

FILE HISTORY

US 6,135,432

PATENT: 6,135,432  
INVENTORS: Hebblewhite, Malcolm  
Kwok, Philip Rodney  
Styles, Robert Edward  
Brydon, John William Ernest  
  
TITLE: Humidifier  
  
APPLICATION NO: US1997918004A  
FILED: 25 AUG 1997  
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COMPILED: 13 OCT 2015

08/19/004  
08/25/97  
261 119.100  
Class Subclass  
ISSUE CLASSIFICATION  
SCANNED 0

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SERIAL NUMBER 119,100	FILING DATE 08/25/97	CLASS 119,100
SUBCLASS 119,100	GROUP ART UNIT 177-4	EXAMINER Bals Miles

APPLICANTS

**BEST COPY**

01/2/97

06/08/95

Foreign priority claimed 35 USC 119 conditions met	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	AS FILED	STATE OR COUNTRY	SHEETS DRWGS.	TOTAL CLAIMS	INDER. CLAIMS	FILING FEE RECEIVED	ATTORNEYS DOCKET NO.
Verified and Acknowledged	Examiner's initials							

ADDRESS

12-16-94

4-9-99

TITLE

**TEAM 5**

U.S. DEPT. OF COMM./PAT. & TM-PTO-436L (Rev. 11/94)

PARTS OF APPLICATION FILED SEPARATELY		NOTICE OF ALLOWANCE MAILED 12-16-94 4-9-99		CLAIMS ALLOWED Total Claims 4		Print Claim 1	
ISSUE FEE Amount Due \$1,200.00		Date Paid 5/15/00		DRAWING Sheets Drwg. 2		Figs. Drwg. 2	
Label Area		C. SCOTT EUGHEY PRIMARY EXAMINER GROUP 100 Primary Examiner		ISSUE BATCH NUMBER 254 F68		PREPARED FOR ISSUE	
<p>WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent &amp; Trademark Office is restricted to authorized employees and contractors only.</p>							

Form PTO-436A (Rev. 8/92)

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QC 28

Issue Fee In File

Format Drawings (shis) set

(FACE)



TEAM 4

59652 P.S. PTO		UTILITY SERIAL NUMBER 08633413		PATENT DATE 11/9/00	PATENT NUMBER
SERIAL NUMBER 08633413		FILING DATE 06/10/96	CLASS 261	SUBCLASS 119.100	GROUP ART UNIT 1305
				EXAMINER miles	

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TM

TM

Foreign priority claimed 35 USC 119 conditions met	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	AS FILED	STATE OR COUNTRY AUX	SHEETS DRWGS. 2	TOTAL CLAIMS 2	INDEP. CLAIMS	FILING FEE RECEIVED \$325.00	ATTORNEY'S DOCKET NO. 3561-294901
Verified and Acknowledged		Examiner's Initials						

ADDRESS

Andy R. Hsem  
1-800-211-4323

TITLE

U.S. DEPT. of COMMERCE • Patent and Trademark Office-PCT-436L (rev. 7-94)

PARTS OF APPLICATION FILED SEPARATELY		Applications Examiner	
NOTICE OF ALLOWANCE MAILED		CLAIMS ALLOWED	
		Total Claims	Print Claim
Assistant Examiner			
ISSUE FEE		DRAWING	
Amount Due	Date Paid	Sheets Drwg.	Figs: Drwg.
		Print Fig	
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Primary Examiner			
PREPARED FOR ISSUE			
<p>WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent &amp; Trademark Office is restricted to authorized employees and contractors only.</p>			

08/633,413

**HUMIDIFIER**

**Transaction History**

<b>Date</b>	<b>Transaction Description</b>
06-21-1996	Initial Exam Team nn
07-15-1996	Notice Mailed--Application Incomplete--Filing Date Assigned
09-26-1996	Request for Foreign Priority (Priority Papers May Be Included)
10-30-1996	Application Is Now Complete
11-05-1996	Application Captured on Microfilm
11-12-1996	Transfer Inquiry
11-15-1996	Case Docketed to Examiner in GAU
02-20-1997	Non-Final Rejection
02-24-1997	Mail Non-Final Rejection
09-23-1997	Aband. for Failure to Respond to O. A.
09-30-1997	Mail Abandonment for Failure to Respond to Office Action
02-17-1998	Abandonment for Purposes of Filing an FWC - File Combined with Child Application
02-17-1998	Abandonment for Purposes of Filing an FWC - File Combined with Child Application



6,135,432

## HUMIDIFIER

### Transaction History

Date	Transaction Description
09-15-1997	Initial Exam Team nn
09-26-1997	IFW Scan & PACR Auto Security Review
11-06-1997	Application Dispatched from OIPE
02-23-1998	Case Docketed to Examiner in GAU
03-23-1998	Non-Final Rejection
03-25-1998	Mail Non-Final Rejection
06-11-1998	Information Disclosure Statement (IDS) Filed
06-11-1998	Information Disclosure Statement (IDS) Filed
06-11-1998	Information Disclosure Statement (IDS) Filed
06-11-1998	Information Disclosure Statement (IDS) Filed
09-25-1998	Information Disclosure Statement (IDS) Filed
09-25-1998	Information Disclosure Statement (IDS) Filed
09-25-1998	Response after Non-Final Action
09-25-1998	Request for Extension of Time - Granted
10-02-1998	Date Forwarded to Examiner
10-06-1998	Final Rejection
10-07-1998	Mail Final Rejection (PTOL - 326)
10-26-1998	Preexamination Location Change
12-07-1998	Response after Final Action
12-17-1998	Date Forwarded to Examiner
12-21-1998	Advisory Action (PTOL-303)
12-22-1998	Mail Advisory Action (PTOL - 303)
03-08-1999	Response after Final Action
03-08-1999	Request for Extension of Time - Granted
04-07-1999	Date Forwarded to Examiner
04-09-1999	Mail Notice of Allowance
04-09-1999	Notice of Allowance Data Verification Completed
07-06-1999	Information Disclosure Statement (IDS) Filed
07-06-1999	Information Disclosure Statement (IDS) Filed
07-06-1999	Continuing Prosecution Application - Continuation (ACPA)
07-06-1999	Workflow - Incoming Correspondence - Begin
07-06-1999	UnMatched Papers in Pubs
08-16-1999	Date Forwarded to Examiner
08-25-1999	Mail Non-Final Rejection
08-25-1999	Non-Final Rejection
11-26-1999	Response after Non-Final Action
12-11-1999	Date Forwarded to Examiner
12-16-1999	Mail Notice of Allowance
12-16-1999	Notice of Allowance Data Verification Completed
03-15-2000	Issue Fee Payment Verified
03-15-2000	Workflow - Drawings Finished
03-15-2000	Workflow - Drawings Matched with File at Contractor
03-15-2000	Workflow - Drawings Received at Contractor
03-15-2000	Workflow - Drawings Sent to Contractor
05-15-2000	Workflow - Complete WF Records for Drawings
09-14-2000	Workflow - File Sent to Contractor
09-26-2000	Application Is Considered Ready for Issue
10-06-2000	Issue Notification Mailed
10-24-2000	Recordation of Patent Grant Mailed



69652 U.S. PTO  
08633413  
06/10/96

# PATENT APPLICATION



08633413

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INITIALS 259629

Date  
Entered  
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## CONTENTS

Date  
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Mailed

**ABANDONED**

1.	Application	2	papers.	
2.	CTR Re-Signatures			7/15/96
3.	Sur/Dec			9-26-96
4.	Priority Doc			9-26-96
2-20-97	Ref 3 mms			2/24/97
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6.	Notice of Aband			9-30-97
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71858 U.S. PAT.  
08/918004  
08/25/97

# PATENT APPLICATION



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## CONTENTS

Date  
Received  
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	1. Application	papers.	
	2. <i>Amend A</i>		8-25-97
3-23-98	3. <i>Reg 3 mos</i>		3-25-98
	4. <i>IDS</i>		6-11-98
	5. <i>Ext. 3 mos w Amend B</i>		9-25-98
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10-6-98	7. <i>Final Reg 3 mos</i>		10-7-98
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	9. <i>Amend C (NFI)</i>		12-2-98
12-21-98	10. <i>Advisory Action</i>		12-22-98
	11. <i>Ext. of T. 2</i>		3-8-99
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4-8-99	13. <i>Notice of Allowance</i>		4-9-99
	14. <i>Req for CPA</i>		7/1/99
	15. <i>Suppl IDS</i>		7/1/99
8-25-99	16. <i>Rejection</i>		8/25/99
	17. <i>Amend E</i>		11-26-99
12/14/99	18. <i>Notice of Allowance</i>		12/16/99
5-15-00	19. <i>Formal drawings (2 sheets) set 1</i>		3-15-00
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U.S. GOVERNMENT PRINTING OFFICE 1987-430-220

PATENT NUMBER

APPLICATION SERIAL NUMBER  
**08/918,004**

APPLICANT'S NAME (PLEASE PRINT)  
**HEBBLEWHITE, et al.**

IF REISSUE, ORIGINAL PATENT NUMBER

ORIGINAL CLASSIFICATION  
CLASS **261** SUBCLASS **119.100**

CROSS REFERENCE(S)

INTERNATIONAL CLASSIFICATION  
**B01F** **3/04**

GROUP ART UNIT **1724**

ASSISTANT EXAMINER (PLEASE STAMP OR PRINT FULL NAME)  
**SCOTT BASHEY**

PRIMARY EXAMINER (PLEASE STAMP OR PRINT FULL NAME)  
**W. P. S.**

PTO 270 (REV. 5-91)

ISSUE CLASSIFICATION SLIP

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

Claim	Final	Original	Date
1	(12)	0	= v =
2	(16)	0	= v =
3	(17)	0	= v =
4	(18)	0	= v =
5	(19)	0	= v =
6	(20)	0	= v =
7	(21)	0	= v =
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24	(38)	0	= v =
25	(39)	0	= v =
26	(40)	0	= v =
27	(41)	0	= v =
28	(42)	0	= v =
29	(43)	0	= v =
30	(44)	0	= v =
31	(45)	0	= v =
32	(46)	0	= v =
33	(47)	0	= v =
34	(48)	0	= v =
35	(49)	0	= v =
36	(50)	0	= v =

SYMBOLS

✓ ..... Rejected

= ..... Allowed

+ (Through numbers) ..... Restricted

N ..... Non-elected

I ..... Interference

A ..... Appeal

O ..... Objected

Claim	Final	Original	Date
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(LEFT INSIDE)



SEARCH NOTES		
	Date	Exmr.

[illegible]

(RIGHT ON ITSIDE)



SEARCHED			
Class	Sub.	Date	Exmr.
261	119.1	9-20-98	cpb
Updated	Above	10-5-98	cpb
Updated	Above	4-7-99	cpb
Updated	Above	8-18-99	cpb
Updated	Above	12-13-99	cpb

INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.
261	119.1	4-7-99	cpb
Updated		12-13-99	cpb

SEARCH NOTES		
Checked Patent Applic. 08/633,413 and all art cited therein.	Date	Exmr.
	3-20-98	cpb

(RIGHT OUTSIDE)





US006135432A

**United States Patent** [19]

Hebblewhite et al.

[11] **Patent Number:** 6,135,432[45] **Date of Patent:** \*Oct. 24, 2000[54] **HUMIDIFIER**[75] Inventors: **Malcolm Hebblewhite**, Cremorne;  
**Philip Rodney Kwok**, West Pymble;  
**Robert Edward Styles**, Glenhaven;  
**John William Ernest Brydon**,  
Waverton, all of Australia[73] Assignee: **ResMed Limited**, North Ryde,  
Australia

[\*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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1 294 808 11/1972 United Kingdom .  
WO 82/03326 10/1982 WIPO .  
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WO 98/04311 2/1998 WIPO .[21] Appl. No.: **08/918,004**[22] Filed: **Aug. 25, 1997****Related U.S. Application Data**

[63] Continuation of application No. 08/633,413, Jun. 10, 1996, abandoned.

[30] **Foreign Application Priority Data**

Jun. 8, 1995 [AU] Australia ..... 3440

[51] Int. Cl.<sup>7</sup> ..... **B01F 3/04**[52] U.S. Cl. .... **261/119.1**

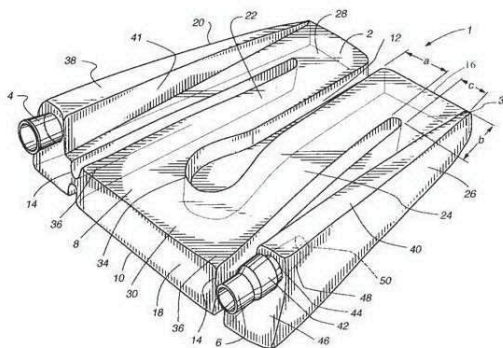
[58] Field of Search ..... 261/119.1

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Primary Examiner—C. Scott Bushey  
Attorney, Agent, or Firm—Holland & Hart LLP[57] **ABSTRACT**

A humidifier for producing humidified air, particularly for use with a continuous positive air pressure device. The humidifier has an air inlet and outlet. An elongate passageway extending between the air inlet and the air outlet. The passageway is adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.

**4 Claims, 2 Drawing Sheets**

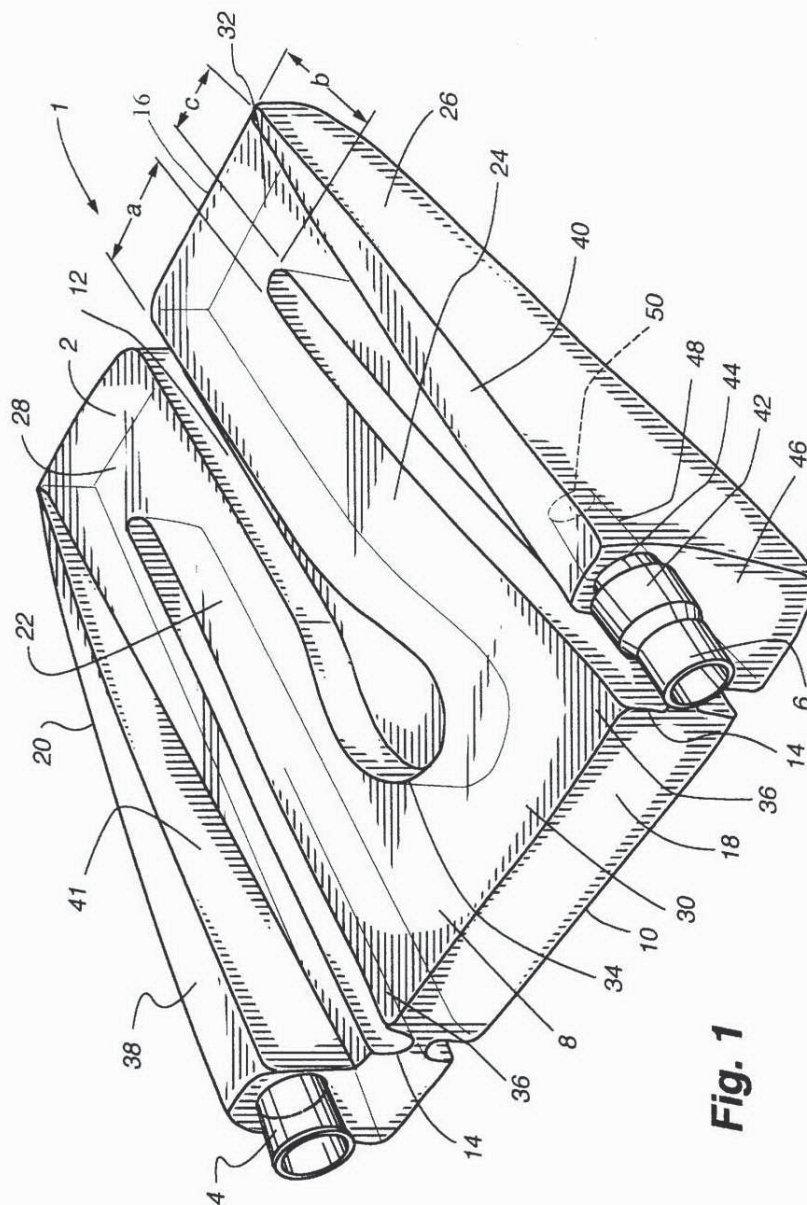
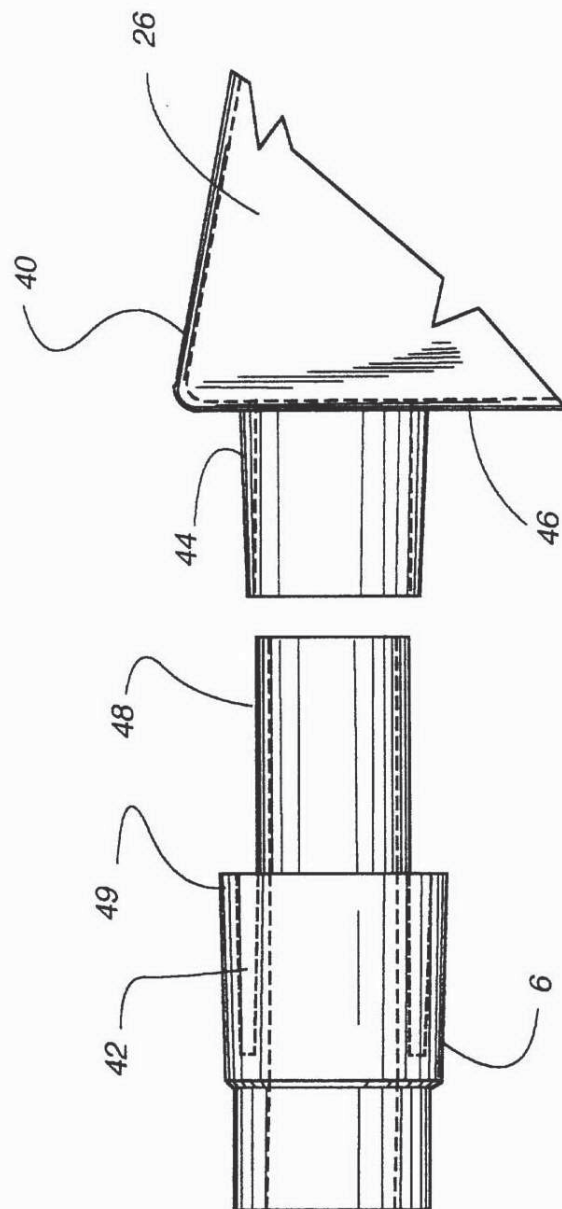


Fig. 1





**Fig. 2**



1

**HUMIDIFIER**

This is a continuation of application Ser. No. 08/633,413, filed Jun. 10, 1996, now abandoned.

**BACKGROUND**

The invention relates to a humidifier for producing humidified air, and particularly, although not exclusively, to a humidifier for use with a Continuous Positive Airway Pressure (CPAP) device.

A CPAP device is used in the treatment of obstructive sleep apnea syndrome, which is a disorder characterised by cycles of snoring, obstruction of the upper airway, and partial awakening during the night. In order to treat obstructive sleep apnea, a CPAP device can be used to deliver air under continuous positive pressure to the nasal passages of the patient during sleep. The positive air pressure prevents obstruction of the upper airway so that the patient is not troubled by frequent awakenings during sleep.

In order to prevent drying of the patient's airway during use of a CPAP device, it is known to pass the air through a humidifier before supplying the air to the patient. Humidification can be achieved by simply passing the air over an area of water within a humidifier so that the air absorbs moisture from the water before being delivered to the patient.

When a humidifier is used with a CPAP device, it is convenient to be able to place the CPAP device on top of the humidifier. In this case, it is desirable that the humidifier is designed so as to form a low, generally flat base for supporting the CPAP device. Such a humidifier is known as a low-profile humidifier. Because a low-profile humidifier is of low height, it is more likely to suffer from the problem of entrainment of water droplets in the output air flow to the patient. This problem arises because as the air passes through the humidifier it induces waves on the surface of the water, and water droplets are stripped from the waves by the air flow, and carried by the air flow to the outlet of the humidifier. It is also important when designing a low-profile humidifier to ensure that maximum use is made of the available water surface area. For example, there is no point in providing a large surface area of water within the humidifier if the air flow passes over only a small portion of this area.

The present invention has arisen from attempts to overcome the above difficulties, but is not limited to low-profile humidifiers, or to humidifiers for use with CPAP devices.

**SUMMARY OF THE INVENTION**

According to the invention there is provided a humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway, extending between the air inlet and air outlet, for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.

The use of an elongate passageway between the air inlet and outlet ensures that the airflow passes over substantially the whole of the surface area of the water, so that the whole of the surface area of the water contributes towards humidifying the air flow.

Preferably, the passageway is arranged so as to direct the air from the air inlet to the air outlet along a single path.

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This feature ensures that each portion of the surface area of the water contributes equally to the humidifying of the air flow. In an arrangement where the air flow can take a number of different paths between the air inlet and the air outlet, there is a danger that certain paths will contribute more greatly to the humidifying process than others, for example because the air is flowing at different speeds along different paths. Such an arrangement does not make maximum use of the available water surface area.

In a preferred embodiment of the invention, the passageway is divided into a plurality of elongate subpassageways and corner portions, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by the corner portions.

The subpassageways can be integrally formed with the corner portions, so that the passageway as a whole is integrally formed.

This feature avoids the possibility of leaks which might otherwise occur at the connections between the subpassageways and corner portions.

One or more of the corner portions can be generally U-shaped, so that the two subpassageways adjacent the or each generally U-shaped corner portion lie side by side, and substantially parallel with each other.

For example, if the passageway is divided into two, three or four subpassageways, the subpassageways can be arranged to form U-, S- or W-shaped serpentine passageways respectively.

It will be appreciated that the use of generally U-shaped corner portions enables the humidifier to be of compact construction, since the subpassageways lie side by side. This allows a greater number of subpassageways to be accommodated within a humidifier of a given size.

Preferably, the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards the outside side of the corner defined by the corner portion.

