(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 212 480 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
14.12.2011 Bulletin 2011/50

(21) Application number: **07805465.7**

(22) Date of filing: **10.10.2007**

(51) Int Cl.:
E03C 1/00 *(2006.01)*

(86) International application number:
PCT/IB2007/054129

(87) International publication number:
WO 2009/047586 (16.04.2009 Gazette 2009/16)

(54) **WATER SUPPLY DEVICE FOR SHOWERS AND THE LIKE**

WASSERVERSORGUNGSVORRICHTUNG FÜR DUSCHEN UND DERGLEICHEN

DISPOSITIF D'ALIMENTATION EN EAU POUR DOUCHES ET ANALOGUES

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

(43) Date of publication of application:
04.08.2010 Bulletin 2010/31

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EP 2 212 480 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention is related to a water supply device for showers, bathtubs and the like, of the kind comprising at least one inlet line of a water flow, adjustment means of said water flow and at least one shower rose or nozzle for the water supply, according to the preamble of claim 1.

[0002] The problem of having the desired temperature of a water flow, e.g. in the operation of a shower, is someone's daily experience.

[0003] Usually, the user operates on said adjustment means for having a water flow which, through the shower rose, falls on the shower plate or in the bathtub and disperses through the bath drain until the flow temperature reaches the desired level, while the user checks it by partially wetting oneself before starting to have a shower. Therefore, it is understood that such operation constitute a moment of discomfort for the user, especially in the winter months, when the room temperature is lower.

[0004] For mitigating such a discomfort, systems have been proposed not allowing the water supply until the water inside the boiler has not reached the desired temperature level. This expedient anyway only partially meets the goal thereof because, on one side, it is appropriate only in a situation with an independent water heating, wherein the boiler substantially works only for the outstanding user or for his habitation and, on the other side, in any case the problem of the cold water already contained in the lines is not got over, which forcedly is supplied through the shower before the heated water. In addition, bacteria may grow in the cold water contained in the lines.

[0005] US5564462A, CA2252350 and GB2435490 disclose various water supply systems of the state of the art.

[0006] The technical problems underlying the present invention is to provide a water supply device allowing to obviate to the drawbacks mentioned with reference to the prior art.

[0007] Such a problem is solved by a water supply device as defined in appended claim 1.

[0008] The main advantage of the water supply device according to the present invention lies in allowing the achievement of the desired temperature level, checkable through said display means, while the water flow is deviated directly towards the drain, with the possibility of sending said water flow towards the shower rose when the achievement of the desired temperature is accomplished, thus eliminating the discomfort of the wait and of the direct check before having a shower, while the means for deviating can link the rose to the drain, through said dedicated line, permits to keep the rose dry, a precaution required by the guidelines for the prevention of legionella bacterial colony formation, a bacterium responsible for dangerous bacterial infections.

[0009] Such a prevention is absolutely needed, and required by in force or about to be approved standards, in communities like hospitals, hotels, barracks and the like.

[0010] The present invention will be hereinafter disclosed according to two embodiments thereof, together with some modalities of employment thereof, provided to an exemplificative and non limitative purpose with reference to the following examples and to the attached drawings wherein:

* Figures 1 to 3 schematically show a first embodiment of the water supply device according to the present invention, illustrating different operational conditions;
* Figure 4 schematically shows a second embodiment of the water supply device according to the present invention; and
* Figures 5A and 5B respectively show two examples of shower cabin incorporating said embodiments of the water supply device.

[0011] With reference to figures 1 to 3, a first embodiment of water supply device according to the invention is hereinafter disclosed, globally indicated as 1.

[0012] It comprises at least one inlet line of a water flow which, in the present embodiment, is composed by a cold water inlet line 2 and by a hot water inlet line 3. They converge in a sole supply line 4 at adjustment means of said flow, globally indicated as 5, said supply line 4 being connected to a shower rose 6 of a shower or to any other kind of nozzle for the water supply.

[0013] Specifically, the present device may be applied to any supply system of tap water: showers, bathtubs, washbasins etc. or any other system employing hot water at a certain temperature, as for domestic equipments like washing machines, dishwashers and machines also of the industrial types.

