 CFR 1.84(l) and (p)(1)); See Figure(s) 2-13.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

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/malemahu/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Please Direct All Correspondence to Customer Number 20,995

RESPONSE TO FORMALITIES NOTICE

Applicant : Steinberg, et al.
App. No : 12/211,733
Filed : September 16, 2008
For : SYSTEM AND METHOD FOR
CALCULATING THE THERMAL
MASS OF A BUILDING
Art Unit : 3744

**Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

Dear Sir:

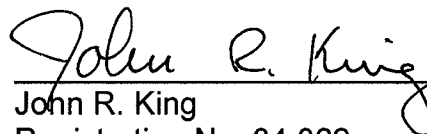
The above-captioned application was filed without a Declaration and/or filing fees. Enclosed in compliance with 37 CFR 1.53(f) are the following.

- (X) A Declaration in 2 pages.
- (X) Replacement Drawings.

The present application qualifies for small entity status under 37 CFR § 1.27.

- (X) Fees will be paid via EFS Web. Extension of time is requested by payment of any extension fee.

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.



John R. King
Registration No. 34,362
Attorney of Record
Customer No. 20,995
(949) 760-0404

6279516:ad
112408

**DECLARATION FOR UTILITY OR DESIGN APPLICATION
UNDER 37 CFR 1.63**

Docket No.: JSTEIN.005A

Page 1 of 2

Title: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

Inventors: John Douglas Steinberg and Scott Douglas Hublou

Please Direct All Correspondence to Customer Number 20,995

This Declaration is directed to the invention that:

Was filed as Serial No. 12/211,733 filed on September 16, 2008

As a below named inventor:

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is described and claimed and for which a patent is sought;

I have reviewed and understand the contents of the above-identified application, including the claims, and any amendment filed herewith or identified above;

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56;

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of **first** inventor: John Douglas Steinberg

Signature: _____

Date: _____

Citizenship: _____

United States

Mailing Address: _____

873 Hacienda Way

Millbrae, CA 94030

Residence Address: _____

Same as above.

(if different than above)

**DECLARATION FOR UTILITY OR DESIGN APPLICATION
UNDER 37 CFR 1.63**

Docket No.: JSTEIN.005A

Page 2 of 2

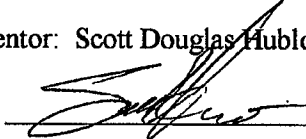
Title: SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A
BUILDING

Inventors: John Douglas Steinberg and Scott Douglas Hublou

Please Direct All Correspondence to Customer Number 20,995

Full name of second inventor: Scott Douglas Hublou

Signature:



Date:

11/10/08

Citizenship:

United States

Mailing Address:

747 Lakeview Way

Redwood City, CA 94062

Residence Address:

Same as above.

(if different than above)

Send Correspondence To:

KNOBBE, MARTENS, OLSON & BEAR, LLP

Customer No. 20,995

6078620:ad
101308

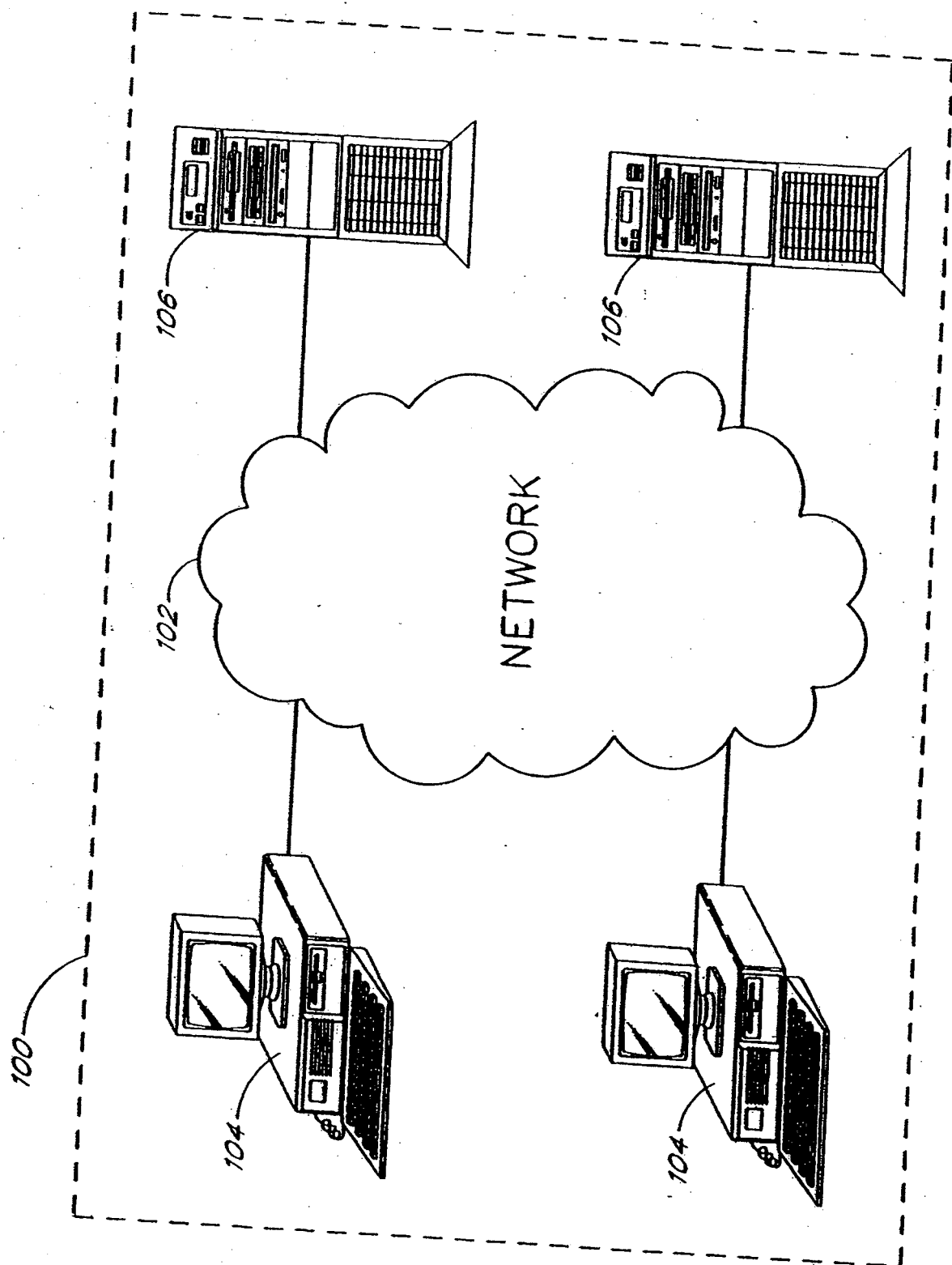


FIG. 1

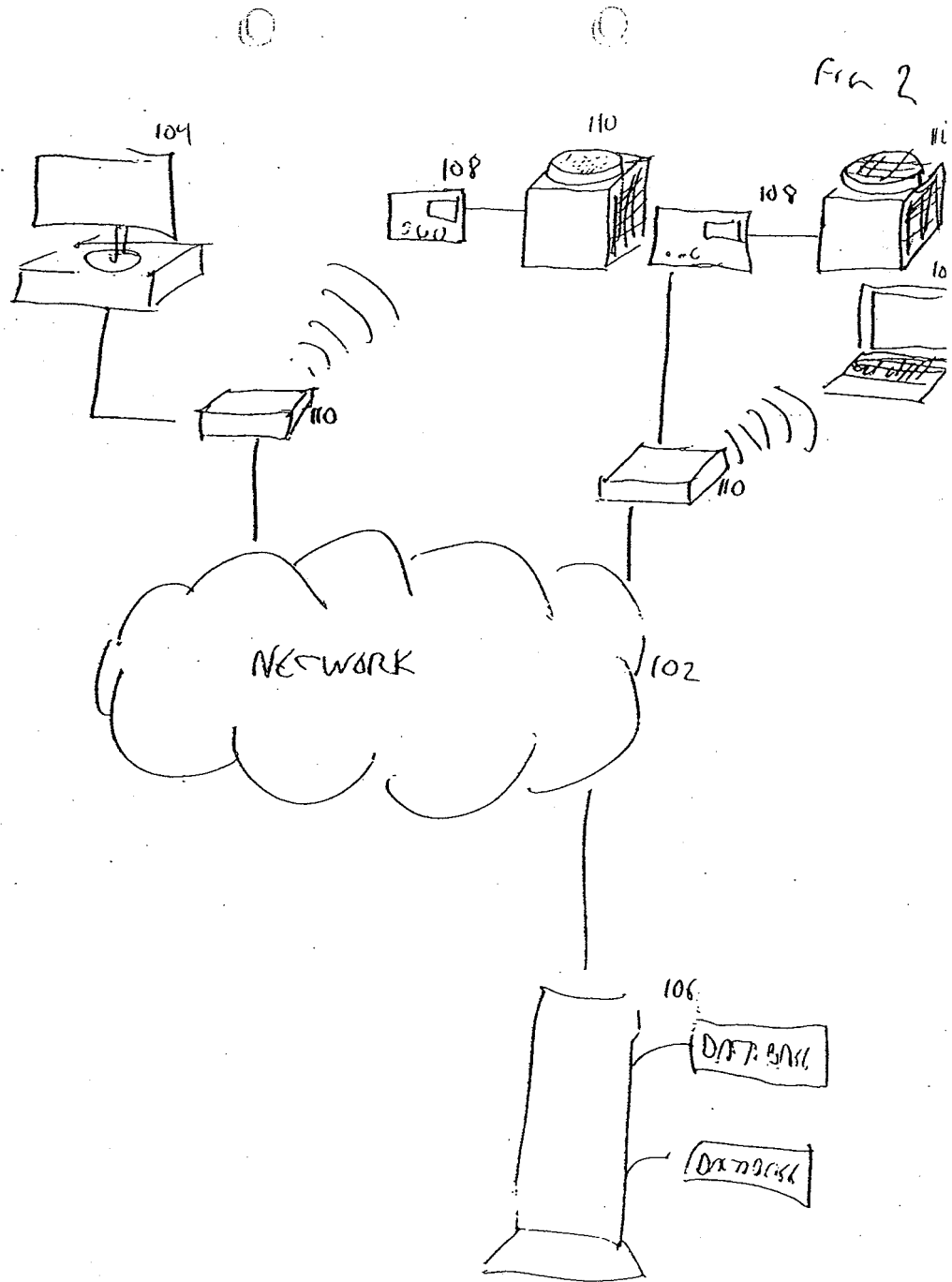


FIG 3

200
204
206
210

ADDRESS: _____

SATUR: _____

ELECTRIC BILL:

JAN 81]

FEB 81]

MAR 81]

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MAY 81]

MICRO #1 now save you

\$ 347/yr [AD 1-]

MICRO #2 now save you

\$ 630/yr [AD 1-]

SIGN UP FOR

CAMPUS PDR

[AD 1-]

SIGN UP FOR

MAX PDR

[AD 1-]

