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(54) **CLIMATE CHAMBER**

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Description

This invention relates to climate chambers and more particularly to steam rooms, sauna rooms and steam cubicles.

Climate chambers are well known and provide an enclosed space which may be filled with steam so as to produce a typical working environment of around 100% Relative Humidity at temperatures of about 40-42°C, although up to 50°C can sometimes be tolerated. Such chambers provide an environment which is considered to be advantageous to the user, although the temperature range specified can vary according to choice and may indeed be much lower than those just mentioned or may have an upper limit of 125°C with a Relative Humidity of only 1 or 2%.

It is known to use an external boiler to provide the steam for climate rooms via suitable pipework. In alternative arrangements a vessel containing water is provided low down in the climate room and a heating element similar to those used in electric kettles is employed to boil the mass of water in the vessel. In both of these systems a mass of water has to be heated before producing any steam and there is, therefore, a considerable delay in achieving suitable conditions within the room.

In CH-A-0503959 there is provided a climate chamber comprising substantially impervious walls and incorporating one or more steam producing devices, the or each steam producing device comprising a member adapted to be heated and a water flow device whereby a controlled flow of water from the flow device is caused to contact the member thereby to produce steam substantially immediately upon contact with the member, the heat produced by the member and the water flow rate being set or controlled relative to each other.

The present invention is characterised in that control means are provided for selectively varying the flow of water from said water flow device and the heat produced by the heated member wherein the heat produced by the member is always just sufficient to ensure that the rate of production of steam is substantially equal to the rate of flow of water.

The term climate chamber, as used herein, means any chamber within which the humidity may be varied from 0 to 100%. Relative Humidity and the temperature varied from ambient to 125°C. Examples of such climate chambers include steam rooms (e.g. saunas) and steam cubicles.

The heat produced by the member and the flow of water may be independently variable so as to provide any combination of Relative Humidity and temperature within the chamber. The member may heat the space within the chamber directly and/or through the production of the steam which is released into the chamber. The chamber may include one or more further heaters so as to provide another way of increasing the heat of the chamber independently of the amount of steam required.

Preferably the water flow device is positioned above the member so that water falls under gravity on to the member. In an alternative embodiment of the invention, the water flow is delivered by a controlled pump or mains water pressure with, optionally, a flow control valve and the water flow device may provide a spray of water droplets (e.g. by passing the water flow through a nozzle) which may be directed at the member at any angle and from any direction. Conveniently the or each steam producing device is located within the chamber and near the floor of the chamber. Ideally, an inner casing extends over the top and sides of the device and an outer casing extends over the top and the sides of the inner casing.

In other arrangements an inner casing surrounds the top, base and sides of the or each steam producing device and is provided with one or more steam outlet holes and an outer casing extends over the top and sides of the inner casing and is also provided with one or more steam outlet apertures. In a preferred case the inner casing is provided with an indentation below one of said apertures for receiving a fragrance release material.

In another embodiment of the invention, the outer casing extends over the top and sides of the steam producing device and comprises one or more steam outlet apertures which include at least one substantially vertically extended portion. Preferably the extended portion reduces the temperature of the steam and air mixture passing therethrough to, for example, below 75°C, preferably below 70°C (e.g., between the temperature of the chamber and 60°C).

In preferred arrangements the inner casing is made from metal and the outer casing is made from plastic.

In some embodiments the or each steam producing device is located externally of but adjacent the chamber. In one, the or each steam producing device is located below the floor of the chamber and the floor has a waste outlet through which the steam enters the chamber. With another, the or each steam producing device is located above the ceiling of the chamber and circulation means is provided to circulate the steam within the chamber.

In preferred arrangements the member comprises a metal block incorporating a heating element. Conveniently the block is made of aluminium, and the heating element is mineral insulated and is cast on to the block, said element being heated electrically. Control means is preferably provided for the member and this control means may incorporate an overtemperature switch.

Ideally, a control system is provided in the chamber and incorporates preferably a manual control for the desired chamber temperature and humidity and a manual control for the desired length of time in the chamber. Controls may also allow for programmed operation at different operating conditions for chosen periods of time.

It is a preferred feature that regulation means is provided to regulate the flow of water. The flow will depend

largely on the temperature of the member and the dispersion of the water over the heated member. In some arrangements the regulation means incorporates a solenoid valve and a constant head device or a constant displacement pump or mains water pressure with flow control.

A detailed embodiment of the invention will now be described in more detail. The description makes reference to the accompanying diagrammatic drawings in which:

Figure 1A shows a part sectional side-view of part of a climate chamber according to the present invention,

Figure 1B shows a part sectional side-view of part of the climate chamber of another embodiment of the invention in which the outer casing comprises a vertically extended portion.

Figure 2 is a graph comparing "chamber temperature" versus "time from switch on" for an example of a climate chamber according to the present invention and a conventional steam chamber.

Figures 3, 4, 5, 6 and 7 show views similar to that of figure 1 of further embodiments according to the present invention.

Figure 1A shows a corner 10 of a steam room having a base 11 and a side wall 12. The remainder of the steam room is not shown, but the room is constructed principally from impervious materials such as stone, tile, plastic, etc. so that the steam is not absorbed by the walls. However, if a sauna room with higher temperatures and lower humidity is required, the walls can be constructed from other materials such as timber. There is also shown a steam generating device 13. The device is located a short distance from the base 11 and is attached to the side wall 12 of the room.

The device 13 incorporates an aluminium block 14 which is bolted at 15 to the side wall 12. In plan view the block 14 is generally rectangular and has an electric heating element (not shown) cast on to it or fixed to it. In this example the heating element is mineral insulated and has an electrical connection 16 which projects through an opening 17 in the side wall 12. There is also an overtemperature switch 18 for protecting the heating element.

The device 13 also incorporates a water supply via a pipe 19. The flow of water is controlled by using a solenoid valve 20 and exits via a water flow control device 21. The upper part of this device 21 is cylindrical and a constant head of water is maintained in this part. A steady flow of water exits from the lower part of the device 21 and any excess goes to waste via an overflow pipe 36.

