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APPLICANTS Philip John Dickinson, Auckland, NEW ZEALAND; David Wixey, Auckland, NEW ZEALAND;				
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Examiner's Signature <u>[Signature]</u> Initials <u>[Initials]</u>		INDEPENDENT CLAIMS 1		
ADDRESS Trexler Bushnell Giangiorgi & Blackstone LTD 105 W Adams Street Chicago, IL 60603				
TITLE Water Chamber				
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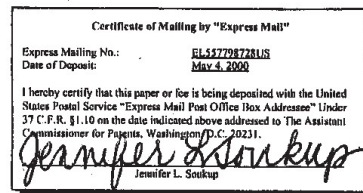
ABSTRACT

5 A water chamber has a horizontally orientated gas inlet with an elongate flow tube extending into the water chamber from the inner periphery of the gases inlet. An inlet end of the elongate flow tube covers the inlet and an outlet end of the flow tube is spaced from the wall of the chamber. In use the flow tube receives gases supplied to the gases inlet, the gases pass through the flow tube and exit the flow tube at the outlet end distant from the wall.

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A Water Chamber

BACKGROUND TO THE INVENTION



5 i) Field of the Invention

The present invention relates to water chambers for gases humidification and in particular to water chambers for "slide-on" humidifiers and CPAP machines.

ii) Summary of the Prior Art

10 In the prior art humidification systems are well known which include a heater base and a disposable humidifier chamber which is fitted onto the heater base and within which a supply of water can be heated by the heater base. Air passing through the chamber from an inlet to an outlet is humidified by the evaporation of water from the water supply.

Humidifier chambers of this type are also now used in compact and portable
15 ventilation machines, for example machines intended for the home treatment of obstructive sleep apnoea (CPAP machines). These machines pose a particular difficulty as the air flow is delivered directly to the humidifier chamber from the air blower of the CPAP machine and this can generate an annoying noise level within the humidifier chamber. Furthermore where the CPAP machine is adapted for use
20 with slide-on humidifier chambers, and the connection of the chamber to the machine is accomplished within the single sliding movement, the inlet air port is consequently provided horizontally through a side of the chamber. Locating the inlet port in the side of the chamber significantly increases the likelihood of water spillage from the chamber if the chamber is tilted with water therein. This can be of
25 particular disadvantage where the water may flow out through the inlet port and into the air blower of the CPAP machine.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a water chamber
30 which at least goes some way towards overcoming the above disadvantages or which will at least provide the public with a useful choice.

In a first aspect the invention consists in a water chamber adapted for use in conjunction with a heater base and having a horizontally oriented gases inlet in a wall thereof the improvement comprising an elongate flow tube extending into said water chamber from the inner periphery of said gases inlet, an inlet end of said
5 elongate flow tube covering said inlet and an outlet end of said flow tube being spaced from the wall of said chamber, said flow tube in use receiving, at said inlet end, gases supplied to said gases inlet, said gases passing through said flow tube and exiting said flow tube at said outlet end distant from said wall.

To those skilled in the art to which the invention relates, many changes in
10 construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the scope of the invention as defined in the appended claims. The disclosures and the descriptions herein are purely illustrative and are not intended to be in any sense limiting.

15 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a water chamber according to the preferred embodiment of the present invention,

Figure 2 is a cross sectional side elevation of the chamber of Figure 1,

Figure 3 is a front elevation of the chamber of Figure 2 before insertion of the
20 inlet extension tube,

Figure 4 is a perspective view of an extension tube according to the preferred embodiment of the present invention,

Figure 5 is a cross sectional side elevation detail of engagement of the extension tube of Figure 4 with the sealing flange of the chamber inlet, and

25 Figure 6 is a cross sectional side elevation of the chamber of Figure 1 in use with water therein and in a tilted condition demonstrating the operation of the inlet extension tube 7 in reducing the capacity for leakage through the gases inlet 2.

DETAILED DESCRIPTION

30 Referring to Figures 1 and 2 a water chamber is illustrated particularly for use in a portable CPAP machine adapted to receive slide-on chambers and which makes

the gases inlet connection to the chamber in the same slide-on motion. The chamber 1 has a transparent plastic shell 4 and a heat conductive base 6. The shell 1 and heat conductive base 6 are connected at a peripheral flange 5 which also serves as a securing flange in the slide-on connection with the CPAP machine. The chamber includes a horizontally aligned gases inlet 2 which in use fits over a blower nozzle of the CPAP machine. A gases outlet 3 is provided in the roof of the chamber 1. The gases outlet 3 may be adapted to take standard breathing circuit fittings.

Referring to Figure 2 the water chamber 1 is shown in cross section. In the present invention the water chamber 1 includes an inlet extension tube 7 extending inwardly into the chamber interior from the periphery of the gases inlet 2. In the most preferred embodiment the chamber further includes a curved downwardly extending baffle 8 located between the gases outlet 3 and the termination of the inlet extension tube 7 to ensure against gases short circuiting the chamber by flowing directly from the extension 7 to the outlet 3. With the baffle 8 in place the gases are forced to follow a more tortuous path ensuring adequate humidification during their journey through the chamber 1.

The lower edge 9 of the baffle 8 preferably extends lower than the lower edge of the inlet extension tube 7.

A narrow rib 18 may be provided on the inside wall of the clear plastic shell 4 which will show visually from the outside of the shell to act as an optimum water level "fill" marker.

In use air is received from the blower of the CPAP machine, or if the chamber is used in a standard humidification circuit, then from the ventilator, through inlet 2. Travelling through the inlet extension tube 7 the air is imparted with a more controlled laminar flow than is generally provided by the blower, as indicated by arrows 20. On exiting the inlet extension tube 7 the air is deflected by the baffle 8 to the various environs of the water chamber as indicated by arrows 21. Air eventually leaves the chamber through outlet 3 as indicated by arrows 22.