78																			
72																			
68																			

FIG 4

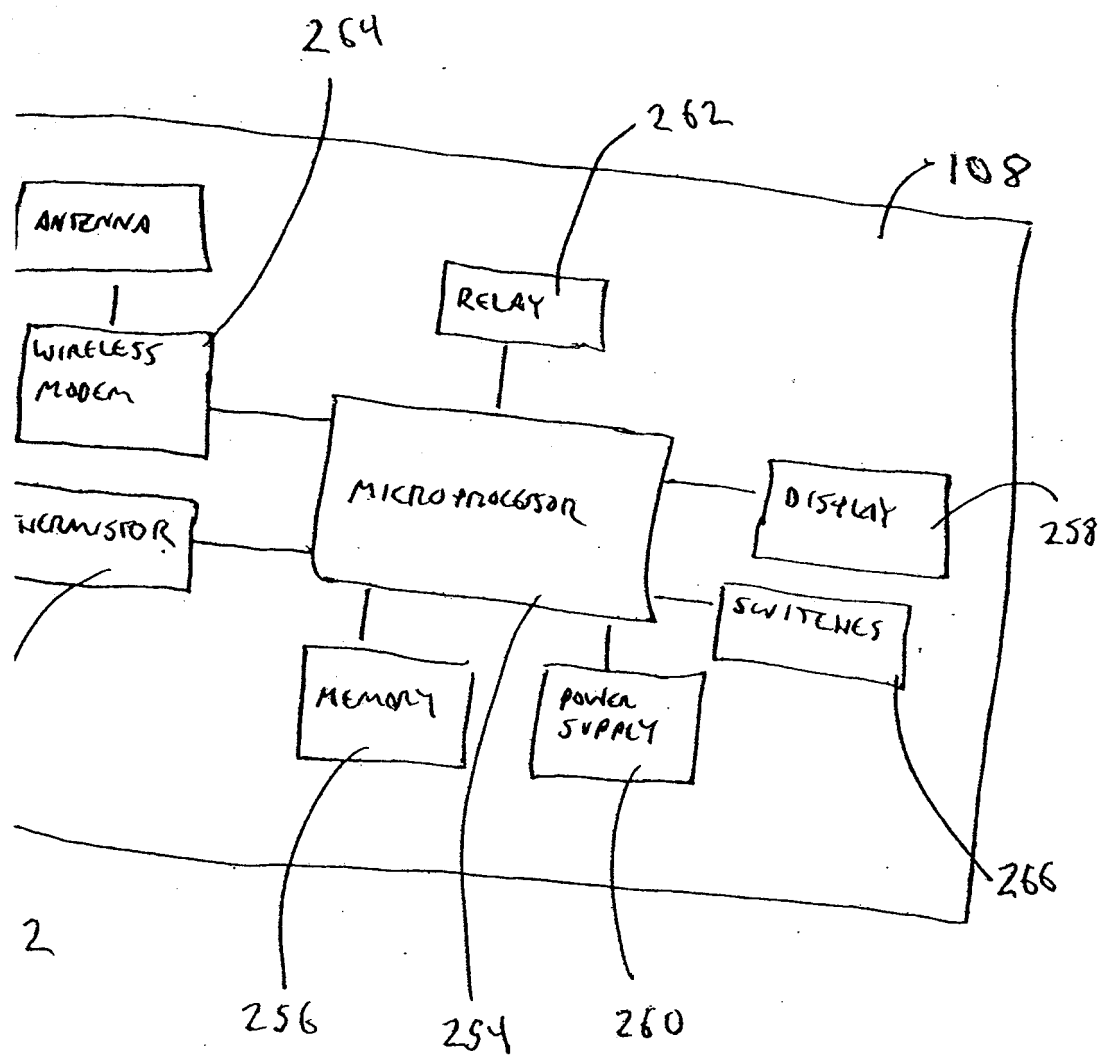


FIG 5

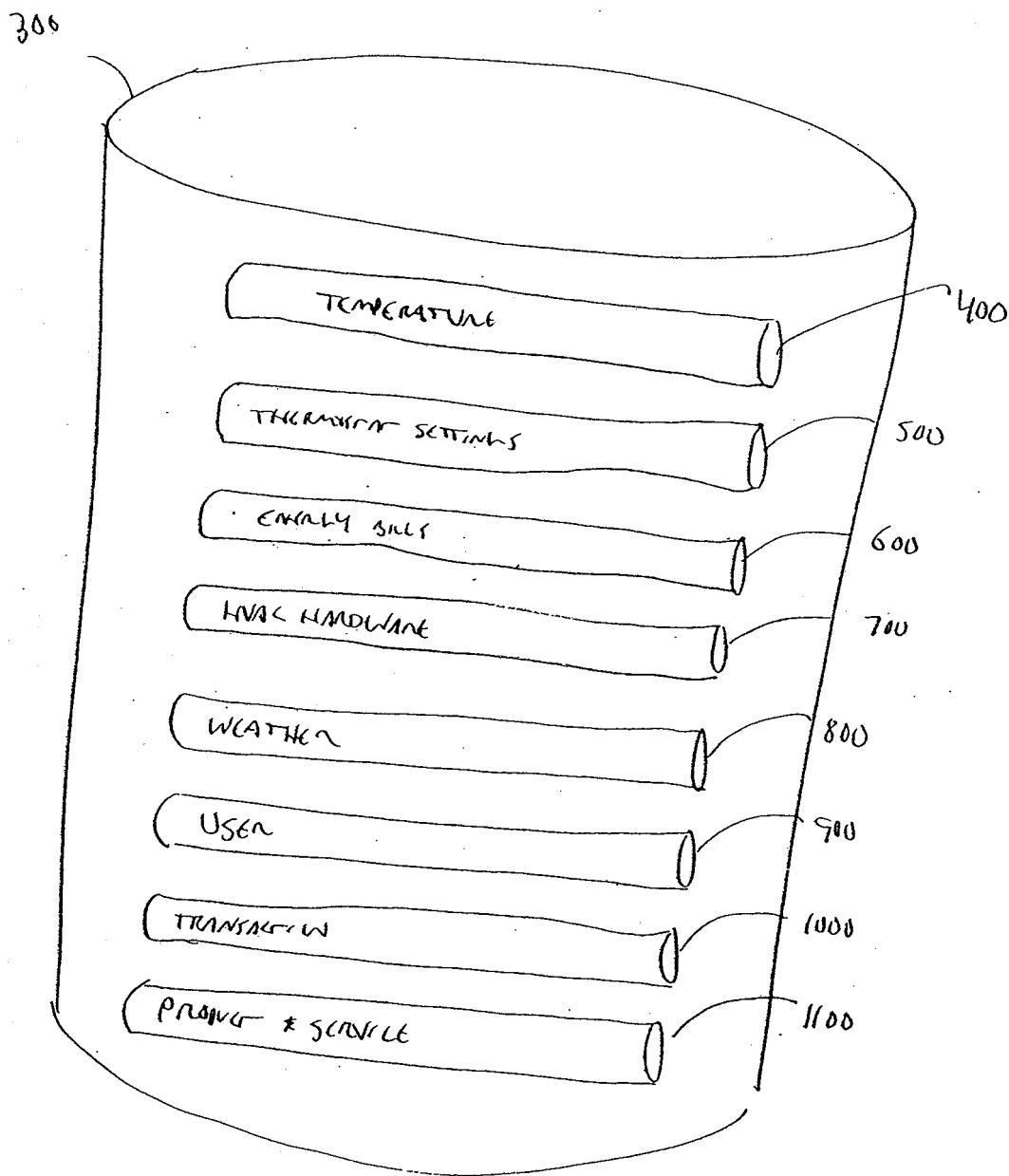


Fig 6A

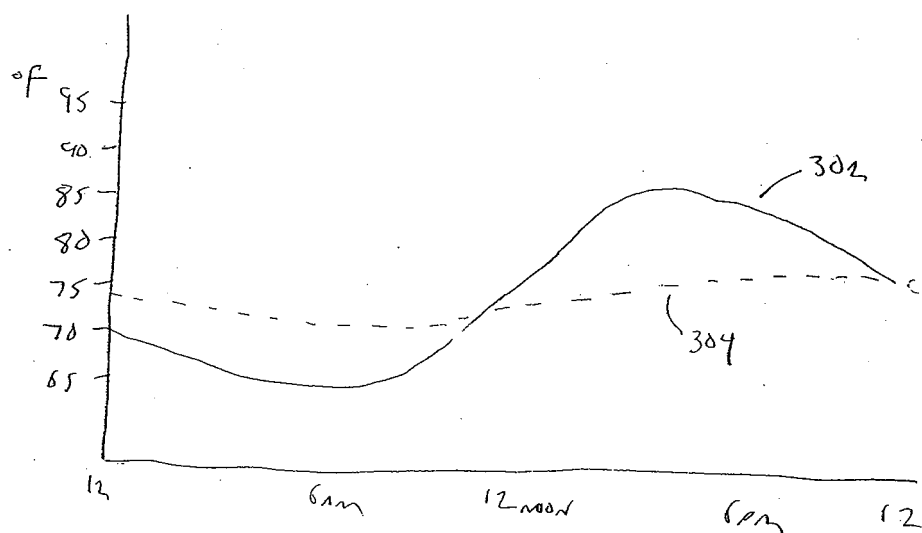


Fig 6B

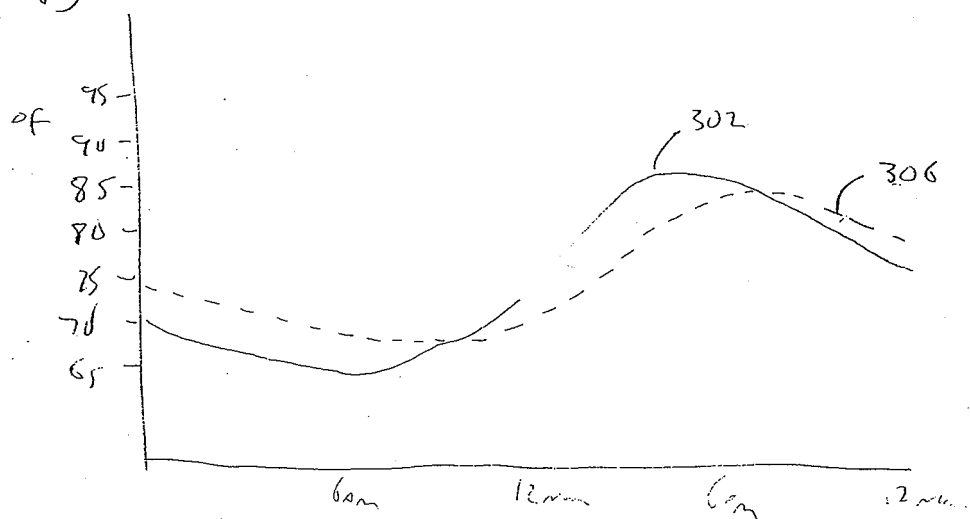


FIG 7A

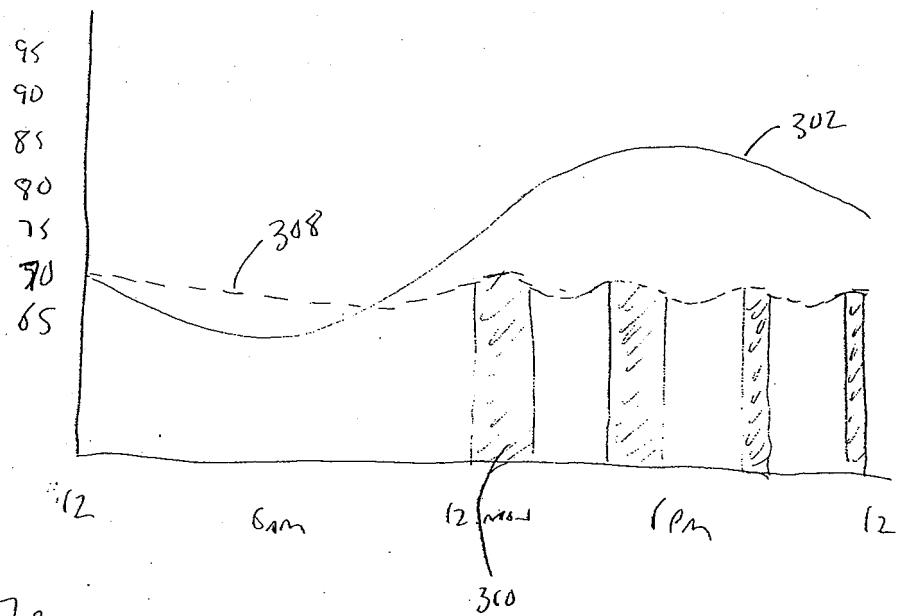


FIG 7B

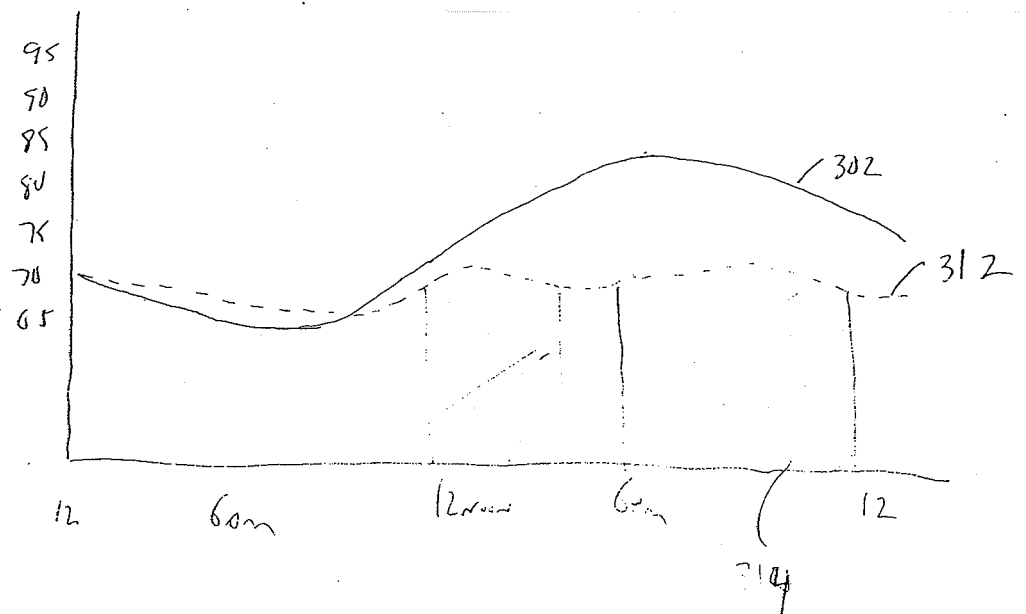


FIG 80

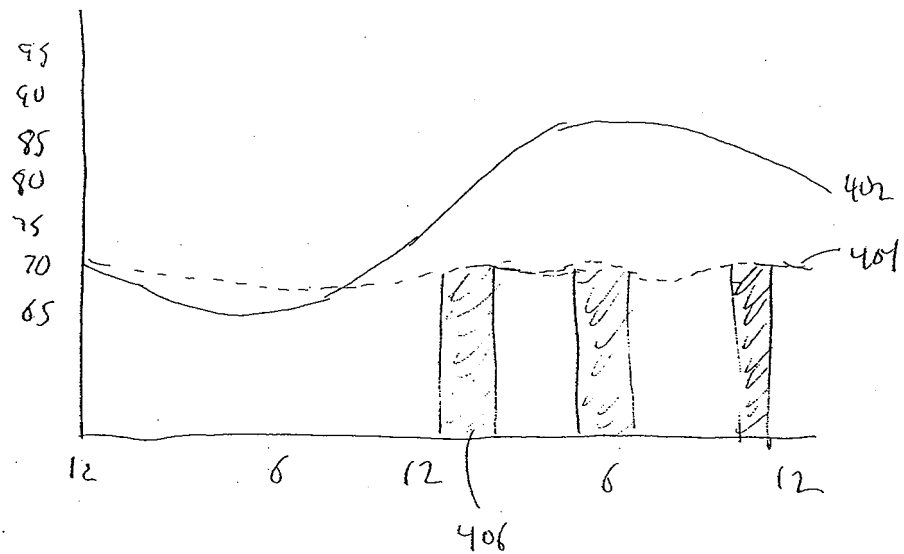
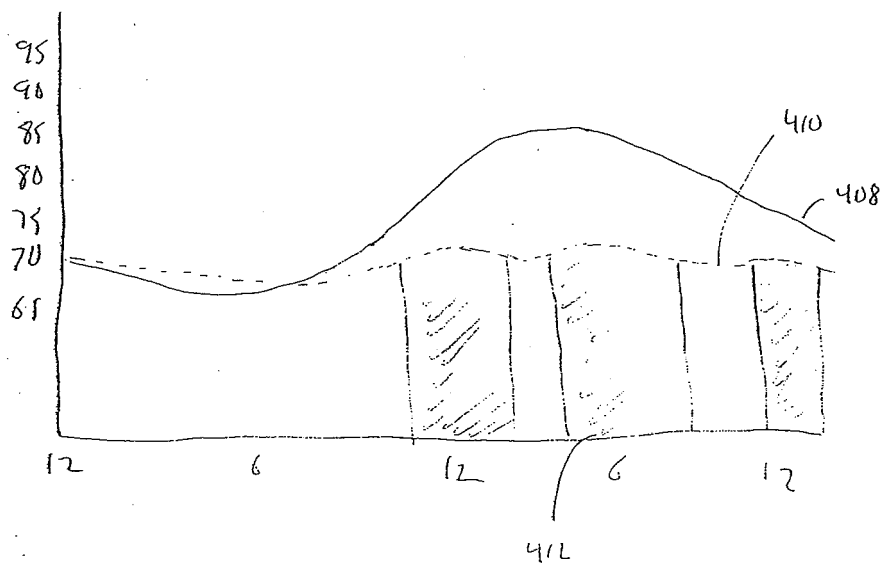


FIG 81



Replacement Sheet

Fig 9a

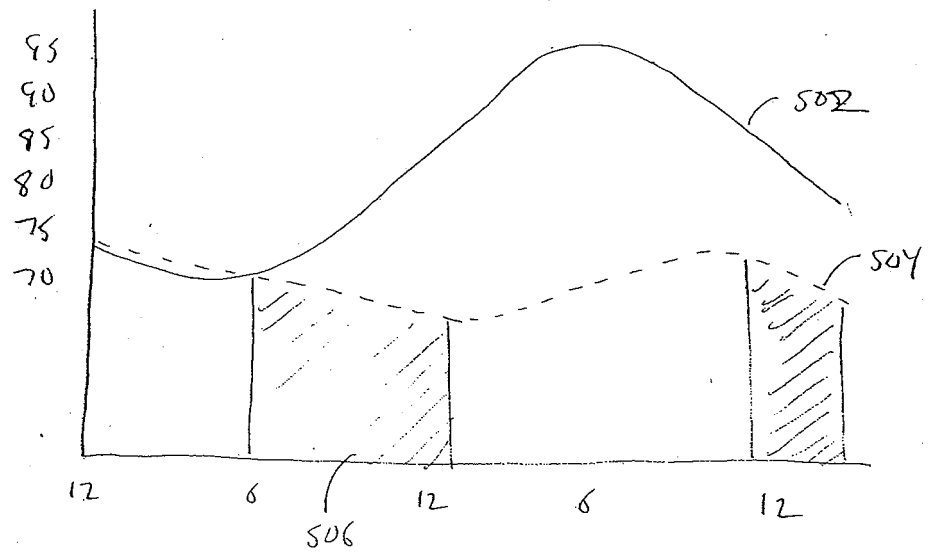


Fig 9b

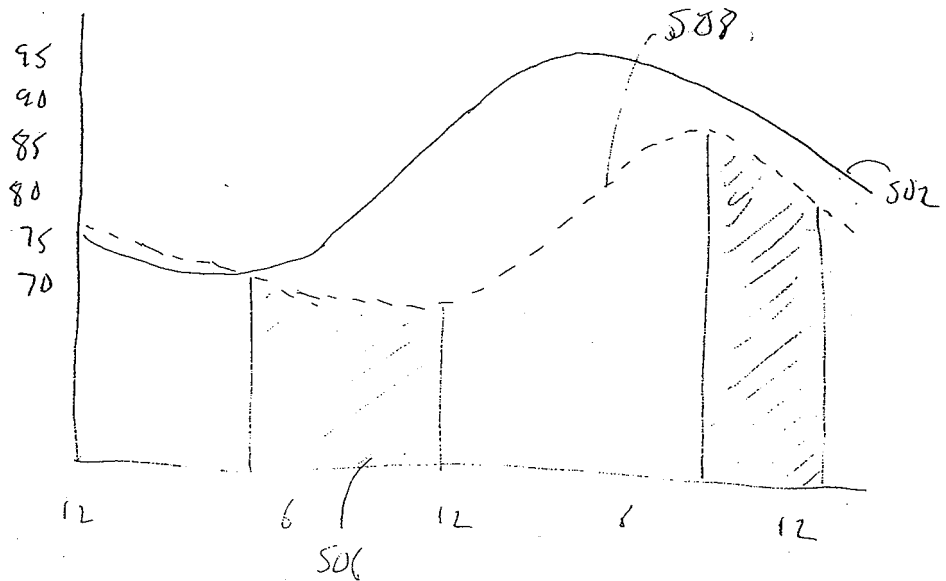


FIG 10a

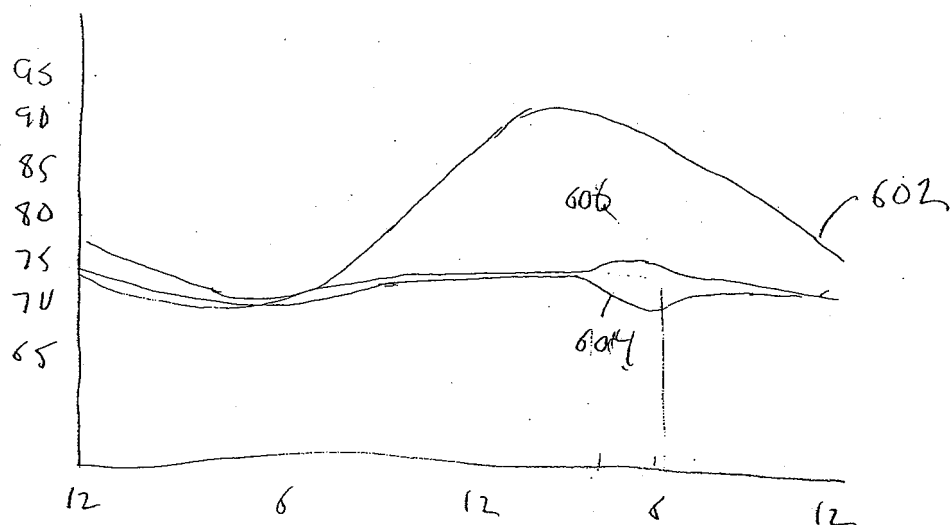
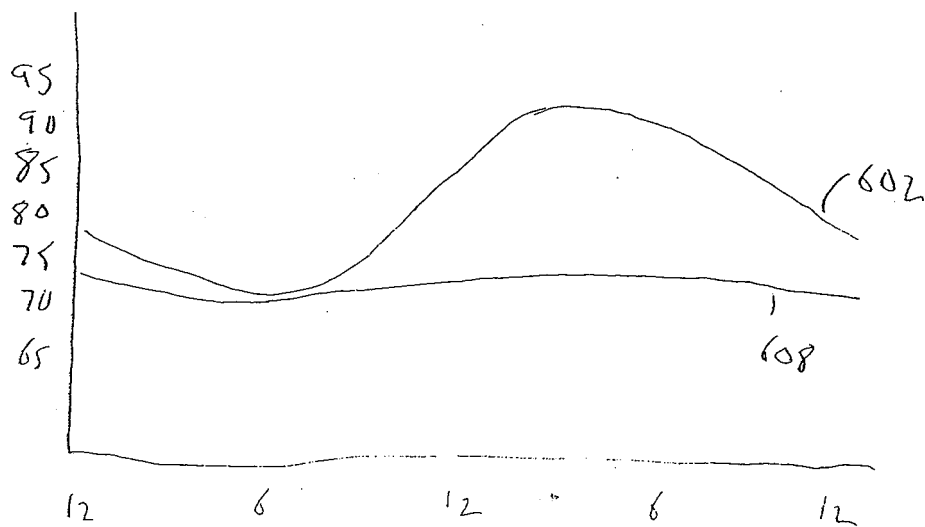