An inner casing 22 is made from stainless steel and extends over the top of the block 14 and around the exposed sides. An outer casing 23 is made from plastic and extends around and spaced from the top and sides of the inner casing 22.

In use the block 14 is heated very quickly by the heating element and the carefully controlled flow of water falls under gravity on to the block. On contact with the block the water immediately becomes steam which is forced by virtue of the inner casing 22 downwards and out into the room. This continues until the desired temperature and humidity in the climate room is reached.

The flow of water and the temperature of the block 14 are carefully monitored and controlled for comfort and safety. A control panel would be provided in the room so that the user can decide upon the temperature and humidity he wants the room to be at and also the length of time he wishes to be in the room. The user enters the room, sets the controls and the flow of water and the block temperature will be controlled so that when the desired humidity and the desired temperature are reached, the steam generation and/or heat output may be modified so as to maintain the desired climate. The flow of water and the temperature of the block may be controlled so as to maximise efficiency, the block being heated just enough to ensure immediate evaporation of all the water supplied with little or no wastage. Ideally the user enters the room at the beginning of steam and/or heat production so as to rise in temperature with the room. This avoids the shock of entering the hot room and also avoids losing climate when a door is opened.

The control panel could also be adapted to give a programmatic cycle of temperatures and humidity if desired and could be located inside or outside the room.

Figure 1B illustrates an alternative embodiment of the invention in which the outer casing 23 comprises a vertically extended portion 68. The vertically extended portion 68 provides a passage 80 through device 13. In use, air is drawn up through the lower end of passage 80 by convection, meets steam passing into the passage 80 through aperture 83 in inner casing 22 and exits into the steam chamber through the top end of passage 80. This arrangement allows the temperature of the steam/air mixture to be reduced before it enters the chamber. The portion 68 may be positioned at any point along the top of the outer casing 23.

Figure 2 shows that an example of the present arrangement reached an acceptable "steam bathing" temperature in 7 minutes, normal body temperature being reached in 5 - 6 minutes and a comfortable temperature of 25°C being reached in less than 3 minutes. Similar temperatures took much longer to achieve in a comparable 'kettle' type steam generator. On the graph X represents the normal steam bathing temperature range.

The climate room may also incorporate a conventional shower head and may be in the form of a combined shower/steam cubicle. It is also envisaged that the idea could also be applied to steam or sauna chambers which do not entirely enclose the body, for example cabinets where the head of the user remains outside.

In one working example of the above steam/heat generating device 13, the outer casing 23 projects

through the side wall 12 and extends generally along an adjacent sidewall. The outer casing of this example is only about 40 mm wide and is some 350 mm long and 100 mm high. This example is by no means limiting but illustrates the possible compactness of a suitable efficient arrangement.

Figure 3 shows an arrangement which is similar in many respects to that shown in figure 1 and so like parts have been given like reference numerals. In this arrangement the stainless steel inner casing 22 has two steam outlet holes 30 and the outer plastic cover 23 has a steam outlet hole 31. Directly below the hole 31 is an indentation 32 in the casing 22 for receiving a fragrance release material if desired, the heat from the block 14 vaporising the material.

The steam/heat generating device 13 shows an electric heating element 33 encased in the aluminium block 14 which is formed with a shallow recess 34 in its top surface and a slope 35. The flow control device 21 is of a constant head variety and any overflow goes to waste via overflow tube 36. The outlet 37 of device 21 is disposed above the top of the slope 35 so the water flows down the slope thereby maximising the potential of the heated block 14.

It will of course be appreciated that the location of the heated block within the chamber itself means that no energy is wasted.

In figure 4 the steam/heat generator 13 is mounted just on the outside of the wall 12 but the steam/heat outlet 38 leads directly to the inside of the chamber. This arrangement results in no loss of space in the chamber.

In figure 5 the steam/heat generator 13 is located directly below the floor 11 in say a shower cubicle. In this example the steam outlet 38 opens to the shower waste hole 39 in the floor 11, as does the overflow tube 36. This arrangement is advantageous in that there is no loss of space in the chamber and steam/heat is introduced at the lowest possible level.

Figure 6 shows a roof mounted generator 13 which lends itself to being an add-on feature for an existing shower cubicle for example. This generator 13 requires a circulation mechanism and the figure shows an example in the form of a centrifugal fan 40. This system tends to ensure a good temperature gradient throughout the chamber. Recirculation of air within the chamber is provided by aperture 96.

In figure 7 the steam/heat generator 13 is located outside the steam chamber, a discharge duct 50 directing the steam/heat into the chamber at floor level in this example. A centrifugal fan 51 forces the steam/heat produced by the generator 13 into the chamber. The duct 50 also carries any waste water from the flow control device 21 and any condensed water vapour into the chamber where it can flow into the water outlet of the chamber. The arrangement is contained in an insulated casing 52 so that the mixture loses as little heat as possible.

Also shown is an optional suction duct 53 having a variable port. The centrifugal fan 51 pulls air from the chamber and effectively reheats it by virtue of it passing by the generator.

To the skilled person, it will be apparent that many other arrangements are possible.

The steam/heat generating devices of the present invention do not have a free volume of boiling water within the chamber. With known 'kettle' generators there may be up to 4 litres of boiling water in a plastic container and should the user fall the consequences could be particularly dangerous. The only contact with the present generator is contact with the plastic outer casing 23. This casing operates at a temperature a little over the enclosure temperature and the only free water is cold water during normal running. There may, however, be some free water that is heated during starting up.

The present arrangement is also quiet in operation because the steam escapes from a large area at the base of the generator or elsewhere. With 'kettle' type generators the bubbling of the boiling water is quite loud in comparison as is the noise from the nozzle of an external boiler.

In addition the steam generating device is easy to maintain and replace. In particular it is easy to clean the element in hard water areas and to replace the block 14/element in the event of failure.

It will be appreciated that the heating element/block can be of any suitable size or shape depending on the desired effect. Also the materials of manufacture of the various components could be altered where necessary. Also more than one device 13 could be used in a single chamber.