[0014] In the present embodiment, the adjustment means 5 comprises a pair of taps 7, but it is apparent that any regulator and/or mixer may be considered comprised in said adjustment means.

[0015] At the supply line, 4 the device 1 comprises a branched line 8, placed downstream with respect to said adjustment means 5 of the flow.

[0016] Hence, it receives the water already mixed and connects said supply line 4 to a drain (not shown), through a dedicated line 9.

[0017] As drain, it is understood e.g. the piping connecting the shower or the bathtub to the grey waters.

[0018] Therefore, the dedicated line 9 may be connected to said piping immediately downstream the water collection well, or even it may be open into the bathtub or into the shower plate.

[0019] At said branched line 8, the device 1 comprises means for deviating said water flow, indicated as 10, arranged to deviate the already mixed water flow towards the rose 6, through the supply line 4, or towards the drain, through the dedicated line.

[0020] The means for deviating 10 is suitable to con-

nect said at least one rose or nozzle 6 to the drain through said dedicated line 9 (Figure 3), so as to allow the safe draining of the supply line 4 and of the rose 6 at the end of the shower use.

[0021] Such draining allows the rose to be kept dry, preventing the formation of moulds and of bacterial colonies, e.g. legionella carrier bacteria proliferating in wet environments and in air at temperatures varying from 25°C to 50°C.

[0022] According to a preferred variant, said means for deviating can be arranged in a configuration deviating the water flow towards the drain, which can coincide with the configuration wherein the rose 6 is connected to said drain, so as to relieve the user from the duty of selecting such a configuration after having had a shower.

[0023] In the present embodiment, the means for deviating comprises a three-way valve, easily maneuverable by a knob 21 (Figure 5A). Thank to the latter, it is possible to select the configurations wherein: (Figure 1) the supply line 4 is connected to the drain; (Figure 2) the supply line 4 is connected to the rose 6; and (Figure 3) the rose is directly connected to the drain and the supply line is shut.

[0024] According to the invention, the device 1 therefore comprises means for the detection of temperature, e.g. comprising a thermocouple sensor 12 arranged upstream the branched line 5 (Figures 1 to 3) or, according to an embodiment not shown in the drawings, between said adjustment means 5 and said branched line 8 or onto said dedicated line 9 as well.

[0025] In the present embodiment, the position of the sensor 12 allows to check the water temperature even through the supply as such.

[0026] The sensor 12 is connected to temperature display means, globally indicated as 19, which can comprise e.g. an acoustic alarm, a light alarm 13 8Figure 5A) or even a display (Figures 4 ad 5B) indicating, in a Celsius or Fahrenheit scale, the temperature level of the water flow. At said display means, the water supply device comprises means for the input of a certain desired temperature value, e.g. a small alphanumeric keyboard 15 or a pair of keys +/. With reference to figure 4, a second embodiment of the device 1, for which the same reference numerals are used, is of the automatic operation type, wherein said means for deviating 10 are slaved to said means for the detection of temperature 12 by an actuator.

[0027] In this embodiment, it is possible that the configuration of the means for deviating 10 is automatically varied by said actuator, on the basis of the temperature reached by the water flow as detected by the sensor 12.

[0028] In the present embodiment, the actuating system comprises one or more electrovalves, specifically a first electrovalve 17 on said dedicated line 9 and a second electrovalve 16 placed between said adjustment means 5 of the water flow and the rose 6.

[0029] In this way, instead of the manual control of the preceding embodiment, it is possible that the flow is deviated, opening said first electrovalve 17, while the flow reaches the requested temperature and when it is occurred, the first electrovalve 17 is shut while the second one is opened, arranging the water supply.

[0030] The simultaneous opening of both the electrovalves 16, 17 allows to connect the rose 6 to the drain, with the already explained advantages.

[0031] The means for deviating, in this case substantially overlapped to said adjustment means, can comprise electrically driven regulators 18, arranged on the inlet lines 2, 3 of the cold and hot water.

[0032] In such a way, the user is required only to input the desired temperature: while the flow is deviated into the drain, it is also adjusted to the requested temperature. The position of the sensor 12 detecting the temperature allows to stop the flow in case of a sudden temperature drop.