This feature ensures that substantially the whole of the surface area of the water in the corner portion is used for humidifying the air flow.

The last corner portion through which air passes before reaching the air outlet will be referred to below simply as "the last corner portion".

Desirably, the last corner portion, whether or not generally U-shaped, increases in width as it passes from the penultimate subpassageway to the last passageway.

It should be understood that the word "width" used above is intended to refer to the dimension of the passageway which lies generally in the plane defined by the surface of the water, and perpendicular to the direction of the air flow along the passageway. Furthermore, the "last" subpassageway is the last passageway through which air in the humidifier passes before reaching the air outlet. The advantage of increasing the width of the passageway at the last corner portion is that it reduces the amount of turbulence in the air flow at the corner portion. It should be noted that most of the air turbulence within the passageway is created at the corner portions, and this turbulence is particularly acute in the case of U-shaped corner portions. The air turbulence creates waves on the water surface which can result in entrainment of water droplets in the air flow at the air outlet, or, if the waves are large enough, indirect spillage of water into the air



outlet. By reducing the air turbulence at the last corner portion, the chances of water spillage, or entrainment of water droplets, at the air outlet are greatly reduced.

Preferably, the width of the last corner portion increases gradually as the last corner portion passes from the penultimate subpassageway to the last subpassageway.

Such a gradual increase causes a greater reduction in air turbulence at the corner portion.

In one embodiment of the invention, the ratio of the width of the last corner portion at its inlet side to its width at its outlet side is 9:10.

Preferably, the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

The gradual increase in height of the roof of the last subpassageway results in a smooth air flow and less air turbulence.

Ideally, the roof of the last subpassageway rises gradually along substantially the whole length of the last subpassageway.

Similarly, the roof of the first subpassageway may rise gradually along the length of the first subpassageway, towards the air inlet, in the same manner as the roof of the last subpassageway.

In a preferred embodiment of the invention, the passageway terminates at an end wall adjacent the air outlet, and the air outlet is arranged so that it communicates with the interior of the passageway at a location which is spaced away from said end wall.

When the air flow within the passageway creates waves on the surface of the water, it has been found that the water has a tendency to splash against the end wall of the passageway, resulting in a danger of water spilling into the air outlet. It has been found that by spacing the air outlet aperture away from the end wall, the danger of water spilling into the air outlet is greatly reduced.

In a second aspect of the invention there is provided a humidifier for producing humidified air, comprising a chamber adapted to be partially filled with water, the chamber being provided with an air inlet for receiving air to be humidified, and an air outlet for discharging humidified air from the chamber after the air has passed over said water, wherein the air outlet is arranged so that it communicates with the interior of the chamber at a location which is spaced away from all of the chamber walls.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described, by a way of example only, with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a W-shaped humidifier formed from a transparent material; and

FIG. 2 is a side view showing the outlet attachment of the humidifier in greater detail.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, the humidifier 1 comprises a W-shaped elongate passageway 2, an air inlet 4 and an air outlet 6. The humidifier is integrally formed by an extrusion blow-moulding process from translucent, polycarbonate material. During use, the humidifier is partially filled with

water, and a use of the translucent material enables the operator to see the water level within the passageway 2 at all times. Furthermore, the integral construction of the humidifier avoids the possibility of leaks of air and water from within the humidifier.

The humidifier is a low-profile humidifier, and is of generally flat, rectangular, box-like construction. The upper and lower walls 8 and 10 of the humidifier are pinched together along a central strip 12 and two outer strips 14 so as to define the shape of the passageway 2. The central strip 12 extends to the rear wall 16 of the humidifier, and the outer strips 14 extend to the front wall 18 of the humidifier, so as to define a generally W-shaped passageway 2 which comprises four subpassageways 20, 22, 24, and 26. The central strip 12 and the two outer strips 14 also provide the humidifier with increased structural rigidity.

The four subpassageways 20, 22, 24, and 26 are each of generally straight, elongate construction. The first subpassageway 20 is connected to the second subpassageway 22 by a first corner portion 28; the second subpassageway 22 is connected to the third (or penultimate) subpassageway 24 by a central corner portion 30; and the third subpassageway 24 is connected to the fourth (or last) subpassageway 26 by a last corner portion 32. All of the corner portions are generally U-shaped, so that the four subpassageways 20, 22, 24, and 26 lie side by side and generally parallel with each other.

The central strip 12 bulges gradually as the central strip 12 passes towards the front wall 18 of the humidifier, to form an enlarged end portion 34 which defines the shape of the inside side of the central corner portion 30. The shape of the enlarged portion 34 ensures that air passing through the central corner portion 30 is forced outwardly towards the corner regions 36 of the central corner portion 30, so that maximum use is made of the available water surface area within the central corner portion 30.

The width of the last corner portion 32 increases gradually from the third subpassageway 24 to the fourth subpassageway 26. For example, the dimensions labelled a, b and c in the drawing can be 40 mm, 45 mm, and 50 mm respectively. The increase in width of the last corner portion 32 reduces air turbulence within the last corner portion 32, and hence reduces the entrainment of water droplets in the air flow, and reduces spillage of water into the air outlet 6.

The roofs 38 and 40 of the first and fourth subpassageways 20 and 26 respectively, rise gradually from the first and last corner portions 28 and 32 to the air inlet 4 and the air outlet 6 respectively. This allows the air inlet 4 and the air outlet 6 to be raised in position with respect to the second and third subpassageways 22 and 24, so that spillage of water into the air inlet 4 or air outlet 6 is less likely to occur. A further advantage of raising the roofs 38 and 40 with respect of the second and third subpassageways 22 and 24 is that a natural hollow or recess 41 is formed between the first and fourth subpassageways 20 and 26. The recess 41 is shaped so as to be of complementary shape to the underside of a CPAP device so that the CPAP device (not shown) fits snugly on top of the humidifier. It should also be noted that the humidifier is of symmetrical construction, so as to reduce the risk of malfunction, or injury to a patient, if the user should accidentally mistake the air inlet for the air outlet and vice versa.

As shown in FIG. 2, the air outlet 6 is formed as an outlet attachment 42 which is attached to a circular tube 44 which projects outwardly from the end wall 46 of the fourth subpassageway 26. The outlet attachment 42 is provided with a tube 48 which projects through the circular tube 44



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and into the fourth subpassageway 26, the tube 44 being gripped between the outer surface of the tube 48 and the inner surface of an outer skirt portion 49. The tube 48 extends along a portion of the length of the fourth subpassageway 26. This ensures that air can only leave the fourth subpassageway 26 via the circular aperture 50 at the end of the tube 48, which aperture 50 is spaced away from the end wall 46.

When water waves are formed within the fourth subpassageway 26, the waves have a particular tendency to splash against the end wall 46, resulting in the danger of water spilling into the air outlet 6. It has been found that spacing the aperture 50 of the air outlet 6 away from the end wall 46 overcomes this problem since the water is less turbulent away from the end wall 46. The aperture 50 should preferably be spaced at least 2 cm away from the end wall 46.

It should be appreciated that the idea of spacing the outlet aperture, in this case the aperture 50 of the tube 48, away from the walls of the humidifier is of general applicability, and may be used in other humidifiers, regardless of whether the humidifiers are formed with elongate passageways.

We claim:

1. A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to an underside of a continuous positive airway pressure device adapted to be mounted thereon, wherein the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards the outside side of the corner defined by the corner portion.

2. A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-shaped construction, and

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includes a recess in its upper surface shaped to be of a complementary shape to an underside of a continuous positive airway pressure device adapted to be mounted thereon, including a last passageway being the last passageway through which air in the humidifier passes before reaching the air outlet, wherein the corner portion through which air passes before reaching the air outlet is the last corner portion and said last corner portion increases in width as it passes from the penultimate subpassageway to the last passageway, wherein the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

3. A humidifier for producing humidified air comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to an underside of a continuous positive airway pressure device adapted to be mounted thereon, including a last subpassageway being the last passageway through which air in the humidifier passes before reaching the air outlet, the last subpassageway including a roof or wall rising gradually along substantially the whole length of the last subpassageway towards the air outlet.


4. A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to an underside of a continuous positive airway pressure device adapted to be mounted thereon, including a first passageway being the first subpassageway through which the air in the humidifier passes after leaving the inlet, the first subpassageway including a roof or wall rising gradually along the length of the first subpassageway towards the air inlet.

\* \* \* \* \*



BAR CODE LABEL &%SA5P0104030502700H633413\$		U.S. PATENT APPLICATION			
SERIAL NUMBER 08/633,413		FILING DATE 06/10/96	CLASS 261	GROUP ART UNIT 1305	
APPLICANT MALCOLM HEBBLEWHITE, CREMORNE, AUSTRALIA; PHILIP R. KWOK, WEST PYMBLE, AUSTRALIA; ROBERT E. STYLES, GIENHAVEN, AUSTRALIA; JOHN W.E. BRYDON, WAVERTON, AUSTRALIA.  **CONTINUING DATA***** VERIFIED _____  **FOREIGN/PCT APPLICATIONS***** VERIFIED            AUSTRALIA            PM 3440            06/08/95 _____					
STATE OR COUNTRY AUX	SHEETS DRAWING 2	TOTAL CLAIMS 4	INDEPENDENT CLAIMS 2	FILING FEE RECEIVED \$880.00	ATTORNEY DOCKET NO. 3961.29US01
ADDRESS MERCHANT GOULD SMITH EDELL WELTER & SCHMIDT 1000 NORWEST CENTER 55 EAST FIFTH STREET ST PAUL MN 55101-1785					
TITLE HUMIDIFIER					
This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the application which is identified above. By authority of the COMMISSIONER OF PATENTS AND TRADEMARKS Date _____ Certifying Officer _____					



BAR CODE LABEL 		U.S. PATENT APPLICATION			
SERIAL NUMBER 08/633,413		FILING DATE 06/10/96	CLASS 454	GROUP ART UNIT 3404	
APPLICANT	MALCOLM HEBBLEWHITE, CREMORNE, AUSTRALIA; PHILIP R. KWOK, WEST PYMBLE, AUSTRALIA; ROBERT E. STYLES, GIENHAVEN, AUSTRALIA; JOHN W.E. BRYDON, WAVERTON, AUSTRALIA.				
	**CONTINUING DATA***** VERIFIED  				
	**FOREIGN/PCT APPLICATIONS***** VERIFIED      AUSTRALIA      PM 3440      06/08/95  				
STATE OR COUNTRY AUX	SHEETS DRAWING 2	TOTAL CLAIMS 4	INDEPENDENT CLAIMS 2	FILING FEE RECEIVED \$880.00	ATTORNEY DOCKET NO. 3961.29US01
ADDRESS	MERCHANT GOULD SMITH EDELL WELTER & SCHMIDT 1000 NORWEST CENTER 55 EAST FIFTH STREET ST PAUL MN 55101-1785				
TITLE	HUMIDIFIER				
This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the application which is identified above. By authority of the COMMISSIONER OF PATENTS AND TRADEMARKS					
Date		Certifying Officer			



PATENT APPLICATION SERIAL NO. 09/633413

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

*12/11/96*

IN-13

24 JUL 1998

170 1298

particular

Agency

TRADE MARK

The use of an elongate passageway between the air inlet and outlet ensures that the airflow passes over substantially the whole of the surface area of the water, so that the whole of the surface area of the water contributes towards humidifying the air flow.



Preferably, the passageway is arranged so as to direct the air from the air inlet to the air outlet along a single path.

5 This feature ensures that each portion of the surface area of the water contributes equally to the humidifying of the air flow. In an arrangement where the air flow can take a number of different paths between the air inlet and the air outlet, there is a danger that certain paths will contribute more greatly to the humidifying process than others, for example because the air is flowing at different speeds along different paths. Such an arrangement does not make maximum use of the available water surface area.

10 In a preferred embodiment of the invention, the passageway is divided into a plurality of elongate subpassageways and corner portions, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by the corner portions.

The subpassageways can be integrally formed with the corner portions, so that the passageway as a whole is integrally formed.

15 This feature avoids the possibility of leaks which might otherwise occur at the connections between the subpassageways and corner portions.

One or more of the corner portions can be generally U-shaped, so that the two subpassageways adjacent the or each generally U-shaped corner portion lie side by side, and substantially parallel with each other.

20 For example, if the passageway is divided into two, three or four subpassageways, the subpassageways can be arranged to form U-, S- or W-shaped serpentine passageways respectively.

It will be appreciated that the use of generally U-shaped corner portions enables the humidifier to be of compact construction, since the subpassageways lie side by side.  
25 This allows a greater number of subpassageways to be accommodated within a humidifier of a given size.

Preferably, the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards  
30 the outside side of the corner defined by the corner portion.

This feature ensures that substantially the whole of the surface area of the water in the corner portion is used for humidifying the air flow.

The last corner portion through which air passes before reaching the air outlet will be referred to below simply as "the last corner portion".

35 Desirably, the last corner portion, whether or not generally U-shaped, increases in width as it passes from the penultimate subpassageway to the last passageway.

It should be understood that the word "width" used above is intended to refer to the dimension of the passageway which lies generally in the plane defined by the surface of the water, and perpendicular to the direction of the air flow along the passageway.

40 Furthermore, the "last" subpassageway is the last passageway through which air in the

humidifier passes before reaching the air outlet. The advantage of increasing the width of the passageway at the last corner portion is that it reduces the amount of turbulence in the air flow at the corner portion. It should be noted that most of the air turbulence within the passageway is created at the corner portions, and this turbulence is

5 particularly acute in the case of U-shaped corner portions. The air turbulence creates waves on the water surface which can result in entrainment of water droplets in the air flow at the air outlet, or, if the waves are large enough, indirect spillage of water into the air outlet. By reducing the air turbulence at the last corner portion, the chances of water spillage, or entrainment of water droplets, at the air outlet are greatly reduced.

10 Preferably, the width of the last corner portion increases gradually as the last corner portion passes from the penultimate subpassageway to the last subpassageway.

Such a gradual increase causes a greater reduction in air turbulence at the corner portion.

15 In one embodiment of the invention, the ratio of the width of the last corner portion at its inlet side to its width at its outlet side is 9:10.

Preferably, the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

20 The gradual increase in height of the roof of the last subpassageway results in a smooth air flow and less air turbulence.

Ideally, the roof of the last subpassageway rises gradually along substantially the whole length of the last subpassageway.

25 Similarly, the roof of the first subpassageway may rise gradually along the length of the first subpassageway, towards the air inlet, in the same manner as the roof of the last subpassageway.

In a preferred embodiment of the invention, the passageway terminates at an end wall adjacent the air outlet, and the air outlet is arranged so that it communicates with the interior of the passageway at a location which is spaced away from said end wall.

30 When the air flow within the passageway creates waves on the surface of the water, it has been found that the water has a tendency to splash against the end wall of the passageway, resulting in a danger of water spilling into the air outlet. It has been found that by spacing the air outlet aperture away from the end wall, the danger of water spilling into the air outlet is greatly reduced.

35 In a second aspect of the invention there is provided a humidifier for producing humidified air, comprising a chamber adapted to be partially filled with water, the chamber being provided with an air inlet for receiving air to be humidified, and an air outlet for discharging humidified air from the chamber after the air has passed over said water, wherein the air outlet is arranged so that it communicates with the interior of the chamber at a location which is spaced away from all of the chamber walls.



DETAILED DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described, by a way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a W-shaped humidifier formed from a transparent material; and

Fig. 2 is a side view showing the outlet attachment of the humidifier in greater detail.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Fig. 1, the humidifier 1 comprises a W-shaped elongate passageway 2, an air inlet 4 and an air outlet 6. The humidifier is integrally formed by an extrusion blow-moulding process from translucent, polycarbonate material. During use, the humidifier is partially filled with water, and a use of the translucent material enables the operator to see the water level within the passageway 2 at all times. Furthermore, the integral construction of the humidifier avoids the possibility of leaks of air and water from within the humidifier.

The humidifier is a low-profile humidifier, and is of generally flat, rectangular, box-like construction. The upper and lower walls 8 and 10 of the humidifier are pinched together along a central strip 12 and two outer strips 14 so as to define the shape of the passageway 2. The central strip 12 extends to the rear wall 16 of the humidifier, and the outer strips 14 extend to the front wall 18 of the humidifier, so as to define a generally W-shaped passageway 2 which comprises four subpassageways 20, 22, 24, and 26. The central strip 12 and the two outer strips 14 also provide the humidifier with increased structural rigidity.

The four subpassageways 20, 22, 24, and 26 are each of generally straight, elongate construction. The first subpassageway 20 is connected to the second subpassageway 22 by a first corner portion 28; the second subpassageway 22 is connected to the third (or penultimate) subpassageway 24 by a central corner portion 30; and the third subpassageway 24 is connected to the fourth (or last) subpassageway 26 by a last corner portion 32. All of the corner portions are generally U-shaped, so that the four subpassageways 20, 22, 24, and 26 lie side by side and generally parallel with each other.

The central strip 12 bulges gradually as the central strip 12 passes towards the front wall 18 of the humidifier, to form an enlarged end portion 34 which defines the shape of the inside side of the central corner portion 30. The shape of the enlarged portion 34 ensures that air passing through the central corner portion 30 is forced outwardly towards the corner regions 36 of the central corner portion 30, so that maximum use is made of the available water surface area within the central corner portion 30.

The width of the last corner portion 32 increases gradually from the third subpassageway 24 to the fourth subpassageway 26. For example, the dimensions labelled a, b and c in the drawing can be 40mm, 45mm, and 50mm respectively. The increase in width of the last corner portion 32 reduces air turbulence within the last

corner portion 32, and hence reduces the entrainment of water droplets in the air flow, and reduces spillage of water into the air outlet 6.

The roofs 38 and 40 of the first and fourth subpassageways 20 and 26 respectively, rise gradually from the first and last corner portions 28 and 32 to the air inlet 4 and the air outlet 6 respectively. This allows the air inlet 4 and the air outlet 6 to be raised in position with respect to the second and third subpassageways 22 and 24, so that spillage of water into the air inlet 4 or air outlet 6 is less likely to occur. A further advantage of raising the roofs 38 and 40 with respect of the second and third subpassageways 22 and 24 is that a natural hollow or recess 41 is formed between the first and fourth subpassageways 20 and 26. The recess 41 is shaped so as to be of complementary shape to the underside of a CPAP device so that the CPAP device (not shown) fits snugly on top of the humidifier. It should also be noted that the humidifier is of symmetrical construction, so as to reduce the risk of malfunction, or injury to a patient, if the user should accidentally mistake the air inlet for the air outlet and vice versa.

As shown in Fig. 2, the air outlet 6 is formed as an outlet attachment 42 which is attached to a circular tube 44 which projects outwardly from the end wall 46 of the fourth subpassageway 26. The outlet attachment 42 is provided with a tube 48 which projects through the circular tube 44 and into the fourth subpassageway 26, the tube 44 being gripped between the outer surface of the tube 48 and the inner surface of an outer skirt portion 49. The tube 48 extends along a portion of the length of the fourth subpassageway 26. This ensures that air can only leave the fourth subpassageway 26 via the circular aperture 50 at the end of the tube 48, which aperture 50 is spaced away from the end wall 46.

When water waves are formed within the fourth subpassageway 26, the waves have a particular tendency to splash against the end wall 46, resulting in the danger of water spilling into the air outlet 6. It has been found that spacing the aperture 50 of the air outlet 6 away from the end wall 46 overcomes this problem since the water is less turbulent away from the end wall 46. The aperture 50 should preferably be spaced at least 2 cm away from the end wall 46.

It should be appreciated that the idea of spacing the outlet aperture, in this case the aperture 50 of the tube 48, away from the walls of the humidifier is of general applicability, and may be used in other humidifiers, regardless of whether the humidifiers are formed with elongate passageways.

~~DATED this Eighth Day of June 1995~~

~~ResCare Limited~~

~~Patent Attorneys for the Applicant~~

~~SPRUSON & FERGUSON~~



CLAIMS  
WE CLAIM

1. A humidifier for producing humidified air comprising:
- a) a housing having an air inlet for receiving air to be humidified and an air outlet for discharging humidified air; and
  - b) an elongate passageway extends between the air inlet and the air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that the air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.
2. The humidifier of claim 1, wherein the passageway is arranged to direct the air from the air inlet to the air outlet along a single path.
3. The humidifier of claim 2, wherein the passageway is divided into a plurality of elongate subpassageways and corner portions, each subpassageway being substantially straight and the subpassageways being connected into and along the length of the passageway by the corner portions.
4. A humidifier for producing humidified air, comprising:
- a) a chamber adapted to be partially filled with water, the chamber being provided with an air inlet for receiving air to be humidified and an air outlet for discharging humidified air from the chamber after the air has passed over the water; and
  - b) wherein the air outlet is arranged so that it communicates with the interior of the chamber at a location which is spaced away from the chamber walls.

08/9/864

- 7 -

~~A HUMIDIFIER~~

Abstract of the Disclosure

A humidifier for producing humidified air, particularly for use with a continuous positive air pressure device. The humidifier has an air inlet and outlet. An elongate passageway extending between the air inlet and the air outlet. The passageway is adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.