By providing the inlet extension tube 7 and therefore imparting an improved flow pattern to the inlet flow, it has been found that the noise level of the humidifier chamber has been significantly reduced, and, in conjunction with the curved baffle 8,

effective operation of the water chamber 1 has been maintained. Additionally, with reference to Figure 6, the inlet extension tube 7 acts as a weir against water flow back through gases inlet 2 upon tilting of the chamber 1.

These benefits have been achieved while maintaining, in the design shown, equivalent external appearance and size, and the same ease of use and simplicity to the user, as earlier chambers.

Referring now to Figures 3-5, these depict the preferred embodiment of the present invention, and in particular the detail of the connection between the inlet extension tube 7 and the plastic shell 1. Note that the inlet extension tube 7 is preferably moulded from the same clear thermoplastic material as the chamber shell 4.

For ease of assembly the extension tube 7 is preferably provided as a snap fit to the inlet 2, so that it can be pushed into the chamber through the inlet 2 and, upon application of sufficient force, snap into a substantially watertight and secure condition.

To these ends the inlet 2 is provided with an inwardly perpendicularly extending annular flange 10 at the inner end thereof. The inlet extension tube 7 includes a similar perpendicularly outwardly extending flange 12 from one end of the generally tapering tubular body 16. The flanges 10 and 12 act together as sealing flanges in the fitted and assembled condition as shown in Figures 2 and 5.

To retain the extension tube 7 in the assembled condition, against both translational and rotational movement several securing mechanisms are provided. In each case the securing mechanisms may be provided on either of the inlet 2 or the inlet extension tube 7, however it is preferred that they be on the inlet extension tube 7, as both components are intended for injection moulding and injection moulding of certain protrusions on the inner surface of the inlet 2 would be considerably more difficult than on the outer surface of the tube 7.

To secure the tube 7 against translational movement, and in a sealing condition between the sealing flanges 10, 12 a plurality (preferably two) of retaining clip protrusions 13 are provided spaced around the circumference of the tubular body 16 of the extension tube 7 adjacent but spaced from the flange 12. The protrusions

13 are preferably spaced from the flange 12 at a distance correlating to the thickness of flange 10. In use, as depicted in the detail Figure 5 the flange 10 is secured between an upstanding edge of the protrusion 13 and the leading face of the flange 12.

5 Particularly for ease of manufacture, and ensuring a simple two part injection mould, a notch 14 is allowed in the flange 12 of the tubular extension 7 adjacent the protrusion 13.

10 To retain the tubular extension 7 against rotational movement when snap fitted into location one or more, preferably 2, locating protrusions 15 are provided circumferentially distributed on the outer surface of the tubular body 16 of the inlet extension tube 7, adjacent and contiguous with the outwardly and perpendicularly extending flange 12. The locating protrusions 15 are preferably generally tapered in both the circumferential and axial direction. Complementary notches 11 are provided in the inwardly extending flange 10 of the inlet 2. In fitting the inlet
15 extension tube 7 the protrusions 15 are aligned with the notches 11, and upon full insertion of the tube 7 the protrusions 15 enter into a tight frictional fit with the notches 11 ensuring substantial if not complete sealing. Given their particular configuration the protrusions 15 could be readily provided on the inner surface of the inlet 2 in which case complementary notches would instead be provided on the
20 flange 12 of the inlet extension tube 7.

25 It will be readily appreciated that the construction as described is simple to manufacture and each of the plastic components is itself capable of simple injection moulding. Consequently a water chamber according to the present invention is, while providing significant advantages, not significantly more expensive than existing chambers.

CLAIMS:

1. In a water chamber adapted for use in conjunction with a heater base and having a horizontally oriented gases inlet in a wall thereof the improvement comprising an elongate flow tube extending into said water chamber from the inner periphery of said gases inlet, an inlet end of said elongate flow tube covering said inlet and an outlet end of said flow tube being spaced from the wall of said chamber, said flow tube in use receiving, at said inlet end, gases supplied to said gases inlet, said gases passing through said flow tube and exiting said flow tube at said outlet end distant from said wall.
2. A water chamber as claimed in claim 1 wherein said flow tube extends for a distance of at least a quarter of the diameter of said water chamber.
3. A water chamber as claimed in claim 2 wherein said gases inlet and said flow tube are aligned radially and said flow tube extends to approximately the middle of said chamber.
4. A water chamber as claimed in claim 1 wherein said chamber includes a vertically oriented gases outlet in the roof of said chamber, said gases outlet located beyond the termination of said flow tube, and a baffle wall extending downwardly from the roof of said chamber between the outlet end of said flow tube and said gases outlet.
5. A water chamber as claimed in claim 4 wherein said baffle wall is curved to be closest to said flow tube at the centre thereof, the ends of said baffle wall curved away from said flow tube.
6. A water chamber as claimed in claim 1 wherein said water chamber comprises a transparent plastic shell open at the bottom and having a peripheral flange, a heat conductive plate enclosing said bottom of said shell and sealed at its

periphery to said flange, and said elongate flow tube comprises a tubular extension tube member fitted at said gases inlet.

5 7. A water chamber as claimed in claim 6 wherein said extension tube includes a perpendicularly extending sealing flange at one end thereof, and said gases inlet of said water chamber includes a perpendicularly and inwardly extending annular sealing flange, and said sealing flange of said extension tube and said sealing flange of said water chamber inlet abut one another in an assembled condition.

10 8. A water chamber as claimed in claim 7 wherein either said extension tube or said gases inlet includes a plurality of retaining protrusions spaced around the circumference thereof, adjacent but spaced from the respective said sealing flange such that in an assembled condition said protrusions and the said adjacent sealing flange engage the other said sealing flange therebetween.

15 9. A water chamber as claimed in claim 8 wherein said adjacent sealing flange includes a notch in the vicinity of each said retaining protrusion.

20 10. A water chamber as claimed in claim 7 wherein either said extension tube or said gases inlet to said water chamber includes one or more locating protrusions around the circumference thereof adjacent to and contiguous with their respective sealing flange, and the other said sealing flange includes one or more corresponding notches into which said retaining protrusions engage to restrain said extension tube against rotational movement.