[0033] The present invention is also referred to integrated structures like shower cabins 20 (Figure 5A and 5B), wherein the device is integrated into the structure connected to the water distribution system.

[0034] A first version (Figure 5A) can provide the use of a manual regulation system with said taps 7 and an additional knob 21 for driving said valve 11.

[0035] A second version (Figure 5B) is completely automated and has a keyboard, which may be remotely arranged with respect to the shower, for inputting the desired temperature and for controlling the start of the water flowing and the start of the supply.

[0036] Of course, intermediate versions are possible, between the solutions herein shown.

[0037] Besides the showers, the device can be used also for the automatic filling up of a bathtub structure. In the automatic version, the supply in the bathtub may automatically occur having reached the desired temperature. In such a case, flow breaking means may be provided, linked to a level switch inside the bathtub.

[0038] Alternatively, said means can be operated after a certain length of time, by a timer, or after the supply of a certain amount of water, e.g. detected by a flow meter applied to the supply line.

[0039] In such a way, the user should neither be worried to break the flow after the filling up of the bathtub.

[0040] To the above disclosed water supply device a man skilled in the art, to meet further and contingent needing, can achieve several additional modifications and variants, however all falling within the protection scope of the present invention, as defined by the annexed claims.

Claims

1. Water supply device (1) for showers and the like, comprising at least one inlet line (2, 3) of a water flow, adjustment means (5) of said water flow, a supply line (4) connected to at least one shower rose (6) or nozzle for the water supply, further comprising:

* a branched line (8), at said supply line (4) and downstream said adjustment means (5) of the water flow, for connecting the water supply device and a drain to each other through a dedicated line (9) of the water supply device;
* means for deviating (10) the water flow at said branched line (8), apt to deviate the water flow towards either the rose (6) or the drain; and
* temperature detection means (12), placed between said adjustment means (5) and said branched line (8) or on said dedicated line (9), and temperature display means (19) connected to said temperature detection means (12),

characterized in that said means for deviating (10) is suitable to connect said at least one rose (6) or nozzle to said drain through said dedicated line (9).

2. Water supply device (1) according to claim 1, wherein, in said means for deviating (10), the configuration deviating the water flow towards the drain coincides with the configuration wherein said at least one rose (6) or nozzle is connected to the drain.

3. Water supply device (1) according to any of the preceding claims, wherein said adjustment means (5) comprises a mixer of hot and cold water, said at least one inlet line comprising a cold water inlet line (2) and a hot water inlet line (3).

4. Water supply device (1) according to any of the preceding claims, wherein said means for deviating (10) are slaved to said temperature detection means (12) by an actuator (16, 17).

5. Water supply device (1) according to claim 4, wherein the configuration of the means for deviating (10) is automatically varied by said actuator (16, 17) on the basis of the temperature reached by the water flow.

6. Water supply device (1) according to claim 4 or 5, wherein said actuator comprises one or more electrovalves (16, 17).

7. Water supply device (1) according to claims 3 and 6, comprising an electrovalve (17) on said dedicated line (9) and another electrovalve (16) between the adjustment means (5) of the water flow and the rose (6) or equivalent nozzle.

8. Water supply device (1) according to any of the preceding claims, wherein said display means (19) comprises acoustic and/or light alarms (13) and/or a display (14) on which the water flow temperature is represented.

9. Water supply device (1) according to any of the preceding claims, comprising means for the input (15) of the desired temperature value.

10. Shower structure (20), comprising a water supply device (1) as defined in one of any preceding claims.

11. Bathtub structure, comprising a water supply device (1) as defined in one of any of claims 1 to 9.

12. Bathtub structure according to claim 11, wherein means for breaking the water flow are provided, comprising a level switch, a timer or a flow meter applied to the supply line.

13. Use of a water supply device (1) according to any of claims 1 to 9, for supplying any domestic or industrial equipment with hot water.