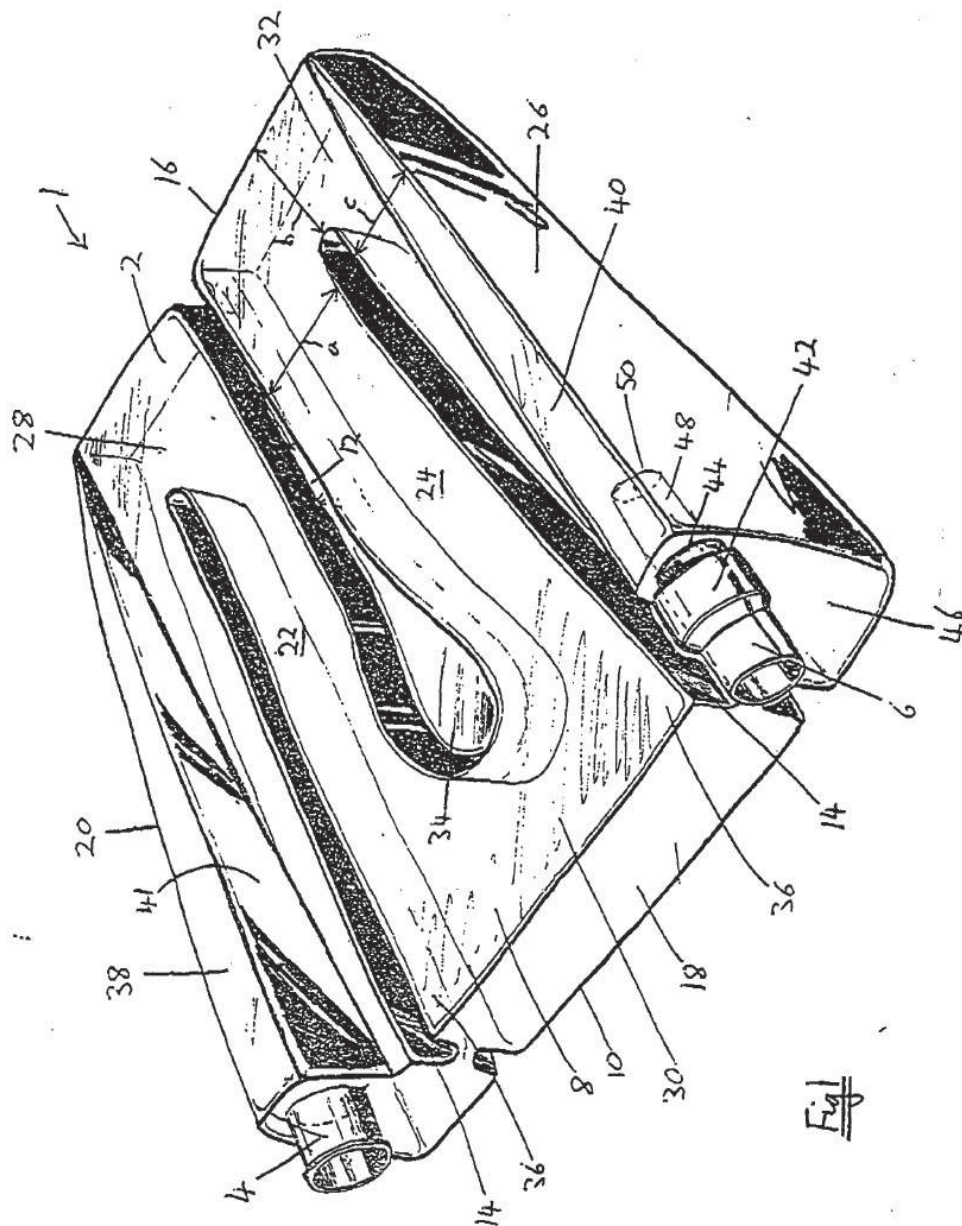


Fig. 1

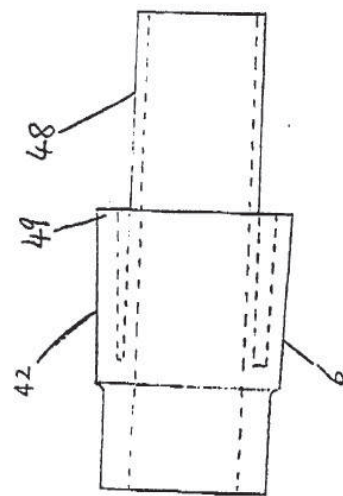
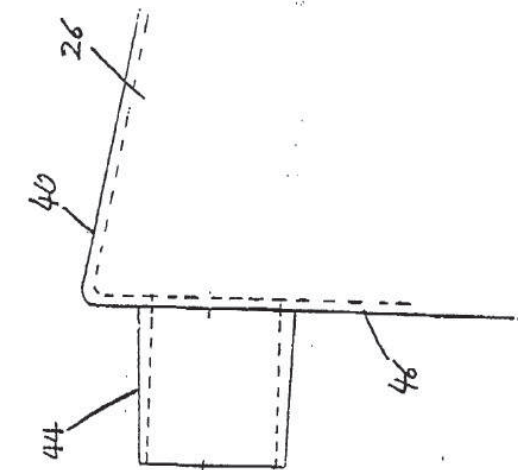


Fig. 2



**BEST COPY**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
00/433,413	06/10/96	HEBELEWHITE	00 3961.29US01

0242/0715  
MERCHANT GUILD SMITH EDILL  
KILTER & SCHMIDT  
1000 NORWEST CENTER  
ST PAUL MN 55101

0000

DATE MAILED: 07/15/96

**NOTICE TO FILE MISSING PARTS OF APPLICATION**  
**FILING DATE GRANTED**

An Application Number and Filing Date have been assigned to this application. However, the items indicated below are missing. The required items and fees identified below must be timely submitted **ALONG WITH THE PAYMENT OF A SURCHARGE** for items 1 and 3-6 only of \$130.00 for large entities or \$65.00 for small entities who have filed a verified statement claiming such status. The surcharge is set forth in 37 CFR 1.16(e).

If all required items on this form are filed within the period set below, the total amount owed by applicant as a ☒ large entity, ☐ small entity (verified statement filed), is \$ 880.00.

Applicant is given **ONE MONTH FROM THE DATE OF THIS LETTER, OR TWO MONTHS FROM THE FILING DATE** of this application, **WHICHEVER IS LATER**, within which to file all required items and pay any fees required above 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 ☐ insufficient. Applicant as a ☒ large entity ☐ small entity, must submit \$ 130.00 to complete the basic filing fee.

2. ☐ Additional claim fees of \$ \_\_\_\_\_ as a ☐ large entity, ☐ small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

3. ☐ The oath or declaration:  
☐ is missing.  
☐ does not cover items omitted at time of execution.

An oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date is required.

4. ☐ The oath or declaration does not identify the application to which it applies. An oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

5. ☒ The signature(s) to the oath or declaration is/are: missing; ☐ by a person other than the inventor or a person qualified under 37 CFR 1.42, 1.43, or 1.47. 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.

6. ☐ The signature of the following joint inventor(s) is missing from the oath or declaration:  
\_\_\_\_\_. An oath or declaration listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

7. ☐ The application was filed in a language other than English. Applicant must file a verified English translation of the application and a fee of \$ \_\_\_\_\_ under 37 CFR 1.17(k), unless this fee has already been paid.

8. ☐ A \$ \_\_\_\_\_ processing fee is required since your check was returned without payment. (37 CFR 1.21(m)).

9. ☐ Your filing receipt was mailed in error because your check was returned without payment.

10. ☐ The application does not comply with the Sequence Rules. See attached Notice to Comply with Sequence Rules 37 CFR 1.821-1.825.

11. ☐ Other.

Direct the response and any questions about this notice to, Attention: Application Processing Division, Special Processing and Correspondence Branch (703) 308-1202.

**A copy of this notice MUST be returned with the response.**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

\* In re Application of: Malcolm Hebblewhite et al.

For: **MAIDIPPER**  
 Docket No.: 3961, 23US01  
 Filed: June 20, 1996  
 Examined: 26/A H C  
 1996

Serial No.: 08/633,413

Group Art Unit: N/A

Assistant Commissioner for Patents  
 Attn: **APPLICATION BRANCH**  
 Washington, D.C. 20231

Sir:

We are transmitting herewith the attached:

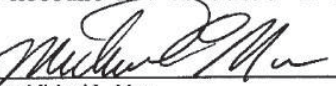
- \* Transmittal Sheet in duplicate containing certificate under 37 CFR 1.8.
- \* Communication regarding Missing Parts.
- \* Copy of Notice.
- \* A signed Combined Declaration and Power of Attorney.
- \* Check in the amount of \$880.00 for Filing Fee and Surcharge Fee for Large Entity.
- \* 2 Month Extension of Time with check in the amount of \$380.00 for Large Entity.
- \* Certified Copy of Australian Application No. PN 3440 filed on 8 June 1995.
- ☒ A return postcard.

- Other: \_\_\_\_\_

- Amendment \_\_\_\_\_ No Additional fee is required \_\_\_\_\_ The fee has been calculated as shown:

CLAIMS AS AMENDED				SMALL ENTITY			OTHER	
(1)	(2)	(3)		RATE	ADD'L FEE	OR	RATE	ADD'L FEE
CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA						
TOTAL CLAIMS	-	=		x 11 = \$		or	x 22 = \$	
INDEPENDENT CLAIMS	-	3 =		x 38 = \$		or	x 76 = \$	
( ) FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				+120 = \$		or	+ 240 = \$	
TOTAL				\$			\$	

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate copy of this sheet is enclosed.

By:   
 Name: Michael L. Mau  
 Reg. No. 30,087

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described hereinabove, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Commissioner of Patents and Trademarks, Attn: Application Branch, Washington, D.C. 20231, on this 22<sup>nd</sup> day of September, 1996.

MERCHANT, GOULD, SMITH, EDELL, WELTER & SCHMIDT  
 1000 Norwest Center, St. Paul, MN 55101 (612-298-1055)  
 (GENERAL)

X



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

\* In re Application of: Malcolm Hebblewhite et al.

For: A HUMIDIFIER

Packet No.: 3961.29US01  
Filed: June 10, 1996  
Examiner: N/A

Serial No.: 08/633,413

Group Art Unit: N/A



Assistant Commissioner for Patents  
ATTN: APPLICATION BRANCH  
Washington, D.C. 20231

We are transmitting herewith the attached:

- \* Transmittal Sheet in duplicate containing certificate under 37 CFR 1.8.
- \* Communication regarding Missing Parts.
- \* Copy of Notice.
- \* A signed Combined Declaration and Power of Attorney.
- \* Check in the amount of \$880.00 for Filing Fee and Surcharge Fee for Large Entity.
- \* 2 Month Extension of Time with check in the amount of \$380.00 for Large Entity.
- \* Certified Copy of Australian Application No. PN 3440 filed on 8 June 1995.
- ☒ A return postcard.

Other: \_\_\_\_\_

Amendment \_\_\_\_\_ No Additional fee is required \_\_\_\_\_ The fee has been calculated as shown:

CLAIMS AS AMENDED				SMALL ENTITY		OR	OTHER		
(1) CLAIMS REMAINING AFTER AMENDMENT	#	(2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(3) PRESENT EXTRA	RATE	ADD'L FEE		RATE	ADD'L FEE	
TOTAL CLAIMS	-	=		x 11 =	\$	or	x 22 =	\$	
INDEPENDENT CLAIMS	-	3 =		x 38 =	\$	or	x 76 =	\$	
( ) FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				+120 =	\$	or	+ 240 =	\$	
TOTAL				\$			\$		

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate copy of this sheet is enclosed.

By: 

Name: Michael L. Mau

Reg. No. 30,087

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described hereinabove, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Commissioner of Patents and Trademarks, Attn: Application Branch, Washington, D.C. 20231, on this 28<sup>th</sup> day of September, 1996.

MERCHANT, GOULD, SMITH, EDELL, WELTER & SCHMIDT  
1000 Norwest Center, St. Paul, MN 55101 (612-298-1055)

(GENERAL)

X



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Malcolm Hebblewhite et al. Examiner: N/A  
Serial # : 08/633,413 Group Art Unit: N/A  
Filed : June 10, 1996 Docket: 3961.29US01  
Title : A HUMIDIFIER

---

COMMUNICATION

Assistant Commissioner for Patents  
Attn: APPLICATION BRANCH  
Washington, D.C. 20231

Dear Sir:

In response to the "Notice to File Missing Parts of Application" (see enclosed copy), an executed Declaration by the named inventor is enclosed. Also enclosed please find a check in the amount of \$880.00 for the filing fee and surcharge fee due for a large entity.

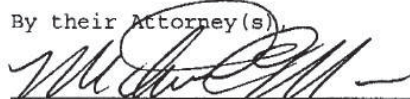
Applicant assumes the application is now in proper order and in a condition for examination.

Please direct any inquiries to the below-signed attorney at (612) 298-1055.

Respectfully submitted,

Malcolm Hebblewhite et al.,

By their Attorney(s),

  
Michael L. Mau  
Reg. No. 30,087  
MERCHANT, GOULD, SMITH, EDELL,  
WELTER & SCHMIDT, P.A.  
1000 Norwest Center  
55 East Fifth Street  
St. Paul, Minnesota 55101  
(612) 298-1055

Sept 23, 1996  
Date



03C



750-101  
1130-105

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

PERMUTANT HOUSE SHELL HOUSE  
BUTLER & COMPANY  
1000 NORTHWEST CORNER  
ST. PAUL MN 55101

012657-21 244.

DATE MAILED:

310 CS	10/03/96	08633413
1 101	750.00	CK
1 105	130.00	CK

If all required items on this form are filed within the period set below, the total amount owed by applicant as a ☒ large entity, ☐ small entity (verified statement filed), is \$ 76,000.

1: ☐ The statutory basic filing fee is: ☒ missing ☐ insufficient. Applicant as a ☒ large entity ☐ small entity, must submit \$ 100.00 to complete the basic filing fee.

- An oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date is required.

6. ☐ The signature of the following joint inventor(s) is missing from the oath or declaration:  
 \_\_\_\_\_ An oath or declaration listing the names of all inventors and signed by  
 the omitted inventor(s), identifying this application by the above Application Number and Filing  
 Date, is required.

7. ☐ The application was filed in a language other than English. Applicant must file a verified English translation of the application and a fee of \$\_\_\_\_\_ under 37 CFR 1.17(k), unless this fee has already been paid.

8. ☐ A \$\_\_\_\_\_ processing fee is required since your check was returned without payment.  
(37 CFR 1.21(m)).

9. ☐ Your filing receipt was mailed in error because your check was returned without payment.

10. ☐ The application does not comply with the Sequence Rules. See attached Notice to Comply with Sequence Rules 37 CFR 1.821-1.825.

- 11.
- ☐
- Other.

Direct the response and any questions about this notice to, Attention: Application Processing Division, Special Processing and Correspondence Branch (703) 308-1202.

***A copy of this notice MUST be returned with the***

CHANT, GOULD, SMITH, EDELL, WELLS & SCHMIDT

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: A HUMIDIFIER

The specification of which

a.    is attached hereto

b. ☒ was filed on June 10, 1996 as application serial no. 08/633,413 and was amended on            (if applicable) (in the case of a PCT-filed application) described and claimed in international no.            filed            and as amended on    (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (see page 3 attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent of inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

a.    no such applications have been filed.

b. ☒ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
Australia	PM 3440	8 June 1995	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:



Adriano, Sarah B. Reg. No. 2  
 Batzli, Brian H. Reg. No. 50  
 B-card, John L. Reg. No. 2,612  
 Beck, Robert C. Reg. No. 28,184  
 Bejlin, Thomas E. Reg. No. 37,089  
 Berman, Charles Reg. No. 29,249  
 Bogucki, Raymond A. Reg. No. 17,426  
 Bruss, Steven C. Reg. No. 34,130  
 Byrne, Linda M. Reg. No. 32,404  
 Carlson, Alan G. Reg. No. 25,953  
 Carter, Charles G. Reg. No. 35,093  
 Caspers, Philip P. Reg. No. 33,227  
 Chappetta, James R. Reg. No. 8-19,634  
 Clifford, John A. Reg. No. 30,247  
 Conrad, Timothy R. Reg. No. 30,164  
 Cooper, Victor G. Reg. No. 39,641  
 Crawford, Robert Reg. No. 32,122  
 Deigmault, Ronald A. Reg. No. 25,988  
 Daley, Dennis R. Reg. No. 34,994  
 Daulton, Julie R. Reg. No. 35,414  
 Davidson, Ben M. Reg. No. 38,424  
 Dempster, Shawn B. Reg. No. 34,321  
 DiPietro, Mark J. Reg. No. 28,707  
 Dryja, Michael A. Reg. No. 7-39,662  
 Edell, Robert T. Reg. No. 20,187  
 Epp Ryan, Sandra Reg. No. 7-19,667  
 Farber, Michael B. Reg. No. 32,812  
 Fauver, Cole M. Reg. No. 36,797  
 Funk, Steven R. Reg. No. 37,830  
 Gabilan, Mary Susan Reg. No. 38,729  
 Gates, George M. Reg. No. 33,503  
 Golla, Charles E. Reg. No. 26,896  
 Gorman, Alan G. Reg. No. 26,472  
 Gould, John D. Reg. No. 18,223  
 Grossens, John J. Reg. No. 33,112  
 Hamre, Curtis B. Reg. No. 29,165  
 Raving, Thomas A. Reg. No. 35,159  
 Hilloon, Randall A. Reg. No. 31,838  
 Hollingsworth, Mark A. Reg. No. 38,491  
 Johnston, Scott W. Reg. No. 7-39,721  
 Kastalic, Joseph M. Reg. No. 37,160  
 Kettelberger, Denise Reg. No. 33,324  
 Kowalchuk, Alan W. Reg. No. 31,535  
 Kowalchuk, Katherine M. Reg. No. 36,848  
 Krull, Mark A. Reg. No. 34,205  
 Lacy, Paul A. Reg. No. 23,946  
 Laney, Michael B. Reg. No. 29,555  
 Lynch, David M. Reg. No. 36,204  
 Mou, Michael L. Reg. No. 39,087  
 McCormack, Myra H. Reg. No. 36,602  
 McDaniel, Karen D. Reg. No. 37,674  
 McDonald, Daniel W. Reg. No. 37,044  
 McDonald, Wendy M. Reg. No. 34,427  
 Miller, William D. Reg. No. 37,388  
 Mueller, Douglas P. Reg. No. 30,360  
 Nasiedlak, Tyler L. Reg. No. 7-40,099  
 an, Albin J. Reg. No. 28,650  
 y, Daniel M. Reg. No. 7-40,123  
 unkett, Theodore Reg. No. 37,209  
 Pollinger, Steven J. Reg. No. 35,326  
 Reich, John C. Reg. No. 37,703  
 Railand, Earl D. Reg. No. 25,757  
 Schmaltz, David G. Reg. No. 7-38,828  
 Schmidt, Cecil C. Reg. No. 20,566  
 Schuman, Mark D. Reg. No. 31,197  
 Schumann, Michael D. Reg. No. 30,422  
 Sebald, Gregory A. Reg. No. 33,280  
 Sharp, Janice A. Reg. No. 34,051  
 Skoog, Mark T. Reg. No. 7-40,178  
 Smith, Jerome R. Reg. No. 35,684  
 Sorensen, Andrew D. Reg. No. 33,606  
 Stinebruner, Scott A. Reg. No. 38,323  
 Strawbridge, Douglas A. Reg. No. 28,275  
 Surodchoff, Kristine M. Reg. No. 34,252  
 Sumner, John P. Reg. No. 27,414  
 Summers, John S. Reg. No. 34,216  
 Tellekson, David K. Reg. No. 32,314  
 Underhill, Albert L. Reg. No. 27,403  
 Vandenburg, J. Durek Reg. No. 32,179  
 Welter, Paul A. Reg. No. 30,830  
 Williams, Douglas J. Reg. No. 27,044  
 Wood, Gregory B. Reg. No. 28,313  
 Xu, Min S. Reg. No. 39,536

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization/who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant, Gould to the contrary.

Please direct all correspondence in this case to Merchant, Gould, Smith, Edell, Welter & Schmidt at the address indicated below:

Merchant, Gould, Smith, Edell,  
 Welter & Schmidt  
 1000 Northwest Center  
 35 East Fifth Street  
 St. Paul, MN 55101-1785

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	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
1	Post Office Address	Post Office Address	City	State & Zip Code/Country
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
2	Post Office Address	Post Office Address	City	State & Zip Code/Country
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
3	Post Office Address	Post Office Address	City	State & Zip Code/Country

Signature of Inventor 201	Signature of Inventor 202	Signature of Inventor 203
X M. N. H. C. G. S. E. T.	X C. H. S. A.	X T. E. L. B.
Date X 16th September 1996	Date X 17/09/96	Date X 16.9.96

For Additional Inventors:

X Indicate here and attach sheet with same information, including date and signature.

Revised 4/5/93

2	Full Name Of Inventor	Family Name <i>4-00</i> Brydon	First Given Name John William	Second Given Name Ernest
0	Residence & Citizenship	City <i>AUX</i> Waverton	State or Foreign Country New South Wales 2060, Australia	Country of Citizenship Australia
4	Post Office Address	Post Office Address 37/10 Carr Street	City Waverton	State & Zip Code/Country New South Wales 2060, Australia
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
5	Post Office Address	Post Office Address	City	State & Zip Code/Count
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
6	Post Office Address	Post Office Address	City	State & Zip Code/Country

Signature of Inventor 204 <i>X John Brydon</i>	Signature of Inventor 205	Signature of Inventor 206
Date <i>X 17/09/96</i>	Date	Date

Revised 4/5/93



380-116



08/633,413

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hebblewhite et Examiner: N/A

al.

Serial No.: 08/633,413 Group Art Unit: N/A

Filed: June 10, 1996 Docket No.: 3961.29US01

Title: A HUMIDIFIER

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on September 23, 1996:

Michael L. Mau

PETITION FOR EXTENSION OF TIME

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

In accordance with the provisions of 37 C.F.R. §1.136(a), it is respectfully requested that a 2-month extension of time be granted in which to respond to the outstanding Office Action mailed July 15, 1996, said period of response being extended from August 15, 1996 to October 15, 1996.

310 CS 10/03/96 08633413  
1 116 380.00 CK

Our check in the amount of \$380.00 is enclosed to cover  
the required extension fee for a large entity.