FIG 10b



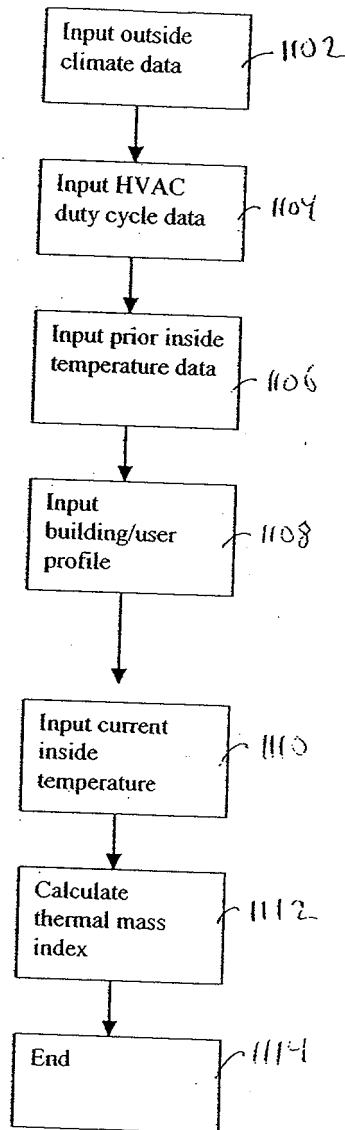
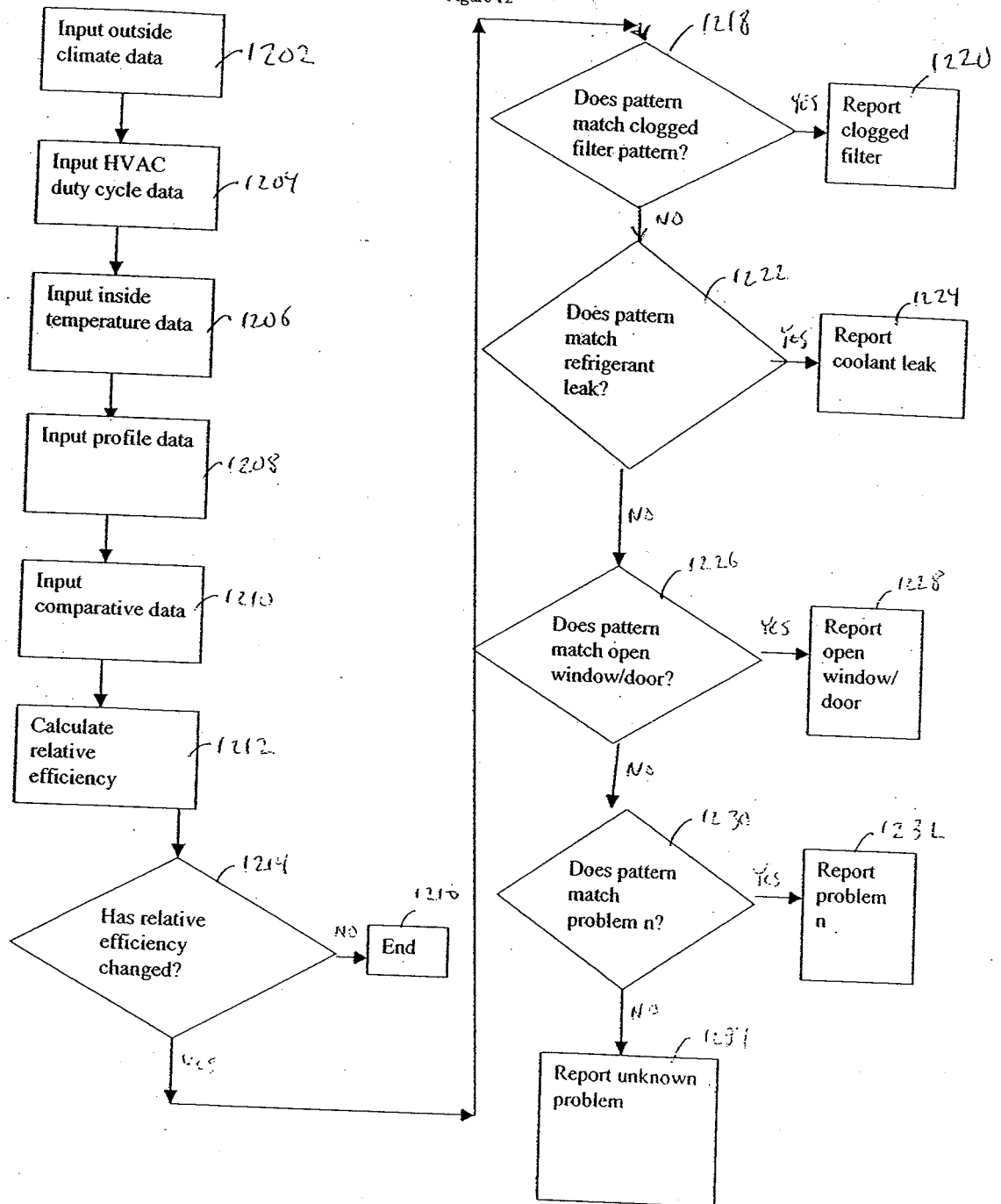
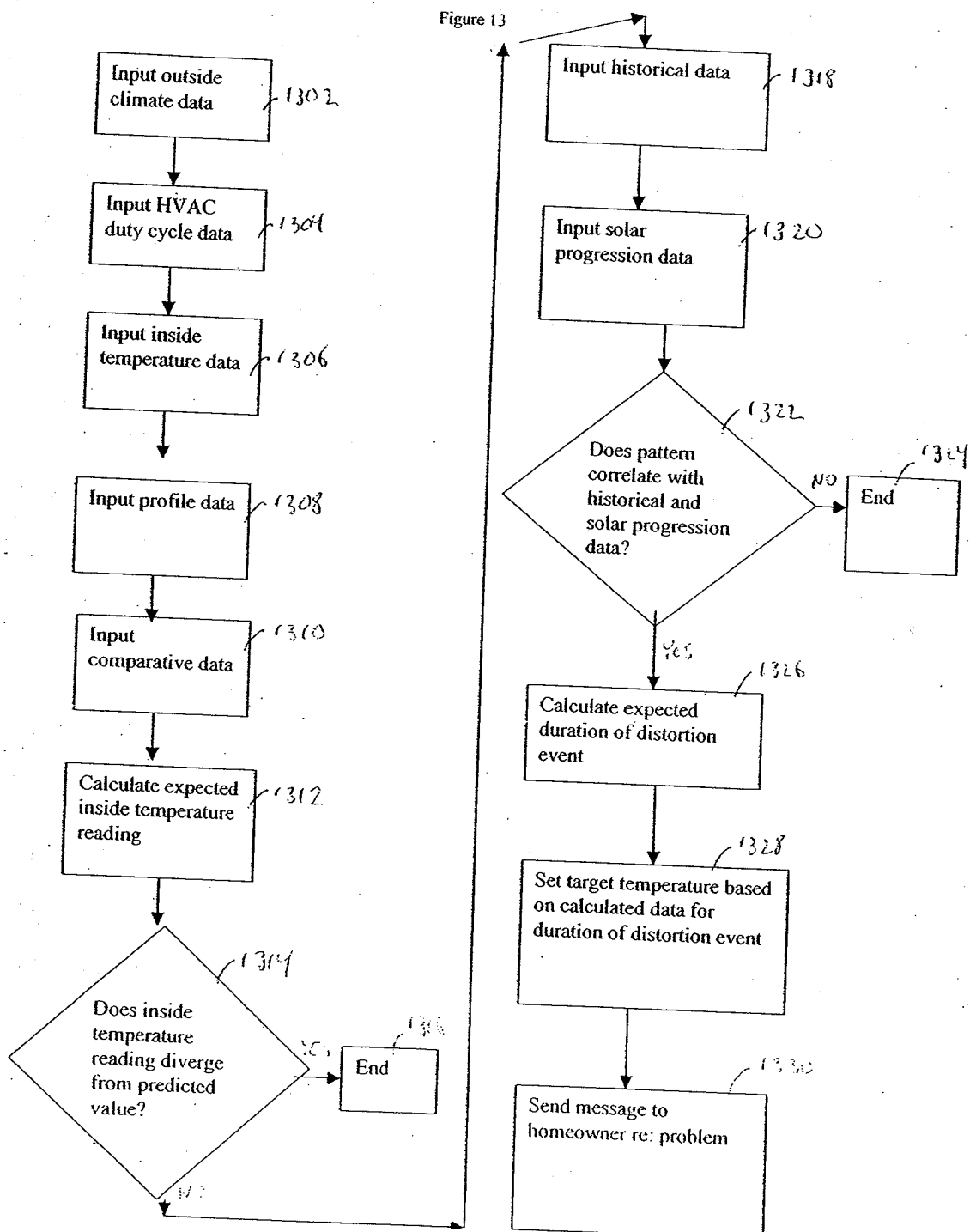


Figure 11





Electronic Patent Application Fee Transmittal				
Application Number:		12211733		
Filing Date:		16-Sep-2008		
Title of Invention:		SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
First Named Inventor/Applicant Name:		John Douglas Steinberg		
Filer:		John R. King/Amy Durrant		
Attorney Docket Number:		JSTEIN.005A		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				527

Electronic Acknowledgement Receipt

EFS ID:	4362592
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Wayne Mahoney
Filer Authorized By:	John R. King
Attorney Docket Number:	JSTEIN.005A
Receipt Date:	26-NOV-2008
Filing Date:	16-SEP-2008
Time Stamp:	16:03:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 527
RAM confirmation Number	2941
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	JSTEIN-005A_respMP.pdf	33135 37b861f2372e30314bf4522e1caf84a2d72f2ab	no	1
Warnings:					
Information:					
2	Oath or Declaration filed	JSTEIN-005A_declaration.pdf	64136 9bf3158bd062169f85a68d5bad86eb87d9b2be2d	no	2
Warnings:					
Information:					
3	Drawings-only black and white line drawings	JSTEIN-005A_drawings.pdf	200933 f7fdd5951ec05351076d8a4a7d48126191355b32	no	13
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	36958 578d3cd682bff719e2306f3116a2180c23759fd8	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			335162		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/211,733	09/16/2008	John Douglas Steinberg	JSTEIN.005A

CONFIRMATION NO. 9030

FORMALITIES LETTER



OC000000032301178

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Date Mailed: 09/30/2008

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$75 to complete the basic filing fee for a small entity.
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - The drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch). See Figures(s) 4, 13.
 - The drawings have a line quality that is too light to be reproduced (weight of all lines and letters must be heavy enough to permit adequate reproduction) or text that is illegible (reference characters, sheet numbers, and view numbers must be plain and legible) see 37 CFR 1.84(l) and (p)(1)); See Figure(s) 3, 9B, 10b, 12, 13.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of **\$65** for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **\$500** for a small entity

- **\$75** Statutory basic filing fee.
- **\$65** Surcharge.
- The application search fee has not been paid. Applicant must submit **\$255** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit **\$105** to complete the examination fee for a small entity in compliance with 37 CFR 1.27.

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P.O. Box 1450
Alexandria VA 22313-1450

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<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/mkoroma/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/211,733	09/16/2008	3744	0.00	JSTEIN.005A	20	3

CONFIRMATION NO. 9030

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FILING RECEIPT



OC000000032301177

Date Mailed: 09/30/2008

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

John Douglas Steinberg, Millbrae, CA;
Scott Douglas Hublou, Redwood City, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 09/25/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/211,733**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

Preliminary Class

236

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JSTEIN.005A
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

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Applicant 1				
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Prefix	Given Name	Middle Name	Family Name	Suffix
	John	Douglas	Steinberg	
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	Millbrae	State/Province	CA	Country of Residence i US
Citizenship under 37 CFR 1.41(b) i		US		
Mailing Address of Applicant:				
Address 1	873 Hacienda Way			
Address 2				
City	Millbrae	State/Province	CA	
Postal Code	94030	Countryi	US	
Applicant 2				
Applicant Authority		<input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117
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	Scott	Douglas	Hublou	
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Mailing Address of Applicant:				
Address 1	747 Lakeview Way			
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JSTEIN.005A
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
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Application Information:

Title of the Invention	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		
Attorney Docket Number	JSTEIN.005A	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

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Prior Application Status	Pending	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	60/944011	2007-09-17
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JSTEIN.005A
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING		

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Assignee 1

If the Assignee is an Organization check here. ☐

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Signature	/John R. King/		Date (YYYY-MM-DD)	2008-09-16
First Name	John	Last Name	King	Registration Number
				34362

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SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A
BUILDING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 60/944,011, filed September 17, 2007, the entirety of which is incorporated herein by reference and is to be considered part of this specification.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] This invention relates to the use of thermostatic HVAC controls that are connected to a computer network. More specifically, communicating thermostats are combined with a computer network to calculate the thermal mass of a structure.

Background

[0003] Climate control systems such as heating and cooling systems for buildings (heating, ventilation and cooling, or HVAC systems) have been controlled for decades by thermostats. At the most basic level, a thermostat includes a means to allow a user to set a desired temperature, a means to sense actual temperature, and a means to signal the heating and/or cooling devices to turn on or off in order to try to change the actual temperature to equal the desired temperature. The most basic versions of thermostats use components such as a coiled bi-metallic spring to measure actual temperature and a mercury switch that opens or completes a circuit when the spring coils or uncoils with temperature changes. More recently, electronic digital thermostats have become prevalent. These thermostats use solid-state devices such as thermistors or thermal diodes to measure temperature, and microprocessor-based circuitry to control the switch and to store and operate based upon user-determined protocols for temperature vs. time.

[0004] These programmable thermostats generally offer a very restrictive user interface, limited by the cost of the devices, the limited real estate of the small wall-mounted

boxes, and the inability to take into account more than two variables: the desired temperature set by the user, and the ambient temperature sensed by the thermostat. Users can generally only set one series of commands per day, and in order to change one parameter (e.g., to change the late-night temperature) the user often has to cycle through several other parameters by repeatedly pressing one or two buttons.

[0005] Because the interface of programmable thermostats is so poor, the significant theoretical savings that are possible with them (sometimes cited as 25% of heating and cooling costs) are rarely realized. In practice, studies have found that more than 50% of users never program their thermostats at all. Significant percentages of the thermostats that are programmed are programmed sub-optimally, in part because, once programmed, people tend to not to re-invest the time needed to change the settings very often.

[0006] A second problem with standard programmable thermostats is that they represent only a small evolutionary step beyond the first, purely mechanical thermostats. Like the first thermostats, they only have two input signals – ambient temperature and the preset desired temperature. The entire advance with programmable thermostats is that they can shift between multiple present temperatures at different times.

SUMMARY OF THE INVENTION

[0007] There are many other sources of information that could be used to increase comfort, decrease energy use, or both. For example, outside temperature and humidity strongly affect subjective comfort. On a 95 degree, 90 per cent humidity day in August, when people tend to dress in lightweight clothing, a house cooled to 70 degrees will feel cool or even uncomfortably cold. On a below-freezing day in January, when people tend to wear sweaters and heavier clothes, that same 70 degree home will feel too warm. It would therefore be advantageous for a thermostat system to automatically incorporate information about external weather conditions when setting the desired temperature.

[0008] Thermostats are used to regulate temperature for the benefit of the occupants in a given space. (Usually this means people, but it can of course also mean critical equipment, such as in a room filled with computer equipment.) In general, thermostats read temperature from the sensor located within the “four corners” of the

thermostat. With a properly designed system, the thermostat may well be located such that the temperature read at the precise location of the thermostat accurately reflects the conditions where the human (or other) occupants tend to be. But there are many reasons and circumstances in which that will not be the case. A single thermostat may produce accurate readings in some circumstances but not others; it may be located in a place far from the occupants, or too far from the ductwork controlled by the thermostat, etc. In one house, for example, the thermostat may be located in a spot that receives direct sunlight on hot afternoons. This could cause the thermostat to sense that the local ambient temperature is extremely high, and as a result signal the A/C to run too long, making the rest of the home too cold, and wasting considerable energy. In another house, the thermostat may be located in a hallway without ductwork or where the nearby ducts have been closed. In such a scenario, the thermostat is likely to (correctly) report cold temperatures in the winter, leading the heating system to overheat the rest of the house and waste considerable energy.