Also the block could be heated by means other than electricity. For example, it could be heated by means of a butane gas cylinder or other suitable gas means. The device 13 could also be used with a water container providing water to the water flow control device 21. A suitable combination of these with a suitable cubicle could result in a portable climate room.

Claims

1. A climate chamber comprising substantially impervious walls and incorporating one or more steam producing devices (13), the or each steam producing device (13) comprising a member (14) adapted to be heated and a water flow device (21) whereby a controlled flow of water from the flow device (21) is caused to contact the member (14) thereby to produce steam substantially immediately upon contact with the member, the heat produced by the member and the water flow rate being set or controlled relative to each other, characterised in that control means are provided for selectively varying the flow of water from said water flow device and the heat produced by the heated member wherein the heat produced by the member is always just

- sufficient to ensure that the rate of production of steam is substantially equal to the rate of flow of water.
2. A climate chamber as claimed in claim 1 wherein the water flow device (21) is positioned above the member (14) so that water flows under gravity on to the member. 5
 3. A climate chamber as claimed in claim 1 or claim 2 wherein the water flow is delivered by a controlled pump or mains water pressure. 10
 4. A climate chamber as claimed in claim 3 wherein the water flow device (21) provides a spray of water droplets directed at the member (14). 15
 5. A climate chamber as claimed in any one of claims 1 to 4 wherein the or each steam producing device (13) is located within the chamber. 20
 6. A climate chamber as claimed in claim 5 wherein the or each steam producing device (13) is located near the floor (11) of the chamber. 25
 7. A climate chamber as claimed in claim 6 wherein an inner casing (22) extends over the top and sides of the or each steam producing device (13) and an outer casing (23) extends over the top and sides of the inner casing (22). 30
 8. A climate chamber as claimed in claim 6 wherein an inner casing (22) surrounds the top, base and sides of the or each steam producing device and is provided with one or more steam outlet holes (30) and an outer casing (23) extends over the top and sides of the inner casing (22) and is also provided with one or more steam outlet apertures (31). 35
 9. A climate chamber as claimed in claims 1 to 8, wherein an outer casing (23) extends over the top and sides of the steam producing device (13) and comprises one or more steam outlet apertures which include at least one substantially vertically extended portion (68). 40
 10. A climate chamber as claimed in claim 9, wherein in use the extended portion (68) reduces the temperature of the steam and air mixture passing there-through. 45
 11. A climate chamber as claimed in claim 10, wherein the temperature of the steam and air mixture is reduced to below 75°C. 50
 12. A climate chamber as claimed in claims 8 to 11 wherein the inner casing (22) is provided with an indentation (32) below one of said apertures (31) for receiving a fragrance release material. 55
 13. A climate chamber as claimed in any one of claims 7 to 12 wherein the inner casing (22) is made of stainless steel and the outer casing (33) is made from plastic.
 14. A climate chamber as claimed in any one of claims 1 to 4 wherein the or each steam producing device (13) is located externally of and immediately adjacent or at a distance from the chamber.
 15. A climate chamber as claimed in claim 14 wherein the or each steam producing device (13) is located below the floor (11) of the chamber and incorporates a steam outlet in the floor.
 16. A steam chamber as claimed in claim 15 wherein the floor has a waste outlet (39) which constitutes the outlet through which the steam enters the chamber.
 17. A climate chamber as claimed in claim 14 wherein the or each steam producing device (13) is located above the ceiling of the chamber and circulation means (40) is provided to circulate the steam within the chamber.
 18. A climate chamber as claimed in any one of claims 1 to 17 wherein the member (14) of the or each device comprises a metal block incorporating a heating element (33).
 19. A climate chamber as claimed in claim 18 wherein the heating element (33) is electrically powered and is mineral insulated before being cast into said metal block.
 20. A climate chamber as claimed in any one of claims 1 to 19 wherein said control means comprises an overtemperature switch.
 21. A climate chamber as claimed in any one of claims 1 to 20 wherein the control means provides manual control means for setting desired chamber temperature and humidity and desired length of time at that temperature.
 22. A climate chamber as claimed in any one of claims 1 to 21 wherein the control means provides programmable means for operation at different operating conditions for chosen periods of time.
 23. A climate chamber as claimed in any one of claims 1 to 22 wherein the controlled flow of water is ensured by the provision of regulation means.
 24. A climate chamber as claimed in claim 23 wherein said regulation means comprises a constant head device (21) or a constant displacement pump.

25. A climate chamber as claimed in claim 23 or claim 24 wherein the regulation means incorporates a solenoid valve (20).