Respectfully requested,

Malcolm Hebblewhite et al.,

By their Attorney(s),

Sept 23, 1996



Michael L. Mau

Reg. No. 30,087

Merchant, Gould, Smith, Edell,

Welter & Schmidt

1000 Norwest Center

55 East Fifth Street

St. Paul, MN 55101-1785

(612) 298-1055





#4

Patent Office  
Canberra

I, DAVID DANIEL CLARKE, ASSISTANT DIRECTOR PATENT SERVICES,  
hereby certify that the annexed are true copies of the Provisional specification and  
drawing(s) as filed on 8 June 1995 in connection with Application No. PN 3440 for a  
patent by RESCARE LIMITED filed on 8 June 1995.

I further certify that the annexed documents are not, as yet, open to public inspection.



WITNESS my hand this Sixteenth  
day of July 1996

A handwritten signature in cursive script, appearing to read "D Clarke".

DAVID DANIEL CLARKE  
ASSISTANT DIRECTOR PATENT SERVICES

AUSTRALIAN	
PROVISIONAL No.	DATE OF FILING
PN3440	-8 JUN. 95
PATENT OFFICE	

S & F Ref: 305080

ORIGINAL

AUSTRALIA

Patents Act 1990

**PROVISIONAL SPECIFICATION FOR THE INVENTION ENTITLED:**

A Humidifier

---

Name and Address  
of Applicant:

ResCare Limited, an Australian company, ACN 003 765  
142, of 82 Waterloo Road, North Ryde, New South Wales,  
2113, AUSTRALIA

This invention is best described in the following statement:

5005



## A HUMIDIFIER

The invention relates to a humidifier for producing humidified air, and particularly, although not exclusively, to a humidifier for use with a Continuous Positive Airway Pressure (CPAP) device.

5 A CPAP device is used in the treatment of obstructive sleep apnea syndrome, which is a disorder characterised by cycles of snoring, obstruction of the upper airway, and partial awakening during the night. In order to treat obstructive sleep apnea, a CPAP device can be used to deliver air under continuous positive pressure to the nasal passages of the patient during sleep. The positive air pressure prevents obstruction of  
10 the upper airway so that the patient is not troubled by frequent awakenings during sleep.

In order to prevent drying of the patient's airway during use of a CPAP device, it is known to pass the air through a humidifier before supplying the air to the patient. Humidification can be achieved by simply passing the air over an area of water within a humidifier so that the air absorbs moisture from the water before being delivered to the  
15 patient.

When a humidifier is used with a CPAP device, it is convenient to be able to place the CPAP device on top of the humidifier. In this case, it is desirable that the humidifier is designed so as to form a low, generally flat base for supporting the CPAP device. Such a humidifier is known as a low-profile humidifier. Because a low-profile  
20 humidifier is of low height, it is more likely to suffer from the problem of entrainment of water droplets in the output air flow to the patient. This problem arises because as the air passes through the humidifier it induces waves on the surface of the water, and water droplets are stripped from the waves by the air flow, and carried by the air flow to the outlet of the humidifier. It is also important when designing a low-profile humidifier  
25 to ensure that maximum use is made of the available water surface area. For example, there is no point in providing a large surface area of water within the humidifier if the air flow passes over only a small portion of this area.

The present invention has arisen from attempts to overcome the above difficulties, but is not limited to low-profile humidifiers, or to humidifiers for use with  
30 CPAP devices.

According to the invention there is provided a humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway, extending between the air inlet and air outlet, for directing air from the air inlet to the air outlet, the passageway  
35 being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.

The use of an elongate passageway between the air inlet and outlet ensures that the airflow passes over substantially the whole of the surface area of the water, so that the whole of the surface area of the water contributes towards humidifying the air flow.

Preferably, the passageway is arranged so as to direct the air from the air inlet to the air outlet along a single path.

This feature ensures that each portion of the surface area of the water contributes equally to the humidifying of the air flow. In an arrangement where the air flow can  
5 take a number of different paths between the air inlet and the air outlet, there is a danger that certain paths will contribute more greatly to the humidifying process than others, for example because the air is flowing at different speeds along different paths. Such an arrangement does not make maximum use of the available water surface area.

In a preferred embodiment of the invention, the passageway is divided into a  
10 plurality of elongate subpassageways and corner portions, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by the corner portions.

The subpassageways can be integrally formed with the corner portions, so that the passageway as a whole is integrally formed.

15 This feature avoids the possibility of leaks which might otherwise occur at the connections between the subpassageways and corner portions.

One or more of the corner portions can be generally U-shaped, so that the two subpassageways adjacent the or each generally U-shaped corner portion lie side by side, and substantially parallel with each other.

20 For example, if the passageway is divided into two, three or four subpassageways, the subpassageways can be arranged to form U-, S- or W-shaped serpentine passageways respectively.

It will be appreciated that the use of generally U-shaped corner portions enables the humidifier to be of compact construction, since the subpassageways lie side by side.  
25 This allows a greater number of subpassageways to be accommodated within a humidifier of a given size.

Preferably, the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards  
30 the outside side of the corner defined by the corner portion.

This feature ensures that substantially the whole of the surface area of the water in the corner portion is used for humidifying the air flow.

The last corner portion through which air passes before reaching the air outlet will be referred to below simply as "the last corner portion".

35 Desirably, the last corner portion, whether or not generally U-shaped, increases in width as it passes from the penultimate subpassageway to the last passageway.

It should be understood that the word "width" used above is intended to refer to the dimension of the passageway which lies generally in the plane defined by the surface of the water, and perpendicular to the direction of the air flow along the passageway.

40 Furthermore, the "last" subpassageway is the last passageway through which air in the



humidifier passes before reaching the air outlet. The advantage of increasing the width of the passageway at the last corner portion is that it reduces the amount of turbulence in the air flow at the corner portion. It should be noted that most of the air turbulence within the passageway is created at the corner portions, and this turbulence is particularly acute in the case of U-shaped corner portions. The air turbulence creates waves on the water surface which can result in entrainment of water droplets in the air flow at the air outlet, or, if the waves are large enough, indirect spillage of water into the air outlet. By reducing the air turbulence at the last corner portion, the chances of water spillage, or entrainment of water droplets, at the air outlet are greatly reduced.

Preferably, the width of the last corner portion increases gradually as the last corner portion passes from the penultimate subpassageway to the last subpassageway.

Such a gradual increase causes a greater reduction in air turbulence at the corner portion.

In one embodiment of the invention, the ratio of the width of the last corner portion at its inlet side to its width at its outlet side is 9:10.

Preferably, the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

The gradual increase in height of the roof of the last subpassageway results in a smooth air flow and less air turbulence.

Ideally, the roof of the last subpassageway rises gradually along substantially the whole length of the last subpassageway.

Similarly, the roof of the first subpassageway may rise gradually along the length of the first subpassageway, towards the air inlet, in the same manner as the roof of the last subpassageway.

In a preferred embodiment of the invention, the passageway terminates at an end wall adjacent the air outlet, and the air outlet is arranged so that it communicates with the interior of the passageway at a location which is spaced away from said end wall.

When the air flow within the passageway creates waves on the surface of the water, it has been found that the water has a tendency to splash against the end wall of the passageway, resulting in a danger of water spilling into the air outlet. It has been found that by spacing the air outlet aperture away from the end wall, the danger of water spilling into the air outlet is greatly reduced.

In a second aspect of the invention there is provided a humidifier for producing humidified air, comprising a chamber adapted to be partially filled with water, the chamber being provided with an air inlet for receiving air to be humidified, and an air outlet for discharging humidified air from the chamber after the air has passed over said water, wherein the air outlet is arranged so that it communicates with the interior of the chamber at a location which is spaced away from all of the chamber walls.

A preferred embodiment of the invention will now be described, by a way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a W-shaped humidifier formed from a transparent material; and

5 Fig. 2 is a side view showing the outlet attachment of the humidifier in greater detail.

Referring to Fig. 1, the humidifier 1 comprises a W-shaped elongate passageway 2, an air inlet 4 and an air outlet 6. The humidifier is integrally formed by an extrusion blow-moulding process from translucent, polycarbonate material. During use, the  
10 humidifier is partially filled with water, and a use of the translucent material enables the operator to see the water level within the passageway 2 at all times. Furthermore, the integral construction of the humidifier avoids the possibility of leaks of air and water from within the humidifier.

The humidifier is a low-profile humidifier, and is of generally flat, rectangular,  
15 box-like construction. The upper and lower walls 8 and 10 of the humidifier are pinched together along a central strip 12 and two outer strips 14 so as to define the shape of the passageway 2. The central strip 12 extends to the rear wall 16 of the humidifier, and the outer strips 14 extend to the front wall 18 of the humidifier, so as to define a generally W-shaped passageway 2 which comprises four subpassageways 20, 22, 24, and 26. The  
20 central strip 12 and the two outer strips 14 also provide the humidifier with increased structural rigidity.

The four subpassageways 20, 22, 24, and 26 are each of generally straight, elongate construction. The first subpassageway 20 is connected to the second subpassageway 22 by a first corner portion 28; the second subpassageway 22 is  
25 connected to the third (or penultimate) subpassageway 24 by a central corner portion 30; and the third subpassageway 24 is connected to the fourth (or last) subpassageway 26 by a last corner portion 32. All of the corner portions are generally U-shaped, so that the four subpassageways 20, 22, 24, and 26 lie side by side and generally parallel with each other.

30 The central strip 12 bulges gradually as the central strip 12 passes towards the front wall 18 of the humidifier, to form an enlarged end portion 34 which defines the shape of the inside side of the central corner portion 30. The shape of the enlarged portion 34 ensures that air passing through the central corner portion 30 is forced outwardly towards the corner regions 36 of the central corner portion 30, so that  
35 maximum use is made of the available water surface area within the central corner portion 30.

The width of the last corner portion 32 increases gradually from the third subpassageway 24 to the fourth subpassageway 26. For example, the dimensions labelled a, b and c in the drawing can be 40mm, 45mm, and 50mm respectively. The  
40 increase in width of the last corner portion 32 reduces air turbulence within the last



corner portion 32, and hence reduces the entrainment of water droplets in the air flow, and reduces spillage of water into the air outlet 6.

The roofs 38 and 40 of the first and fourth subpassageways 20 and 26 respectively, rise gradually from the first and last corner portions 28 and 32 to the air inlet 4 and the air outlet 6 respectively. This allows the air inlet 4 and the air outlet 6 to be raised in position with respect to the second and third subpassageways 22 and 24, so that spillage of water into the air inlet 4 or air outlet 6 is less likely to occur. A further advantage of raising the roofs 38 and 40 with respect of the second and third subpassageways 22 and 24 is that a natural hollow or recess 41 is formed between the first and fourth subpassageways 20 and 26. The recess 41 is shaped so as to be of complementary shape to the underside of a CPAP device so that the CPAP device (not shown) fits snugly on top of the humidifier. It should also be noted that the humidifier is of symmetrical construction, so as to reduce the risk of malfunction, or injury to a patient, if the user should accidentally mistake the air inlet for the air outlet and vice versa.

As shown in Fig. 2, the air outlet 6 is formed as an outlet attachment 42 which is attached to a circular tube 44 which projects outwardly from the end wall 46 of the fourth subpassageway 26. The outlet attachment 42 is provided with a tube 48 which projects through the circular tube 44 and into the fourth subpassageway 26, the tube 44 being gripped between the outer surface of the tube 48 and the inner surface of an outer skirt portion 49. The tube 48 extends along a portion of the length of the fourth subpassageway 26. This ensures that air can only leave the fourth subpassageway 26 via the circular aperture 50 at the end of the tube 48, which aperture 50 is spaced away from the end wall 46.

When water waves are formed within the fourth subpassageway 26, the waves have a particular tendency to splash against the end wall 46, resulting in the danger of water spilling into the air outlet 6. It has been found that spacing the aperture 50 of the air outlet 6 away from the end wall 46 overcomes this problem since the water is less turbulent away from the end wall 46. The aperture 50 should preferably be spaced at least 2 cm away from the end wall 46.

It should be appreciated that the idea of spacing the outlet aperture, in this case the aperture 50 of the tube 48, away from the walls of the humidifier is of general applicability, and may be used in other humidifiers, regardless of whether the humidifiers are formed with elongate passageways.

DATED this Eighth Day of June 1995

ResCare Limited

Patent Attorneys for the Applicant  
SPRUSON & FERGUSON

BEST COPY

633, 413



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

7

2/22/97

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
		LOWEWHITE	M 3961.29US01

011/0224

EXAMINER

ART UNIT

PAPER NUMBER

1305

DATE MAILED: 02/24/97

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on \_\_\_\_\_ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), \_\_\_\_\_ days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.                 | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152.                  |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/>  |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-4 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-4 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received  
☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be 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.
14. ☐ Other



Serial Number: 08/633,413

Page 2

Art Unit: 1305

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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:

(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.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Froelich. Note, for example, col. 2, line 69 to col. 3, line 14.

Claims 1- 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Poppel, Newton or Lenoir, particularly in view of Froelich. All of the primary references disclose a housing having an elongated passageway therein with elongated and corner portions which is to be partially filled with a liquid to be contacted by a gas flowing there over, as claimed. All of these claims are thus seen to be met in terms of structure by all

Serial Number: 08/633,413

Page 3

Art Unit: 1305

of the primary references, since all of the primary reference devices are adapted to contact water and air, and thus to function as humidifiers. In any event, Froelich may be relied on to show that it is old and obvious in the art to contact water and air in an elongated passage, and it would have been obvious to so contact water and air in any of the primary reference devices, in order to obtain more complete humidification of the air.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Froelich, particularly in view of Pando. This claim is seen to be readable on the Froelich humidifier alone, because liquid droplet separating baffles 25 project into the housing and thus form a gas outlet which is spaced from the chamber walls. In any event, it would have been obvious to replace baffles 25 with an outlet pipe that performed the same function by projecting into the contact chamber, as taught by Pando (note outlet 7, Fig. 1).

It is suggested that claim 3 may be made allowable by rewriting it in independent form, and inserting -, said housing having a relatively low profile, being of generally flat, box-like construction, and having a recess in its upper surface shaped to be of complementary shape to the underside of a continuous positive airway pressure device adapted to be mounted thereon- after "portions" in line 5 of claim 3.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Tim R. Miles, whose telephone number is (703) 308-3790. The Examiner can normally be reached on Monday-Thursday from 7:30AM-6PM.



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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. J. Woo, can be reached on (703)-308-3793. The FAX phone number for this Group is (703)-305-7719.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0651.

TRM  
February 18, 1997

  
Tim R. MILES  
PRIMARY EXAMINER  
ART UNIT 1305

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. <u>918,004</u> <u>633,415</u>	GROUP/UNIT <u>1305</u>	ATTACHMENT TO PAPER NUMBER <u>5</u>		
NOTICE OF REFERENCES CITED				APPLICANT(S) <u>Hobblewhite et al</u>				
U.S. PATENT DOCUMENTS								
*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE	
	A	<u>2710178</u>	<u>6-55</u>	<u>Froelich</u>	<u>261</u>	<u>119.1</u>		
	B	<u>1817265</u>	<u>8-31</u>	<u>Pando</u>	<u>"</u>	<u>"</u>		
	C	<u>1730212</u>	<u>10-29</u>	<u>Ireland</u>	<u>"</u>	<u>"</u>		
	D	<u>1869344</u>	<u>7-32</u>	<u>Schonbein</u>	<u>"</u>	<u>"</u>		
	E							
	F							
	G							
	H							
	I							
	J							
	K							
FOREIGN PATENT DOCUMENTS								
*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG. SPEC.
	L	<u>25866 d</u>	<u>1-1897</u>	<u>British</u>	<u>Poppel</u>	<u>261</u>	<u>119.1</u>	
	M	<u>2439 d</u>	<u>9-1865</u>	<u>"</u>	<u>Newton</u>	<u>"</u>	<u>"</u>	
	N	<u>1589 d</u>	<u>5-1874</u>	<u>"</u>	<u>Lenoir</u>	<u>"</u>	<u>"</u>	
	O	<u>175793</u>	<u>10-06</u>	<u>Germany</u>	<u>Luttgen</u>	<u>"</u>	<u>"</u>	
	P							
	Q							
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)								
	R							
	S							
	T							
	U							
EXAMINER <u>Zin A. Nalis</u>				DATE <u>2-18-97</u>				

\* A copy of this reference is not being furnished with this office action.  
(See Manual of Patent Examining Procedure, section 707.05 (a).)



# File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 1997-02-24

Document Title - Notice of Formal Drawings Required

633,413


**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/633,413	06/10/96	HEBBLEWHITE	R 3961.290S01

A3M1/0930  
 [ **MERCHANT GOULD SMITH EDELL**  
**WELTER & SCHMIDT**  
 1000 NORWEST CENTER  
 55 EAST FIFTH STREET  
 ST PAUL MN 55101-1785 ]

EXAMINER	
MILES, T	
ART UNIT	PAPER NUMBER
1305	6

DATE MAILED: 09/30/97

**NOTICE OF ABANDONMENT**

This application is abandoned in view of:

1. ☒ Applicant's failure to respond to the Office letter, mailed 2-24-97.
2. ☐ Applicant's letter of express abandonment which is in compliance with 37 C.F.R. 1.138.
3. ☐ Applicant's failure to timely file the response received \_\_\_\_\_ within the period set in the Office letter.
4. ☐ Applicant's failure to pay the required issue fee within the statutory period of 3 months from the mailing date of \_\_\_\_\_ of the Notice of Allowance.
  - ☐ The issue fee was received on \_\_\_\_\_.
  - ☐ The issue fee has not been received in Allowed Files Branch as of \_\_\_\_\_.

In accordance with 35 U.S.C. 151, and under the provisions of 37 C.F.R. 1.316(b), applicant(s) may petition the Commissioner to accept the delayed payment of the issue fee if the delay in payment was unavoidable. The petition must be accompanied by the issue fee, unless it has been previously submitted, in the amount specified by 37 C.F.R. 1.17(l), and a verified showing as to the causes of the delay.

If applicant(s) never received the Notice of Allowance, a petition for a new Notice of Allowance and withdrawal of the holding of abandonment may be appropriate in view of *Delgar Inc. v. Schuyler*, 172 U.S.P.Q. 513.
5. ☐ Applicant's failure to timely correct the drawings and/or submit new or substitute formal drawings by \_\_\_\_\_ as required in the last Office action.
  - ☐ The corrected and/or substitute drawings were received on \_\_\_\_\_.
6. ☐ The reason(s) below.

*Tim R Miles*  
**TIM R. MILES**  
**PRIMARY EXAMINER**  
**GROUP 1300**

9-23-97



**BEST COPY**

PATENT APPLICATION FEE DETERMINATION RECORD					Application or Docket Number	
Effective October 1, 1995					6033413	
<b>CLAIMS AS FILED - PART I</b>						
(Column 1)		(Column 2)		SMALL ENTITY		OR
FOR	NUMBER FILED	NUMBER EXTRA		RATE	FEE	OTHER THAN SMALL ENTITY
BASIC FEE					375.00	
TOTAL CLAIMS	4	minus 20 =	*	x\$11=		x\$22=
INDEPENDENT CLAIMS	2	minus 3 =	*	x39=		x78=
MULTIPLE DEPENDENT CLAIM PRESENT				+125=		+250=
				TOTAL		TOTAL
<small>* If the difference in column 1 is less than zero, enter "0" in column 2</small>						
<b>CLAIMS AS AMENDED - PART II</b>						
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		OR
Total	*	Minus	**	=		
Independent	*	Minus	***	=		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		OR
Total	*	Minus	**	=		
Independent	*	Minus	***	=		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		OR
tal	*	Minus	**	=		
ependent	*	Minus	***	=		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						
<small>try in column 1 is less than the entry in column 2, write "0" in column 3.  highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."  highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."  highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</small>						

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE





71058 U.S. PTO  
08/918004  
08/25/97

PATENT APPLICATION SERIAL NO. \_\_\_\_\_

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

09/23/1997 DRUTLER 00000043 08918004  
01 FC:101 770.00 00

PTO-1556  
(5/87)



A1FWC#

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532284333US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re File Wrapper Continuation  
Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner:

Art Unit:

**FILE WRAPPER CONTINUATION APPLICATION  
TRANSMITTAL UNDER 37 C.F.R. § 1.62**

Box FWC  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This is a request to file a file wrapper continuation application  
under 37 C.F.R. § 1.62, of U.S. Patent Application Serial No.  
08/633,413 for A HUMIDIFIER, filed June 10, 1996.

Priority under 35 U.S.C. § 120 of Serial No. 08/633,413 is hereby  
claimed.

A Preliminary Amendment is filed herewith. After entry of this  
Amendment, 16 claims remain pending in the present application  
including three independent claims.

Also enclosed herewith is a Petition for Three Month Extension of  
Time.

Enclosed is a check for \$1,700.00 representing the large entity  
filing fee and the fee for a three month extension of time. Any fee



deficiency associated with this filing may be charged to Deposit Acct.  
No. 08-2623.

Please contact the undersigned by telephone with any questions  
relating to the present application.

Respectfully submitted,

August 25, 1997

  
\_\_\_\_\_  
Andrew D. Sorensen, Reg. No. 33,606  
Attorney for Applicants  
Holland & Hart <sup>LLP</sup>  
Post Office Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8194  
Facsimile: (303) 295-8261

DENVER:0785068.01

7/10/98  
P2  
2-13-98

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532284333US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re File Wrapper Continuation  
Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner:

Art Unit:

PRELIMINARY AMENDMENT

Box FWC  
Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

Please enter this preliminary amendment in the file wrapper  
continuation application of Serial. No. 08/633,413, filed concurrently  
herewith. Please enter the following amendments:

In the Claims:

Please cancel claims 1-4.

Please add new claims 5-20 as follows:

5. A humidifier for producing humidified air, comprising an air  
inlet for receiving air to be humidified, an air outlet for discharging  
humidified air, and an elongate passageway extending between the air  
inlet and air outlet for directing air from the air inlet to the air outlet, the  
passageway being adapted to be partially filled with water so that air  
passing along the passageway becomes humidified as it passes over  
the water from the air inlet to the air outlet, said passageway being  
divided into a plurality of elongate subpassageways and at least one

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A1

corner portion, each subpassageway being substantially straight, and  
10 the subpassageways being connected end to end along the length of  
the passageway by one of more the corner portions and wherein said  
housing has a relatively low profile, being of generally flat, box-like  
construction, and includes a recess in its upper surface shaped to be of  
a complementary shape to the underside of a continuous positive  
15 airway pressure device adapted to be mounted thereon.