[0009] These problems can be reduced or eliminated through use of additional remote temperature sensors connected to the thermostat's control circuitry. However, such systems require additional hardware, additional thermostat complexity, and skilled installation and configuration.

[0010] It would therefore be desirable for a thermostat system using only a single temperature sensor to take such sub-optimal installations into account and to correct for the erroneous readings generated by such thermostats.

[0011] Different structures will respond to changes in conditions such as external temperature in different ways. For example, houses built 50 or more years ago will generally have little or no insulation, be poorly sealed, and have simple single-glazed windows. Such houses will do a very poor job of retaining internal heat in the winter and rejecting external heat in the summer. In the absence of applications of thermal measures such as heating and air conditioning, the inside temperature in such houses will trend to track outside temperatures very closely. Such houses may be said to have low thermal mass. A house built in recent years, using contemporary techniques for energy efficiency such as high levels of insulation, double-glazed windows and other techniques, will, in the absence of intervention,

tend to absorb external heat and release internal heat very slowly. The newer house can be thought of as having higher thermal mass than the older house.

[0012] A conventional thermostat has no mechanism by which it might take the thermal mass of the structure into account, but thermal mass significantly affects many parameters relating to energy efficiency.

[0013] The cost to an electric utility to produce power varies over time. Indeed, the cost of production between low demand and peak demand periods can vary by as much as an order of magnitude. Traditionally, residential customers paid the same price regardless of time or the cost to produce. Thus consumers have had little financial incentive to reduce consumption during periods of high demand and high production cost. Many electric utilities are now seeking to bring various forms of variable rates to the retail energy markets. Under such schemes, consumers can reduce costs by taking into account not just how much energy they use, but when they use it.

[0014] Thus many consumers now can see real benefits from optimizing not just the total number of kilowatt-hours of electricity consumed, but also optimizing when it is used. The optimum strategy for energy use over time will vary based upon many variables, one of which is the thermal mass of the structure being heated or cooled. In a structure with high thermal mass, heating and cooling can effectively be shifted away from high cost periods to lower cost "shoulder" periods with little or no effect on comfort. If, for example, a utility charges much higher rates on hot summer afternoons, it is likely that pre-cooling a high-thermal mass structure just before the high-cost period and then shutting down the air conditioning during the peak will allow the house to remain comfortable. But in a house with low thermal mass, the benefits of pre-cooling will quickly dissipate, and the house will rapidly become uncomfortable if the air conditioning is shut off. Thus it would be advantageous for a temperature control system to take thermal mass into account when setting desired temperatures.

[0015] Many factors affect the efficiency of HVAC systems. Some may be thought of as essentially fixed, such as the theoretical efficiency of a central air conditioner (often expressed as its SEER rating), the matching of a given system to the characteristics of a given home, the location and size of forced-air ductwork, etc. Other contributors to

efficiency are more dynamic, such as clogged filters, refrigerant leaks, duct leakage and “pop-offs,” and the like.

[0016] Most of these problems are likely to manifest themselves in the form of higher energy bills. But the “signature” of each different problem can be discerned from the way in which each such problem affects the cycle times of a given HVAC system over time and relative to weather conditions and the performance of other HVAC systems in other houses. If two otherwise identical houses are located next door to each other and have gas furnaces, but one is rated at 50,000 BTUs and the other is rated at 100,000 BTUs, the cycle times for the higher-capacity furnace should be shorter than for the lower-capacity unit. If both of those same houses have identical furnaces, but one has a clogged filter, the cycle times should be longer in the house with the clogged filter. Because cycling of the HVAC system is controlled by the thermostat, those differences in cycle time would be reflected in the data sensed by and control signals generated by the thermostat. It would be advantageous for a thermostat system to be able to use that information to diagnose problems and make recommendations based upon that data.

[0017] These needs are satisfied by at least one embodiment of the invention that includes a system for calculating a value for the effective thermal mass of a building comprising: at least one HVAC control system that measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time; calculating one or more rates of change in temperature at said first location; and relating said calculated rates of change to said outside temperature measurements.

[0018] Another embodiment includes a system for calculating a value for the operational efficiency of an HVAC system comprising at least one HVAC control system that

measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time; calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “on”; calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “off”; and relating said calculated rates of change to said outside temperature measurements.

[0019] A further embodiment includes a system for evaluating changes in the operational efficiency of an HVAC system over time comprising at least one HVAC control system that measures temperature at at least a first location conditioned by said HVAC system, and reporting said temperature measurements as well as the status of said HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said HVAC control systems and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements; and one or more databases that store at least said temperatures measured at said first location over time.

[0020] A further embodiment includes a system for detecting and correcting for anomalous behavior in HVAC control systems comprising a first HVAC control system that measures temperature at at least a first location conditioned by said first HVAC system, and reporting said temperature measurements as well as the status of said first HVAC control system; at least a second HVAC control system that measures temperature at at least a second location conditioned by said second HVAC system, and reporting said temperature

measurements as well as the status of said second HVAC control system; one or more processors that receive measurements of outside temperatures from at least one source other than said first and second HVAC control systems and compare said temperature measurements from said first HVAC controls system and said second HVAC control system and said outside temperature measurements; and one or more databases that store said temperatures measurements.

[0021] In at least one embodiment, the invention comprises a thermostat attached to an HVAC system, a local network connecting the thermostat to a larger network such as the Internet, and one or more additional thermostats attached to the network, and a server in bi-directional communication with a plurality of such thermostats. The server logs the ambient temperature sensed by each thermostat vs. time and the signals sent by the thermostats to their HVAC systems. The server preferably also logs outside temperature and humidity data for the geographic locations for the buildings served by the connected HVAC systems. Such information is widely available from various sources that publish detailed weather information based on geographic areas such as by ZIP code. The server also stores other data affecting the load upon the system, such as specific model of HVAC system, occupancy, building characteristics, etc. Some of this data may be supplied by the individual users of the system, while other data may come from third-party sources such as the electric and other utilities who supply energy to those users.

[0022] Combining these data sources will also allow the server to calculate the effective thermal mass of the structures conditioned by those thermostats. By combining data from multiple thermostats in a given neighborhood, the system can correct for flaws in the location of a given thermostat, and can evaluate the efficiency of a given system, as well as assist in the diagnosis of problems and malfunctions in such systems.

[0023] This and other advantages of certain embodiments of the invention are explained in the detailed description and claims that make reference to the accompanying diagrams and flowcharts.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Figure 1 shows an example of an overall environment in which an embodiment of the invention may be used.

[0025] Figure 2 shows a high-level illustration of the architecture of a network showing the relationship between the major elements of one embodiment of the subject invention.

[0026] Figure 3 shows an embodiment of the website to be used as part of the subject invention.

[0027] Figure 4 shows a high-level schematic of the thermostat used as part of the subject invention.

[0028] Figure 5 shows one embodiment of the database structure used as part of the subject invention

[0029] Figures 6a and 6b show graphical representations of inside and outside temperatures in two different homes, one with high thermal mass and one with low thermal mass.

[0030] Figures 7a and 7b show graphical representations of inside and outside temperatures in the same homes as in Figures 6a and 6b, showing the cycling of the air conditioning systems in those houses.

[0031] Figures 8a and 8b show graphical representations of inside and outside temperatures in the same home as in Figures 6a and 7a, showing the cycling of the air conditioning on two different days in order to demonstrate the effect of a change in operating efficiency on the parameters measured by the thermostat.

[0032] Figures 9a and 9b show the effects of employing a pre-cooling strategy in two different houses.

[0033] Figures 10a and 10b show graphical representations of inside and outside temperatures in two different homes in order to demonstrate how the system can correct for erroneous readings in one house by referencing readings in another.

[0034] Figure 11 is a flowchart illustrating the steps involved in calculating the effective thermal mass of a home using the subject invention.

[0035] Figure 12 is a flowchart illustrating the steps involved in determining whether an HVAC system has developed a problem that impairs efficiency using the subject invention.

[0036] Figure 13 is a flowchart illustrating the steps involved in correcting for erroneous readings in one house by referencing readings in another using the subject invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0037] **Figure 1** shows an example of an overall environment 100 in which an embodiment of the invention may be used. The environment 100 includes an interactive communication network 102 with computers 104 connected thereto. Also connected to network 102 are one or more server computers 106, which store information and make the information available to computers 104. The network 102 allows communication between and among the computers 104 and 106.

[0038] Presently preferred network 102 comprises a collection of interconnected public and/or private networks that are linked to together by a set of standard protocols to form a distributed network. While network 102 is intended to refer to what is now commonly referred to as the Internet, it is also intended to encompass variations which may be made in the future, including changes additions to existing standard protocols.

[0039] When a user of the subject invention wishes to access information on network 102, the buyer initiates connection from his computer 104. For example, the user invokes a browser, which executes on computer 104. The browser, in turn, establishes a communication link with network 102. Once connected to network 102, the user can direct the browser to access information on server 106.

[0040] One popular part of the Internet is the World Wide Web. The World Wide Web contains a large number of computers 104 and servers 106, which store HyperText Markup Language (HTML) documents capable of displaying graphical and textual information. HTML is a standard coding convention and set of codes for attaching presentation and linking attributes to informational content within documents.

[0041] The servers 106 that provide offerings on the World Wide Web are typically called websites. A website is often defined by an Internet address that has an associated electronic page. Generally, an electronic page is a document that organizes the presentation of text graphical images, audio and video.

[0042] In addition to the Internet, the network 102 can comprise a wide variety of interactive communication media. For example, network 102 can include local area networks, interactive television networks, telephone networks, wireless data systems, two-way cable systems, and the like.

[0043] In one embodiment, computers 104 and servers 106 are conventional computers that are equipped with communications hardware such as modem or a network interface card. The computers include processors such as those sold by Intel and AMD. Other processors may also be used, including general-purpose processors, multi-chip processors, embedded processors and the like.

[0044] Computers 104 can also be handheld and wireless devices such as personal digital assistants (PDAs), cellular telephones and other devices capable of accessing the network.

[0045] Computers 104 utilize a browser configured to interact with the World Wide Web. Such browsers may include Microsoft Explorer, Mozilla, Firefox, Opera or Safari. They may also include browsers used on handheld and wireless devices.

[0046] The storage medium may comprise any method of storing information. It may comprise random access memory (RAM), electronically erasable programmable read only memory (EEPROM), read only memory (ROM), hard disk, floppy disk, CD-ROM, optical memory, or other method of storing data.

[0047] Computers 104 and 106 may use an operating system such as Microsoft Windows, Apple Mac OS, Linux, Unix or the like.

[0048] Computers 106 may include a range of devices that provide information, sound, graphics and text, and may use a variety of operating systems and software optimized for distribution of content via networks.

[0049] **Figure 2** illustrates in further detail the architecture of the specific components connected to network 102 showing the relationship between the major elements

of one embodiment of the subject invention. Attached to the network are thermostats 108 and computers 104 of various users. Connected to thermostats 108 are HVAC units 110. The HVAC units may be conventional air conditioners, heat pumps, or other devices for transferring heat into or out of a building. Each user is connected to the server 106 via wired or wireless connection such as Ethernet or a wireless protocol such as IEEE 802.11, a gateway 110 that connects the computer and thermostat to the Internet via a broadband connection such as a digital subscriber line (DSL) or other form of broadband connection to the World Wide Web. Server 106 contains the content to be served as web pages and viewed by computers 104, as well as databases containing information used by the servers.

[0050] In the currently preferred embodiment, the website 200 includes a number of components accessible to the user, as shown in **Figure 3**. Those components may include a means to enter temperature settings 202, a means to enter information about the user's home 204, a means to enter the user's electricity bills 206, means to calculate energy savings that could result from various thermostat-setting strategies 208, and means to enable and choose between various arrangements 210 for demand reduction with their electric utility provider as intermediated by the demand reduction service provider.

[0051] **Figure 4** shows a high-level block diagram of thermostat 108 used as part of the subject invention. Thermostat 108 includes temperature sensing means 252, which may be a thermistor, thermal diode or other means commonly used in the design of electronic thermostats. It includes a microprocessor 254, memory 256, a display 258, a power source 260, a relay 262, which turns the HVAC system on and off in response to a signal from the microprocessor, and contacts by which the relay is connected to the wires that lead to the HVAC system. To allow the thermostat to communicate bi-directionally with the computer network, the thermostat also includes means 264 to connect the thermostat to a local computer or to a wireless network. Such means could be in the form of Ethernet, wireless protocols such as IEEE 802.11, IEEE 802.15.4, Bluetooth, cellular systems such as CDMA, GSM and GPRS, or other wireless protocols. The thermostat 250 may also include controls 266 allowing users to change settings directly at the thermostat, but such controls are not necessary to allow the thermostat to function.

[0052] The data used to generate the content delivered in the form of the website is stored on one or more servers 106 within one or more databases. As shown in **Figure 5**, the overall database structure 300 may include temperature database 400, thermostat settings database 500, energy bill database 600, HVAC hardware database 700, weather database 800, user database 900, transaction database 1000, product and service database 1100 and such other databases as may be needed to support these and additional features.

[0053] The website will allow users of connected thermostats 250 to create personal accounts. Each user's account will store information in database 900, which tracks various attributes relative to users of the site. Such attributes may include the make and model of the specific HVAC equipment in the user's home; the age and square footage of the home, the solar orientation of the home, the location of the thermostat in the home, the user's preferred temperature settings, whether the user is a participant in a demand reduction program, etc.

[0054] As shown in Figure 3, the website 200 will permit thermostat users to perform through the web browser substantially all of the programming functions traditionally performed directly at the physical thermostat, such as temperature set points, the time at which the thermostat should be at each set point, etc. Preferably the website will also allow users to accomplish more advanced tasks such as allow users to program in vacation settings for times when the HVAC system may be turned off or run at more economical settings, and set macros that will allow changing the settings of the temperature for all periods with a single gesture such as a mouse click.

[0055] In addition to using the system to allow better signaling and control of the HVAC system, which relies primarily on communication running from the server to the thermostat, the bi-directional communication will also allow the thermostat 108 to regularly measure and send to the server information about the temperature in the building. By comparing outside temperature, inside temperature, thermostat settings, cycling behavior of the HVAC system, and other variables, the system will be capable of numerous diagnostic and controlling functions beyond those of a standard thermostat.

[0056] For example, **Fig. 6a** shows a graph of inside temperature and outside temperature for a 24-hour period in House A, assuming no HVAC activity. House A has

double-glazed windows and is well-insulated. When outside temperature 302 increases, inside temperature 304 follows, but with significant delay because of the thermal mass of the building.

[0057] **Figure 6b** shows a graph of inside temperature and outside temperature for the same 24-hour period in House B. House B is identical to House A except that it (i) is located a block away and (ii) has single-glazed windows and is poorly insulated. Because the two houses are so close to each other, outside temperature 302 is the same in Figure 6a and Figure 6b. But the lower thermal mass of House B means that the rate at which the inside temperature 306 changes in response to the changes in outside temperature is much greater.

[0058] The differences in thermal mass will affect the cycling behavior of the HVAC systems in the two houses as well. **Figure 7a** shows a graph of inside temperature and outside temperature in House A for the same 24-hour period as shown in Figure 6a, but assuming that the air conditioning is being used to try to maintain an internal temperature of 70 degrees. Outside temperatures 302 are the same as in Figures 6a and 6b. Because of the high thermal mass of the house, the air conditioning does not need to run for very long to maintain the target temperature, as shown by shaded areas 310.

[0059] **Figure 7b** shows a graph of inside temperature 312 and outside temperature 302 for the same 24-hour period in House B, assuming use of the air conditioning as in Figure 7a. Because of the lower thermal mass of House B, the air conditioning system in House B has to run longer in order to maintain the same target temperature, as shown by shaded areas 314.

[0060] Because server 106a logs the temperature readings from inside each house (whether once per minute or over some other interval), as well as the timing and duration of air conditioning cycles, database 300 will contain a history of the thermal performance of each house. That performance data will allow the server 106a to calculate an effective thermal mass for each such structure – that is, the speed with the temperature inside a given building will change in response to changes in outside temperature and differences between inside and outside temperatures. Because the server will also log these inputs against other inputs including time of day, humidity, etc. the server will be able to predict, at any given

time on any given day, the rate at which inside temperature should change for given inside and outside temperatures.