Patentansprüche

1. Wasserversorgungsvorrichtung (1) für Duschen und dergleichen, aufweisend wenigstens eine Zuflussleitung (2 ,3) für einen Wasserstrom, Einstellmittel (5) für den Wasserstrom, eine Versorgungsleitung (4) verbunden mit wenigstens einem Duschkopf (6) oder Düse für die Wasserversorgung, weiterhin aufweisend:

- eine Abzweigungsleitung (8) an der Versorgungsleitung (4) und den Einstellmitteln (5) für den Wasserstrom nachgeschaltet, um die Wasserversorgungseinrichtung und einen Ablauf durch eine zugeordnete Leitung (9) der Wasserversorgungsvorrichtung miteinander zu verbinden;
- Mittel zum Umleiten (10) des Wasserstroms zu dieser Abzweigungsteitung (8), geeignet, um den Wasserstrom zu dem Duschkopf oder dem Ablauf zu leiten; und
- Temperaturerfassungsmittel (12), positioniert zwischen den Einstellmitteln (5) und dieser Abzweigungsleitung (8) oder in der zugeordneten Leitung (9), und Temperaturanzeigemittel (19), verbunden mit den Temperaturerfassungsmittel (12),

dadurch gekennzeichnet, dass die Mittel zum Umleiten (10) zum Verbinden des wenigstens einen Duschkopfes (6) oder Düse mit dem Ablauf über die zugeordnete Leitung (9) geeignet sind.

2. Wasserversorgungsvorrichtung (1) gemäß Anspruch 1, **dadurch gekennzeichnet, dass** in den Mitteln zum Umleiten (10) die Konfiguration, die den Wasserfluss zum Ablauf umleitet, mit der Konfiguration übereinstimmt, bei der der mindestens ein Duschkopf (6) oder Düse mit dem Ablauf verbunden

ist.

3. Wasserversorgungsvorrichtung (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Einstellmittel (5) einen Mischer für heißes und kaltes Wasser aufweisen, dass die wenigstens eine Zuflussleitung eine Kaltwasserzuflussleitung (2) und eine Heißwasserzuflussleitung (3) aufweist.

4. Wasserversorgungsvorrichtung (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Umleiten (10) den Temperaturerfassungsmitteln (12) mit einem Aktuator (16, 17) zugeordnet sind.

5. Wasserversorgungsvorrichtung (1) nach Anspruch 4, **dadurch gekennzeichnet, dass** die Konfiguration der Mittel zum Umleiten (10) automatisch durch die Aktuatoren (16, 17) auf Basis der erreichten Temperatur des Wasserstroms verändert wird.

6. Wasserversorgungsvorrichtung (1) nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** der Aktuator ein oder mehrere Elektroventile (16, 17) aufweist.

7. Wasserversorgungsvorrichtung (1) nach Anspruch 3 und 6, aufweisend ein Elektroventil (17) auf der zugeordneten Leitung (9) und ein anderes Elektroventil (16) zwischen den Einstellmitteln (5) des Wasserstroms und dem Duschkopf (6) oder einer entsprechenden Düse.

8. Wasserversorgungsvorrichtung (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Anzeigemittel (19) Akustikalarme und/oder Lichtalarme (13) und/oder ein Display (14), auf dem die Wasserstromtemperatur angezeigt ist, aufweisen.

9. Wasserversorgungsvorrichtung (1) nach einem der vorhergehenden Ansprüche, aufweisend Mittel für die Eingabe (15) von dem gewünschten Temperaturwert.

10. Duschanordnung (20), aufweisend eine Wasserversorgungsvorrichtung (1) nach einem der vorhergehenden Ansprüche.

11. Badewannenanordnung, aufweisend eine Wasserversorgungsvorrichtung (1) nach einem der Ansprüche 1 bis 9.

12. Badewannenanordnung nach Anspruch 11, **dadurch gekennzeichnet, dass** Mittel zum Unterbrechen des Wasserstroms vorgesehen sind, aufweisend einen der Versorgungsleitung zugeordneten Füllstandsschalter, Timer oder Durchflusszähler.

13. Verwendung einer Wasserversorgungsvorrichtung (1) nach einem der Ansprüche 1 bis 9, zur Versorgung einer häuslichen oder industriellen Einrichtung mit heißem Wasser.