6. A humidifier for producing humidified air, comprising an air  
inlet for receiving air to be humidified, an air outlet for discharging  
humidified air, and an elongate passageway extending between the air  
inlet and air outlet for directing air from the air inlet to the air outlet, the  
5 passageway being adapted to be partially filled with water so that air  
passing along the passageway becomes humidified as it passes over  
the water from the air inlet to the air outlet.

7. A humidifier as claimed in claim 6, wherein the  
passageway is arranged so as to direct the air from the air inlet to the  
air outlet along a single path.

8. A humidifier as claimed in claim 6, wherein the  
passageway is divided into a plurality of elongate subpassageways and  
at least one corner portion, each subpassageway being substantially  
straight, and the subpassageways being connected end to end along  
5 the length of the passageway by one of more the corner portions and  
said housing having a relatively low profile, being of generally flat, box-  
like construction, and having a recess in its upper surface shaped to be  
of complementary shape to the underside of a continuous positive  
airway pressure device adapted to be mounted thereon.

9. A humidifier as claimed in claim 8, wherein the  
subpassageways are integrally formed with the corner portions, such  
that the passageway as a whole is integrally formed.

10. A humidifier as claimed in claim 8, wherein one or more of  
the corner portions are generally U-shaped, such that the two



subpassageways adjacent the or each generally U-shaped corner portion lie side by side, and substantially parallel with each other.

11. A humidifier as claimed in claim 8, wherein the passageway is divided into two, three or four subpassageways and the subpassageways are arranged to form U-, S- or W-shaped serpentine passageways respectively.

12. A humidifier as claimed in claim 8, wherein the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards the outside side of the corner defined by the corner portion.

13. A humidifier as claimed in claim 8, wherein the corner portion through which air passes before reaching the air outlet is the last corner portion and said last corner portion increases in width as it passes from the penultimate subpassageway to the last passageway, wherein said last subpassageway is the last passageway through which air in the humidifier passes before reaching the air outlet.

14. A humidifier as claimed in claim 13, wherein the width of the last corner portion increases gradually as the last corner portion passes from the penultimate subpassageway to the last subpassageway.

15. A humidifier as claimed in claim 13, wherein the ratio of the width of the last corner portion at its inlet side to its width at its outlet side is 9:10.

16. A humidifier as claimed in claim 13, wherein the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

SUB  
B4

17. A humidifier as claimed in claim 6, wherein the roof of the last subpassageway rises gradually along substantially the whole length of the last subpassageway.

18. A humidifier as claimed in claim 6, wherein the roof of the first subpassageway rises gradually along the length of the first subpassageway towards the air inlet.

SUB C7

19. A humidifier as claimed in claim 6, wherein the passageway terminates at an end wall adjacent the air outlet, and the air outlet is arranged so that it communicates with the interior of the passageway at a location which is spaced away from said end wall.

6e1

20. A humidifier for producing humidified air, comprising a chamber adapted to be partially filled with water, the chamber being provided with an air inlet for receiving air to be humidified, and an air outlet for discharging humidified air from the chamber after the air has passed over said water, wherein the air outlet is arranged so that it communicates with the interior of the chamber at a location which is spaced away from all of the chamber walls.

#### REMARKS

This application is now felt to be in condition for examination and such examination and such action is respectfully requested.

Signed at Denver, Colorado, this 25th day of August, 1997.

Respectfully submitted,

  
Andrew D. Sorensen  
Registration No. 33,606  
Attorney for Applicants  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8194  
Facsimile: (303) 295-8261

DENVER:0785068.01

3c405 U.S. PTO  
08/25/97

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532284333US

71050 U.S. PTO  
08/25/97

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re File Wrapper Continuation  
Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/633413

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner:

Art Unit: 1305

PETITION FOR THREE MONTH EXTENSION OF TIME

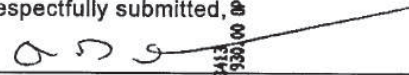
Box FWC  
Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

The Applicant, by and through the undersigned attorney, hereby petitions for a three month extension of time, i.e., up to and including August 25, 1997, in which to respond to the Office Action mailed February 24, 1997. Our check in the amount of \$1,700.00 is enclosed and includes the payment of the \$930.00 fee required to be paid under 37 C.F.R. 1.17 for a three month extension of time. Any additional fee may be charged to Deposit Account No. 08-2623.

WHEREFORE, it is respectfully requested that the three month extension of time be granted.

Signed at Denver, Colorado, this 25th day of August, 1997.

Respectfully submitted, 

Andrew D. Sorensen, Registration No. 33,606  
Attorney for Applicants  
HOLLAND & HART LLP  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8194  
Facsimile: (303) 295-8261

09/23/1997 DBUTLER 00000043 08918004  
02 FC:117 -930.00 DP

Adjustment date: 10/29/1997 CSTREATE  
09/23/1997 DBUTLER 00000043 08918004  
02 FC:117 -930.00 DP

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GROUP 1300

10/29/1997 DBUTLER 00000043 08918004  
02 FC:117 -930.00 DP



Transaction History Date **1998-03-25**  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at [www.uspto.gov](http://www.uspto.gov)

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**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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01/21/98

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01/21/98  
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01/21/98

01/21/98

EXAMINER

01/21/98

ART UNIT

PAPER NUMBER

01/21/98

8

DATE MAILED:

03/25/98

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

Commissioner of Patents and Trademarks

**Office Action Summary**Application No.  
**08/918,004**Applicant(s)  
**HEBBLEWHITE ET AL**Examiner  
**Scott Bushey**Group Art Unit  
**1724**☒ Responsive to communication(s) filed on Aug 25, 1997☐ This action is **FINAL**.☐ 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.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**☒ Claim(s) 5-20 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.☒ Claim(s) 5-20 is/are rejected.☐ Claim(s) \_\_\_\_\_ is/are objected to.☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.**Application Papers**☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.☒ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.**Priority under 35 U.S.C. § 119**☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been☐ received.☒ received in Application No. (Series Code/Serial Number) 08/633,413.☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).**Attachment(s)**☐ Notice of References Cited, PTO-892☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_☐ Interview Summary, PTO-413☐ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1724

#### **DETAILED ACTION**

1. This application filed under former 37 CFR 1.62 lacks the necessary reference to the prior application. A statement reading "This is a continuation of Application No. 08/633,413, filed June 10, 1996, now abandoned." should be entered following the title of the invention or as the first sentence of the specification.
2. The following guidelines illustrate the preferred layout and content for patent applications. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

The following order or arrangement is preferred in framing the specification and, except for the reference to "Microfiche Appendix" and the drawings, each of the lettered items should appear in upper case, without underlining or bold type, as section headings. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) Title of the Invention.
- (b) Cross-References to Related Applications.
- (c) Statement Regarding Federally Sponsored Research or Development.
- (d) Reference to a "Microfiche Appendix" (see 37 CFR 1.96).
- (e) Background of the Invention.
  1. Field of the Invention.
  2. Description of the Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) Brief Summary of the Invention.
- (g) Brief Description of the Several Views of the Drawing(s).
- (h) Detailed Description of the Invention.
- (i) Claim or Claims (commencing on a separate sheet).
- (j) Abstract of the Disclosure (commencing on a separate sheet).
- (k) Drawings.
- (l) Sequence Listing (see 37 CFR 1.821-1.825).

Applicant should insert the appropriate headings into the instant application.



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Page 3

Art Unit: 1724

3. The disclosure is objected to because of the following informalities: on page 5 of the specification, the last four lines thereof, beginning with line 35 should be deleted in there entirety.

Appropriate correction is required.

4. Claims 5, and 8-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, line 11, "more" apparently should be deleted so as to allow the claim to make sense.

In claim 8, line 5, "more" apparently should be deleted so as to allow the claim to make sense.

In claim 17, "the roof" and "the last subpassageway" both lack antecedent basis.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 6, 7, and 17-20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Froelich (Fig. 2; col. 2, line 69 through col. 3, line 14).

Applicant should note that the gas/liquid contact passageway of Froelich is shown in the form of three contiguous subpassageways, wherein the roof (7) of the first subpassageway rises gradually toward the air inlet, and the roof (8) of the last subpassageway rises gradually along the

Serial Number: 08/918,004

Page 4

Art Unit: 1724

whole length of the last subpassageway. Applicant should also note that the space between the baffles (25) provides an air outlet that is in communication with the chamber interior, while being spaced away from all of the chamber walls, including the end wall (5) that defines the end of the passageway.

7. 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:

(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.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froelich taken in view of Pando.

As should be evident from the rejection statement of paragraph 6 above, claims 19 and 20 are seen to be readable on the Froelich humidifier alone, because the liquid droplet separating baffles (25) project into the housing and thus form a gas outlet that is spaced from the chamber

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Page 5

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walls. In any event, it would have been obvious for an artisan at the time of the invention, to replace baffles (25) of Froelich with an outlet pipe that performed the same function by projecting into the contact chamber, as taught by Pando (note outlet 7 of Fig. 1).

9. Claim 5 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112 set forth in this Office action.

Claim 5 would be allowable for the reasons as set forth in Paper No. 5 of parent application S.N. 08/633,413.

10. Claims 8-16 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 8-16 would be allowable in view of the recitation by instant claim 8 of the same allowable language as claim 5 as noted above.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581.

csb

March 21, 1998

C. SCOTT BUSHEY  
PRIMARY EXAMINER  
GROUP 1300

  
3-21-98





CP1724\$

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM263018431US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.: 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner: C. BUSHBY

Art Unit: 1724

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CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed

1. Information Disclosure Statement,
2. Form PTO-1449,
3. References,
4. Check in the Amount of \$240.00; and
5. Return Card,

and this Certificate of Mailing by Express Mail, relating to the above application, were deposited as "Express Mail", Mailing Label No. EM263018431US, with the U.S. Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on June 11, 1998.

June 11, 1998

Valerie Brown  
Mailer

June 11, 1998

Andrew D. Sorensen  
Andrew D. Sorensen, Reg. No. 33,608  
for HOLLAND & HART LLP  
Post Office Box 8749  
555 Seventeenth Street, Suite 3200  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8194  
Facsimile: (303) 295-8261

DENVER:0847636.01



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PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM263018431US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
In re Application of:

Malcolm HEBBLEWHITE, et al.

Examiner: C. BUSHEY

Serial No.: 08/918,004

Art Unit: 1724

Filed: August 25, 1997

For: A HUMIDIFIER

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Pursuant to 37 C.F.R. § 1.97 the Examiner may wish to consider the references listed on the attached PTO Form-1449. In submitting the references for the Examiner's consideration, no representation is made or implied that the references are or are not material to examination of the application. The Examiner is encouraged to make his or her own determination of materiality. Copies of the references are provided.

This Information Disclosure Statement is being filed pursuant to 37 C.F.R. §1.97 (c), after issuance of a first office action in the case. A check in the amount of \$240.00 is enclosed representing the required petition fee. Any further fees associated with this communication may be charged to Deposit Account No. 08-2623.

June 11, 1998

as  
Andrew D. Sorensen, Reg. No. 33,606  
for HOLLAND & HART LLP  
Post Office Box 8749  
555 Seventeenth Street, Suite 3200  
Denver, Colorado 80201-8749  
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Facsimile: (303) 295-8261

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98 JUN 18 AM 7:29  
GROUP 100

FORM PTO-1449 (Modified)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 38730.830007.001	SERIAL NO. 08/918,004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		APPLICANT: Malcolm HEBBLEWHITE, et al.	
		FILING DATE August 25, 1997	GROUP 1724



U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
crb	2,712,927	07/12/55	Blum			
crb	2,953,355	09/20/60	Hungate			
crb	3,659,604	05/02/72	Melville, et al.			
crb	3,869,529	03/04/75	Follette			
crb	3,903,883	09/09/75	Pecina, et al.			
crb	3,987,133	10/19/76	Andra			
crb	4,051,205	09/27/77	Grant			
crb	4,060,576	11/29/77	Grant			
crb	4,110,419	08/29/78	Miller			
crb	4,201,204	05/06/80	Rinne, et al.			
crb	4,203,027	05/13/80	O'Hare, et al.			
crb	4,346,048	08/24/82	Gates			
crb	4,389,353	06/21/83	Gates			
crb	4,448,035	05/15/84	Moriyama, et al.			
crb	4,590,772	05/27/86	Nose, et al.			
crb	4,595,139	06/17/86	Levine			
crb	4,621,632	11/11/86	Bartels, et al.			
crb	5,163,423	11/17/92	Suzuki			
crb	5,231,979	08/03/93	Rose, et al.			
crb	5,240,177	08/31/93	Muramatsu, et al.			
crb	5,367,604	11/22/94	Murray			
crb	5,637,997	07/23/96	Mechlenburg, et al.			
crb	5,658,084	09/24/96	Daniell, et al.			
crb	5,590,644	01/07/97	Rosenkoetter			
crb	5,598,837	02/04/97	Sirlanne, Jr. et al.			
crb	5,673,687	10/07/97	Dobson et al.			

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GROUP 1724

Exr. C.S. B S

DATE: 10-5-98





Sheet 2 of 2

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

		DOCUMENT NUMBER	PUBLISHED DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
ans		GB 1 294 808	11/01/72	Great Britain				
ans		FR 2 630 917	11/10/89	France				X
ans		EP 0 535 952 A1	07/04/93	Europe				
ans		AU 9226120	07/06/95	Australia				
ans		WO 96/35911	11/14/96	PCT				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages etc.)


EXAMINER

CS-PK

DATE CONSIDERED

10-5-98

EXAMINER: Initial if citation 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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GROUP 100

PATENT  
Express Mail No. EM135568789US  
Attorney Docket No. 38730.830007.001

In re application of: Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

THE COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231



98 SEP 32 4:17:45  
RECEIVED  
GROUP 1300

Sir:

Transmitted herewith for filing is an Amendment, First Supplemental Information Disclosure Statement and Petition for Three Month Extension in the above-identified application.

☒ Small entity status of this application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.

☐ A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed.

☐ No additional fee is required.

The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)		(Col. 3)	SMALL ENTITY			OTHER THAN A SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDIT. FEE	OR	RATE	ADDIT. FEE
TOTAL	14	MINUS	20	=	0	x 11 =	\$		x 22 =	\$
INDEP.	2	MINUS	3	=	0	x 41 =	\$		x 82 =	\$
						+130 =	\$		+260 =	\$
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEP. CLAIM						TOTAL	\$ 0		TOTAL ADDIT. FEE	\$

\* If the entry in Col. 1 is less than the entry in Col.2, write "0" in Col. 3.

\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.

\*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment or the number of claims originally filed.

☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_. A duplicate of this sheet is attached.

☒ A check in the amount of \$ 475.00 is attached in payment of the fee for a three month extension.

A check in the amount of \$240.00 is enclosed in payment of the fee for Information Disclosure Statement).

☒ The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 08-2623. A duplicate copy of this sheet is attached.

☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.

☒ Any in patent application processing fees under 37 CFR 1.17.

Lee R. Osman  
HOLLAND & HART LLP  
555 Seventeenth Street, Suite 3200  
Post Office Box 8749  
Denver, Colorado 80201-8749  
(303) 295-8589

Dated: September 25, 1998

DENVER:0871132.01



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PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM135568789US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed Amendment Transmittal Letter; Amendment; Petition for Three Month Extension of Time; Check in the Amount of \$475.00; First Supplemental Information Disclosure Statement; Form PTO-1449; Check in the Amount of \$240.00; Copy of Cited Reference; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EM135568789US with the United States Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on September 25, 1998.

September 25, 1998

Valerie Brown  
Mailer

September 25, 1998

Lee R. Osman  
Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
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PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM135568789US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

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GROUP 1300

AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This Amendment is in response to the Office Action dated March 25, 1998. Also filed herewith is a Petition for Three Month Extension of Time and the requisite fee for such extension.

In the Specification:

At page 1, line 2, just after the Title, insert This is a continuation of  
Application No. 08/633,413, filed June 10, 1996, now abandoned.

At page 1, line 2, after the above amendment, insert a new line  
including the heading --BACKGROUND--.

At page 1, line 31, insert a new line including the heading  
--SUMMARY OF THE INVENTION--.

At page 4, line 1, insert a new line including the heading--BRIEF  
DESCRIPTION OF THE DRAWINGS--.

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At page 4, line 7, insert a new line including the heading --DETAILED DESCRIPTION OF THE INVENTION--.

At page 5, lines 35 to end of page, delete "DATED this Eighth Day of June 1995 ResCare Limited Patent Attorneys for the Applicant SPRUSON & FERGUSON".

At page 6, line 1, insert the heading--CLAIMS--.

At page 7, line 1, delete "A HUMIDIFIER".

In the Claims:

Please cancel claims 8 and 20.

Please amend claims 5, 6, 9, 10, 11, 12, 13, 17 and 18 as follows:

Sub C1

B2

5. (Amended) A humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one [of] or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-like construction, and includes a recess in its upper surface shaped to be of a complementary shape to the underside of a continuous positive airway pressure device adapted to be mounted thereon.

6. (Amended) A humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between

B<sup>2</sup>  
Cont'd

- the air inlet and air outlet for directing air from the air inlet to the air outlet,  
5 the passageway being adapted to be partially filled with water so that air  
passing along the passageway becomes humidified as it passes over the water  
from the air inlet to the air outlet, wherein the passageway is divided into a  
plurality of elongate subpassageways and at least one corner portion, each  
subpassageway being substantially straight, and the subpassageways being  
10 connected end to end along the length of the passageway by one or more of  
the corner portions and said housing having a relatively low profile, being of  
generally flat, box-like construction, and having a recess in its upper surface  
shaped to be of complementary shape to the underside of a continuous positive  
airway pressure device adapted to be mounted thereon.

In claim 9, at line 1, replace "8" with --6--.

In claim 10, at line 1, replace "8" with --6--.

In claim 11, at line 1, replace "8" with --6--.

In claim 12, at line 1, replace "8" with --6--.

Sub C4  
B<sup>3</sup>

13. (Amended) A humidifier as claimed in claim [8] 6, including a  
last passageway being the last passageway through which air in the humidifier  
passes before reaching the air outlet, wherein the corner portion through  
which air passes before reaching the air outlet is the last corner portion and  
5 said last corner portion increases in width as it passes from the penultimate  
subpassageway to the last passageway[, wherein said last subpassageway is  
the last passageway through which air in the humidifier passes before reaching  
the air outlet].

B<sup>4</sup> Sub C6

17. (Amended) A humidifier as claimed in claim 6, [wherein the  
roof of] including a last subpassageway being the last passageway through  
which air in the humidifier passes before reaching the air outlet, the last  
subpassageway [rises] including a roof or wall rising gradually along

[3]



B<sup>4</sup>  
Cont'd

5 substantially the whole length of the last subpassageway towards the air outlet.

18. (Amended) A humidifier as claimed in claim 6, [wherein the roof of] including a first passageway being the first subpassageway through which the air in the humidifier passes after leaving the inlet, the first subpassageway [rises] including a roof or wall rising gradually along the length of the first subpassageway towards the air inlet.

#### REMARKS

Claims 5, 6, 9, 10, 11, 12, 13, 17 and 18 are amended, claims 8 and 20 are canceled, and claims 5-7 and 9-19 remain in this application for reconsideration by the Examiner.

#### Reference to Prior Application

The appropriate reference to the abandoned parent application has been inserted in the first line of the specification following the title.

#### Specification Issues

The specification has been amended to include the appropriate headings as suggested by the Examiner.

The date and title block on page 5 of the specification has been deleted as requested by the Examiner.

#### 35 U.S.C. §112 Rejections

Claims 5 and 8-17 were rejected under 35 U.S.C. §112, second paragraph. These claims, in particular claims 5, 6 (previously claim 8), 13, 17 and 18, have been appropriately amended as required by the Examiner to overcome the stated rejections.

**Allowable Subject Matter**

The Examiner states that claim 5 would be allowable if re-written to overcome the stated §112 rejections. Claim 5 has been amended to overcome the basis of the Examiner's rejection.

The Examiner provides that claims 8-16 would be allowable if re-written to overcome the stated §112 rejections and to include all of the limitations of the base claim and any intervening claims. Claim 6 has been amended to include the elements of claim 8, which depended from claim 6. Thus, claim 6 is believed to be allowable. Claims 7 and 9-16 each depend variously from claim 6, and are thus also believed to be allowable.

Claim 17 is believed to be allowable as it depends from allowable claim 6.

Claims 18 and 19 are also believed to be allowable since each depends from allowed claim 6.

As set forth above, claims 5-7, and 9-19 are believed to be allowable. Such action is respectfully requested. The Examiner is encouraged to contact the undersigned by telephone to facilitate the expeditious allowance of this application.

Signed at Denver, Colorado, this 25<sup>th</sup> day of September, 1998.

  
\_\_\_\_\_  
Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
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DENVER:0869778.01



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM135568789US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.: 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

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ec

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FIRST SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Pursuant to 37 C.F.R. § 1.97 the Examiner may wish to consider the reference listed on the attached PTO Form-1449. In submitting the reference for the Examiner's consideration, no representation is made or implied that the reference is or is not material to examination of the application. The Examiner is encouraged to make his or her own determination of materiality. A copy of the reference is provided.

This First Supplemental Information Disclosure Statement is being filed pursuant to 37 C.F.R. § 1.97(c), after issuance of a first office action in the case. A check in the amount of \$240.00 is enclosed representing the required petition fee. Any further fees associated with this communication may be charged to Deposit Account No. 08-2623.