[0061] The server will also record the responses of each house to changes in outside conditions and cycling behavior over time. That will allow the server to diagnose problems as and when they develop. For example, **Figure 8a** shows a graph of outside temperature 402, inside temperature 404 and HVAC cycle times 406 in House A for a specific 24-hour period on date X. Assume that, based upon comparison of the performance of House A on date X relative to House A's historical performance, and in comparison to the performance of House A relative to other nearby houses on date X, the HVAC system in House A is presumed to be operating at normal efficiency, and that House A is in the 86th percentile as compared to those other houses. **Figure 8b** shows a graph of outside temperature 408, inside temperature 410 and HVAC cycle times 412 in House A for the 24-hour period on date X+1. House A's HVAC system now requires significantly longer cycle times in order to try to maintain the same internal temperature. If those longer cycle times were due to higher outside temperatures, those cycle times would not indicate the existence of any problems. But because server 106 is aware of the outside temperature, the system can eliminate that possibility as an explanation for the higher cycle times. Because server 106 is aware of the cycle times in nearby houses, it can determine that, for example, on date X+1 the efficiency of House A is only in the 23rd percentile. The server will be programmed with a series of heuristics, gathered from predictive models and past experience, correlating the drop in efficiency and the time interval over which it has occurred with different possible causes. For example, a 50% drop in efficiency in one day may be correlated with a refrigerant leak, especially if followed by a further drop in efficiency on the following day. A reduction of 10% over three months may be correlated with a clogged filter. Based upon the historical data recorded by the server, the server 106 will be able to alert the homeowner that there is a problem and suggest a possible cause.

[0062] Because the system will be able to calculate effective thermal mass, it will be able to determine the cost effectiveness of strategies such as pre-cooling for specific houses under different conditions. **Figure 9a** shows a graph of outside temperature 502, inside temperature 504 and HVAC cycling times 506 in House A for a specific 24-hour

period on date Y assuming that the system has used a pre-cooling strategy to avoid running the air conditioning during the afternoon, when rates are highest. Because House A has high thermal mass, the house is capable of “banking” cool, and energy consumed during off-peak hours is in effect stored, allowing the house to remain cool even when the system is turned off. Temperatures keep rising during the period the air conditioning is off, but because thermal mass is high, the rate of increase is low, and the house is still comfortable six hours later. Although the pre-cooling cycle time is relatively long, the homeowner may still benefit because the price per kilowatt during the morning pre-cooling phase is lower than the price during the peak load period. **Figure 9b** shows a graph of the same outside temperature 502 in House B as in House A in Figure 9a for the same 24-hour period and using the same pre-cooling strategy as shown by cycling times 506. But because House B has minimal thermal mass, using additional electricity in order to pre-cool the house does not have the desired effect; inside temperature 508 warms up so fast that the cool that had been banked is quickly lost. Thus the system will recommend that House A pre-cool in order to save money, but not recommend pre-cooling for House B.

[0063] The system can also help compensate for anomalies such as measurement inaccuracies due to factors such as poor thermostat location. It is well-known that thermostats should be placed in a location that will be likely to experience “average” temperatures for the overall structure, and should be isolated from windows and other influences that could bias the temperatures they “see.” But for various reasons, not all thermostat installations fit that ideal. **Figure 10a** shows a graph of outside temperature 602, the average inside temperature for the entire house 604, and inside temperature as read by the thermostat 606 in House C for a specific 24-hour period on September 15th, assuming that the thermostat is located so that from 4PM until 5:30PM on that day the thermostat is in direct sunlight. Until the point at which the sun hits the thermostat, the average inside temperature and temperature as read by the thermostat track very closely. But when the direct sunlight hits the thermostat, the thermostat and the surrounding area can heat up, causing the internal temperature as read by the thermostat to diverge significantly from the average temperature for the rest of the house. Conventional thermostats have no way of distinguishing this circumstance from a genuinely hot day, and will both over-cool the rest of the house and

waste considerable energy when it cycles the air conditioner in order to reduce the temperature as sensed by the thermostat. If the air conditioning is turned off, this phenomenon will manifest as a spike in temperature as measured by the thermostat. If the air conditioning is turned on (and has sufficient capacity to respond to the distorted temperature signal caused by the sunlight), this phenomenon will likely manifest as relatively small changes in the temperature as sensed by the thermostat, but significantly increased HVAC usage (as well as excessively lowered temperatures in the rest of the house, but this result may not be directly measured in a single sensor environment. The subject system, in contrast, has multiple mechanisms that will allow it to correct for such distortions. First, because the subject system compares the internal readings from House C with the external temperature, it will be obvious that the rise in temperature at 4:00PM is not correlated with a corresponding change in outside temperature. Second, because the system is also monitoring the readings from the thermostat in nearby House D, which (as shown in **Figure 10b**) is exposed to the same outside temperature 602, but has no sudden rise in measured internal temperature 608 at 4:00, the system has further validation that the temperature increase is not caused by climatic conditions. And finally, because the system has monitored and recorded the temperature readings from the thermostat in House C for each previous day, and has compared the changing times of the aberration with the progression of the sun, the system can distinguish the patterns likely to indicate solar overheating from other potential causes.

[0064] **Figure 11** illustrates the steps involved in calculating comparative thermal mass, or the thermal mass index. In step 1102, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1104, the server retrieves HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1106, the server retrieves data regarding recent temperature readings as recorded by the thermostat in home X. In step 1108, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning

hardware, and other data. In step 1110, the server retrieves the current inside temperature reading as transmitted by the thermostat. In step 1112, the server calculates the thermal mass index for the home under those conditions; that is, for example, it calculates the likely rate of change for internal temperature in home X from a starting point of 70 degrees when the outside temperature is 85 degrees at 3:00PM on August 10th when the wind is blowing at 5 mph from the north and the sky is cloudy. The server accomplishes this by applying a basic algorithm that weighs each of these external variables as well as variables for various characteristics of the home itself (such as size, level of insulation, method of construction, etc.) and data from other houses and environments.

[0065] **Figure 12** illustrates the steps involved in diagnosing defects in the HVAC system for specific home X. In step 1202, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1204, the server retrieves HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1206, the server retrieves data regarding current and recent temperature readings as recorded by the thermostat in home X. In step 1208, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning hardware, and other data. In step 1210, the server retrieves comparative data from other houses that have thermostats that also report to the server. Such data may include interior temperature readings, outside temperature for those specific locations, duty cycle data for the HVAC systems at those locations, profile data for the structures and HVAC systems in those houses and the calculated thermal mass index for those other houses. In step 1212, the server calculates the current relative efficiency of home X as compared to other homes. Those comparisons will take into account differences in size, location, age, etc in making those comparisons.

[0066] The server will also take into account that relative efficiency is not absolute, but will vary depending on conditions. For example, a house that has extensive

south-facing windows is likely to experience significant solar gain. On sunny winter days, that home will appear more efficient than on cloudy winter days. That same house will appear more efficient at times of day and year when trees or overhangs shade those windows than it will when summer sun reaches those windows. Thus the server will calculate efficiency under varying conditions.

[0067] In step 1214 the server compares the HVAC system's efficiency, corrected for the relevant conditions, to its efficiency in the past. If the current efficiency is substantially the same as the historical efficiency, the server concludes 1216 that there is no defect and the diagnostic routine ends. If the efficiency has changed, the server proceeds to compare the historical and current data against patterns of changes known to indicate specific problems. For example, in step 1218, the server compares that pattern of efficiency changes against the known pattern for a clogged air filter, which is likely to show a slow, gradual degradation over a period of weeks or even months. If the pattern of degradation matches the clogged filter paradigm, the server creates and transmits to the homeowner a message 1220 alerting the homeowner to the possible problem. If the problem does not match the clogged filter paradigm, the system compares 1222 the pattern to the known pattern for a refrigerant leak, which is likely to show a degradation over a period of a few hours to a few days. If the pattern of degradation matches the refrigerant leak paradigm, the server creates and transmits to the homeowner a message 1224 alerting the homeowner to the possible problem. If the problem does not match the refrigerant leak paradigm, the system compares 1226 the pattern to the known pattern for an open window or door, which is likely to show significant changes for relatively short periods at intervals uncorrelated with climatic patterns. If the pattern of degradation matches the open door/window paradigm, the server creates and transmits to the homeowner a message 1228 alerting the homeowner to the possible problem. If the problem does not match the refrigerant leak paradigm, the system continues to step through remaining known patterns N 1230 until either a pattern is matched 1232 or the list has been exhausted without a match 1234.

[0068] **Figure 13** illustrates the steps involved in diagnosing inaccurate thermostat readings due to improper location. In step 1302, the server retrieves climate data related to home X. Such data may include current outside temperature, outside temperature

during the preceding hours, outside humidity, wind direction and speed, whether the sun is obscured by clouds, and other factors. In step 1304, the server retrieves HVAC duty cycle data for home X. Such data may include target settings set by the thermostat in current and previous periods, the timing of switch-on and switch-off events and other data. In step 1306, the server retrieves data regarding current and recent temperature readings as recorded by the thermostat in home X. In step 1308, the server retrieves profile data for home X. Such data may include square footage and number of floors, when the house was built and/or renovated, the extent to which it is insulated, its address, make, model and age of its furnace and air conditioning hardware, and other data. In step 1310, the server retrieves comparative data from other houses that have thermostats that also report to the server. Such data may include interior temperature readings, outside temperature for those specific locations, duty cycle data for the HVAC systems at those locations, profile data for the structures and HVAC systems in those houses and the calculated thermal mass index for those other houses. In step 1312, the server calculates the expected thermostat temperature reading based upon the input data. In step 1314, the server compares the predicted and actual values. If the calculated and actual values are at least roughly equivalent, the server concludes 1316 that there is no thermostat-related anomaly. If the calculated and actual values are not roughly equivalent, the server retrieves additional historical information about past thermostat readings in step 1318. In step 1320, the server retrieves solar progression data, i.e., information regarding the times at which the sun rises and sets on the days being evaluated at the location of the house being evaluated, and the angle of the sun at that latitude, etc. In step 1322, the server compares the characteristics of the anomalies over time, to see if, for example, abnormally high readings began at 3:06 on June 5th, 3:09 on June 6th, 3:12 on June 7th, and the solar progression data suggests that at the house being analyzed, that sun would be likely to reach a given place in that house three minutes later on each of those days. If the thermostat readings do not correlate with the solar progression data, the server concludes 1324 that the sun is not causing the distortion by directly hitting the thermostat. If the thermostat readings do correlate with solar progression, the server then calculates 1326 the predicted duration of the distortion caused by the sun. In step 1328, the server calculates the appropriate setpoint information to be used by the thermostat to maintain the desired temperature and correct for the distortion

for the expected length of the event. For example, if the uncorrected setpoint during the predicted event is 72 degrees, and the sun is expected to elevate the temperature reading by eight degrees, the server will instruct the thermostat to maintain a setpoint of 80 degrees. In step 1330, the server sends the homeowner a message describing the problem.

[0069] The system installed in a subscriber's home may optionally include additional temperature sensors at different locations within the building. These additional sensors may be connected to the rest of the system via a wireless system such as 802.11 or 802.15.4, or may be connected via wires. Additional temperature and/or humidity sensors may allow increased accuracy of the system, which can in turn increase user comfort or energy savings.

[0070] While particular embodiments have been shown and described, it is apparent that changes and modifications may be made without departing from the invention in its broader aspects and, therefore, the invention may be carried out in other ways without departing from the true spirit and scope. These and other equivalents are intended to be covered by the following claims:

WHAT IS CLAIMED IS:

1. A system for calculating a value for the effective thermal mass of a building comprising:

at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperature measurements from said first location over time; and

one or more processors that receive outside temperature measurements associated with outside temperatures from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein the one or more processors are configured to calculate one or more rates of change in temperature measurements at said first location and wherein the one or more processors are further configured to relate said calculated rates of change to said outside temperature measurements.

2. A system as in claim 1 in which said processors receive measurements of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system.

3. A system as in claim 1 further comprising receiving temperature measurements from a programmable thermostat that communicates with said HVAC control system using the Internet.

4. A system as in claim 1 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

5. A system as in claim 1 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

6. A system as in claim 1 in which said temperature measurements inside said first location occur at only one physical location.

7. A system as in claim 1 in which the status of said HVAC system includes whether said system is “on” or “off”.

8. A system for calculating a value for the operational efficiency of an HVAC system comprising:

at least one HVAC control system that receives temperature measurements from at least a first location conditioned by at least one HVAC system, and receives status of said HVAC system;

one or more databases that store at least said temperatures measured at said first location over time; and

one or more processors that receive outside temperature measurements from at least one source other than said HVAC system and compare said temperature measurements from said first location with expected temperature measurements wherein the expected temperature measurements are based at least in part upon past temperature measurements and said outside temperature measurements, wherein said one or more processors are configured to calculate one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “on” and wherein said one or more processors are further configured to calculate one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “off”, and to relate said calculated rates of change to said outside temperature measurements

9. A system as in claim 8 in which said processors receive temperature of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system.

10. A system as in claim 8 further comprising a programmable thermostat that communicates with said HVAC control system using the Internet.

11. A system as in claim 8 in which said processors communicate with said HVAC system using a network that includes an electricity meter.

12. A system as in claim 8 further comprising a programmable thermostat and said programmable thermostat is the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

13. A system as in claim 8 in which said temperature measurements inside said first location occur at only one physical location.

14. A system as in claim 8 in which the status of said HVAC system includes whether said system is “on” or “off”.

15. A method for calculating a value for the operational efficiency of an HVAC system comprising:

storing over time, temperature measurements from at least a first location conditioned by at least one HVAC system;

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “on”;

calculating one or more rates of change in temperature at said first location for periods during which the status of the HVAC system is “off”;

relating said calculated rates of change to outside temperature measurements from a location other than said first location;

determining with a computer processor, expected temperature measurements based at least in part upon said calculated rates of change and based at least in part on one or more outside temperature measurements obtained from said location other than said first location,

16. The method as in claim 15 wherein said outside temperatures are for geographic regions such as ZIP codes from sources other than said HVAC system.

17. The method as in claim 15 further comprising communicating with a programmable thermostat associated with said HVAC system using the Internet.

18. The method as in claim 15 further comprising communicating with said HVAC system using a network that includes an electricity meter.

19. The method as in claim 15 further comprising a programmable thermostat that provides the sole source for current data regarding temperature inside said location conditioned by said HVAC system.

20. A method as in claim 15 further comprising receiving the status of said HVAC system wherein said status comprises whether said system is “on” or “off”.

SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING

ABSTRACT OF THE DISCLOSURE

The invention comprises a system for calculating a value for the effective thermal mass of a building. The climate control system obtains temperature measurements from at least a first location conditioned by the climate system. One or more processors receive measurements of outside temperatures from at least one source other than the control system and compare the temperature measurements from the first location with expected temperature measurements. The expected temperature measurements are based at least in part upon past temperature measurements obtained by said HVAC control system and said outside temperature measurements. The processors then calculate one or more rates of change in temperature at said first location.

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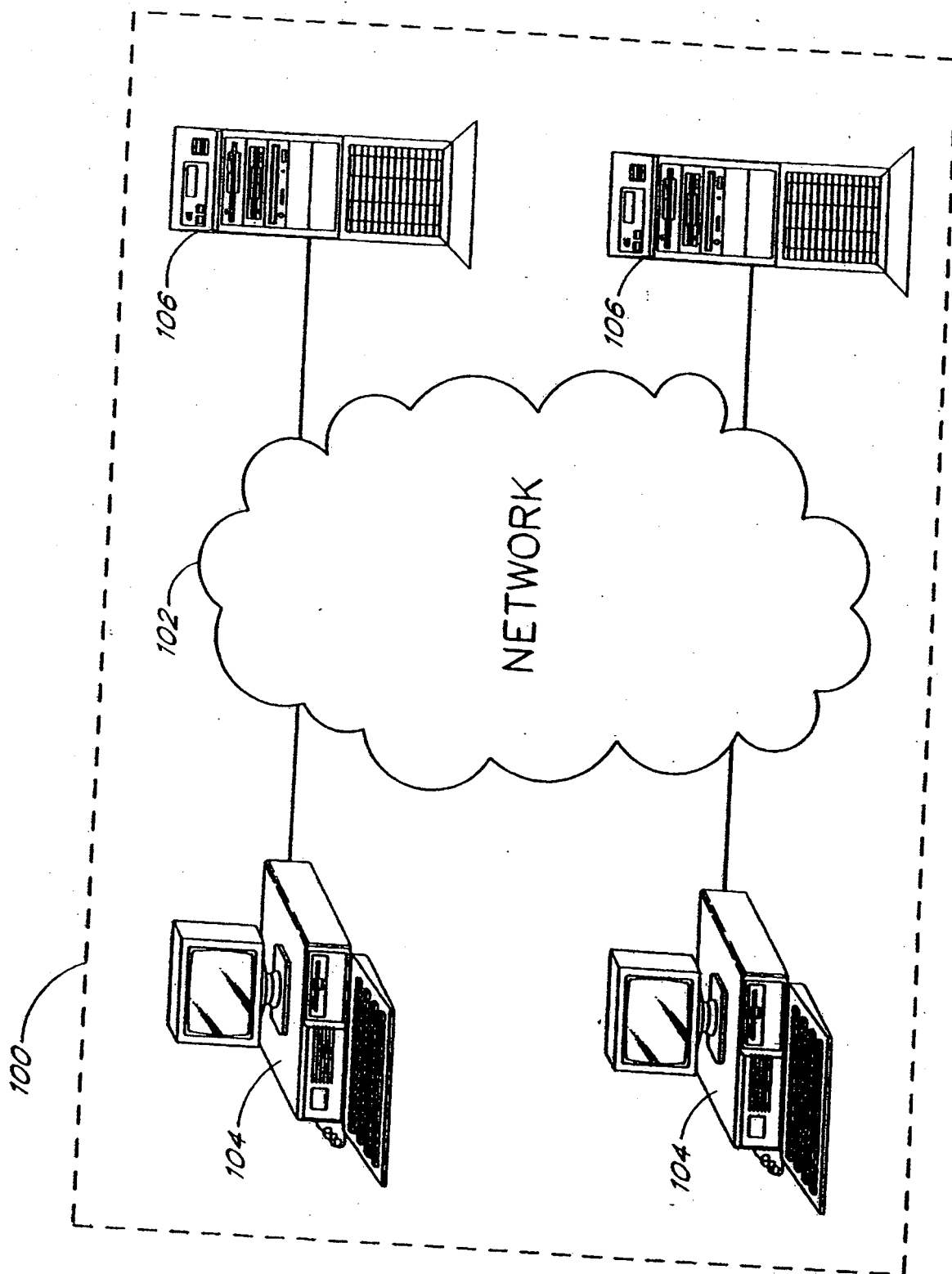