25 11. A water chamber as claimed in claims 3 wherein said chamber includes a vertically oriented gases outlet in the roof of said chamber, said gases outlet located beyond the termination of said flow tube, and a baffle wall extending downwardly from the roof of said chamber between the outlet end of said flow tube and said
30 gases outlet.

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12. A water chamber as claimed in claim 11 wherein said baffle wall is curved to be closest to said flow tube at the centre thereof, the ends of said baffle wall curved away from said flow tube.

5 13. A water chamber as claimed in claim 3 wherein said water chamber comprises a transparent plastic shell open at the bottom and having a peripheral flange, a heat conductive plate enclosing said bottom of said shell and sealed at its periphery to said flange, and said elongate flow tube comprises a tubular extension tube member fitted at said gases inlet.

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14. A water chamber as claimed in claim 13 wherein said extension tube includes a perpendicularly extending sealing flange at one end thereof, and said gases inlet of said water chamber includes a perpendicularly and inwardly extending annular sealing flange, and said sealing flange of said extension tube and said sealing flange of said water chamber inlet abut one another in an assembled condition.

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15. A water chamber as claimed in claim 4 wherein said water chamber comprises a transparent plastic shell open at the bottom and having a peripheral flange, a heat conductive plate enclosing said bottom of said shell and sealed at its periphery to said flange, and said elongate flow tube comprises a tubular extension tube member fitted at said gases inlet.

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16. A water chamber as claimed in claim 15 wherein said extension tube includes a perpendicularly extending sealing flange at one end thereof, and said gases inlet of said water chamber includes a perpendicularly and inwardly extending annular sealing flange, and said sealing flange of said extension tube and said sealing flange of said water chamber inlet abut one another in an assembled condition.

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17. A water chamber as claimed in claim 16 wherein either said extension tube or said gases inlet includes a plurality of retaining protrusions spaced around the circumference thereof, adjacent but spaced from the respective said sealing flange

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such that in an assembled condition said protrusions and the said adjacent sealing flange engage the other said sealing flange therebetween.

5 18. A water chamber as claimed in claim 15 wherein either said extension tube or said gases inlet to said water chamber includes one or more locating protrusions around the circumference thereof adjacent to and contiguous with their respective sealing flange, and the other said sealing flange includes one or more corresponding notches into which said retaining protrusions engage to restrain said extension tube against rotational movement.

10

19. A water chamber as claimed in claim 7 wherein either said extension tube or said gases inlet to said water chamber includes one or more locating protrusions around the circumference thereof adjacent to and contiguous with their respective sealing flange, and the other said sealing flange includes one or more corresponding notches into which said retaining protrusions engage to restrain said extension tube against rotational movement.

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20. A water chamber as claimed in claim 8 wherein either said extension tube or said gases inlet to said water chamber includes one or more locating protrusions around the circumference thereof adjacent to and contiguous with their respective sealing flange, and the other said sealing flange includes one or more corresponding notches into which said retaining protrusions engage to restrain said extension tube against rotational movement.

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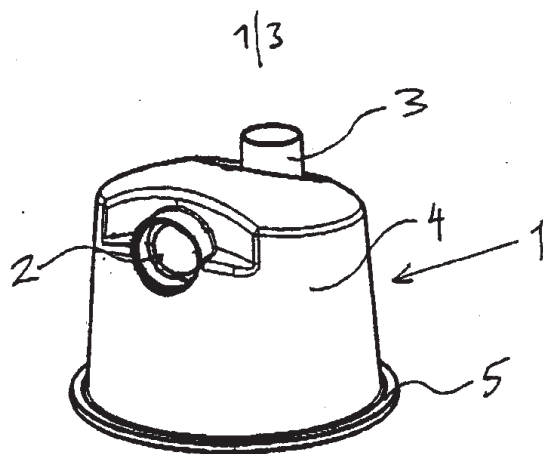