Respectfully submitted,

September 25, 1998

  
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for HOLLAND & HART LLP  
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555 Seventeenth Street, Suite 3200  
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Facsimile: (303) 295-8261

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DENVER:0870969.01





Sheet 1 of 1

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE  
(Modified) PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
38730.830007.001

SERIAL NO. 08/918,004

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT  
(Use several sheets if necessary)APPLICANT  
Malcolm HEBBLEWHITE, et al.FILING DATE  
August 25, 1997

GROUP 1724

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

	DOCUMENT NUMBER	PUBLISHED DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

Ref	Respironics, Inc.; Oasis Humidity Operating Instruction; July 17, 1996;

EXAMINER 03-P25 DATE CONSIDERED 10-5-98

EXAMINER: Initial if citation 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.



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM135568789US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

PETITION FOR THREE MONTH EXTENSION OF TIME

Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

The Applicants, by and through the undersigned attorney, hereby petition for a three month extension of time, *i.e.*, up to and including September 25, 1998, in which to respond to the Office Action mailed March 25, 1998. Our check in the amount of \$475.00 is enclosed in payment of the fee required to be paid under 37 C.F.R. §1.17 for a three month extension of time. Any additional fee may be charged to Deposit Account No. 08-2623.

Signed at Denver, Colorado, this 25 day of September, 1998.

Respectfully submitted,

*Lee R. Osman*

Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8589  
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DENVER:0869778.01

RECEIVED  
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SEP 22 11 17:45



Receipt

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532669271US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

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SEP 15 1998

CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Attention: Customer Correction Branch  
Application Processing Division  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that Request to Correct Filing Receipt; copy of Filing Receipt; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EM532669271US with the United States Postal Service, addressed to Assistant Commissioner for Patents, Attention: Customer Correction Branch, Application Processing Division, Washington, D.C., 20231, on this 25th day of September, 1998.

September 25, 1998

Valerie Brown  
Mailer

September 25, 1998

Lee R. Osman  
Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
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PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532669271US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

REQUEST TO CORRECT FILING RECEIPT

Assistant Commissioner for Patents  
Attention: Customer Correction Branch  
Application Processing Division  
Washington, D.C. 20231

Sir:

Enclosed is a copy of the Official Filing Receipt received in the above identified case. The Total Claims was listed incorrectly. The Total Claims should read --16--. Also, there was an error on the Independent Claims. The correct Independent Claims should read --3--. Please issue a corrected filing receipt in this case.

Although no fee is believed to be required for this correction, any required fee may be charged to Deposit Account No. 08-2623.

Respectfully submitted,

September 25, 1998

  
Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
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DENVER:0870961.01

PTO-103X  
(Rev. 8-95)

FILING RECEIPT



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY AND COMMISSIONER  
OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
08/918,004	08/25/97	1305	\$770.00	38730.830007	2	4	2

16 3

ANDREW D SORENSEN  
HOLLAND AND HART  
P O BOX 8749  
DENVER CO 80201-8749

RECEIVED  
OCT 13 1997  
HOLLAND & HART

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. 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 write to the Application Processing Division's Customer Correction Branch within 10 days of receipt. Please provide a copy of the Filing Receipt with the changes noted thereon.

Applicant(s)

MALCOLM HEBBLEWHITE, CREMORNE, AUSTRALIA; PHILIP R.  
KWOK, WEST PYMBLE, AUSTRALIA; ROBERT E. STYLES, GIENHAVEN,  
AUSTRALIA; JOHN W.E. BRYDON, WAVERTON, AUSTRALIA.

CONTINUING DATA AS CLAIMED BY APPLICANT-

THIS APPLN IS A CON OF 08/633,413 06/10/96 ABN

FOREIGN/PCT APPLICATIONS-AUSTRALIA

PM 3440

06/08/95

TITLE  
HUMIDIFIER

PRELIMINARY CLASS: 261

Mail Ledger 10/13/97  
Docketed 10/13/97  
10/23/97

(see reverse)

Transaction History Date 1998-10-07  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at www.uspto.gov

**BEST COPY**



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
00/019,004	08/20/97	RODRIGUEZ, J. L.	M 38730.830007

JOSEPH D. SORENSON  
PATENT AND TRADEMARK  
ATTORNEY  
1000 14th Street, N.W.  
Washington, D.C. 20004

10/21/1007

EXAMINER

BUSINESS

ART UNIT

PAPER NUMBER

1007

12


DATE MAILED:

10/07/98

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

Commissioner of Patents and Trademarks



<b>Office Action Summary</b>	Application No. <b>08/918,004</b>	Applicant(s) <b>HEBBLEWHITE ET AL</b>	
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>	

☒ Responsive to communication(s) filed on 6-11-98 and 9-25-98

☒ This action is **FINAL**.

☐ 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.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) 5-7 and 9-19 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 5-7, 9-11, 13-15, and 19 is/are rejected.

☒ Claim(s) 12 and 16-18 is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3 sheets

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

#### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 5-7, 9-11, 13, 14, and 19 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Dobson et al '687 (Figs. 2, 3, 7, 8, and 13; col. 4, line 48-53).

Applicant should note that Dobson et al '687 has an effective filing date of June 7, 1995, which is the U.S. filing date of the parent application of the reference.

Dobson et al '687 clearly disclose a humidifier including a humidifier element (4) having inlet (44) and outlet (48) air passageways that carry air to and from a U-shaped serpentine passageway around baffle (46) within the humidification chamber (see Fig. 8). It is especially noteworthy that the housing (4) includes a recess (see Figs. 3, 7, and 13) in its upper surface shaped to be complementary to the underside of a continuous positive airway pressure device (1) adapted to be mounted thereon.

3. 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:

(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.

Art Unit: 1724

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobson et al '687.

Dobson et al '687 (Figs. 2, 3, 7, 8, and 13; col. 4, line 48-53) as has been applied above substantially disclose applicant's invention as recited by instant claim 15, except for the specific ratio of the width of the last corner portion at its inlet side to its width at its outlet side being 9:10. Dobson et al '687 (Fig. 8) do clearly teach a corner connecting the passageways from the inlet to the outlet around the baffle (46), in which the width thereof does gradually increase as the corner passes from the penultimate passageway to the last passageway. It would have been obvious for an artisan at the time of the invention, to optimize the width ratio of the corner connecting the passageways of the Dobson et al '687 apparatus by way of routine experimentation to thereby provide an apparatus having the desired outlet flow velocity and humidity level, such being long since established by the Courts as evidence of obviousness. See *In re Allen et al*, 105 USPQ 233.



Art Unit: 1724

5. Applicant is advised that should claim 5 be found allowable, claim 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

It is noted that the only language difference between claims 5 and 6 is that phrase "includes a recess" in claim 5 has been replaced by "having a recess" in claim 6. Therefore, the claims are identical in scope, regardless of the slight difference in wording, and the allowance of one of the claims would lead to the objection of the other for the above reasons.

6. Claims 12, and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record either taken alone or in combination with Dobson et al, which is considered to teach the apparatus of the parent claims of dependent claims 12, and 16-18, would not have suggested applicant's invention as recited by instant claims 12, and 16-18. Specifically, the bulged inside corner of claim 12, as well as the sloped roof of claims 16-18, would not have been rendered obvious by any reasonable combination of the prior art of record.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Application/Control Number: 08/918,004

Page 5

Art Unit: 1724

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Applicant should note, that the IDS's filed by applicant on June 11, 1998 and September 25, 1998, which were filed after the mailing of the first Office action mailed on March 25, 1998, were filed at a time governed by 37 CFR 1.97(c).

Filing of information disclosure statement.

37 CFR 1.97© An information disclosure statement shall be considered by the Office if filed after the period specified in paragraph (b) of this section, provided that the statement is accompanied by either a certification as specified in paragraph (e) of this section or the fee set forth in § 1.17(p), and is filed before the mailing date of either:

(1) A final action under § 1.113 or

(2) A notice of allowance under § 1.311,

whichever occurs first.

Application/Control Number: 08/918,004

Page 6

Art Unit: 1724


If information submitted during the period set forth in 37 CFR 1.97(c) with a certification is used in a new ground of rejection on unamended claims, the next Office action will not be made final since in this situation it is clear that applicant has submitted the information to the Office promptly after it has become known and the information is being submitted prior to a final determination on patentability by the Office. The information submitted with a certification can be used in a new ground of rejection and the next Office action made final, however, if the new ground of rejection was necessitated by amendment of the application by applicant. **Where the information is submitted during this period with a fee, the examiner may use the information submitted; e.g., printed publication or evidence of public use, and make the next Office action final whether or not the claims have been amended, provided that no other new ground of rejection which was not necessitated by amendment to the claims is introduced by the examiner.** See MPEP § 706.07(a). If a new ground of rejection is introduced that is neither necessitated by an amendment to the claims nor based on the information submitted with the fee set forth in 37 CFR 1.17(p), the Office action shall not be made final.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581.

csb

October 5, 1998

C. SCOTT BUSHEY  
PRIMARY EXAMINER  
GROUP 1300

  
10-5-98



CITY 1724  
PATENT  
o. EM532641242US  
o. 38730.830007.001

The fee has been calculated as shown below:

If the entry in Col. 1 is less than the entry in Col.2, write "0" in Col. 3.  
If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.  
If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.  
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment or the number of claims originally filed.

- 12/10/1998 9:41 AM Any comments or objections to processing fees under 37 CFR 1.17.

156.00 DP

DENVER 0871132 02



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532641242US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

RECEIVED  
DEC 15 1998  
UNIT 1724  
C. BUSHEY

CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed Amendment Transmittal Letter; Amendment; Check in the Amount of \$156.00; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EM532641242US with the United States Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on December 7, 1998.

December 7, 1998

Valerie Brown  
Mailer

December 7, 1998

John R. Wahl  
John R. Wahl, Reg. No. 33,044  
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III:886014 v1



*D. Lawrence*  
*#191C*  
*12-17-98*

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532641242US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

DO NOT ENTER

Serial No. 08/918,004

OK TO ENTER

*exp 12-21-98 ext. cont. 4-7-99*  
Filed: August 25, 1997

Examiner: C. BUSHEY

Art Unit: 1724

OK AS ENTERED

For: HUMIDIFIER

AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This Amendment is in response to the Office Action dated October 7, 1998. Please amend the application as follows.

In the Claims:

Please cancel claim 6.

Please amend claims 5, 7, 9-13 and 16-19 as follows:

C1 5. (Twice amended) A humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to



- C1  
Cont.
- 10 end ~~along~~ the length of the passageway by one or more of the corner portions  
and wherein said housing has a relatively low profile, being of generally flat,  
box-like construction, and includes a recess in its upper surface shaped to be of  
a complementary shape to the underside of a continuous positive airway  
pressure device adapted to be mounted thereon wherein one of said  
15 subpassageways or one of said corner section before said air outlet diverges  
toward said air outlet.

C2

7. (Amended) A humidifier as claimed in claim [6] 5, wherein the  
passageway is arranged so as to direct the air from the air inlet to the air outlet  
along a single path.

9. (Twice amended) A humidifier as claimed in claim [6] 5, wherein  
the subpassageways are integrally formed with the corner portions, such that  
the passageway as a whole is integrally formed.

C3

10. (Twice amended) A humidifier as claimed in claim [6] 5, wherein  
one or more of the corner portions are generally U-shaped, such that the two  
subpassageways adjacent the or each generally U-shaped corner portion lie  
side by side, and substantially parallel with each other.

11. (Twice amended) A humidifier as claimed in claim [6] 5, wherein  
the passageway is divided into two, three or four subpassageways and the  
subpassageways are arranged to form U-, S- or W-shaped serpentine  
passageways respectively.

Sub ELS

12. (Twice amended) [A humidifier as claimed in claim 6] A  
humidifier for producing humidified air, comprising an air inlet for receiving air  
to be humidified, an air outlet for discharging humidified air, and an elongate  
passageway extending between the air inlet and air outlet for directing air from  
5 the air inlet to the air outlet, the passageway being adapted to be partially  
filled with water so that air passing along the passageway becomes humidified  
as it passes over the water from the air inlet to the air outlet, said passageway  
being divided into a plurality of elongate subpassageways and at least one

Sub E15

C3  
cont.

10 corner portion, each subpassageway being substantially straight, and the  
subpassageways being connected end to end along the length of the  
passageway by one or more of the corner portions and wherein said housing  
has a relatively low profile, being of generally flat, box-like construction, and  
includes a recess in its upper surface shaped to be of a complementary shape to  
15 the underside of a continuous positive airway pressure device adapted to be  
mounted thereon, wherein the passageway is provided with at least one  
generally U-shaped corner portion which bulges outwardly at the inside side of  
the corner defined by the corner portion so as to force air passing through the  
corner portion outwardly towards the outside side of the corner defined by the  
corner portion.

C4

13. (Twice amended) A humidifier as claimed in claim [6] 5,  
including a last passageway being the last passageway through which air in the  
humidifier passes before reaching the air outlet, wherein the corner portion  
through which air passes before reaching the air outlet is the last corner  
5 portion and said last corner portion increases in width as it passes from the  
penultimate subpassageway to the last passageway.

Sub E16

C5

8 16. (Amended) [A humidifier as claimed in claim 13] A humidifier for  
producing humidified air, comprising an air inlet for receiving air to be  
humidified, an air outlet for discharging humidified air, and an elongate  
passageway extending between the air inlet and air outlet for directing air from  
5 the air inlet to the air outlet, the passageway being adapted to be partially  
filled with water so that air passing along the passageway becomes humidified  
as it passes over the water from the air inlet to the air outlet, said passageway  
being divided into a plurality of elongate subpassageways and at least one  
corner portion, each subpassageway being substantially straight, and the  
10 subpassageways being connected end to end along the length of the  
passageway by one or more of the corner portions and wherein said housing  
has a relatively low profile, being of generally flat, box-like construction, and  
includes a recess in its upper surface shaped to be of a complementary shape to

Sub E2  
CF  
Cont.

- 15 the underside of a continuous positive airway pressure device adapted to be mounted thereon, including a last passageway being the last passageway through which air in the humidifier passes before reaching the air outlet, wherein the corner portion through which air passes before reaching the air outlet is the last corner portion and said last corner portion increases in width as it passes from the penultimate subpassageway to the last passageway,
- 20 wherein the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

Sub E2

CB

- ~~B17~~ (Twice amended) [A humidifier as claimed in claim 6] A humidifier for producing humidified air, comprising an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from
- 5 the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the
- 10 subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, box-like construction, and includes a recess in its upper surface shaped to be of a complementary shape to the underside of a continuous positive airway pressure device adapted to be
- 15 mounted thereon, including a last subpassageway being the last passageway through which air in the humidifier passes before reaching the air outlet, the last subpassageway including a roof or wall rising gradually along substantially the whole length of the last subpassageway towards the air outlet.

~~4~~  
18. (Twice amended) [A humidifier as claimed in claim 6] A humidifier for producing humidified air, comprising an air inlet for receiving air



Sub E2

C6  
cont.

- 5 to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from  
the air inlet to the air outlet, the passageway being adapted to be partially  
filled with water so that air passing along the passageway becomes humidified  
as it passes over the water from the air inlet to the air outlet, said passageway  
being divided into a plurality of elongate subpassageways and at least one  
corner portion, each subpassageway being substantially straight, and the  
10 subpassageways being connected end to end along the length of the  
passageway by one or more of the corner portions and wherein said housing  
has a relatively low profile, being of generally flat, box-like construction, and  
includes a recess in its upper surface shaped to be of a complementary shape to  
the underside of a continuous positive airway pressure device adapted to be  
15 mounted thereon, including a first passageway being the first subpassageway  
through which the air in the humidifier passes after leaving the inlet, the first  
subpassageway including a roof or wall rising gradually along the length of the  
first subpassageway towards the air inlet.

C7

19. (Amended) A humidifier as claimed in claim [6] 5, wherein the passageway terminates at an end wall adjacent the air outlet, and the air outlet is arranged so that it communicates with the interior of the passageway at a location which is spaced away from said end wall.

#### REMARKS

This amendment is responsive to the Final Office Action mailed October 7, 1998 setting a three month shortened statutory period for response expiring on January 7, 1999. Claims 5-7 and 9-19 were pending in the application. Claim 6 has now been canceled. Claims 5, 7, 9 through 19 have been amended and are believed to now be allowable. Prompt reconsideration and passage of the application to issue are therefore earnestly solicited.

In the Office Action, claims 5-7, 9-11, 13, 14, and 19 were rejected under 35 USC 102(c) as anticipated by Dobson et al. Amended independent

claim 5 obviates this rejection. Claim 5 has been amended to specifically recite that one of the subpassageways or corner sections diverges toward the air outlet. Support for the claim amendment may be found specifically in Fig. 1 where it is shown that subpassageway 26 expands or diverges toward the air outlet 6. See also Applicant's specification, page 3, lines 8-25 and page 4, lines 37 through page 5, line 7. The expansion of the passageway before the air outlet permits humid air to slow its volumetric flow rate thereby reducing the likelihood of carrying unevaporated water droplets through the air outlet to the patient and minimize recondensation of water in the vapor phase into droplets. Claims 7, 9, 10, 11, 13, and 19 have been amended so as to depend from amended claim 5. Accordingly, claim 5, and claims 7, 9, 10, 11, 13, 14, 15, and 19 depending from claim 5 are believed to clearly now be allowable.

Claim 15 was rejected under 35 USC 103(a) as unpatentable over Dobson. Claim 15 depends from amended claim 13 which depends from amended claim 5 and is therefore believed to also be allowable for the reasons set forth above with respect to amended claim 5.

Claims 12 and 16-18 were objected to in the office Action as depending from rejected base claims but would be allowable if placed in independent form. These claims have been amended to place them in independent form including all of the limitations of any intervening claims. Accordingly, these claims are also believed to be allowable.

Claims 5, 7, and 9-19 remain pending in the application. This amendment is believed to be responsive to all points in the Office Action. As set forth above, claims 5, 7, and 9-19 are believed to be allowable. Such action is respectfully requested. Should the Examiner have any questions or unresolved concerns after receiving this amendment, he is encouraged to contact the undersigned by telephone to facilitate the expeditious allowance of this application.

Signed at Denver, Colorado, this 7th day of December, 1998.



---

John R. Wahl, Reg. No. 33,044  
Attorney for Applicants  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8093  
Facsimile: (303) 295-8261

III:886014 v1



Transaction History Date 1998-12-22  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at www.uspto.gov

**BEST COPY**



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY, DOCKET NO.
08/19/98, 004	08/25/97	FRANK SWARTZ	M 38730.830007

FRANK W. D. SCHNEIDER  
HOLLAND AND MARK  
P.O. BOX 8749  
DENVER CO 80201-8749

08/21/1222

EXAMINER

BUDNEY, C

ART UNIT	PAPER NUMBER
----------	--------------

1724

DATE MAILED:

12/22/98

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

Commissioner of Patents and Trademarks

<b>Advisory Action</b>	Application No. <b>08/918,004</b>	Applicant(s) <b>HEBBLEWHITE ET AL</b>
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>

THE PERIOD FOR RESPONSE: [check only a) or b)]

a) ☐ expires \_\_\_\_\_ months from the mailing date of the final rejection.

b) ☒ expires either three months from the mailing date of the final rejection, or on the mailing date of this Advisory Action, whichever is later. In no event, however, will the statutory period for the response expire later than six months from the date of the final rejection.

Any extension of time must be obtained by filing a petition under 37 CFR 1.136(a), the proposed response and the appropriate fee. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for the purposes of determining the period of extension and the corresponding amount of the fee. Any extension fee pursuant to 37 CFR 1.17 will be calculated from the date of the originally set shortened statutory period for response or as set forth in b) above.

☐ Appellant's Brief is due two months from the date of the Notice of Appeal filed on \_\_\_\_\_ (or within any period for response set forth above, whichever is later). See 37 CFR 1.191(d) and 37 CFR 1.192(a).

Applicant's response to the final rejection, filed on Dec 7, 1998 has been considered with the following effect, but is NOT deemed to place the application in condition for allowance:

☒ The proposed amendment(s):

☒ will be entered upon filing of a Notice of Appeal and an Appeal Brief.

☐ will not be entered because:

☐ they raise new issues that would require further consideration and/or search. (See note below).

☐ they raise the issue of new matter. (See note below).

☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

☐ they present additional claims without cancelling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_

\_\_\_\_\_

☒ Applicant's response has overcome the following rejection(s):  
102(b) rejection of claim 6 due to its proposed cancellation.

☒ Newly proposed or amended claims 12 and 16-18 would be allowable if submitted in a separate, timely filed amendment cancelling the non-allowable claims.

☒ The affidavit, exhibit or request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
The request for reconsideration with respect to claims 5, 7, 9-11, 13-15, and 19 is not persuasive since Dobson et al '687 clearly teaches (Fig. 8) a corner portion that diverges toward the air outlet (48).

☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

☒ For purposes of Appeal, the status of the claims is as follows (see attached written explanation, if any):

Claims allowed: 12 and 16-18

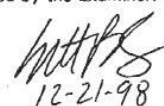
Claims objected to: None

Claims rejected: 5, 7, 9-11, 13-15, and 19 (claim 6 being cancelled by the After Final amendment)

☐ The proposed drawing correction filed on \_\_\_\_\_ ☐ has ☐ has not been approved by the Examiner.

☐ Note the attached Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☒ Other On the penultimate line of claim 5, as amended by the After Final amendment filed 12-7-98, "section" should be made plural.

  
**SCOTT BUSHEY**  
**PRIMARY EXAMINER**  
**ART UNIT 1724**



AF/GM 1724/8

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532646390US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

RECEIVED

MAR 15 1999  
RPOU 1724

CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed Amendment After Final; Petition for Two-Month Extension; Check in the Amount of \$380.00; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EM532646390US with the United States Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on March 8, 1999.

March 8, 1999

Maier

March 8, 1999

James A. Pinto, Reg. No. 40,774  
HOLLAND & HART LLP  
555-17th Street, Suite 3200  
Post Office Box 8749  
Denver, Colorado 80201  
Telephone: (303) 295-8254  
Facsimile: (303) 295-8261

HH:886014 v2





17/15 (16)

T.W.