FIG. 1

FIG 2

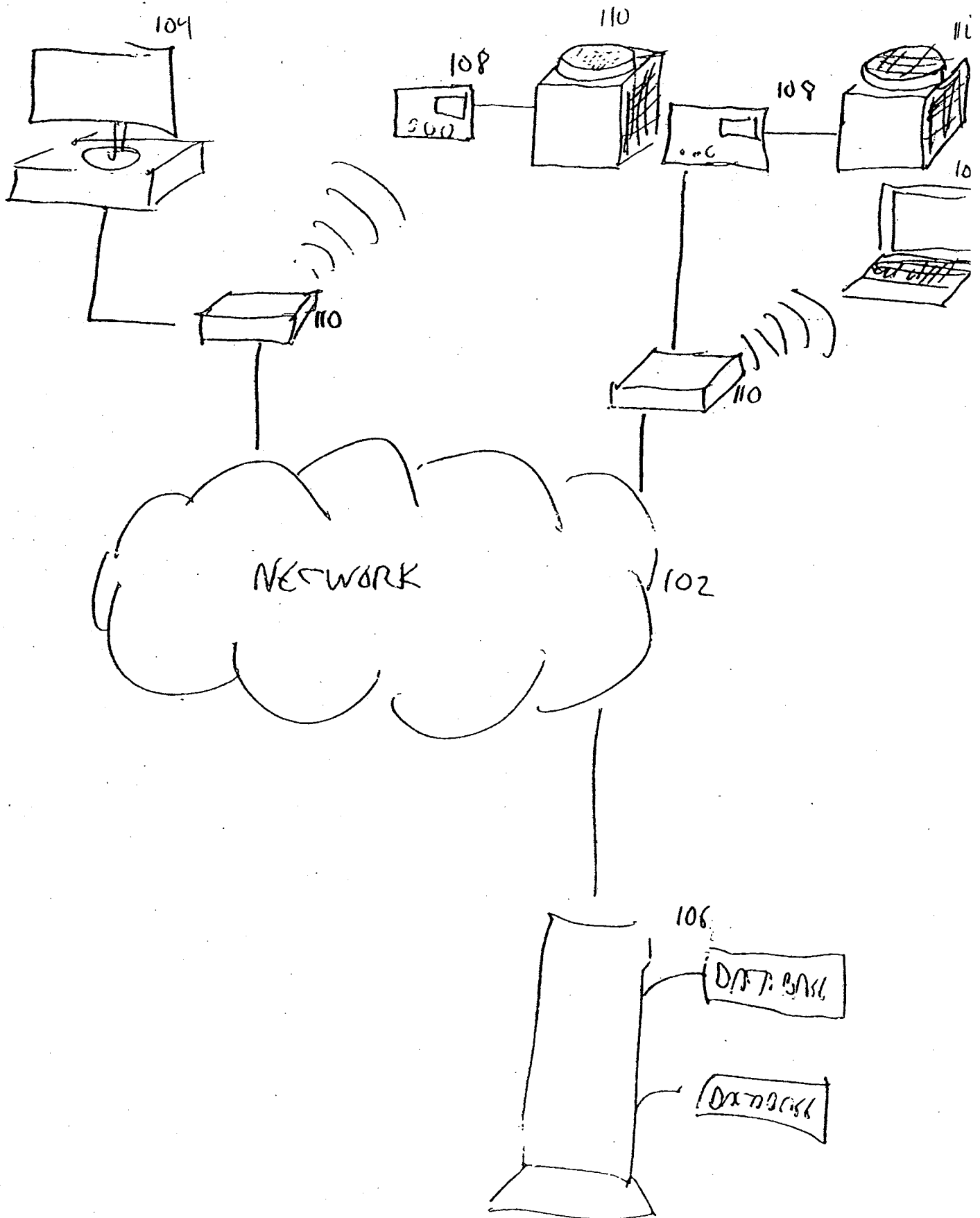


FIG 3

200
204
208
210

ADDRESS: _____
 SALES: _____

ELECTRIC BILL:

JAN \$ ()
 FEB \$ ()
 MARCH
 APRIL
 MAY

MICRO #1 would save you
 \$ 347/yr ()

MICRO #2 would save you
 \$ 630/yr ()

SIGN UP FOR
 CAMPAIGN PDR
 ()

SIGN UP FOR
 MAX PDR
 ()