Patentansprüche

1. Klimakammer, umfassend im wesentlichen undurchlässige Wände und beinhaltend ein oder mehrere Dampferzeugungsvorrichtungen (13), wobei die oder jede Dampferzeugungsvorrichtung (13) ein zu erhitzendes Element (14) und eine Wasserströmungsvorrichtung (21) aufweist, so daß ein geregelter Wasserfluß von der Strömungsvorrichtung (21) bewirkt wird, die mit dem Element (14) in Kontakt kommt, so daß Dampf im wesentlichen unmittelbar nach dem Kontakt mit dem Element erzeugt wird, wobei die durch das Element erzeugte Wärme und die Wasserströmungsraten relativ zueinander eingestellt oder geregelt werden, dadurch gekennzeichnet, daß ein Steuermittel zum selektiven Ändern der Wasserströmung von der genannten Wasserströmungsvorrichtung und der durch das erhitzte Element erzeugten Wärme variiert wird, wobei die durch das Element erzeugte Wärme stets gerade ausreicht, um zu gewährleisten, daß die Dampfproduktionsrate im wesentlichen gleich der Wasserströmungsraten ist.
2. Klimakammer nach Anspruch 1, bei der die Wasserströmungsvorrichtung (21) oberhalb des Elementes (14) positioniert ist, so daß Wasser unter Schwerkraft auf das Element fließt.
3. Klimakammer nach Anspruch 1 oder Anspruch 2, wobei die Wasserströmung mit einem geregelten Pumpen- oder Leitungswasserdruck zugeführt wird.
4. Klimakammer nach Anspruch 3, bei der die Wasserströmungsvorrichtung (21) einen auf das Element (14) gerichteten Wassertröpfchen-Sprühnebel liefert.
5. Klimakammer nach einem der Ansprüche 1 bis 4, bei der sich die oder jede Dampferzeugungsvorrichtung (13) innerhalb der Kammer befindet.
6. Klimakammer nach Anspruch 5, bei der sich die bzw. jede Dampferzeugungsvorrichtung (13) in der Nähe des Bodens (11) der Kammer befindet.
7. Klimakammer nach Anspruch 6, bei der ein Innengehäuse (22) über die Oberseite und die Seiten der bzw. jeder Dampferzeugungsvorrichtung (13) und ein Außengehäuse (23) über die Oberseite und die Seiten des Innengehäuses (22) verläuft.
8. Klimakammer nach Anspruch 6, bei der ein Innengehäuse (22) die Oberseite, die Unterseite und die
- Seiten der bzw. jeder Dampferzeugungsvorrichtung umgibt und mit einem oder mehreren Dampfauslaßlöchern (30) versehen ist und ein Außengehäuse (23) über die Oberseite und die Seiten des Innengehäuses (22) verläuft und ebenso mit einer oder mehreren Dampfauslaßöffnungen (31) versehen ist.
9. Klimakammer nach Anspruch 1 bis 8, bei der ein Außengehäuse (23) über die Oberseite und die Seiten der Dampferzeugungsvorrichtung (13) verläuft und ein oder mehrere Dampfauslaßlöcher umfaßt, die wenigstens einen im wesentlichen senkrecht verlaufenden Abschnitt (68) aufweisen.
10. Klimakammer nach Anspruch 9, bei der bei Gebrauch der erweiterte Abschnitt (68) die Temperatur des durch ihn hindurchlaufenden Gemisches aus Dampf und Luft reduziert.
11. Klimakammer nach Anspruch 10, bei der die Temperatur des Gemisches aus Dampf und Luft auf unter 75°C verringert wird.
12. Klimakammer nach Anspruch 8 bis 11, bei der das Innengehäuse (22) mit einer Einbuchtung (32) unterhalb einer der genannten Öffnungen (31) zur Aufnahme eines Duftfreigabematerials versehen ist.
13. Klimakammer nach einem der Ansprüche 7 bis 12, bei der das Innengehäuse (22) aus nichtrostendem Stahl und das Außengehäuse (33) aus Kunststoff hergestellt ist.
14. Klimakammer nach einem der Ansprüche 1 bis 4, bei der sich die bzw. jede Dampferzeugungsvorrichtung (13) außerhalb der oder unmittelbar neben oder in einem Abstand von der Kammer befinden.
15. Klimakammer nach Anspruch 14, bei der sich die bzw. jede Dampferzeugungsvorrichtung (13) unterhalb des Bodens (11) der Kammer befindet und einen Dampfauslaß im Boden aufweist.
16. Dampfkammer nach Anspruch 15, bei der der Boden einen Abwasserauslaß (39) aufweist, den Auslaß darstellt, durch den Dampf in die Kammer eintritt.
17. Klimakammer nach Anspruch 14, bei der sich die bzw. jede Dampferzeugungsvorrichtung (13) oberhalb des Daches der Kammer befindet und wobei ein Umwälzmittel (40) zum Umwälzen des Dampfes in der Kammer vorgesehen ist.
18. Klimakammer nach einem der Ansprüche 1 bis 17, bei der das Element (14) der bzw. jeder Vorrichtung

einen ein Heizelement (33) beinhaltenden Metallblock aufweist.

19. Klimakammer nach Anspruch 18, wobei das Heizelement (33) mit Strom gespeist und mineralisiert wird, bevor es in den genannten Metallblock gegossen wird. 5
20. Klimakammer nach einem der Ansprüche 1 bis 19, bei der das genannte Steuermittel einen Übertemperaturschalter aufweist. 10
21. Klimakammer nach einem der Ansprüche 1 bis 20, bei der das Steuermittel ein manuelles Steuermittel zum Einstellen der gewünschten Kammertemperatur und -feuchtigkeit und der gewünschten Zeitdauer mit dieser Temperatur aufweist. 15
22. Klimakammer nach einem der Ansprüche 1 bis 21, bei der das Steuermittel ein programmierbares Mittel für den Betrieb bei verschiedenen Betriebsbedingungen für gewählte Zeitdauern aufweist. 20
23. Klimakammer nach einem der Ansprüche 1 bis 22, bei der die geregelte Wasserströmung mit Hilfe eines Reguliermittels sichergestellt wird. 25
24. Klimakammer nach Anspruch 23, wobei das genannte Reguliermittel eine konstante Kopfvorrichtung (21) oder eine konstante Verdrängungspumpe umfaßt. 30
25. Klimakammer nach Anspruch 23 oder Anspruch 24, bei der das Reguliermittel ein Magnetventil (20) beinhaltet. 35