FIGURE 1

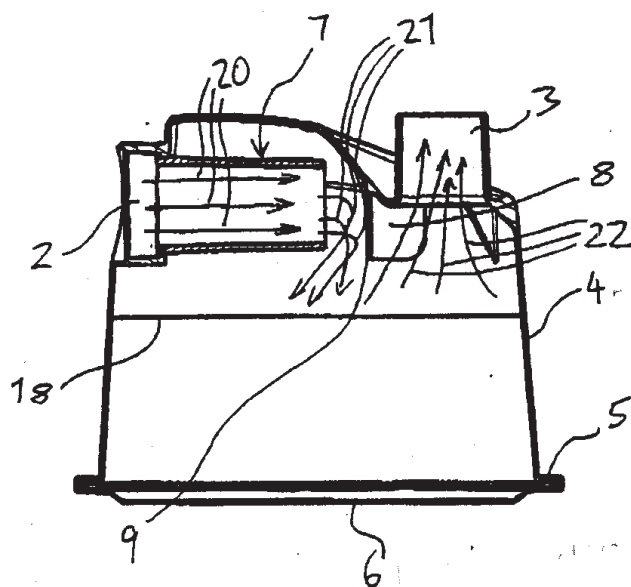


FIGURE 2

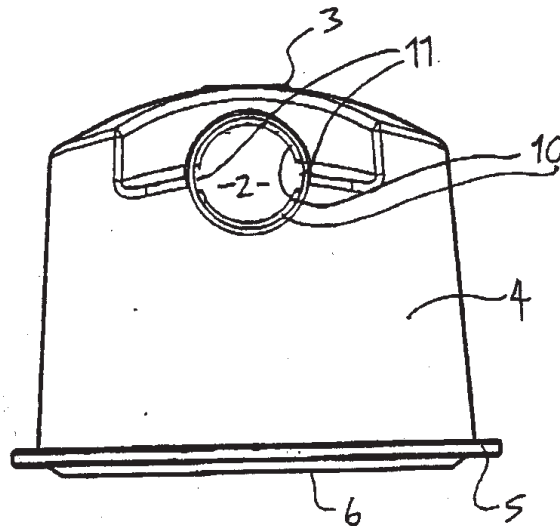
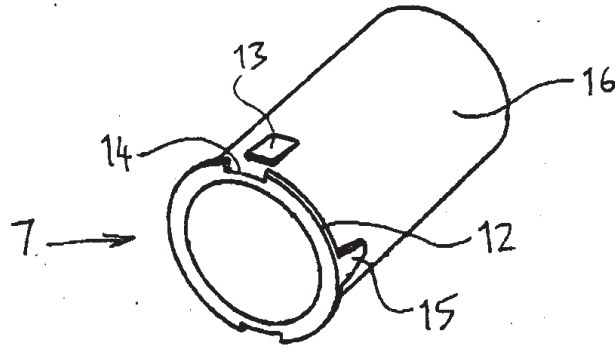
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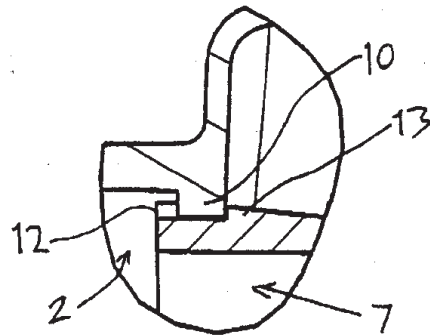


FIGURE 5

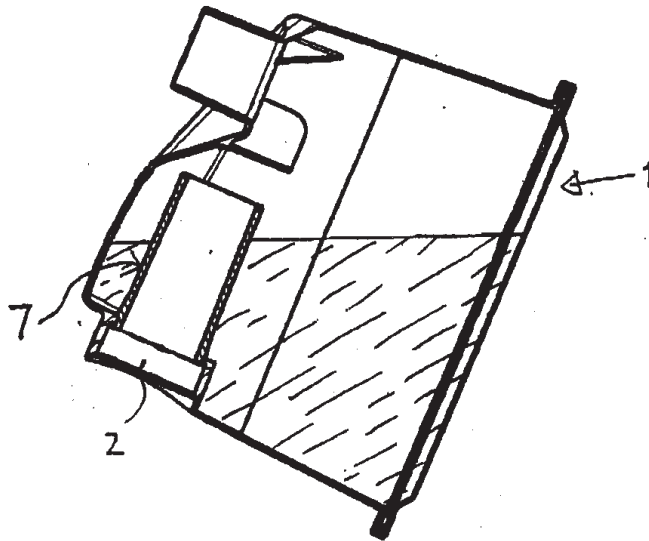


FIGURE 6

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TOTAL P.15



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

1724

Inventor: Philip John Dickinson and
David Wixey

For: A WATER CHAMBER

Serial No.: 09/564,508

Filed: May 4, 2000

Art Unit: 1724

Atty Docket No.: 1171/38569/74

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:

Date of Deposit: July 27, 2000

Jennifer L. Soukup
Jennifer L. Soukup

**TRANSMITTAL OF CERTIFIED COPY
REGARDING CONVENTION CLAIM UNDER 35 U.S.C. §119**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In completion of Applicant's claim for priority under 35 U.S.C. §119 for United States Patent application filed concurrently herewith, please find enclosed a Certified Copy of New Zealand Provisional Specification filed on May 10, 1999 with an application for Letters Patent number 335694.

It is believed that this completes Applicant's claim for priority and acknowledgment of receipt of this priority document is requested.

Respectfully submitted,

Date: July 27, 2000

By:

Raiford A. Blackstone
Raiford A. Blackstone, Reg. No. 25,156
Linda L. Palomar, Reg. No. 379, 903
TREXLER, BUSHNELL, GIANGIORGI
& BLACKSTONE, LTD.
105 West Adams Street, 36th Floor
Chicago, Illinois 60603
Tel: (312) 704-1890

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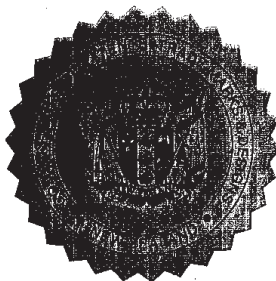
CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 10 May 1999 with an application for Letters Patent number 335694 made by FISHER & PAYKEL LIMITED.

I further certify that PHILIP JOHN DICKINSON and DAVID WIXEY are believed to be the true and first inventors of the invention.

Dated 15 May 2000.



Neville Harris
Commissioner of Patents

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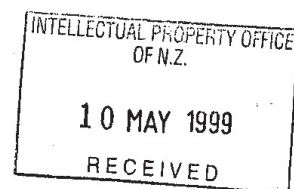
**NEW ZEALAND
PATENTS ACT, 1953**

PROVISIONAL SPECIFICATION

" A Water Chamber"

We, FISHER & PAYKEL LIMITED a company duly incorporated under the laws of New Zealand of 78 Springs Road, East Tamaki, Auckland, New Zealand, do hereby declare this invention to be described in the following statement:

- 1 -



The present invention relates to water chambers for gases humidification and in particular to water chambers for "slide-on" humidifiers and CPAP machines.

In the prior art humidification systems are well known which include a heater base and a disposable humidifier chamber which is fitted onto the heater base and within which a supply of water can be heated by the heater base. Air passing through the chamber from an inlet to an outlet is humidified by the evaporation of water from the water supply.

Humidifier chambers of this type are also now used in compact and portable ventilation machines, for example machines intended for the home treatment of obstructive sleep apnoea (CPAP machines). These machines pose a particular difficulty as the air flow is delivered directly to the humidifier chamber from the air blower of the CPAP machine and this can generate an annoying noise level within the humidifier chamber. Furthermore where the CPAP machine is adapted for use with slide-on humidifier chambers, and the connection of the chamber to the machine is accomplished within the single sliding movement, the inlet air port is consequently provided horizontally through a side of the chamber. Locating the inlet port in the side of the chamber significantly increases the likelihood of water spillage from the chamber if the chamber is tilted with water therein. This can be of particular disadvantage where the water may flow out through the inlet port and into the air blower of the CPAP machine.

It is therefore an object of the present invention to provide a water chamber which at least goes some way towards overcoming the above disadvantages or which will at least provide the public with a useful choice.