4-7-99

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532646390US

en.  
CWB  
4-7-99

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:  
Malcolm HEBBLEWHITE, et al.  
Serial No. 08/918,004  
Filed: August 25, 1997  
For: HUMIDIFIER

Examiner: C. BUSHEY  
Art Unit: 1724

DO NOT ENTER  
OK TO ENTER  
OK AS ENTERED  
CWB 4-7-99

AMENDMENT AFTER FINAL

Assistant Commissioner for Patents  
Washington, D.C. 20231

RECEIVED  
MAR 15 1999  
GROUP 1700

Sir:

This Amendment is in response to the Advisory Action dated December 22, 1998 setting a three-month shortened statutory period expiring on January 7, 1999 (three months from the Final Office Action). A Petition for Two-Month Extension of Time, and fee, is submitted herewith. Because March 7, 1999 was a Sunday, a response filed on Monday, March 8, 1999 would fall within the Two-Month Extension. See 37 C.F.R. §1.7. Please amend the application as follows.

In the Claims:

Please cancel, without prejudice, claims 5, 7, 9-11, 13-15, 19.

REMARKS

This amendment is responsive to the Advisory Action mailed December 22, 1998 setting a three month shortened statutory period for response expiring on January 7, 1999. Claims 5, 7 and 9-19 were pending in

R

the application. Claims 5, 7, 9-11, 13-15, 19 have now been canceled, without prejudice, to be pursued in a continuation application.

The Examiner indicated that the remaining claims 12 and 16-18 are allowable. Prompt allowance of the application and remaining claims is respectfully requested.

Should the Examiner have any questions or unresolved concerns after receiving this Amendment, the Examiner should contact the undersigned by telephone to facilitate the expeditious allowance of this application.

It is believed that the proper fee for the Petition for Two-Month extension associated with this Amendment is submitted herewith. Any fee deficiency can be charged to Deposit Account 08-2623. Should any additional extensions of time be required, consider this a petition therefore and charge Deposit Account 08-2623 the required fee.

Signed at Denver, Colorado, this 8th day of March, 1999.

  
James A. Pinto, Reg. No. 40,774  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8254  
Facsimile: (303) 295-8261

HH:886014 v2



16  
T.W.  
4-299

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM532646390US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

PETITION FOR TWO-MONTH EXTENSION OF TIME

Assistant Commissioner for Patents  
Washington, D.C. 20231

RECEIVED

MAR 15 1999

GROUP 1700

Sir:

A petition for a two-month extension of time (*i.e.*, up to and including March 7, 1999) is requested for responding to the Advisory Action mailed December 22, 1998 of the Final Office Action mailed October 7, 1998. Because March 7, 1999 was a Sunday, a response filed on Monday March 8, 1999, would fall within the Two-month extension. See 37 C.F.R. § 1.7.

A check for the \$380.00 large entity fee for a two-month extension is enclosed herewith. Any additional fees required to be paid under 37 C.F.R. 1.17, may be charged to Deposit Account No. 08-2623.

Signed at Denver, Colorado, on this 8th day of March, 1999.

Respectfully submitted,

James A. Pinto, Reg. No. 40,774  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8254  
Facsimile: (303) 295-8261



Transaction History Date 1999-04-09  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at www.uspto.gov

<b>Notice of Allowability</b>	Application No. <b>08/918,004</b>	Applicant(s) <b>HEBBLEWHITE ET AL</b>
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>

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 and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to applicant's amendment filed 3-8-99.

☒ The allowed claim(s) is/are 12, and 16-18 (renumbered as 1-4, respectively).

☐ The drawings filed on \_\_\_\_\_ are acceptable.

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.

☒ received in Application No. (Series Code/Serial Number) 08/633,413.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☒ Applicant MUST submit NEW FORMAL DRAWINGS

☒ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. \_\_\_\_\_.

☐ including changes required by the proposed drawing correction filed on \_\_\_\_\_, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

|| Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☐ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☐ Examiner's Statement of Reasons for Allowance

*Scott Bushey*  
4-7-99  
SCOTT BUSHEY  
PRIMARY EXAMINER  
ART UNIT 1724

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UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

JM21/0419

ANDREW D. SORENSEN  
HURT AND HERT  
P. O. BOX 8749  
DENVER CO 80201-8749

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/518,004	08/25/97	001	BUSHLEY, C	1724 04/09/99
First Named Applicant	HUBBLEWHITE, 35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION  
HUMIDIFIER

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 38,30,830007	261 117,100	RS4	UTILITY	NO	\$1210.00	07/09/99

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE 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.**

**HOW TO RESPOND 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 changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number.  
Please direct all communications prior to issuance to Box 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.**

PATENT AND TRADEMARK OFFICE COPY

PTOL-85 (REV. 10-96) Approved for use through 05/30/99. (0651-0033)



PATENT  
 Attorney Docket No. 38730.830007.001  
 Express Mail Label No. EL353031073US

IN THE U.S. PATENT AND TRADEMARK OFFICE

CPA REQUEST TRANSMITTAL

Box CPA  
 Assistant Commissioner for Patents  
 Washington, D.C. 20231

Dear Sir:

This is a request for filing a X Continuation or        Divisional Application under  
 37 CFR 1.53(d), (Continued Prosecution Application [CPA]) of prior application Serial No.  
08/918,004 filed on August 25, 1997, entitled HUMIDIFIER.

       Enter the un-entered amendment previously filed on        under 37 C.F.R. 1.116  
 in the prior non-provisional application.

       A preliminary amendment is enclosed.

       This application is filed by fewer than all the inventors named in the prior application, 37  
 C.F.R. 1.53(d)(4).

Delete the following inventor(s) named in the prior non-provisional application:

       A new Power of Attorney is enclosed.

X An Information Disclosure Statement is enclosed:

X PTO 1449

X Copies of IDS Citations

       Small Entity Status:

       A small entity statement is enclosed.

       A small entity statement was filed in the prior non-provisional application and  
 such status is still proper and desired.

The filing fee is calculated below:

	(Col. 1)	(Col. 2)
FOR:	NO. FILED	NO. EXTRA
BASIC FEE		
TOTAL CLAIMS	4 - 20 =	* 0
INDEP CLAIMS		
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENCE		

\*If the difference in Col. 1 is less than 10, enter  
 "0" in Col. 2.

SMALL ENTITY

RATE	FEE
	\$380
x 9 =	\$
x 39 =	\$
x 130 =	\$
TOTAL	\$

OTHER THAN A  
 SMALL ENTITY

RATE	FEE
	\$ 760
x 18 =	\$
x 78 =	\$ 78
+260 =	\$
TOTAL	\$ 838

RECEIVED  
 JUL 12 1999  
 TC 1700 MAIL ROOM



ocket No. 38730.830007.001

- ☐ A Petition for a \_\_\_\_\_ month extension of time is enclosed.
- ☒ A check in the amount of \$ 838.00 is enclosed for the filing fee.
- ☐ Please charge Deposit Account No. 08-2623 in the amount of \$ \_\_\_\_\_.
- ☐ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 08-2623.
- ☒ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 08-2623. A duplicate copy of this sheet is attached.
- ☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.
- ☒ Any patent application processing fees under 37 CFR 1.17.

Please forward all correspondence to:

Lee R. Osman, Reg. No. 38,260  
HOLLAND & HART LLP  
555 Seventeenth Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201  
Phone: (303) 295-8589  
Fax: (303) 295-8261

Dated this 6th day of July, 1999.

Respectfully submitted,

  
\_\_\_\_\_  
Lee R. Osman, Reg. No. 38,260  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
(303) 295-8589

DENVER:0927432.01

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EL353031073US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

MALCOLM HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER



Examiner: C. BUSHEY  
Art Unit: 1724  
Batch No. R54  
Allowed: April 9, 1999

CERTIFICATE OF MAILING BY EXPRESS MAIL

Box CPA  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed CPA Transmittal Letter; Second Supplemental Information Disclosure Statement; Form PTO-1449; Copy of Cited References; Check in the Amount of \$838.00; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EL353031073US with the United States Postal Service, addressed to Box CPA, Assistant Commissioner for Patents, Washington, D.C. 20231, on this 6<sup>th</sup> day of July, 1999.

July 6, 1999

Valerie Brown  
Mailer

July 6, 1999

Lee R. Osman  
Lee R. Osman, Reg. No. 38,260  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8589  
Facsimile: (303) 295-8261

HH:927441 v1



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EL353031073US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.: 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The undersigned hereby certifies that the enclosed

1. Second Supplemental Information Disclosure Statement,
2. Form PTO-1449,
3. References, and
4. Return Card,

and this Certificate of Mailing by Express Mail, relating to the above application, were deposited as "Express Mail", Mailing Label No. EL353031073US, with the U.S. Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on July 6, 1999.

July 6, 1999

Maureen H Brown  
Mailer

July 6, 1999

Lee R. Osman  
Lee R. Osman, Reg. No. 38,260  
for HOLLAND & HART LLP  
Post Office Box 8749  
555 Seventeenth Street, Suite 3200  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8589  
Facsimile: (303) 295-8261

DENVER:0929239.01

RECEIVED  
JUL 12 1999  
TC 1700 MAIL ROOM



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EL353031073US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Malcolm HEBBLEWHITE, et al.

Serial No.: 08/918,004

Filed: August 25, 1997

For: A HUMIDIFIER



Examiner: C. BUSHEY

Art Unit: 1724

20/MB  
8/16/99

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

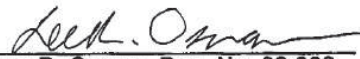
Sir:

Pursuant to 37 C.F.R. § 1.97 the Examiner may wish to consider the references listed on the attached PTO Form-1449. In submitting the references for the Examiner's consideration, no representation is made or implied that the references are or are not material to examination of the application. The Examiner is encouraged to make his or her own determination of materiality. Copies of the references are provided.

This Second Supplemental Information Disclosure Statement is being filed concurrently with a CPA in the above referenced application, and thus no petition fee is believed required. However, any fees associated with the communication may be made to Deposit Account No. 08-2326.

Respectfully submitted,

July 6, 1999

  
Lee R. Osman, Reg. No. 38,260  
for HOLLAND & HART LLP  
Post Office Box 8749  
555 Seventeenth Street, Suite 3200  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8589  
Facsimile: (303) 295-8261

RECEIVED  
JUL 12 1999  
TC 1700 MAIL ROOM



Sheet 1 of 1

FORM PTO-1449 (Modified)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 38730.830007.001	SERIAL NO. 08/918,004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		APPLICANT Malcolm HEBBLEWHITE, et al.	
		FILING DATE August 25, 1997	GROUP 1724

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
Cub	5,564,415	10/15/1996	Dobson et al.			
Cub	5,590,648	01/07/97	Mitchell			

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

	DOCUMENT NUMBER	PUBLISHED DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
Cub	WO 82/03326	10/14/82	PCT				
Cub	EP 298 367 A2	01/11/89	European				
Cub	EP 481 459 A1	04/22/92	European				
Cub	EP 0 845 277	06/03/98	European				
Cub	WO 98/04311	02/05/98	PCT				X

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages etc.)

EXAMINER	<i>Cub</i>	DATE CONSIDERED	8-17-99
EXAMINER: Initial if citation 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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TC 1700 MAIL ROOM

**BEST COPY**



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/918,004	08/25/97	HEBBLEWHITE	M 38730.830007

ANDREW D SORENSEN  
HOLLAND AND HART  
P O BOX 8749  
DENVER CO 80201-8749

IM62/0825

EXAMINER

BUSHEY, C

ART UNIT	PAPER NUMBER
----------	--------------

1724

DATE MAILED:

08/25/99

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

Commissioner of Patents and Trademarks



<b>Office Action Summary</b>	Application No. <b>08/918,004</b>	Applicant(s) <b>HEBBLEWHITE ET AL</b>
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>

☒ Responsive to communication(s) filed on Jul 6, 1999

☐ This action is **FINAL**.

☐ 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.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) 12 and 16-18 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 12 and 16-18 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.

[ ] received in Application No. (Series Code/Serial Number) \_\_\_\_\_

[ ] received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 1 sheet

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

#### DETAILED ACTION

1. Claims 12 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12, line 11, "said housing" lacks antecedent basis. It is suggested that --a housing having-- be inserted on line 2 of claim 12 after "comprising". Also in claim 12, line 12, "box-like" should be replaced by --box-shaped-- since it is unclear as to what the term "box-like" includes or excludes. Lastly, in claim 12, line 14, "the underside" lacks antecedent basis and should be replaced by --an underside--.

In claim 16, line 11, "said housing" lacks antecedent basis. It is suggested that --a housing having-- be inserted on line 2 of claim 16 after "comprising". Also in claim 16, line 12, "box-like" should be replaced by --box-shaped-- since it is unclear as to what the term "box-like" includes or excludes. Lastly, in claim 16, line 14, "the underside" lacks antecedent basis and should be replaced by --an underside--.

In claim 17, line 11, "said housing" lacks antecedent basis. It is suggested that --a housing having-- be inserted on line 2 of claim 17 after "comprising". Also in claim 17, line 12, "box-like" should be replaced by --box-shaped-- since it is unclear as to what the term "box-like" includes or excludes. Lastly, in claim 17, line 14, "the underside" lacks antecedent basis and should be replaced by --an underside--.

Application/Control Number: 08/918,004

Page 3

Art Unit: 1724

In claim 18, line 11, "said housing" lacks antecedent basis. It is suggested that --a housing having-- be inserted on line 2 of claim 18 after "comprising". Also in claim 18, line 12, "box-like" should be replaced by --box-shaped-- since it is unclear as to what the term "box-like" includes or excludes. Lastly, in claim 18, line 14, "the underside" lacks antecedent basis and should be replaced by --an underside--.

2. Claims 12, and 16-18 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action.
3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581.

C. SCOTT BUSHEY  
PRIMARY EXAMINER  
GROUP 1200



csb

August 18, 1999



PATENT  
Express Mail No. EM222668082US  
Attorney Docket No. 38730.830007.001

In re application of: Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

THE COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is an Amendment in the above-identified application.

- ☐ Small entity status of this application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.
- ☐ A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed.
- ☐ No additional fee is required.

The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA
TOTAL	13	MINUS	20	= 0
INDEP.	4	MINUS	5	= 0
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEP. CLAIM				

SMALL  
ENTITY

RATE	ADDIT. FEE
x 9 =	\$
x 39 =	\$
+130 =	\$
TOTAL	\$ 0

OR

RATE	ADDIT. FEE
x 18 =	\$
x 78 =	\$
+280 =	\$
TOTAL ADDIT. FEE	\$ 0

- \* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.
- \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.
- \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.
- The "Highest Number Previously Paid For" (Total or Independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment or the number of claims originally filed.

- ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_. A duplicate of this sheet is attached.

A check in the amount of \$ 0 is attached.

- ☒ The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 08-2623. A duplicate copy of this sheet is attached.

☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.

☒ Any in patent application processing fees under 37 CFR 1.17.

*Lee R. Osman*

Lee R. Osman Reg. No. 38,260  
HOLLAND & HART LLP  
555 Seventeenth Street, Suite 3200  
Post Office Box 8749  
Denver, Colorado 80201-8749  
(303) 295-8093

Dated: November 26, 1999

DENVER 0957354.01

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM222666082US

jc711 U.S. PTO  
11/26/99

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

**CERTIFICATE OF MAILING BY EXPRESS MAIL**

Assistant Commissioner for Patents  
Washington, D.C. 20231


Sir:

The undersigned hereby certifies that the enclosed Amendment Transmittal Letter; Amendment; Return Card; and this Certificate of Mailing by Express Mail relating to the above application, were deposited as "Express Mail," Mailing Label No. EM222666082US with the United States Postal Service, addressed to Assistant Commissioner for Patents, Washington, D.C., 20231, on November 26, 1999.

November 26, 1999

Lee R. Osman  
Mailer

November 26, 1999

  
Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
555-17th Street, Suite 3200  
Post Office Box 8749  
Denver, Colorado 80201  
Telephone: (303) 295-8589  
Facsimile: (303) 295-8261

DENVER:0957353.01

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11/26/99  
10711 U.S. PTO

PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EM222666082US

22/E  
2-12-99  
AW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER

Examiner: C. BUSHEY

Art Unit: 1724

AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This Amendment is in response to the Office Action dated August 25, 1999.

In the Claims:

Please amend claims 12, 16, 17, and 18 as follows:

12. (Three times amended) A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of

E



EC

generally flat, [box-like] box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to [the] an underside of a continuous positive airway pressure device adapted to be mounted thereon, wherein the passageway is provided with at least one generally U-shaped corner portion which bulges outwardly at the inside side of the corner defined by the corner portion so as to force air passing through the corner portion outwardly towards the outside side of the corner defined by the corner portion.

E2

16. ~~7~~ (Twice Amended) A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, [box-like] box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to [the] an underside of a continuous positive airway pressure device adapted to be mounted thereon, including a last passageway being the last passageway through which air in the humidifier passes before reaching the air outlet, wherein the corner portion through which air passes before reaching the air outlet is the last corner portion and said last corner portion increases in width as it passes from the penultimate subpassageway to the last passageway, wherein the upper wall, or roof, of the last subpassageway rises gradually along the length of the last subpassageway, towards the air outlet, so as to allow the air outlet to be positioned at a greater height above the water within the last subpassageway.

17. (Three times amended) A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, [box-like] box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to [the] an underside of a continuous positive airway pressure device adapted to be mounted thereon, including a last subpassageway being the last passageway through which air in the humidifier passes before reaching the air outlet, the last subpassageway including a roof or wall rising gradually along substantially the whole length of the last subpassageway towards the air outlet.

18. (Three times amended) A humidifier for producing humidified air, comprising a housing having an air inlet for receiving air to be humidified, an air outlet for discharging humidified air, and an elongate passageway extending between the air inlet and air outlet for directing air from the air inlet to the air outlet, the passageway being adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet, said passageway being divided into a plurality of elongate subpassageways and at least one corner portion, each subpassageway being substantially straight, and the subpassageways being connected end to end along the length of the passageway by one or more of the corner portions and wherein said housing has a relatively low profile, being of generally flat, [box-like] box-shaped construction, and includes a recess in its upper surface shaped to be of a complementary shape to [the] an underside of

E2

a continuous positive airway pressure device adapted to be mounted thereon, including a first passageway being the first subpassageway through which the air in the humidifier passes after leaving the inlet, the first subpassageway including a roof or wall rising gradually along the length of the first subpassageway towards the air inlet.

---

REMARKS

Claims 12, 16, 17 and 18 are amended, and remain in this application for consideration by the Examiner.

**Allowable Subject Matter**

The Examiner provided that claims 12 and 16-18 would be allowable if rewritten to overcome the §112 rejections. Claims 12 and 16-18 have been rewritten, as suggested by the Examiner, and are now believed to be allowable. Such action is respectfully requested.

The shortened 3 month period for filing this Amendment ended on November 25, 1999 (Thanksgiving Holiday), and as such the filing of this Amendment on November 26, 1999 is believed to be timely, requiring no petitions for extension of time. However, if such petition is believed required, please consider this such a petition and debit our Deposit Account No. 08-2623 for the requisite petition fee.

Signed at Denver, Colorado, this 26<sup>th</sup> day of November 26, 1999.




Lee R. Osman, Reg. No. 38,260  
Attorney for Applicants  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
P.O. Box 8749  
Denver, Colorado 80201-8749  
Telephone: (303) 295-8589  
Facsimile: (303) 295-8261

DENVER:0957353.01



Transaction History Date 1999-12-16  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at www.uspto.gov

<b>Notice of Allowability</b>	Application No. <b>08/918,004</b>	Applicant(s) <b>HEBBLEWHITE ET AL</b>	
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>	

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 and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to applicant's amendment filed 11-26-99.

☒ The allowed claim(s) is/are 12, and 16-18 (renumbered as 1-4, respectively).

☐ The drawings filed on \_\_\_\_\_ are acceptable.

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☒ received in Application No. (Series Code/Serial Number) 08/633,413.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☒ Applicant MUST submit NEW FORMAL DRAWINGS

☒ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. \_\_\_\_\_.

☐ including changes required by the proposed drawing correction filed on \_\_\_\_\_, which has been approved by the examiner.

☐ Including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948


☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☐ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☐ Examiner's Statement of Reasons for Allowance

  
**12-13-99**  
**SCOTT BUSHEY**  
**PRIMARY EXAMINER**  
**ART UNIT 1724**

**BEST COPY**



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

VS-75

**NOTICE OF ALLOWANCE AND ISSUE FEE DUE**

ANDREW G. SORENSON  
HULL AND HART  
P.O. BOX 12749  
DENVER, CO 80201-8749

01/22/1216

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
00 07 2,000	08/25/77	00	DEBNEY, C	1724 12/16/99
First Named Applicant	DEBNEY, C			
	35 USC 154(b) time ext. = 0 Days.			

TITLE OF INVENTION: 0,001,000,000

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
00 07 2,000	00 00 00	00	00 00 00	00	0000.00	0, 2/16/00

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE 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.**

**HOW TO RESPOND 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 changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box 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.**

PATENT AND TRADEMARK OFFICE COPY

\*TOL-85 (REV. 10-96) Approved for use through 06/30/99. (0651-0033)

\*U.S. GPO: 1998-437-839/80023



# BEST COPY

## PART B—ISSUE FEE TRANSMITTAL

Complete and mail this form, together with appropriate fees, to: **Box ISSUE FEE  
Assistant Commissioner for Patents  
Washington, D.C. 20231**

15-23

**MAILING INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, 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.

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee 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.

### Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above on the date indicated below.

(Depositor's name)

(Signature)

(Date)

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

ANDREW S. SORENSON  
HOLLAND AND HART  
P O BOX 8749  
DENVER CO 80201-8749



APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/25/99, 804	08/25/99	004	BURNEY, C	1724 12/16/99
First Named Applicant	35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION: BURDEN HOUR

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
08/25/99, 804	263-110,100	004	UTILITY	NO	\$1210.00	03/16/00

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

☐ 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) attached.