Revendications

1. Chambre climatisée comprenant des parois essentiellement imperméables et comportant un ou plusieurs dispositifs producteurs de vapeur (13), le ou chaque dispositif producteur de vapeur (13) comprenant un élément (14) adapté pour être chauffé et un dispositif d'écoulement d'eau (21), de telle sorte qu'un écoulement d'eau contrôlé du dispositif d'écoulement (21) est mis en contact avec l'élément (14) pour produire ainsi de la vapeur dès le contact avec l'élément, la chaleur produite par l'élément et le débit d'eau étant réglés ou commandés relativement l'un à l'autre, caractérisé en ce que des moyens de régulation sont prévus pour faire varier sélectivement le débit d'eau dudit dispositif d'écoulement d'eau et la chaleur produite par l'élément chauffé, où la chaleur produite par l'élément est toujours juste suffisante pour assurer que le débit de production de vapeur soit essentiellement égal au débit d'écoulement d'eau. 40 45 50 55
2. Chambre climatisée selon la revendication 1, dans laquelle le dispositif d'écoulement d'eau (21) est positionné au-dessus de l'élément (14) de telle sorte que l'eau coule par gravité sur l'élément.
3. Chambre climatisée selon la revendication 1 ou la revendication 2, dans laquelle l'écoulement d'eau est fourni par une pompe commandée ou par la pression d'eau du réseau.
4. Chambre climatisée selon la revendication 3, dans laquelle le dispositif d'écoulement d'eau (21) fournit une pulvérisation de gouttelettes d'eau dirigée sur l'élément (14).
5. Chambre climatisée selon l'une quelconque des revendications 1 à 4 dans laquelle le ou chaque dispositif producteur de vapeur (13) est situé à l'intérieur de la chambre.
6. Chambre climatisée selon la revendication 5, dans laquelle le ou chaque dispositif producteur de vapeur (13) est situé près du plancher (11) de la chambre.
7. Chambre climatisée selon la revendication 6 dans laquelle une enveloppe intérieure (22) s'étend par-dessus le sommet et les côtés du ou de chaque dispositif production de vapeur (13) et une enveloppe extérieure (23) s'étend par-dessus le sommet et les côtés de l'enveloppe intérieure (22).
8. Chambre climatisée selon la revendication 6 dans laquelle une enveloppe intérieure (22) entoure le sommet, la base et les côtés du ou de chaque dispositif producteur de vapeur et est munie d'un ou plusieurs orifices de sortie de vapeur (30) et dans laquelle une enveloppe extérieure (23) s'étend par-dessus le sommet et les côtés de l'enveloppe intérieure (22) et est aussi munie d'un ou plusieurs orifices de sortie de vapeur (31).
9. Chambre climatisée selon les revendications 1 à 8, dans laquelle une enveloppe extérieure (23) s'étend par-dessus le sommet et les côtés du dispositif producteur de vapeur (13) et comprend une ou plusieurs ouvertures de sortie de vapeur qui comportent au moins une partie prolongée principalement verticalement (68).
10. Chambre climatisée selon la revendication 9, dans laquelle, en utilisation, la partie prolongée (68) réduit la température du mélange de vapeur et d'air qui la traverse.
11. Chambre climatisée selon la revendication 10, dans laquelle la température du mélange de vapeur et d'air est réduite à moins de 75°C.

12. Chambre climatisée selon les revendications 8 à 11 dans laquelle l'enveloppe intérieure (22) est munie d'un creux (32) en-dessous d'une desdites ouvertures (31) pour recevoir une matière émettant un parfum. 5
13. Chambre climatisée selon l'une quelconque des revendications 7 à 12, dans laquelle l'enveloppe intérieure (22) est réalisée en acier inoxydable et l'enveloppe extérieure (33) est réalisée en plastique. 10
14. Chambre climatisée selon l'une quelconque des revendications 1 à 4 dans laquelle le ou chaque dispositif producteur de vapeur (13) est situé à l'extérieur et à proximité immédiate ou à une certaine distance de la chambre. 15
15. Chambre climatisée selon la revendication 14 dans laquelle le ou chaque dispositif producteur de vapeur (13) est situé sous le plancher (11) de la chambre et comporte une sortie de vapeur dans le plancher. 20
16. Chambre à vapeur selon la revendication 15 dans laquelle le plancher a un orifice d'évacuation des déchets (39) qui constitue l'orifice par lequel la vapeur entre dans la chambre. 25
17. Chambre climatisée selon la revendication 14, dans laquelle le ou chaque dispositif producteur de vapeur (13) est situé au-dessus du plafond de la chambre et où un moyen de circulation (40) est prévu pour faire circuler la vapeur dans la chambre. 30
35
18. Chambre climatisée selon l'une quelconque des revendications 1 à 17, dans laquelle l'élément (14) du ou de chaque dispositif comprend un bloc de métal comportant un élément chauffant (33). 40
19. Chambre climatisée selon la revendication 18 dans laquelle l'élément chauffant (33) fonctionne à l'énergie électrique et est isolé avec une matière minérale avant d'être moulé dans ledit bloc de métal. 45
20. Chambre climatisée selon l'une quelconque des revendications 1 à 19 dans laquelle le moyen de régulation comprend un contacteur de surchauffe. 50
21. Chambre climatisée selon l'une quelconque des revendications 1 à 20, dans laquelle le moyen de régulation permet une commande manuelle du réglage voulu de la température et de l'humidité de la chambre et de la durée voulue à cette température. 55
22. Chambre climatisée selon l'une quelconque des revendications 1 à 21 dans laquelle le moyen de régulation offre un moyen programmable de fonctionnement à différentes conditions de fonctionnement pendant des durées choisies.
23. Chambre climatisée selon l'une quelconque des revendications 1 à 22 dans laquelle le débit contrôlé d'eau est assuré par la fourniture d'un moyen de régulation.
24. Chambre climatisée selon la revendication 23 dans laquelle le moyen de régulation comprend un dispositif à charge constante (21) ou une pompe à cylindrée constante.
25. Chambre climatisée selon la revendication 23 ou la revendication 24 dans laquelle le moyen de régulation comprend une électrovanne (20).