In a first aspect the invention may broadly be said to consist in a water chamber adapted for use in conjunction with a heater base and having a horizontally oriented gases inlet characterised by an elongate flow tube extending into said water chamber from the inner periphery of said gases inlet.

Preferably said flow tube extends for a distance of at least a quarter of the diameter of said water chamber.

Preferably said gases inlet and said flow tube are aligned radially and said flow tube extends to approximately the middle of said chamber.

Preferably said chamber includes a vertically oriented gases outlet in the roof of said chamber, said gases outlet located beyond the termination of said flow tube, and a baffle wall extending downwardly from the roof of said chamber between the termination of said flow tube and said gases outlet.

Preferably said baffle wall is curved to be closest to said flow tube at the centre thereof, the ends of said baffle wall curved away from said flow tube.

Preferably said water chamber comprises a transparent plastic shell open at the bottom and having a peripheral flange, a heat conductive plate enclosing said bottom of

said shell and sealed at its periphery to said flange, and a tubular extension tube member fitted at said gases inlet.

Preferably said extension tube includes a perpendicularly extending sealing flange at one end thereof, and said gases inlet of said water chamber includes a perpendicularly and inwardly extending annular sealing flange, and said sealing flange of said extension tube and said sealing flange of said water chamber inlet seal against one another in an assembled condition.

Preferably either said extension tube or said gases inlet includes a plurality of retaining protrusions spaced around the circumference thereof, adjacent but spaced from the respective said sealing flange such that in an assembled condition said protrusions and the said adjacent sealing flange engage the other said sealing flange therebetween.

Preferably said adjacent said sealing flange includes a notch in the vicinity of each said retaining protrusion.

Preferably either said extension tube or said gases inlet to said water chamber includes one or more locating protrusions around the circumference thereof adjacent to and contiguous with their respective sealing flange, and the other said sealing flange includes one or more corresponding notches into which said retaining protrusions engage to restrain said extension tube against rotational movement.

This invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of said parts, elements or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth.

The invention consists in the foregoing and also envisages constructions of which the following gives examples.

One preferred form of the present invention will now be described with reference to the accompanying drawings in which;

Figure 1 is a perspective view of a water chamber according to the preferred embodiment of the present invention,

Figure 2 is a cross sectional side elevation of the chamber of Figure 1,

Figure 3 is a front elevation of the chamber of Figure 2 before insertion of the inlet extension tube,

Figure 4 is a perspective view of an extension tube according to the preferred embodiment of the present invention,

Figure 5 is a cross sectional side elevation detail of engagement of the extension tube of Figure 4 with the sealing flange of the chamber inlet, and

Figure 6 is a cross sectional side elevation of the chamber of Figure 1 in use with water therein and in a tilted condition demonstrating the operation of the inlet extension tube 7 in reducing the capability of leakage through the gases inlet 2.

Referring to Figure 1 a water chamber is illustrated particularly for use in a portable CPAP machine adapted to receive slide-on chambers and which makes the gases inlet connection to the chamber in the same slide-on motion. The chamber 1 has a transparent plastic shell 4 and a heat conductive base 6. The shell 1 and heat conductive base 6 are connected at a peripheral flange 5 which also serves as a securing flange in the slide-on connection with the CPAP machine. The chamber includes a horizontally aligned gases inlet 2 which in use fits over a blower nozzle of the CPAP machine. A gases outlet 3 is provided in the roof of the chamber 1. The gases outlet 3 may be adapted to take standard breathing circuit fittings.

Referring now to Figure 2 the water chamber 1 is shown in cross section. In accordance with the present invention the water chamber 1 includes an inlet extension tube 7 extending inwardly into the chamber interior from the periphery of the gases inlet 2. In the most preferred embodiment the chamber further includes a curved downwardly extending baffle 8 located between the gases outlet 3 and the termination of the inlet extension tube 7 to ensure against gases short circuiting the chamber by flowing directly from the extension 7 to the outlet 3. With the baffle 8 in place the gases are forced to follow a more tortuous path ensuring adequate humidification during their journey through the chamber 1.

The lower edge 9 of the baffle 8 preferably extends lower than the lower edge of the inlet extension tube 7.

A narrow rib 18 may be provided on the inside wall of the clear plastic shell 4 which will show visually from the outside of the shell to act as an optimum water level "fill" marker.

In use air is received from the blower of the CPAP machine, or if the chamber is used in a standard humidification circuit, then from the ventilator through inlet 2. Travelling through the inlet extension tube 7 the air is imparted with a more controlled laminar flow than is generally provided by the blower, as indicated by arrows 20. On exiting the inlet extension tube 7 the air is deflected by the baffle 8 to the various environs of the water chamber as indicated by arrows 21. Air eventually leaves the chamber through outlet 3 as indicated by arrows 22.

By providing the inlet extension tube 7 and therefore imparting an improved flow pattern to the inlet flow, it has been found that the noise level of the humidifier chamber has been significantly reduced, and, in conjunction with the curved baffle 8, effective operation of the water chamber 1 has been maintained. Additionally and with reference

to Figure 6 the inlet extension tube 7 acts as a weir against water flow back through gases inlet 2 upon tilting of the chamber 1.

These benefits have been achieved while maintaining, in the design shown, equivalent external appearance and size, and the same ease of use and simplicity to the user, as earlier chambers.

Referring now to Figures 3-5, these depict the preferred embodiment of the present invention, and in particular the detail of the connection between the inlet extension tube 7 and the plastic shell 1. Note that the inlet extension tube 7 is preferably moulded from the same clear thermoplastic material as the chamber shell 4.

For ease of assembly the extension tube 7 is preferably provided as a snap fit to the inlet 2, so that it can be pushed into the chamber through the inlet 2 and, upon application of sufficient force, snap into a substantially watertight and secure condition.

To these ends the inlet 2 is provided with an inwardly perpendicularly extending annular flange 10 at the inner end thereof. The inlet extension tube 7 includes a similar perpendicularly outwardly extending flange 12 from one end of the generally tapering tubular body 16. The flanges 10 and 12 act together as sealing flanges in the fitted and assembled condition as shown in Figures 2 and 5.