Revendications

1. Dispositif d'alimentation en eau (1) pour des douches et similaires, comprenant au moins une conduite d'entrée (2, 3) d'un écoulement d'eau, des moyens de réglage (5) dudit écoulement d'eau, une conduite d'alimentation (4) raccordée à au moins une pomme de douche (6) ou une buse pour l'alimentation en eau, comprenant en outre :

   * une conduite de branchement (8), dans la conduite d'alimentation (4) et en aval desdits moyens de réglage (5) de l'écoulement d'eau, pour raccorder le dispositif d'alimentation en eau et un drain l'un à l'autre par l'intermédiaire d'une conduite dédiée (9) du dispositif d'alimentation en eau ;
   * des moyens pour dévier (10) l'écoulement d'eau dans ladite conduite de branchement (8), capables de dévier l'écoulement d'eau soit vers la pomme (6) soit vers le drain ; et
   * des moyens de détection de température (12), placés entre lesdits moyens de réglage (5) et ladite conduite de branchement (8) ou sur ladite conduite dédiée (9), et des moyens d'affichage de température (19) connectés auxdits moyens de détection de température (12),

   caractérisé en ce que lesdits moyens pour dévier (10) sont appropriés pour raccorder ladite au moins une pomme (6) ou buse audit drain par l'intermédiaire de ladite conduite dédiée (9).

2. Dispositif d'alimentation en eau (1) selon la revendication 1, dans lequel, dans lesdits moyens pour dévier (10), la configuration déviant l'écoulement d'eau vers le drain coïncide avec la configuration dans laquelle ladite au moins une pomme (6) ou buse est raccordée au drain.

3. Dispositif d'alimentation en eau (1) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de réglage (5) comprennent un mélangeur d'eau chaude et d'eau froide, ladite au moins une conduite d'entrée comprenant une conduite d'entrée d'eau froide (2) et une conduite d'entrée d'eau chaude (3).

4. Dispositif d'alimentation en eau (1) selon l'une quelconque des revendications précédentes, dans le-

quel lesdits moyens pour dévier (10) sont asservis auxdits moyens de détection de température (12) par un actionneur (16, 17).

5. Dispositif d'alimentation en eau (1) selon la revendication 4, dans lequel la configuration des moyens pour dévier (10) est modifiée automatiquement par ledit actionneur (16, 17) sur la base de la température atteinte par l'écoulement d'eau.

6. Dispositif d'alimentation en eau (1) selon la revendication 4 ou 5, dans lequel ledit actionneur comprend une ou plusieurs électrovannes (16, 17).

7. Dispositif d'alimentation en eau (1) selon les revendications 3 et 6, comprenant une électrovanne (17) sur ladite conduite dédiée (9) et une autre électrovanne (16) entre les moyens d'ajustement (5) de l'écoulement d'eau et la pomme (6) ou la buse équivalente.

8. Dispositif d'alimentation en eau (1) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens d'affichage (19) comprennent des alarmes acoustiques et/ou lumineuses (13) et/ou un afficheur (14) sur lequel la température de l'écoulement d'eau est représentée.

9. Dispositif d'alimentation en eau (1) selon l'une quelconque des revendications précédentes, comprenant des moyens pour l'entrée (15) de la valeur de température souhaitée.

10. Structure de douche (20), comprenant un dispositif d'alimentation en eau (1) selon l'une quelconque des revendications précédentes.

11. Structure de baignoire, comprenant un dispositif d'alimentation en eau (1) selon l'une quelconque des revendications 1 à 9.

12. Structure de baignoire selon la revendication 11, dans laquelle des moyens pour couper l'écoulement d'eau sont prévus, comprenant un contacteur de niveau, une minuterie ou un débitmètre appliqué à la conduite d'alimentation.

13. Utilisation d'un dispositif d'alimentation en eau (1) selon l'une quelconque des revendications 1 à 9, pour alimenter en eau chaude n'importe quel équipement domestique ou industriel.