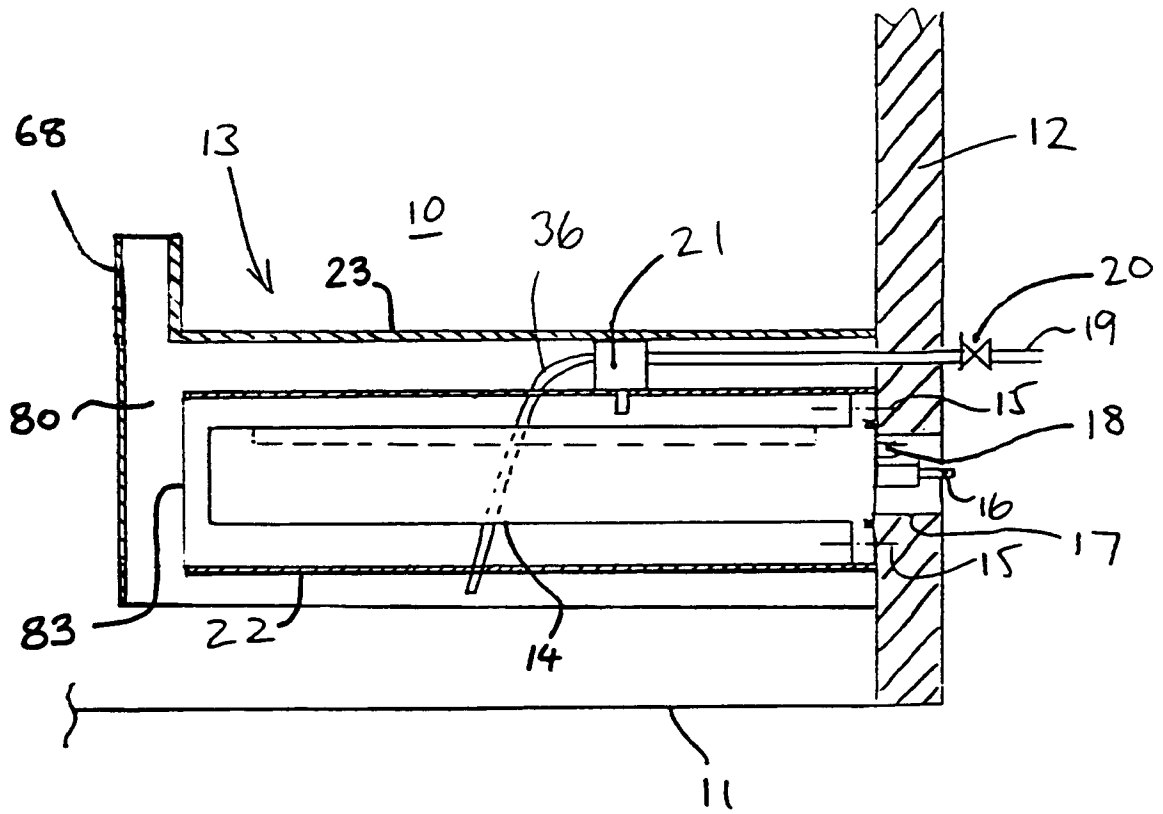


FIGURE 1 B

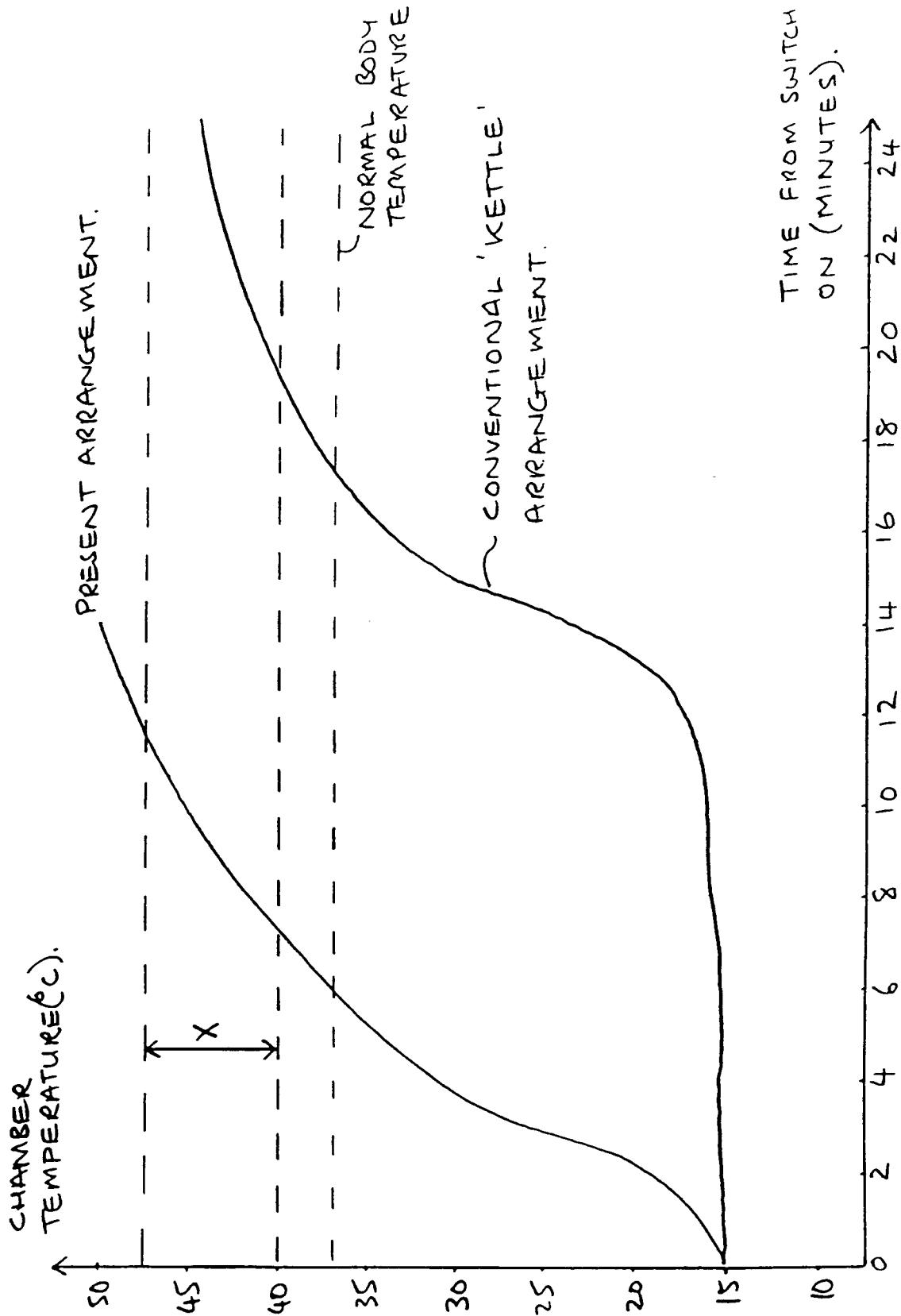


FIGURE 2