To retain the extension tube 7 in the assembled condition, against both translational and rotational movement several securing mechanisms are provided. In each case the securing mechanisms may be provided on either of the inlet 2 or the inlet extension tube 7, however it is preferred that they be on the inlet extension tube 7, as both components are intended for injection moulding and injection moulding of certain protrusions on the inner surface of the inlet 2 would be considerably more difficult than on the outer surface of the tube 7.

To secure the tube 7 against translational movement, and in a sealing condition between the sealing flanges 10, 12 a plurality, preferably 2, of retaining clip protrusions 13 are provided spaced around the circumference of the tubular body 16 of the extension tube 7 adjacent but spaced from the flange 12. The protrusions 13 are preferably spaced from the flange 12 at a distance correlating to the thickness of flange 10. In use, as depicted in the detail Figure 5 the flange 10 is secured between an upstanding edge of the protrusion 13 and the leading face of the flange 12.

Particularly for ease of manufacture, and ensuring a simple two part injection mould, a notch 14 is allowed in the flange 12 of the tubular extension 7 adjacent the protrusion 13.

To retain the tubular extension 7 against rotational movement when snap fitted into location one or more, preferably 2, locating protrusions 15 are provided circumferentially distributed on the outer surface of the tubular body 16 of the inlet extension tube 7,

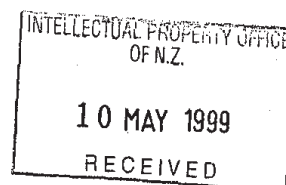
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- 6 -

adjacent and contiguous with the outwardly and perpendicularly extending flange 12. The locating protrusions 15 are preferably generally tapered in both the circumferential and axial direction. Complementary notches 11 are provided in the inwardly extending flange 10 of the inlet 2. In fitting the inlet extension tube 7 the protrusions 15 are aligned with the notches 11, and upon full insertion of the tube 7 the protrusions 15 enter into a tight frictional fit with the notches 11 ensuring substantial if not complete sealing. Given their particular configuration the protrusions 15 could be readily provided on the inner surface of the inlet 2 in which case complementary notches would instead be provided on the flange 12 of the inlet extension tube 7.

It will be readily appreciated that the construction as described is simple to manufacture and each of the plastic components is itself capable of simple injection moulding. Consequently a water chamber according to the present invention is, while providing significant advantages, not significantly more expensive than existing chambers.

DATED THIS 10 DAY OF MAY 1999
A.J. PARK & SON
PER *V. P. John*
AGENTS FOR THE APPLICANT





UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

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

AS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/564,508 05/04/00 DICKINSON

P 1171/38569/7

EXAMINER

IM22/0710

TREXLER BUSHNELL GIANGIORGI & BLACKSTONE
105 W ADAMS STREET
CHICAGO IL 60603

BUSHEY, C

ART UNIT

PAPER NUMBER

6

1724

DATE MAILED:

07/10/01

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

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/564,508	DICKINSON ET AL.	
	Examiner	Art Unit	
	Scott Bushey	1724	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-5, 11 and 12 is/are rejected.

7) ☒ Claim(s) 6-10 and 13-20 is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

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

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____	6) <input type="checkbox"/> Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

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 -

(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.

2. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Romanoff (Fig. 2).

Applicant should note that the gas inlet tube (13) extends for a distance of at least $\frac{1}{4}$ of the diameter of the chamber (1). The fact that half of the length of the gas inlet extension tube is directed downwardly is irrelevant to the claim limitation of instant claim 2 as currently recited. It should also be noted that the curved baffle wall (14) meets the limitations of instant claim 4.

Claim Rejections - 35 USC § 103

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.

4. 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(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch.

Lynch (Fig. 2; text lines 44-56) substantially discloses applicant's invention as recited by instant claims 1, 2, 4, and 5, except for the reservoir chamber being adapted for use with a heater base and the inlet tube (15) extending for at least $\frac{1}{4}$ of the diameter of the reservoir. Lynch does disclose providing a heating means for raising the temperature of the gas to a desired degree, and a circular flange (10) which forms a curved baffle wall between the outlet of the gas inlet tube and the gas outlet (9), the circular form of the flange (10) satisfying the limitations of instant claim 5. It would have been obvious for an artisan at the time of the invention, to modify the length of the inlet tube to at least $\frac{1}{4}$ of the diameter of the reservoir and to utilize a heater base as the chosen means for raising the air temperature to a desired degree, since such would deliver the gas to the evaporative sponge at a higher velocity and provide an easily controllable heating means, thereby improving the vaporization efficiency of the apparatus.

6. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanoff as applied to claims 1, 2, and 4 above, and further in view of Hartmann.

Romanoff as applied above substantially discloses applicant's invention as recited by instant claims 3 and 11, except for the gas inlet tube extending to approximately the middle of the chamber.

Hartmann (C in Fig. 2) discloses a gas-liquid contactor wherein the gas inlet extension tube (C) extends approximately to the center of the reservoir. It would have been obvious for an

artisan at the time of the invention, to extend the gas inlet tube of the primary reference to approximately the center of the reservoir, in view of Hartmann, since such would insure the longest contact time between the phases, thereby humidifying the gas to the greatest possible degree.

7. Claims 3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch as applied to claims 1, 2, 4, and 5 above, and further in view of Hartmann.

Lynch as applied above substantially discloses applicant's invention as recited by instant claims 3, 11 and 12, except for the gas inlet tube extending to approximately the middle of the chamber.

Hartmann (C in Fig. 2) discloses a gas-liquid contactor wherein the gas inlet extension tube (C) extends approximately to the center of the reservoir. It would have been obvious for an artisan at the time of the invention, to extend the gas inlet tube of the primary reference to approximately the center of the reservoir, in view of Hartmann, since such would insure the longest contact time between the phases, thereby humidifying the gas to the greatest possible degree.

Allowable Subject Matter

8. Claims 6-10 and 13-20 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 fails to disclose or suggest the structure as recited by instant claims 6, 13, and 15.