MAN
TUES
WED
THUR
FRI

78																			
72																			
68																			

FIG 4

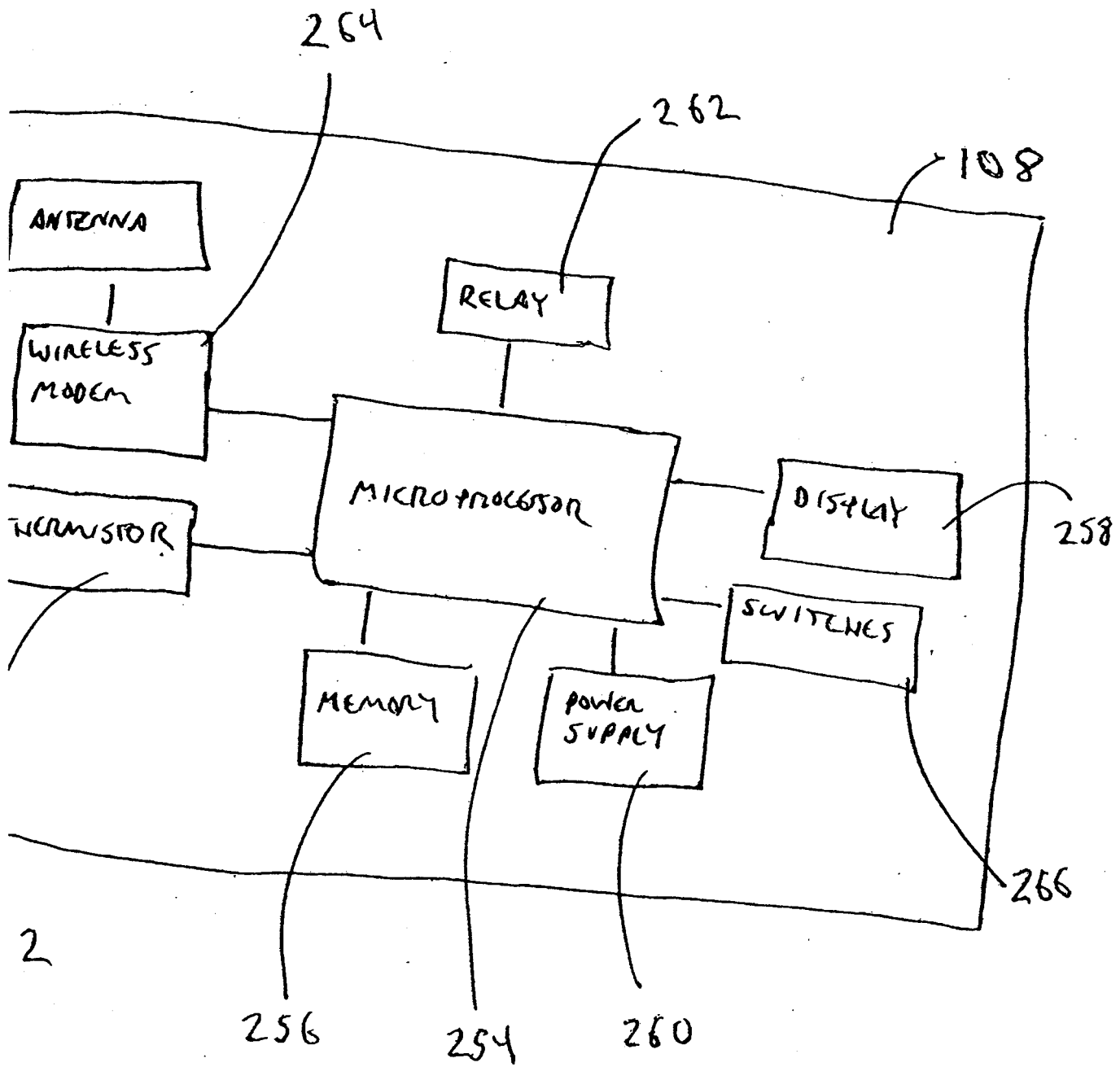


FIG 5

300

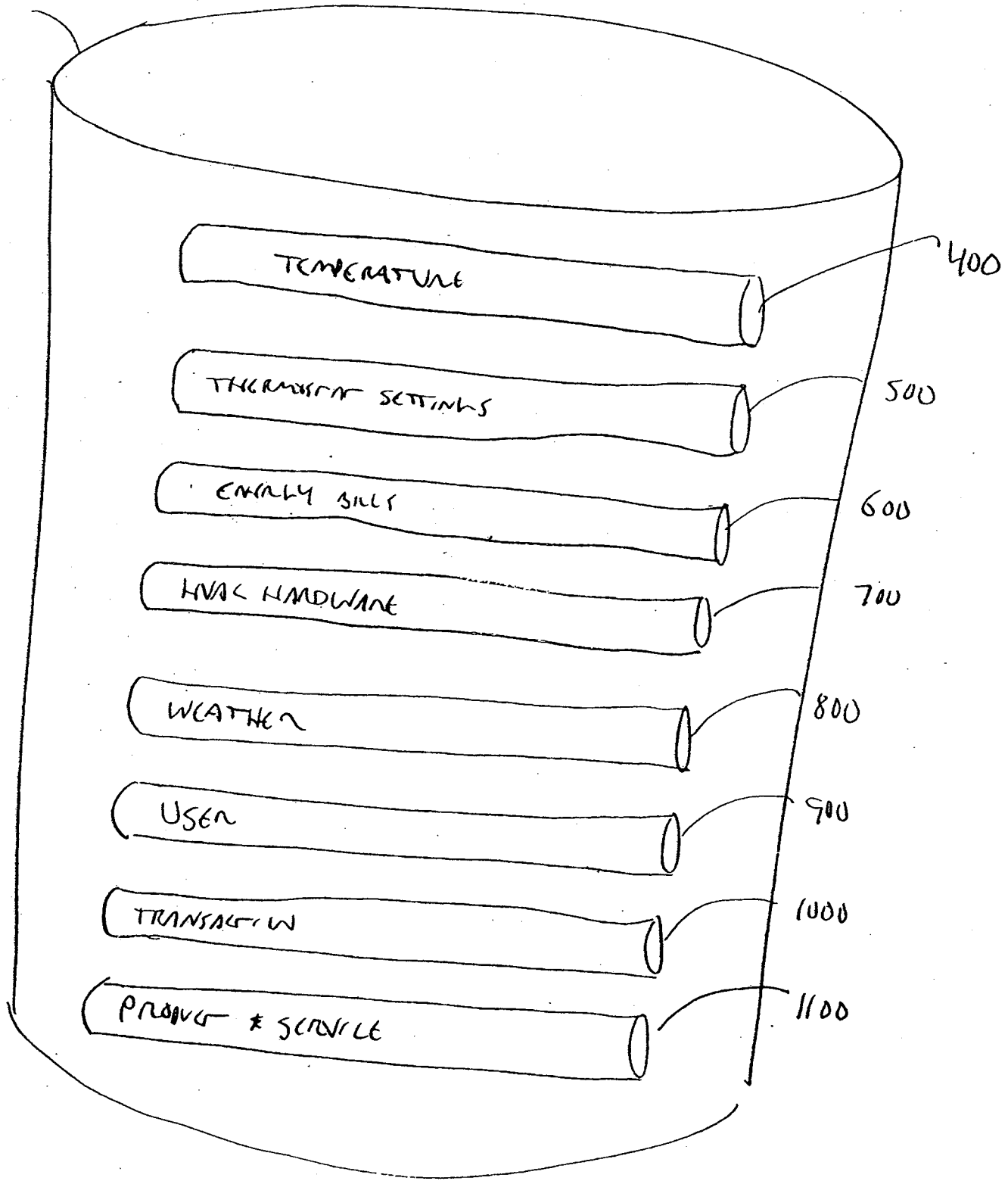


Fig 6A

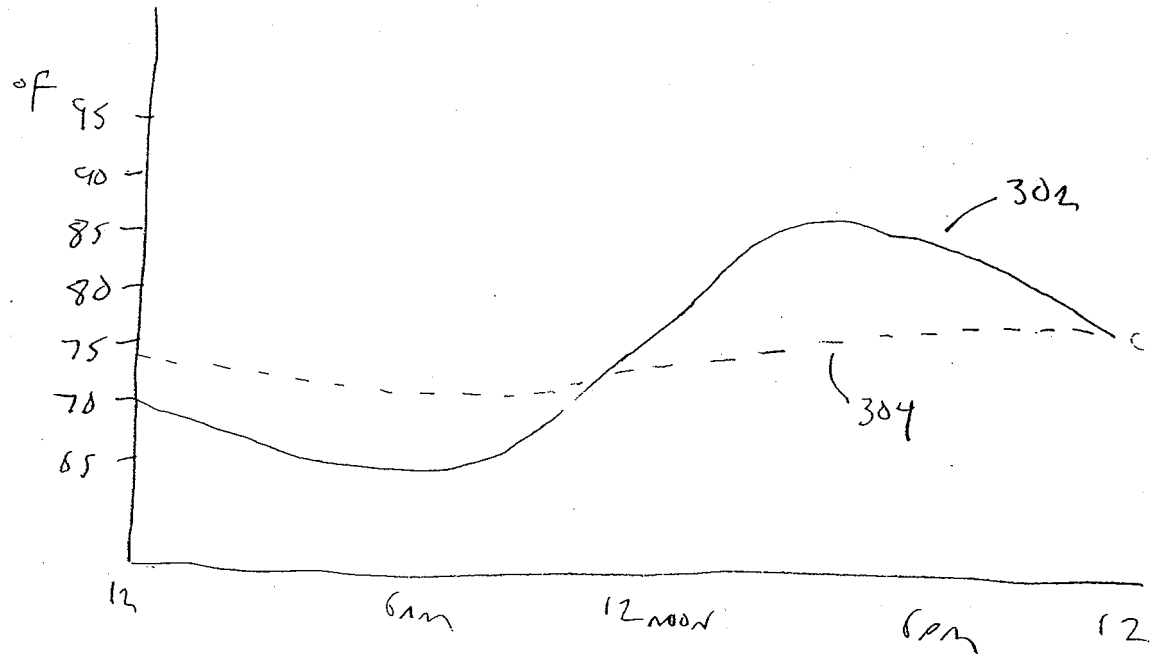


Fig 6B

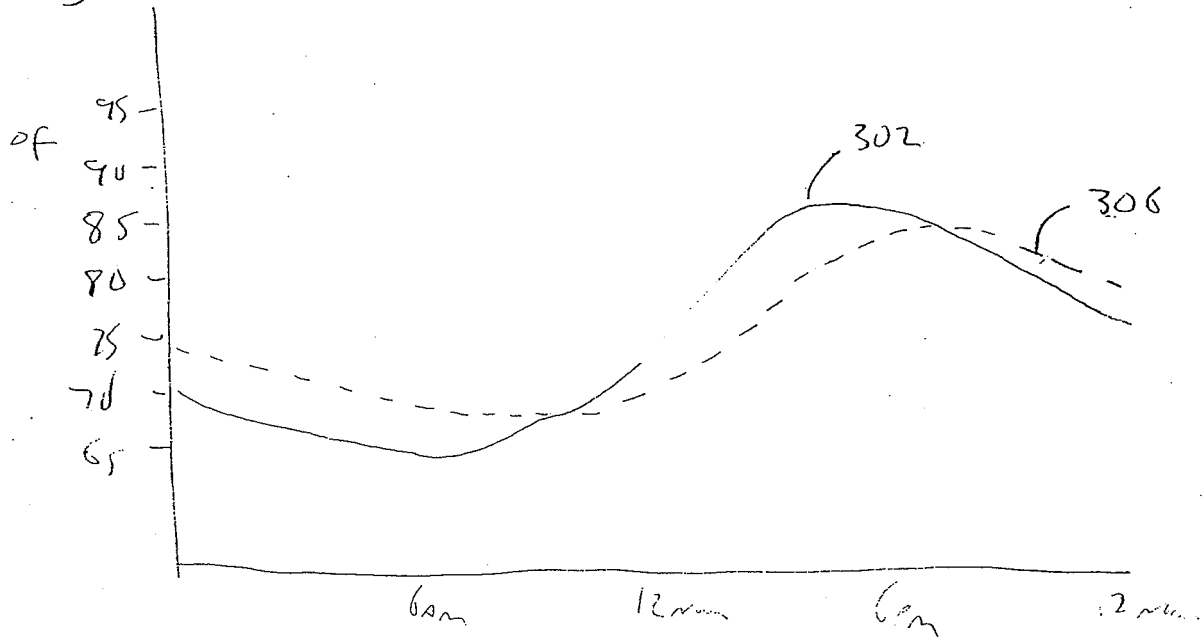


Fig 7A

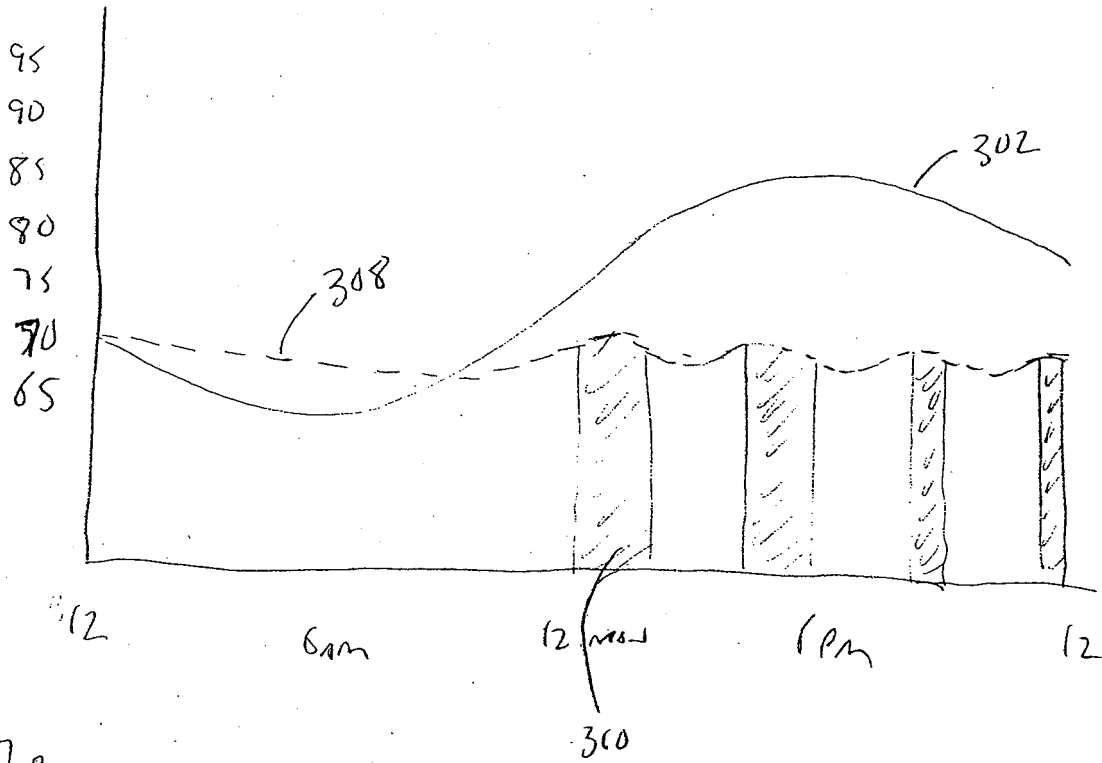


Fig 7B

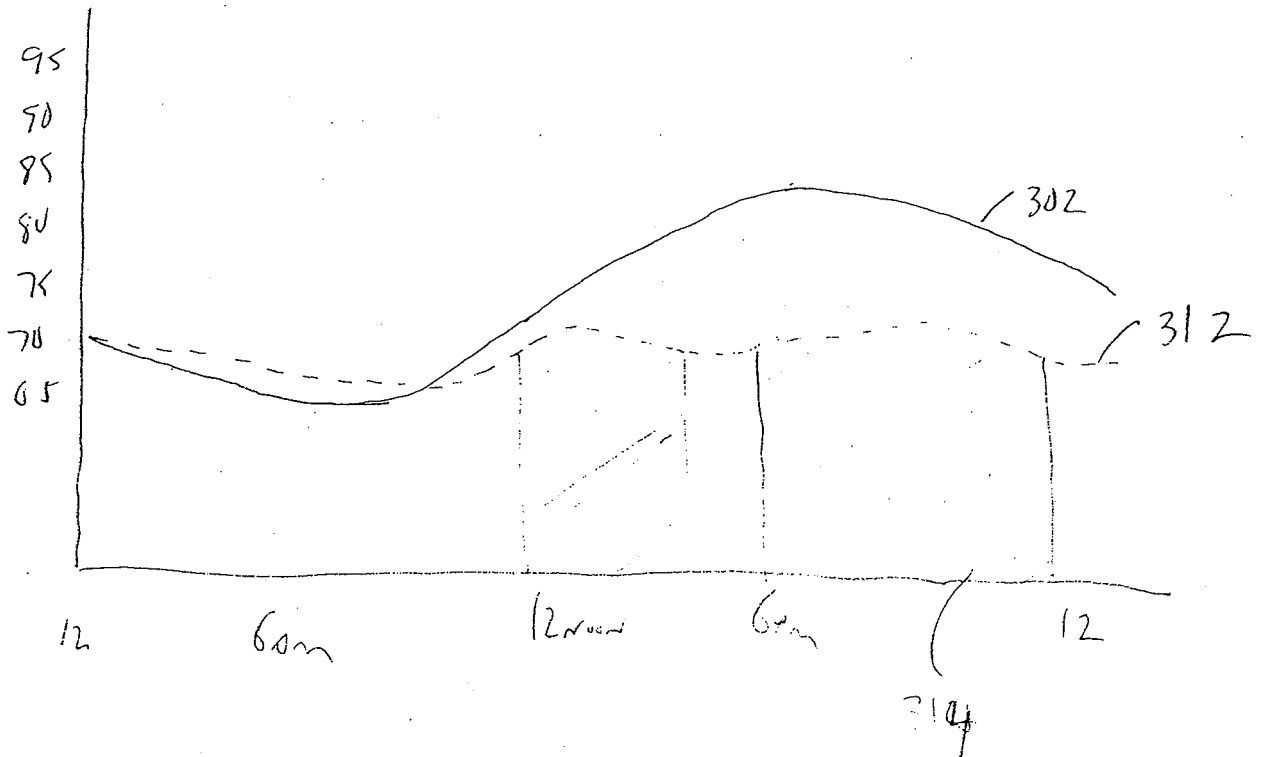


FIG 8A

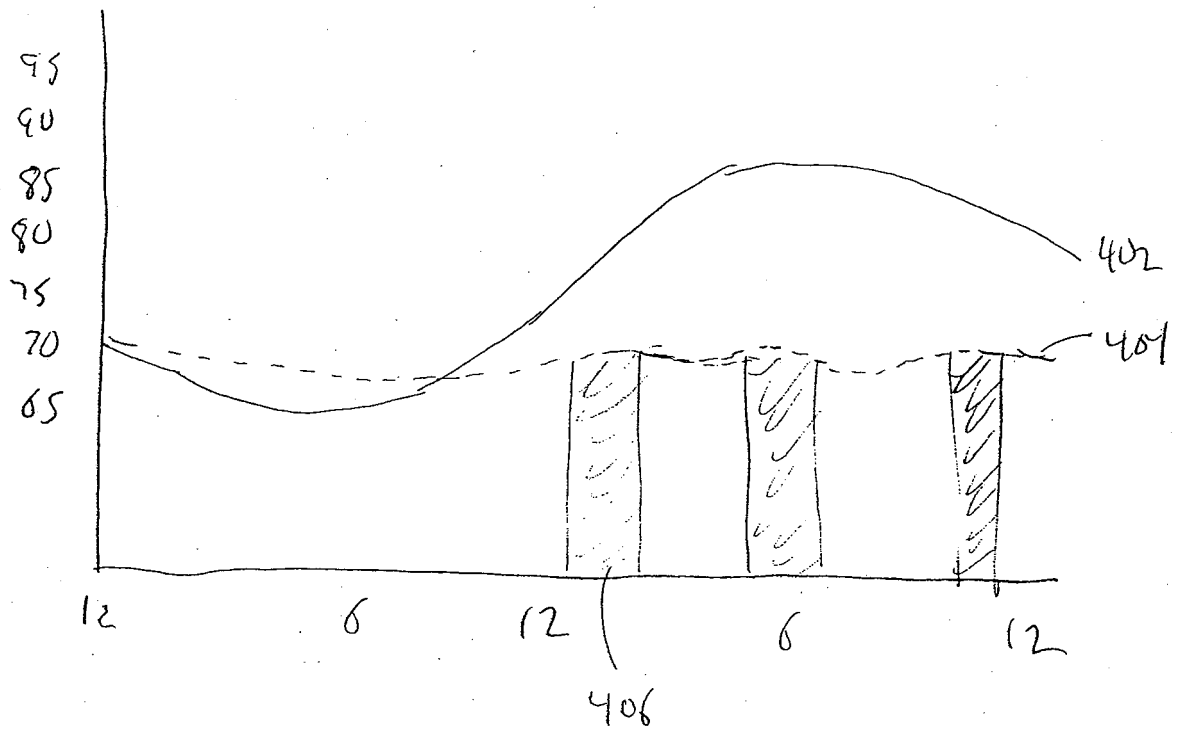


FIG 8B

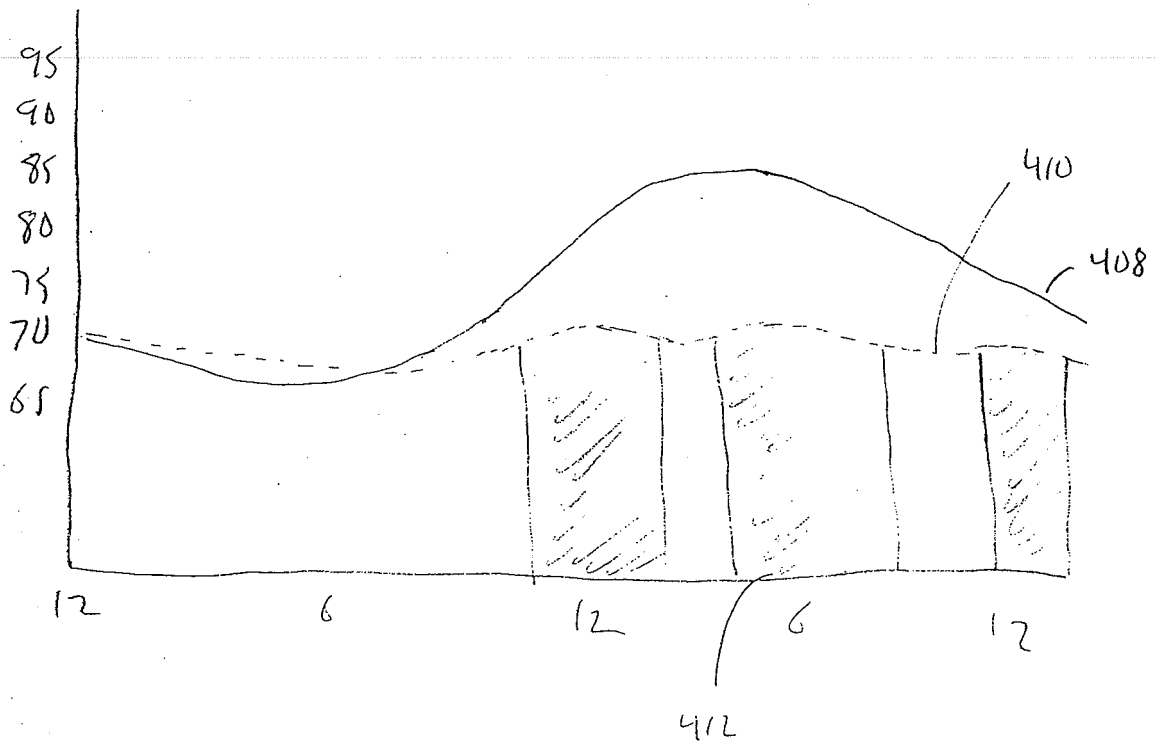


Fig 9a

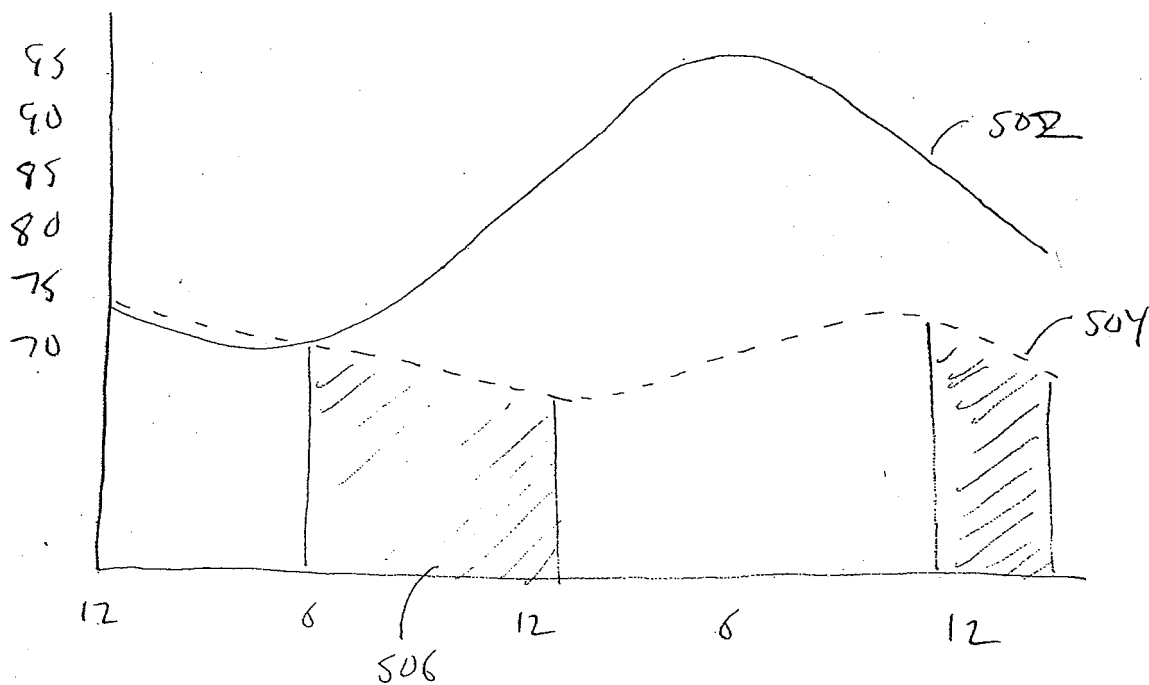


Fig 9b

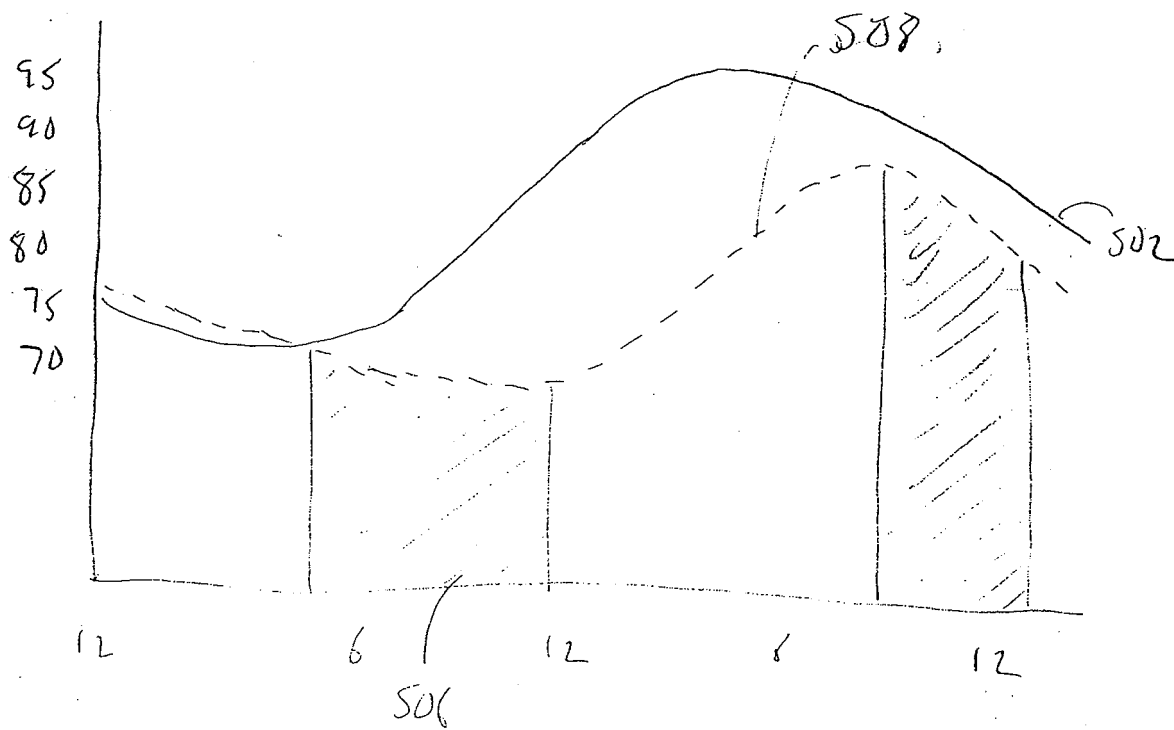


Fig 10a

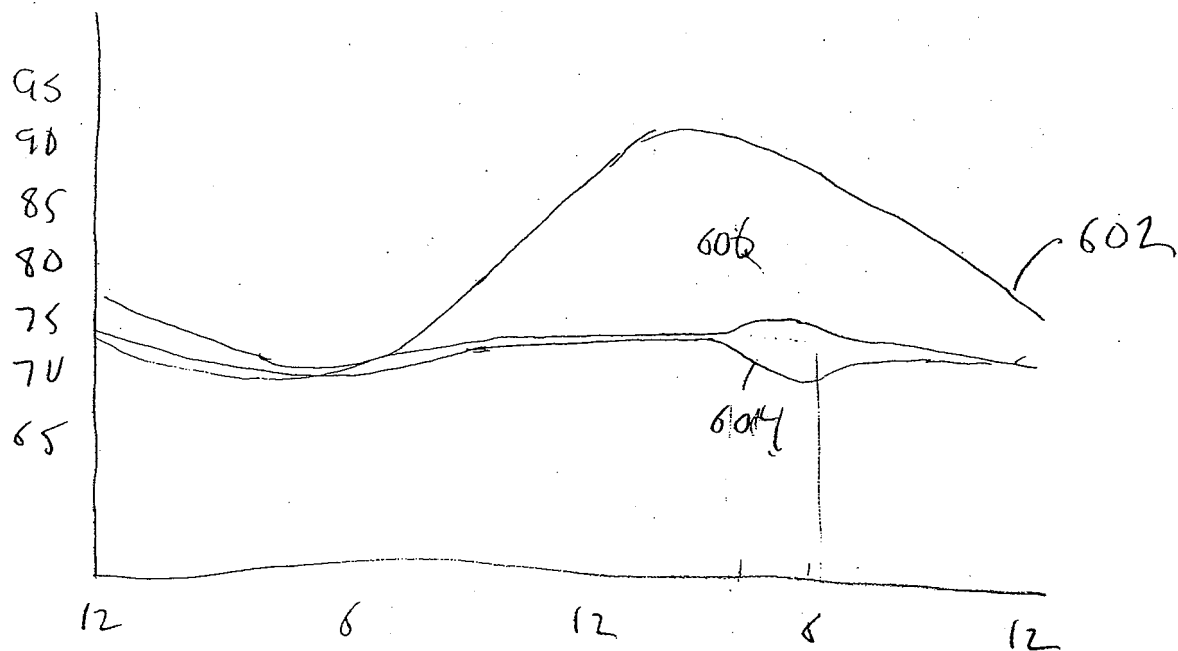


Fig 10b

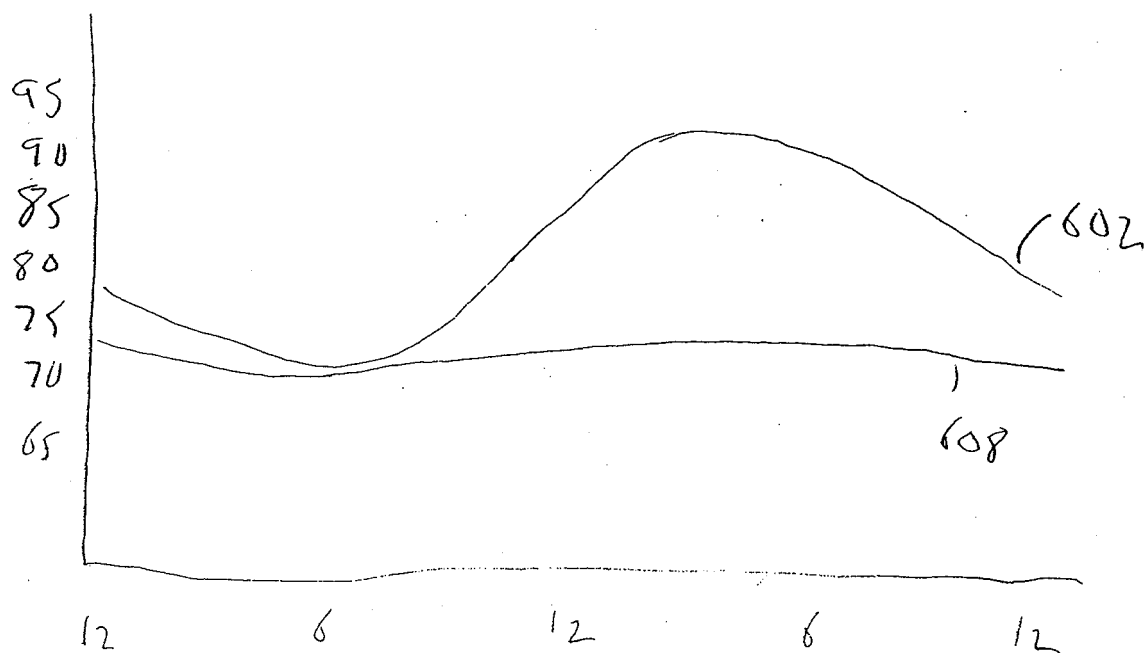


Figure 11

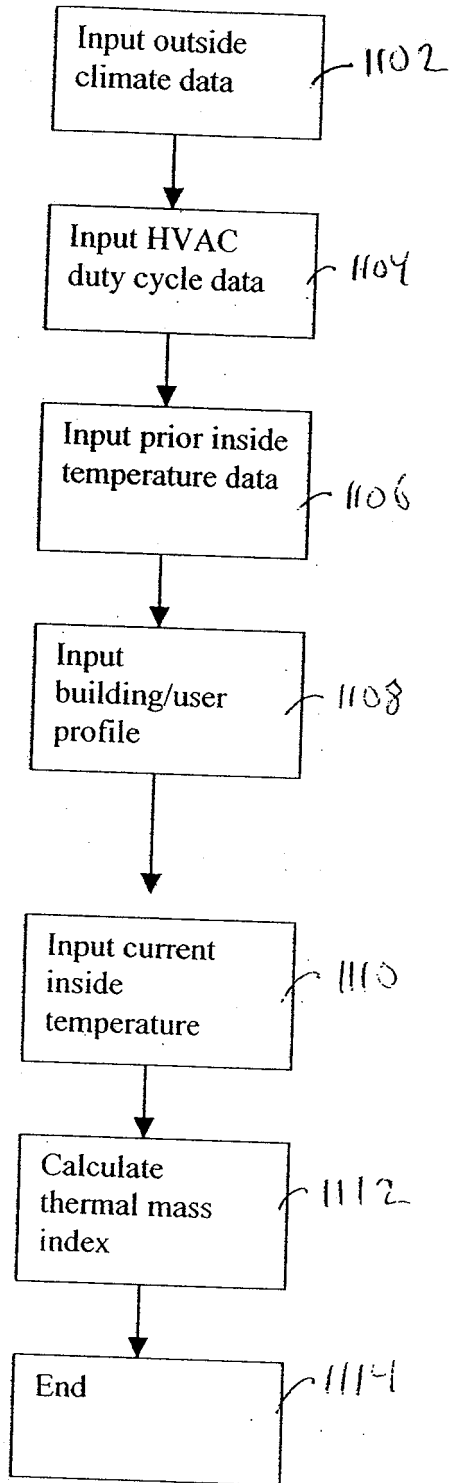


Figure 12

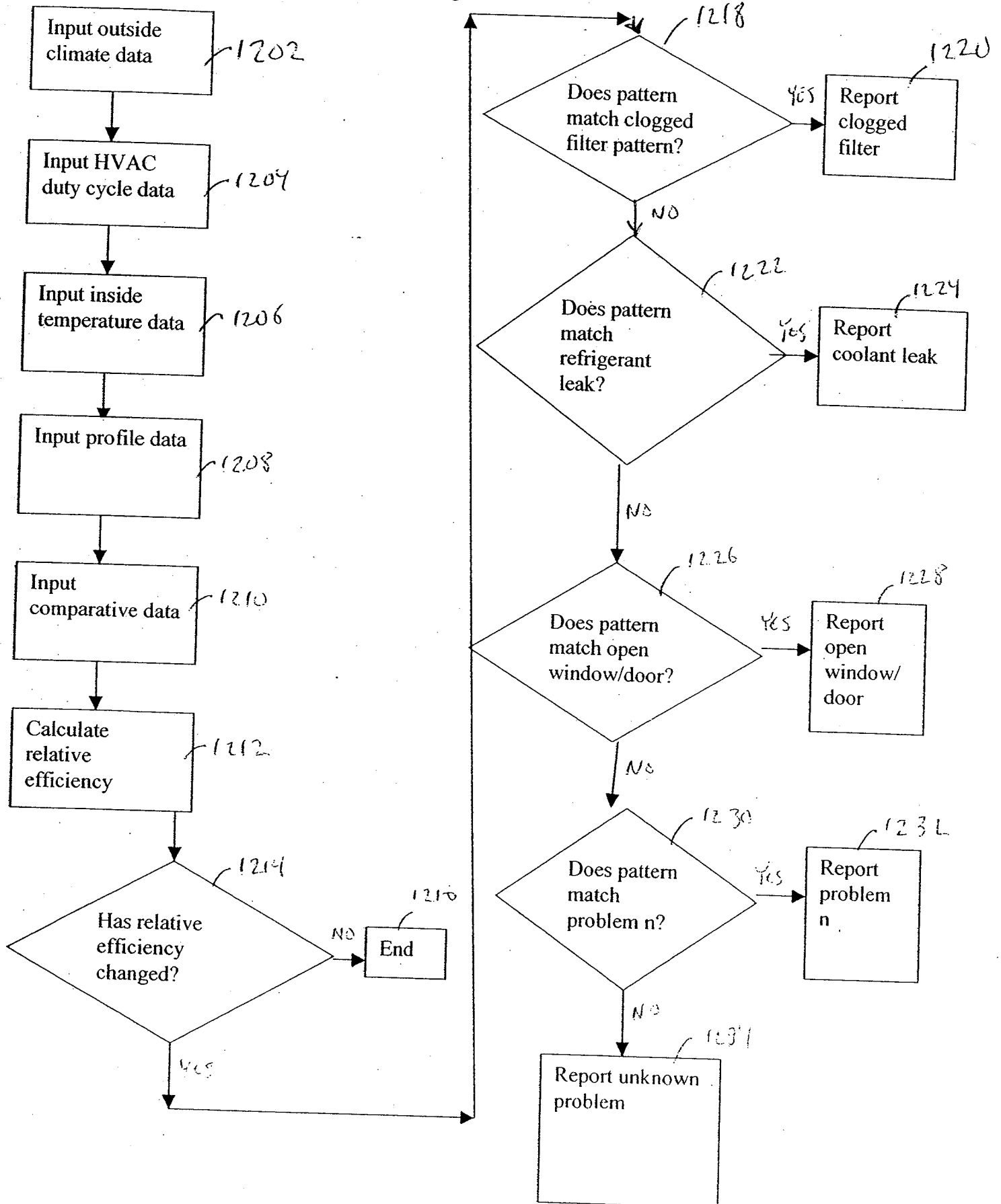
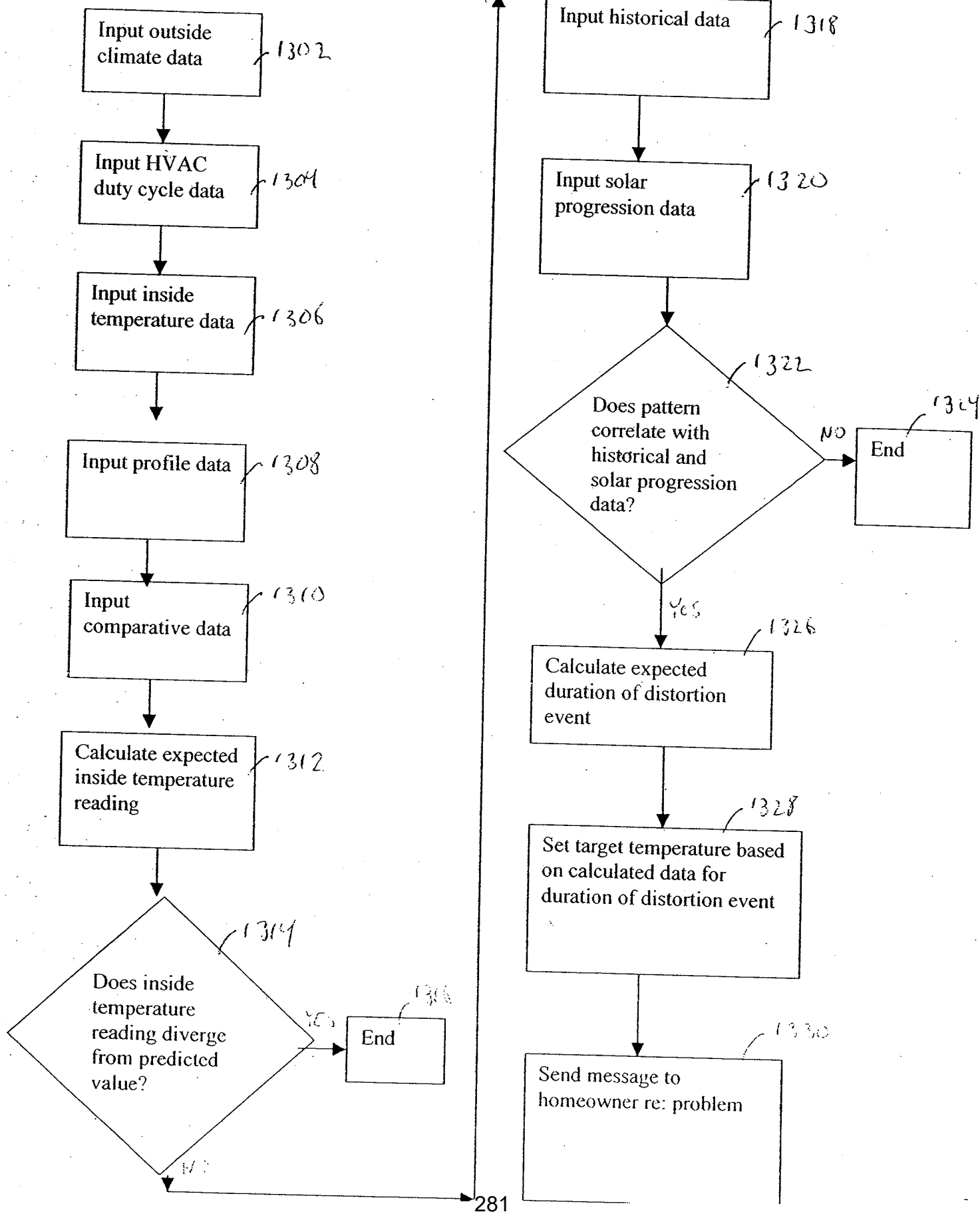


Figure 13



Electronic Acknowledgement Receipt

EFS ID:	3952636
Application Number:	12211733
International Application Number:	
Confirmation Number:	9030
Title of Invention:	SYSTEM AND METHOD FOR CALCULATING THE THERMAL MASS OF A BUILDING
First Named Inventor/Applicant Name:	John Douglas Steinberg
Customer Number:	20995
Filer:	John R. King/Chelsea Pearsall
Filer Authorized By:	John R. King
Attorney Docket Number:	JSTEIN.005A
Receipt Date:	16-SEP-2008
Filing Date:	
Time Stamp:	19:20:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	JSTEIN-005A_ADS1_001.pdf	262136 133bbe2305bd51a0ae33af68ce3bc0ef8224bcf4	no	4

Warnings:

Information:

This is not an USPTO supplied ADS fillable form					
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	Specification		1	20	
	Claims		21	23	
	Abstract		24	24	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	JSTEIN-005A_drawings_001.pdf	232860	no	13
			784b9766ca18f518b10f583774fddcba4a35abe3		
Warnings:					
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Total Files Size (in bytes):			1797863		
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09/16/08

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/211733	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
OTHER THAN SMALL ENTITY						
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75	N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	255	N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	105	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *	X 25=		X 50=	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	X 105=		X 210=	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			N/A		N/A	
			TOTAL	435	TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		SMALL ENTITY		OR
OTHER THAN SMALL ENTITY						
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
Total (37 CFR 1.16(i))	*	Minus **	=	X =		X =
Independent (37 CFR 1.16(h))	*	Minus ***	=	X =		X =
Application Size Fee (37 CFR 1.16(s))						
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A
				TOTAL		TOTAL
				ADD'T FEE		ADD'T FEE
(Column 1)		(Column 2)		SMALL ENTITY		OR
OTHER THAN SMALL ENTITY						
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
Total (37 CFR 1.16(i))	*	Minus **	=	X =		X =
Independent (37 CFR 1.16(h))	*	Minus ***	=	X =		X =
Application Size Fee (37 CFR 1.16(s))						
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A
				TOTAL		TOTAL
				ADD'T FEE		ADD'T FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

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