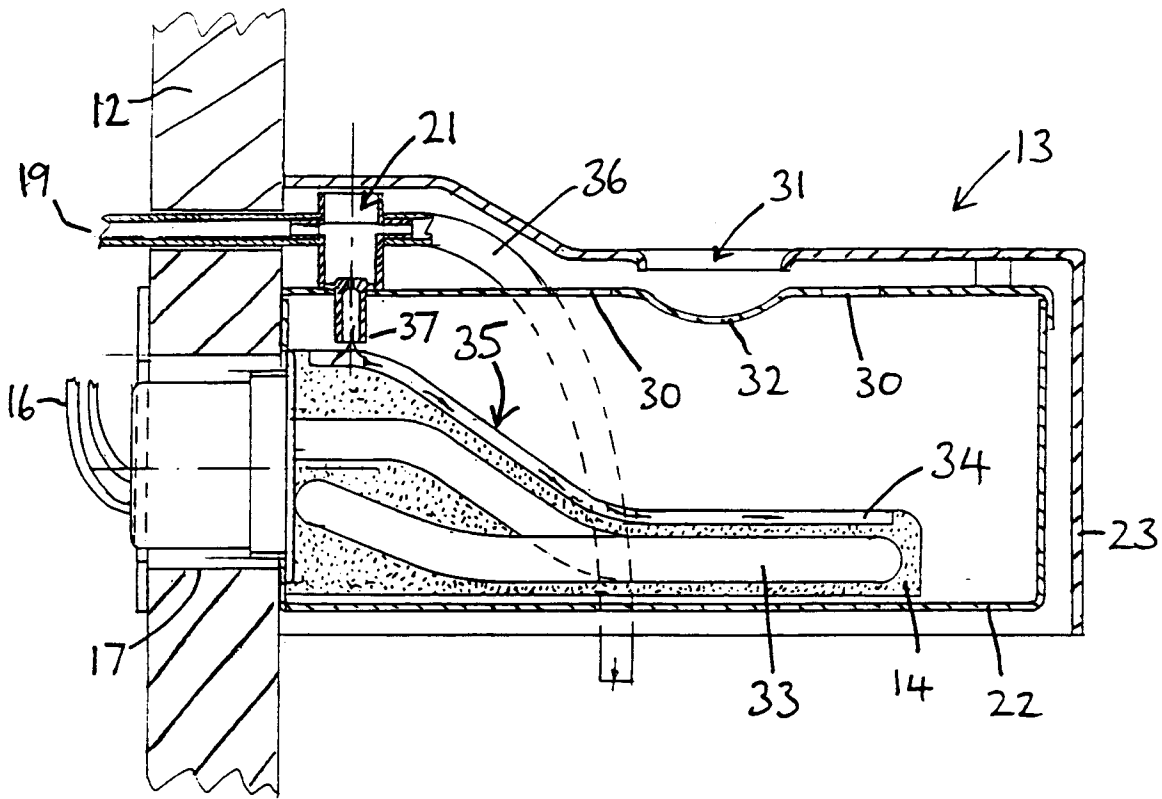


FIGURE 3

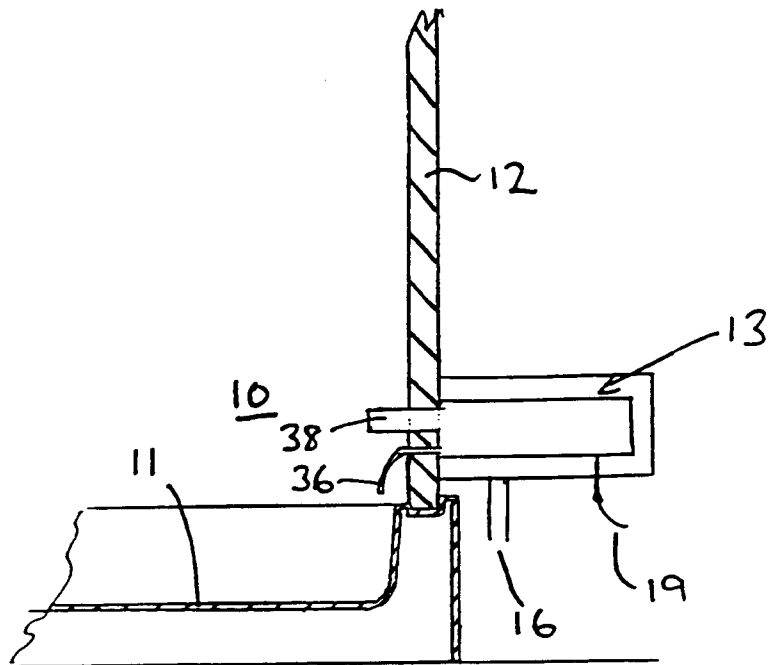


FIGURE 4

FIGURE 5

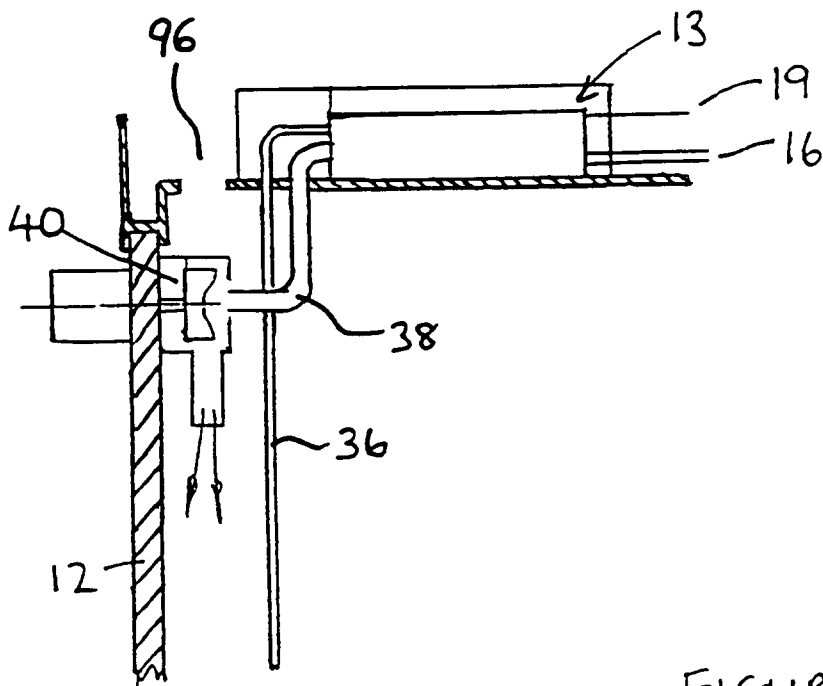