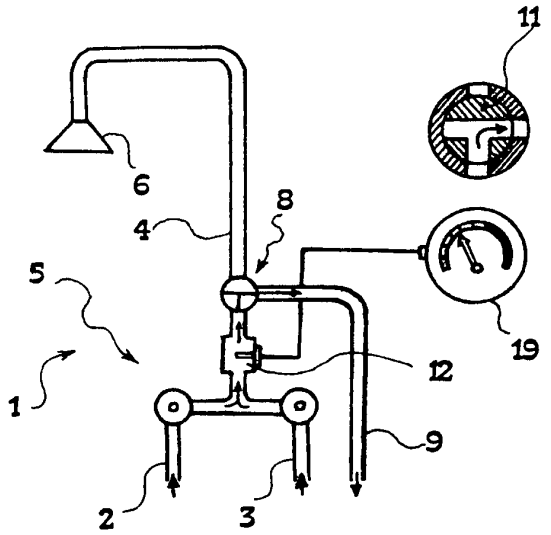

FIG.1

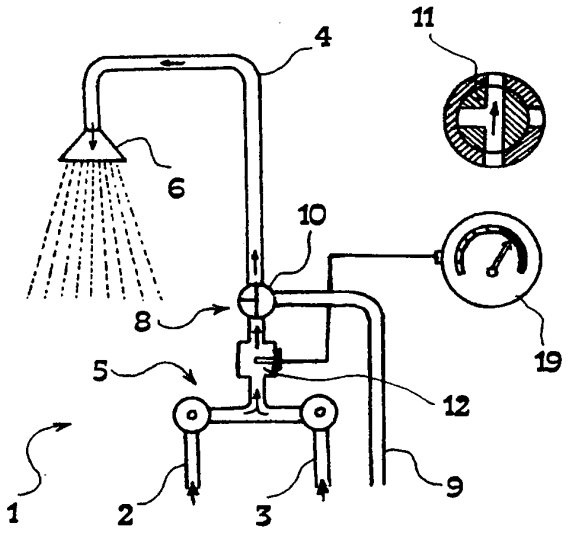

FIG.2

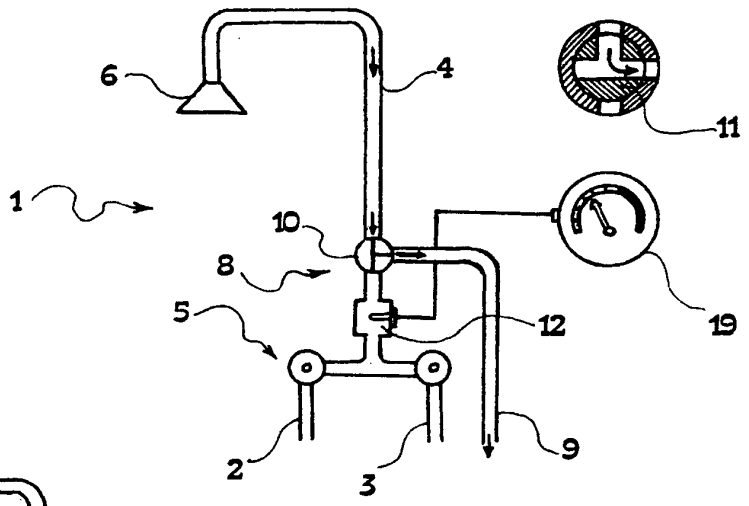

FIG.3

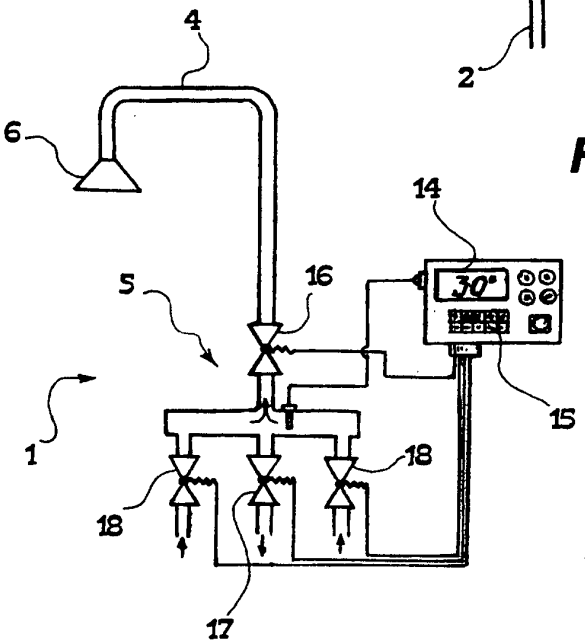

FIG.4