Fee Payor No. 000557

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.

Holland & Hart LLP

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. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

ResMed Limited, an Australian company

(B) RESIDENCE (CITY & STATE OR COUNTRY)

North Ryde, New South Wales, AUSTRALIA

Please check the appropriate assignee category indicated below (will not be printed on the patent)

☐ Individual ☐ corporation or other private group entity ☐ government

4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):

☒ Issue Fee

☒ Advance Order - # of Copies 10

4b. The following fees or deficiency in these fees should be charged to:

DEPOSIT ACCOUNT NUMBER 08-2623

(ENCLOSE AN EXTRA COPY OF THIS FORM)

☒ Issue Fee

☒ Advance Order - # of Copies 10

The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

(Authorized Signature)

Pat # 40,774

(Date)

3/15/2000

NOTE: The Issue Fee 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 Patent and Trademark Office.

**Burden Hour Statement:** This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND FEES AND THIS FORM TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

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.

TRANSMIT THIS FORM WITH FEE

PTOL-85B (REV.10-96) Approved for use through 06/30/99. OMB 0651-0033

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE



PATENT  
Attorney Docket No. 38730.830007.001  
Express Mail Label No. EL222669937US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Malcolm HEBBLEWHITE, et al.

Serial No. 08/918,004

Filed: August 25, 1997

For: HUMIDIFIER



Examiner: C. BUSHEY

Art Unit: 1724

Batch: F68

Allowed: December 16, 1999

SUBMISSION OF FORMAL DRAWINGS

Box ISSUE FEE

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

In the Notice of Allowability mailed December 16, 1999, the Examiner required formal drawings. The undersigned submits the following formal drawings for approval in the present application. The enclosed two (2) sheets of drawings and the figures contained thereon are in substitution for the drawings previously filed in the application. No new matter has been added by these formal drawings.

While it is believed that there are no fees associated with this submission of formal drawings, any fee deficiency associated may be charged to Deposit Account No. 08-2623.

Signed at Denver, Colorado this 15<sup>TH</sup> day of March, 2000.

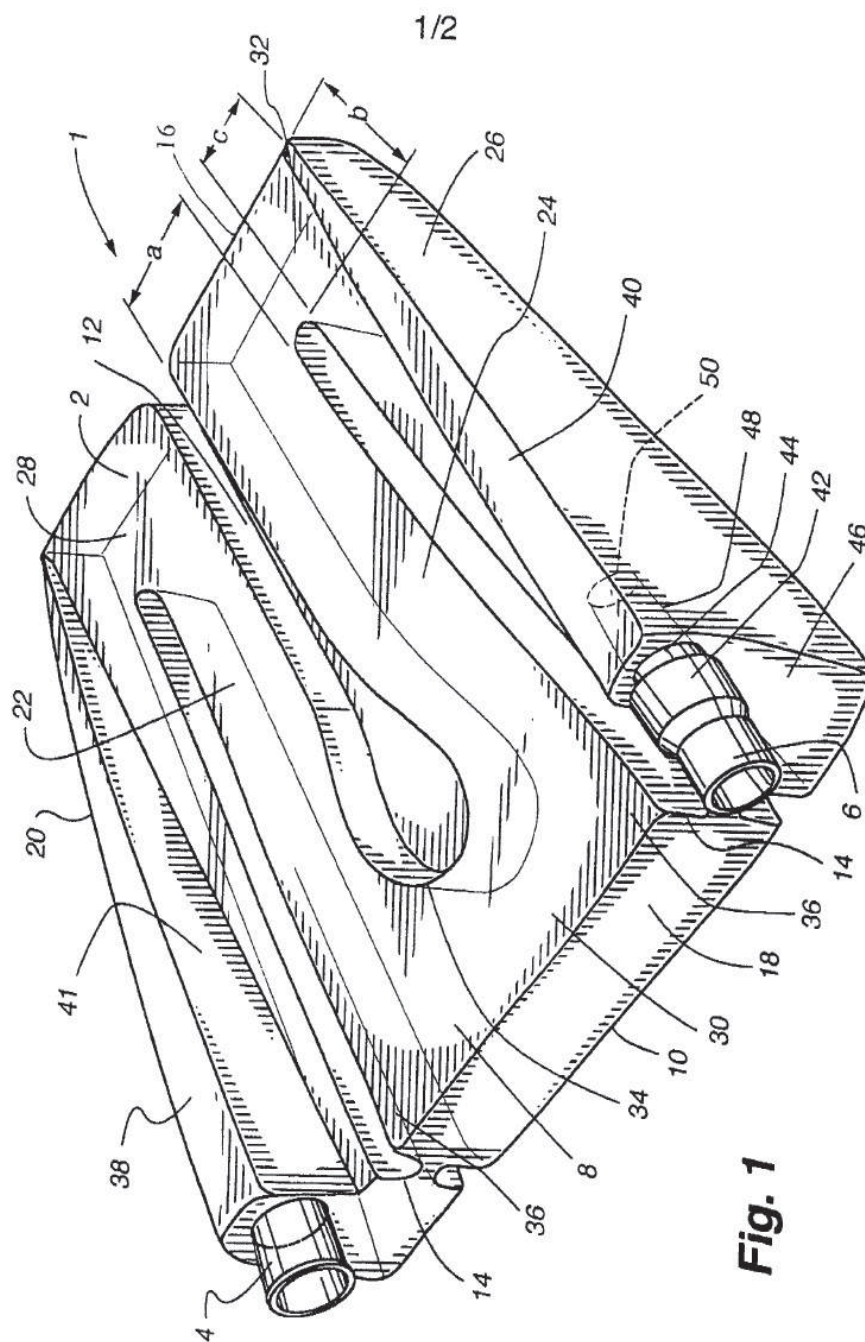
Respectfully submitted,

A handwritten signature in cursive script, appearing to read "James A. Pinto".

James A. Pinto, Registration No. 40,774  
HOLLAND & HART LLP  
555 17th Street, Suite 3200  
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Telephone: (303) 295-8254  
Facsimile: (303) 295-8261

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**Fig. 1**

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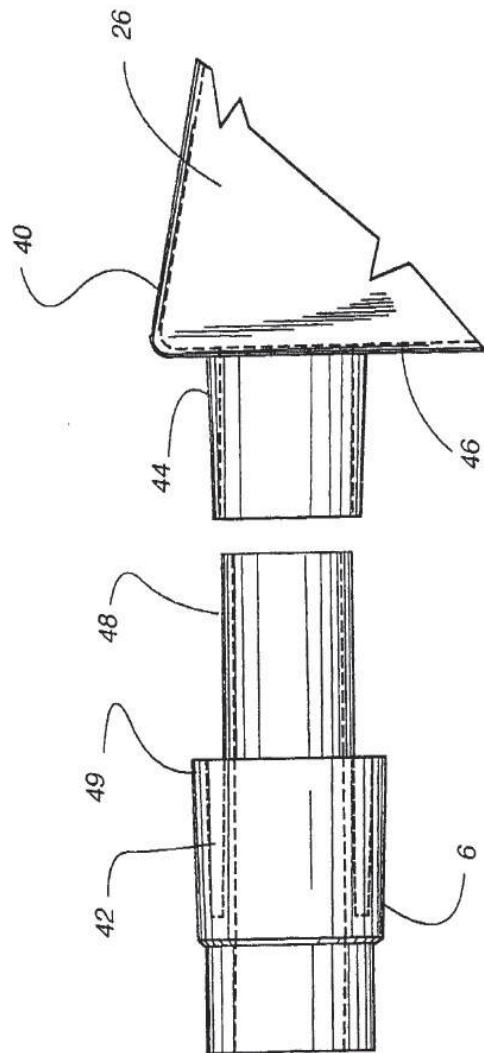


Fig. 2



## File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2000-10-24

Document Title - USPTO Grant

PRIORITY NUMBER  		ORIGINAL CLASSIFICATION CLASS <u>399</u> SUBCLASS <u>159</u>																	
APPLICATION SERIAL NUMBER <u>8/923310</u>		CROSS REFERENCE(S) CLASS SUBCLASS (ONE SUBCLASS PER BLOCK)																	
APPLICANT'S NAME (PLEASE PRINT) <u>KZDO et al.</u>		<u>399</u>	<u>265</u>																
IF REISSUE, ORIGINAL PATENT NUMBER  																			
INTERNATIONAL CLASSIFICATION <table border="1"> <tr> <td>G</td><td>0</td><td>3</td><td>G</td> </tr> <tr> <td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td> </tr> </table> <u>15/00</u>		G	0	3	G														
G	0	3	G																
		GROUP ART UNIT <u>2105</u>	ASSISTANT EXAMINER (PLEASE STAMP OR PRINT FULL NAME)  																
			PRIMARY EXAMINER (PLEASE STAMP OR PRINT FULL NAME) <u>Sandra L. Brase</u>																

PTO 270  
(REV. 5-91)

ISSUE CLASSIFICATION SLIP

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

**BEST COPY**

PATENT APPLICATION FEE DETERMINATION RECORD Effective October 1, 1996					Application or Docket Number <u>91804</u>	
<b>CLAIMS AS FILED - PART I</b>						
		(Column 1)	(Column 2)			
FOR		NUMBER FILED	NUMBER EXTRA			
BASIC FEE						
TOTAL CLAIMS		<u>4</u> minus 20 = *				
INDEPENDENT CLAIMS		<u>2</u> minus 3 = *				
MULTIPLE DEPENDENT CLAIM PRESENT						
* If the difference in column 1 is less than zero, enter "0" in column 2						
					<b>SMALL ENTITY OR OTHER THAN SMALL ENTITY</b>	
		RATE		FEE		
				385.00		
		x\$11=		x\$22=		
		x40=		x80=		
		+130=		+260=		
		TOTAL		TOTAL		
<b>CLAIMS AS AMENDED - PART II</b>						
		(Column 1)	(Column 2)	(Column 3)		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total	*	Minus **	=		
	Independent	*	Minus ***	=		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
		(Column 1)	(Column 2)	(Column 3)		
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total	*	Minus **	=		
	Independent	*	Minus ***	=		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
		(Column 1)	(Column 2)	(Column 3)		
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total	*	Minus **	=		
	Independent	*	Minus ***	=		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
		(Column 1)	(Column 2)	(Column 3)		
		RATE		ADDITIONAL FEE		
				x\$11=		
				x40=		
				+130=		
		TOTAL ADDIT. FEE		TOTAL ADDIT. 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.						



**Table of Contents**

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1. US6135432A Humidifier
-

**Family 1/1**

**3 record(s) per family**

**Record 1/3** AU1995PN3440D0 A humidifier

**Publication Number:** AU1995PN3440D0 19950706

**Title:** A humidifier

**Title - DWPI:**

**Priority Number:** AU19953440A

**Priority Date:** 1995-06-08

**Application Number:** AU19953440A

**Application Date:** 1995-06-08

**Publication Date:** 1995-07-06

**IPC Class Table:**

IPC	Section	Class	Subclass	Class Group	Subgroup
A61M001616	A	A61	A61M	A61M0016	A61M001616
F24F000602	F	F24	F24F	F24F0006	F24F000602

**IPC Class Table - DWPI:**

**Assignee/Applicant:** RESCARE LTD

**JP F Terms:**

**JP FI Codes:**

**Assignee - Original:**

**Any CPC Table:**

**ECLA:**

**Abstract:**

**Language of Publication:** EN

**INPADOC Legal Status Table:**

**Post-Issuance (US):**

**Reassignment (US) Table:**

**Maintenance Status (US):**

**Litigation (US):**

**Opposition (EP):**

**License (EP):**

**EPO Procedural Status:**

**Front Page Drawing:**

(No drawing/image available)



**Record 2/3** US6135432A Humidifier

**Publication Number:** US6135432A 20001024

**Title:** Humidifier

**Title - DWPI:** Humidifier for producing humidified air comprises housing with air inlet, air outlet, and elongate passageway having U-shaped corner

**Priority Number:** AU19953440A | US1996633413A

**Priority Date:** 1995-06-08 | 1996-06-10

**Application Number:** US1997918004A

**Application Date:** 1997-08-25

**Publication Date:** 2000-10-24

**IPC Class Table:**

IPC	Section	Class	Subclass	Class Group	Subgroup
A61M001616	A	A61	A61M	A61M0016	A61M001616
F24F000602	F	F24	F24F	F24F0006	F24F000602

**IPC Class Table - DWPI:**

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A61M001610	A	A61	A61M	A61M0016	A61M001610
F24F000602	F	F24	F24F	F24F0006	F24F000602
A61M001616	A	A61	A61M	A61M0016	A61M001616
B01F000304	B	B01	B01F	B01F0003	B01F000304

**Assignee/Applicant:** ResMed Limited,North Ryde,AU

**JP F Terms:**

**JP FI Codes:**

**Assignee - Original:** ResMed Limited

**Any CPC Table:**

Type	Invention	Additional	Version	Office
Current	<b>A61M 16/16</b>	F24F 2006/143	20130101	EP
Current	F24F 6/02		20130101	EP

**ECLA:** A61M001616 | F24F000602 | R24F000614A

**Abstract:**

A humidifier for producing humidified air, particularly for use with a continuous positive air pressure device. The humidifier has an air inlet and outlet. An elongate passageway extending between the

air inlet and the air outlet. The passageway is adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.

**Language of Publication:** EN

**INPADOC Legal Status Table:**

Gazette Date	Code	INPADOC Legal Status Impact
2012-04-11	FPAY	+
<b>Description:</b> FEE PAYMENT		
2010-01-14	AS	-
<b>Description:</b> ASSIGNMENT RESMED LIMITED, AUSTRALIA CHANGE OF NAME AND ADDRESS; ASSIGNOR:RESCARE LIMITED; REEL/FRAME:023845/0048 2000-06-21		
2008-09-23	AS	-
<b>Description:</b> ASSIGNMENT RESCARE LIMITED, AUSTRALIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:HEBBLEWHITE, MALCOLM; REEL/FRAME:021590/0436 1994-02-23		
2008-04-11	FPAY	+
<b>Description:</b> FEE PAYMENT		
2004-03-17	FPAY	+
<b>Description:</b> FEE PAYMENT		

**Post-Issuance (US):**

**Reassignment (US) Table:**

Assignee	Assignor	Date Signed	Reel/Frame	Date
RESMED LIMITED,BELLA VISTA, NEW SOUTH WALES,AU	RESCARE LIMITED	2000-06-21	023845/0048	2010-01-14
<b>Conveyance:</b> CHANGE OF NAME AND ADDRESS				
<b>Corresponent:</b> PAUL T. BOWEN NIXON & VANDERHYE P.C. 901 NORTH GLEBE ROAD 11TH FLORO ARLINGTON, VA 22203				
RESCARE LIMITED,NORTH RYDE, NEW SOUTH WALES,AU	HEBBLEWHITE, MALCOLM	1994-02-23	021590/0436	2008-09-23
<b>Conveyance:</b> ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				

**Correspondent:** PAUL T. BOWEN NIXON & VANDERHYE P.C. 901 NORTH GLEBE ROAD 11TH FLOOR ARLINGTON, VA 22203

**Maintenance Status (US):**

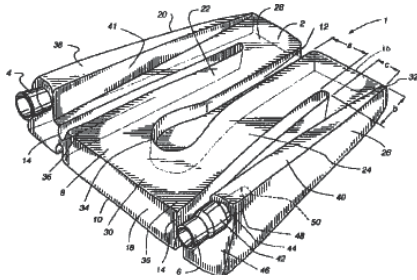
**Litigation (US):**

**Opposition (EP):**

**License (EP):**

**EPO Procedural Status:**

**Front Page Drawing:**





**Record 3/3** US6338473B1 Humidifier

**Publication Number:** US6338473B1 20020115

**Title:** Humidifier

**Title - DWPI:** Low profile humidifier, for producing humidified air, comprises elongate passageways extending between air inlets and air outlets

**Priority Number:** AU19953440A | US1996633413A | US1997918004A

**Priority Date:** 1995-06-08 | 1996-06-10 | 1997-08-25

**Application Number:** US2000532399A

**Application Date:** 2000-03-22

**Publication Date:** 2002-01-15

**IPC Class Table:**

IPC	Section	Class	Subclass	Class Group	Subgroup
A61M001616	A	A61	A61M	A61M0016	A61M001616
F24F000602	F	F24	F24F	F24F0006	F24F000602

**IPC Class Table - DWPI:**

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A61M001610	A	A61	A61M	A61M0016	A61M001610
F24F000602	F	F24	F24F	F24F0006	F24F000602
A61M001616	A	A61	A61M	A61M0016	A61M001616
B01F000304	B	B01	B01F	B01F0003	B01F000304

**Assignee/Applicant:** ResMed Limited,North Ryde,AU

**JP F Terms:**

**JP FI Codes:**

**Assignee - Original:** ResMed Limited

**Any CPC Table:**

Type	Invention	Additional	Version	Office
Current	<b>A61M 16/16</b>	F24F 2006/143	20130101	EP
Current	F24F 6/02		20130101	EP

**ECLA:** A61M001616 | F24F000602 | R24F000614A

**Abstract:**

A humidifier for producing humidified air, particularly for use with a continuous positive air pressure device. The humidifier has an air inlet and outlet. An elongate passageway extending between the

air inlet and the air outlet. The passageway is adapted to be partially filled with water so that air passing along the passageway becomes humidified as it passes over the water from the air inlet to the air outlet.

**Language of Publication:** EN

**INPADOC Legal Status Table:**

Gazette Date	Code	INPADOC Legal Status Impact
2013-03-11	FPAY	+
<b>Description:</b> FEE PAYMENT		
2009-06-17	FPAY	+
<b>Description:</b> FEE PAYMENT		
2005-06-21	FPAY	+
<b>Description:</b> FEE PAYMENT		
2002-09-17	CC	-
<b>Description:</b> CERTIFICATE OF CORRECTION		
2001-12-06	AS	-
<b>Description:</b> ASSIGNMENT RESMED LIMITED, AUSTRALIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:RESCASE OPERATIONS LIMITED; REEL/FRAME:012357/0990 1995-10-19		
2001-12-06	AS	-
<b>Description:</b> ASSIGNMENT RESCARE OPERATIONS LIMITED, AUSTRALIA CHANGE OF NAME; ASSIGNOR:RESCARE LIMITED; REEL/FRAME:012358/0007 1995-06-30		
2001-09-12	AS	-
<b>Description:</b> ASSIGNMENT RESCARE LIMITED, AUSTRALIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:HEBBLEWHITE, MALCOLM; KWOK, PHILIP RODNEY; STYLES, ROBERT EDWARD; AND OTHERS; REEL/FRAME:012156/0139 1994-02-23		

**Post-Issuance (US):** CORR-CERT Certificate of Correction 2002-09-17 2002

**Reassignment (US) Table:**

Assignee	Assignor	Date Signed	Reel/Frame	Date
RESMED LIMITED,NEW SOUTH WALES, 2113,AU	RESCASE OPERATIONS LIMITED	1995-10-19	012357/0990	2001-12-06
<b>Conveyance:</b> ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				

<b>Corresponent:</b> PILLSBURY WINTHROP LLP PAUL T. BOWEN INTELLECTUAL PROPERTY GROUP 1600 TYSONS BOULEVARD MCLEAN, VA 22102				
RESCARE OPERATIONS LIMITED,NORTH RYDE, NEW SOUTH WALES, 2113,AU	RESCARE LIMITED	1995-06-30	012358/0007	2001-12-06
<b>Conveyance:</b> CHANGE OF NAME (SEE DOCUMENT FOR DETAILS).				
<b>Corresponent:</b> PILLSBURY WINTHROP LLP PAUL T. BOWEN INTELLECTUAL PROPERTY GROUP 1600 TYSONS BOULEVARD MCLEAN, VIRGINIA 22102				
RESCARE LIMITED,NORTH RYDE, NORTH SOUTH WALES 2113,AU	HEBBLEWHITE, MALCOLM	1994-02-23	012156/0139	2001-09-12
	KWOK, PHILIP RODNEY	1994-02-23		
	STYLES, ROBERT EDWARD	1994-02-23		
	BRYDON, JOHN WILLIAM ERNEST	1994-02-23		
<b>Conveyance:</b> ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				
<b>Corresponent:</b> PILLSBURY WINTHROP LLP PAUL T. BOWEN 1600 TYSONS BLVD. MCLEAN, VA 22102				

**Maintenance Status (US):** CC

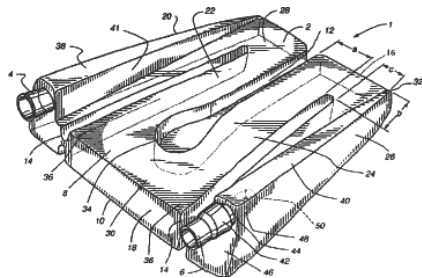
**Litigation (US):**

**Opposition (EP):**

**License (EP):**

**EPO Procedural Status:**

**Front Page Drawing:**



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USPTO Maintenance Report					
Patent Bibliographic Data				10/13/2015 12:57 AM	
Patent Number:	6135432		Application Number:	08918004	
Issue Date:	10/24/2000		Filing Date:	08/25/1997	
Title:	HUMIDIFIER				
Status:	4th, 8th and 12th year fees paid			Entity:	LARGE
Window Opens:	N/A	Surcharge Date:	N/A	Expiration:	N/A
Fee Amt Due:	Window not open	Surchg Amt Due:	Window not open	Total Amt Due:	Window not open
Fee Code:					
Surcharge Fee Code:					
Most recent events (up to 7):	04/11/2012 04/11/2008 03/17/2004	Payment of Maintenance Fee, 12th Year, Large Entity. Payment of Maintenance Fee, 8th Year, Large Entity. Payment of Maintenance Fee, 4th Year, Large Entity. --- End of Maintenance History ---			
Address for fee purposes:	Pillsbury Winthrop Shaw Pittman, LLP (NV PO Box 10500 McLean VA 22102				