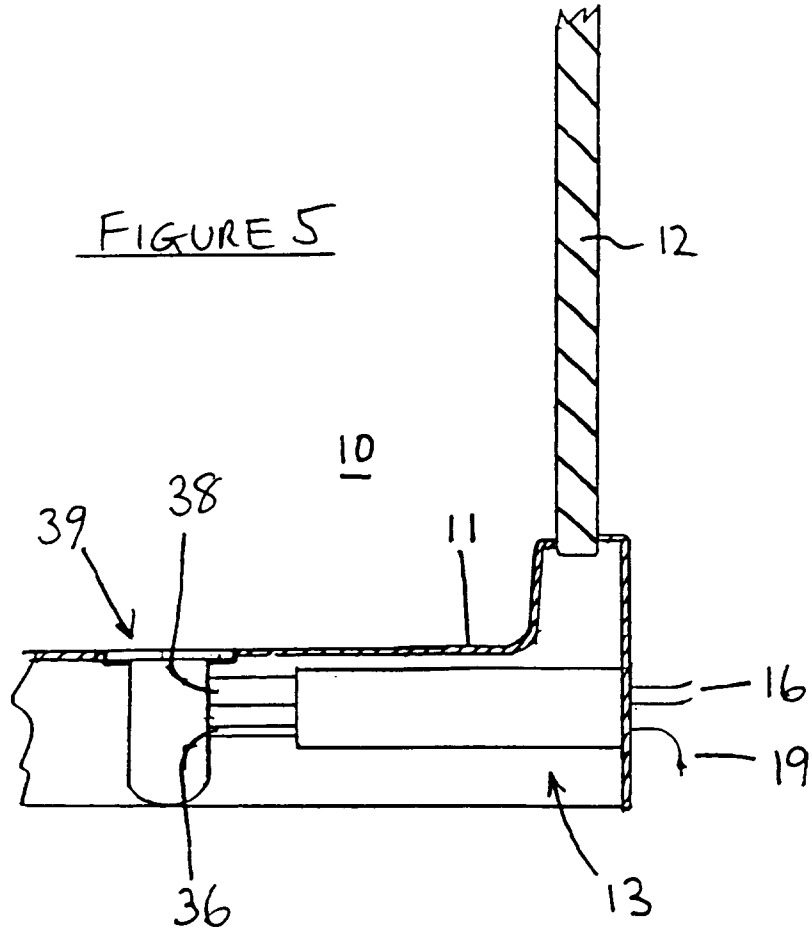


FIGURE 6

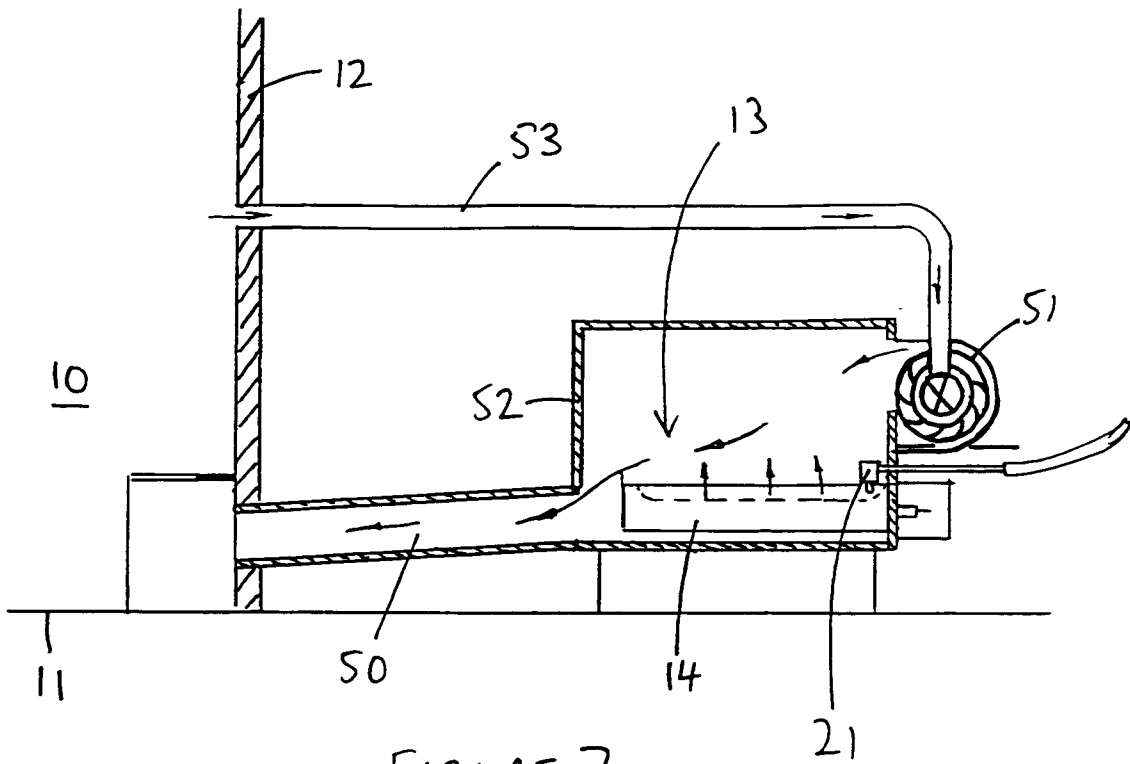


FIGURE 7