Application/Control Number: 09/564,508

Page 5

Art Unit: 1724

Conclusion

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

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581. The examiner can normally be reached on Monday-Thursday 6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Simmons can be reached on (703) 308-1972. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Scott Bushey
Primary Examiner
Art Unit 1724

csb
July 9, 2001

[Handwritten Signature]
7-9-01

Notice of References Cited	Application/Control No. 09/564,508	Applicant(s)/Patent Under Reexamination DICKINSON ET AL	
	Examiner Scott Bushey	Art Unit 1724	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number	Date	Name	Classification	
		Country Code-Number-Kind Code	MM-YYYY			
	A	US-485127	10-1892	LYNCH	261	30
	B	US-933301	09-1909	HARTMANN	261	30
	C	US-1059622	04-1913	LONG ET AL	261	30
	D	US-1777510	10-1930	VOIGT	261	119.1
	E	US-1813959	07-1931	ROMANOFF	261	119.1
	F	US-2710178	06-1955	FROELICH	261	119.1
	G	US-4152379	05-1979	SUHR	261	DIG 65
	H	US-4487746	12-1984	TAHILIANI	261	119.1
	I	US-5209225	05-1993	GLENN	261	DIG 65
	J	US-5762663	06-1998	ASADA	261	119.1
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.02(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

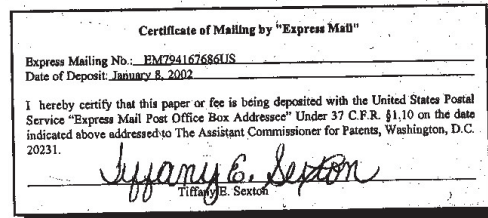
Part of Paper No. 6



IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT

In re application:)
For: WATER CHAMBER)
Serial No.: 09/564,508)
Filed: May 4, 2000)
Applicant: Dickinson and Wixey)
Examiner: S. Bushey)
Group Art Unit: 1724)
Atty. Docket No.: 1171/38569/74)



PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136

Assistant Commissioner
For Patents
Washington, D.C. 20231

Sir:

Applicant, in the above-identified matter, hereby petitions under 37 CFR §1.136 for a three-month extension of time to respond to the Office Action dated July 10, 2001, in the above application; that is, to and including January 10, 2002.

Enclosed is a check in the amount of \$920.00 for the three-month extension of time.

The Commissioner is further authorized to charge any fee deficiency or credit any overpayment to Deposit Account No. 20-1495.

Respectfully submitted,

Date: January 8, 2002

By: Raiford A. Blackstone, Jr.

Raiford A. Blackstone, Jr., Reg. No. 25,156
Linda L. Palomar, Reg. No. 37,903
Attorney for Applicant
TREXLER, BUSHNELL, GIANGIORGI,
BLACKSTONE & MARR, LTD.
105 West Adams Street, 36th Floor
Chicago, Illinois 60603
(312) 704-1890

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PATENT 1-25-02

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Serial No.: 09/564,508)
Applicant: Dickinson and Wixey)
Filed: May 4, 2000)
For: WATER CHAMBER)
Examiner: S. Bushey)
Art Unit: 1724)
Attorney Docket No.:)
1171/38569)

Certificate of Mailing by "Express Mail"	
Express Mailing No.:	EM 794167686US
Date of Deposit:	1/8/02
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office Box Addressee" Under 37 C.F.R. §1.10 on the date indicated above addressed to The Assistant Commissioner for Patents, Washington, D.C. 20231.	
<i>Tiffany E. Sexton</i> Tiffany E. Sexton	

RESPONSE TO OFFICE ACTION DATED 7/10/01

Asst. Commissioner for Patents
Washington, D.C. 20231

Sir:

This is responsive to the Office Action dated July 10, 2001. A Petition for a Three Month Extension of Time to extend the date for response up to and including January 10, 2002 is concurrently submitted herewith.

Claims 1-20 are pending. Applicant acknowledges that claims 6-10 and 13-20 were 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.

Claim Rejections - 35 U.S.C. §102

Claims 1, 2 and 4 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by United States Patent No. 1,813,959 to Romanoff (Figure 2). Reconsideration and withdrawal of this rejection is respectfully requested.

Romanoff discloses an outer container 1 holding a bath of oil 4 for heating an inner container. The inner container is a water reservoir 3. The water reservoir 3 has an inlet through its upper surface, Figure 2, adjacent one side. An air inlet pipe 13 connects with this inlet.

Independent claim 1 specifies "a horizontally oriented gases inlet in a wall thereof". The water reservoir 3 of Romanoff does not disclose such a feature.

In addition, independent claim 1 specifies that "an elongate flow tube extending into said water chamber from the inner periphery of said gases inlet" and "an outlet end of said flow tube being spaced from the wall of said chamber". There is no disclosure in Romanoff of such features. The inlet pipe 13 of Romanoff as shown in Figure 2 does not show any extension within the water reservoir 3. Any lateral extension would be shown in Figure 2 of Romanoff. It appears that the vertical lines in Figure 2 of Romanoff relate to the spiral wall 14. The lack of any vertical extension of inlet pipe 13 is supported by its absence between turns of the spiral wall 14 in Figure 3 of Romanoff.

Therefore, because Romanoff does not disclose each and every feature of independent claim 1, Romanoff does not anticipate independent claim 1. Reconsideration and allowance of claim 1 is requested.

Claims 2 and 4 are dependent upon claim 1 which Applicant submits is in condition for allowance. Reconsideration and allowance of claims 2 and 4 is respectfully requested.

Claim Rejections - 35 U.S.C. §103

Claims 1, 2, 4 and 5 were rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 485,127 to Lynch. Reconsideration and withdrawal of this rejection is respectfully requested.

Independent claim 1 is directed to a "water chamber". The reservoir 5 of Lynch is adapted "to contain disinfectants in solid or liquid form", lines 29-31, or "ice or some cooling mixture instead of the disinfectant", lines 57-58. In the alternative, line 59 of Lynch specifies "the sponge may be saturated with perfume". None of these suggest the reservoir 5 to be a water chamber as required in claim 1.