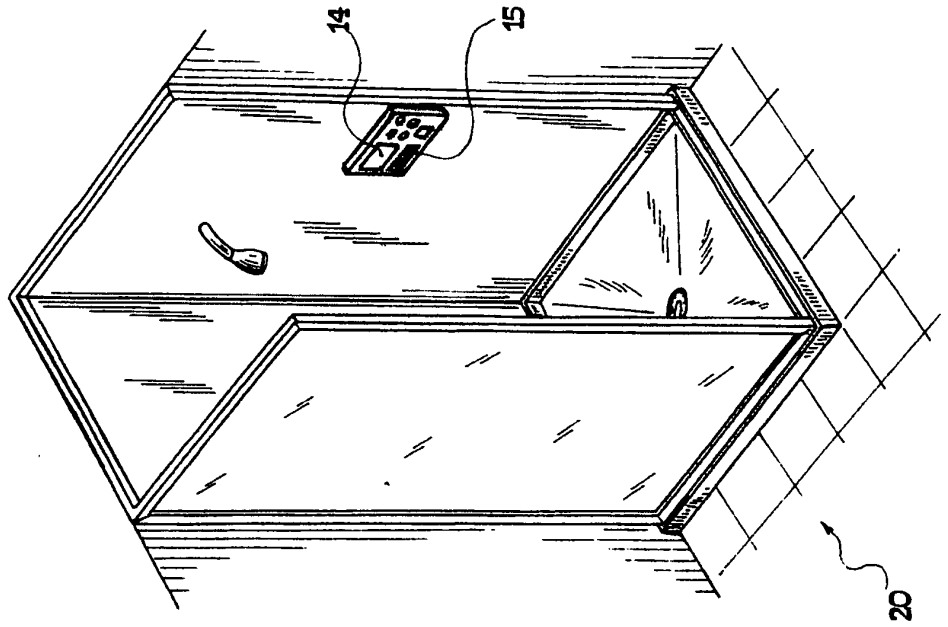

FIG.5B

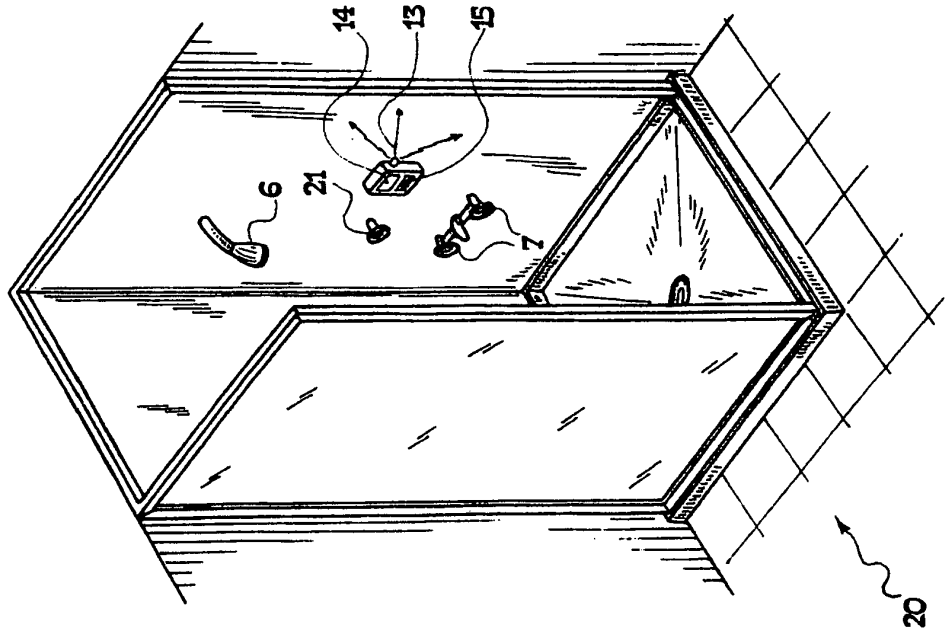

FIG.5A

REFERENCES CITED IN THE DESCRIPTION

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