Lynch discloses that the fan chamber may be supplied from a source of pure air through a pipe and that the pipe "may extend through a heating device, by which the temperature of the air passing through the same may be raised to a desired degree". Lynch does not disclose that this is for any reason other than heating the air. Lynch does not specify that this is to improve evaporation from the reservoir. The contents of the reservoir, solid or liquid disinfectant, ice or a perfumed sponge, do not suggest evaporative efficiency as a desirable trait. In fact, the contents of the reservoir in Lynch count against any suggestion of heating the reservoir, either being non-efficacious (solid disinfectant and a suspended sponge), counter productive (ice), nor potentially dangerous (liquid disinfectant).

Applicant submits that the Examiner's argument that Lynch discloses all of the requirements of claim 1 except for the reservoir chamber being adapted for use with a heater base and that it would have been obvious to utilize a heater base as the chosen means for raising the air temperature to a desired degree, since such would deliver the gas to the evaporative sponge at a higher velocity and provide an easily controllable heating means,

thereby improving the evaporative efficiency of the apparatus can only be made with hindsight after reading the Applicant disclosure of its invention. There is no disclosure or suggestion in Lynch.

Therefore, because Lynch does not disclose or suggest each and every feature of independent claim 1, Lynch does not render obvious independent claim 1. Reconsideration and allowance of claim 1 is requested.

Claims 2, 4 and 5 are dependent upon claim 1 which Applicant submits is in condition for allowance. Reconsideration and allowance of claims 2, 4 and 5 is respectfully requested.

Claims 3 and 11 were rejected under 35 U.S.C. §103 as being unpatentable over Romanoff in view of United States Patent No. 933,301 to Hartmann.

Claims 3 and 11 are dependent upon claim 1 which Applicant submits is in condition for allowance. Reconsideration and allowance of claims 3 and 11 is respectfully requested.

Claims 3, 11 and 12 were rejected under 35 U.S.C. §103 as being unpatentable over Lynch in view of Hartmann.

Claims 3, 11 and 12 are dependent upon claim 1 which Applicant submits is in condition for allowance. Reconsideration and allowance of claims 3, 11 and 12 is respectfully requested.

Moreover, Hartmann discloses a smoke scrubber to remove particulates from furnace exhaust smoke. A double cylinder system pump draws air through an inlet pipe C alternately into each of its piston chambers to be expelled into the water reservoir. In Hartmann, the sole function of the inlet pipes C extending to the center of the chamber is to meet with the cylinders which are suspended from the apex of the chamber roof.

Applicant submits that the disclosure of a smoke scrubber as presented in Hartmann does not provide a basis for any modification of the structures of either Romanoff or Lynch. Applicant submits that instead adopting a pipe structure similar to that in Hartmann in either Romanoff or Lynch would leave the gases exit from an inlet pipe in the immediate vicinity of the gases exit from the relevant reservoir or chamber providing only limited opportunity for contact with either the water in Romanoff or the cleansing materials of Lynch.

Thus, Applicant submits that the combination of Romanoff and Hartmann or Lynch and Hartmann would not render obvious the present invention. Reconsideration and allowance is requested.

In view of the above Remarks, Applicant respectfully submits that the claims of the application are allowable over the rejections of the Examiner. Should the Examiner have any questions regarding this Amendment, the Examiner is invited to contact one of the undersigned attorneys at (312) 704-1890.

Respectfully submitted,

Dated: July 8, 2002

By: 

Raiford A. Blackstone, Jr., Reg. No. 25,156
Linda L. Palomar, Reg. No. 37,903

TREXLER, BUSHNELL, GIANGIORGI
BLACKSTONE & MARR, LTD.
105 W. Adams Street
Suite 3600
Chicago, Illinois 60603
(312) 704-1890

75141-1

MF-9

Notice of Allowability	Application No.		Applicant(s)	
	09/564,508		DICKINSON ET AL.	
	Examiner		Art Unit	
	Scott Bushey		1724	

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

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

1. ☒ This communication is responsive to applicant's response filed 1-8-02.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 04 May 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

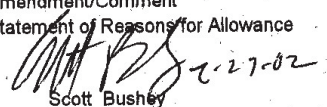
7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1 <input type="checkbox"/> Notice of References Cited (PTO-892) 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____ 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material	2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ 6 <input type="checkbox"/> Examiner's Amendment/Comment 8 <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9 <input type="checkbox"/> Other
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 Scott Bushey
 Primary Examiner
 Art Unit: 1724



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

02/28/2002

Trexler Bushnell Giangorgi & Blackstone LTD
105 W Adams Street
Chicago, IL 60603

EXAMINER

BUSHEY, CHARLES S

ART UNIT

CLASS-SUBCLASS

1724

261-141000

DATE MAILED: 02/28/2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/564,508	05/04/2000	Philip John Dickinson	1171/38569/74	2144

TITLE OF INVENTION: WATER CHAMBER

TOTAL CLAIMS	APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
20	nonprovisional	NO	\$1280	\$0	\$1280	05/28/2002

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

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above. If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

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

If the SMALL ENTITY is shown as NO:

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

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

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

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application 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.



PART B - FEE(S) TRANSMITTAL

Complete and mail this form, together with applicable fee(s), to:

Box ISSUE FEE
Assistant Commissioner for Patents
Washington, D.C. 20231

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02/28/2002

Trexler Bushnell Giangiorgi & Blackstone LTD
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Maria E. Kitz	(Depositor's name)
<i>Maria E. Kitz</i>	(Signature)
April 23, 2002	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/564,508	05/04/2000	Philip John Dickinson	1171/38569/74	2144

TITLE OF INVENTION: WATER CHAMBER

TOTAL CLAIMS	APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
20	nonprovisional	NO	\$1280	\$0	\$1280	05/28/2002

EXAMINER	ART UNIT	CLASS-SUBCLASS
BUSHEY, CHARLES S	1724	261-141000

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Raymond A. Blackstone 4/23/02

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