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(54) **Water dispenser device with lighting means powered by first and second electric current generators in the hot and cold water supply ducts**

Wasserauslaß mit Beleuchtung, angetrieben durch einen ersten und einen zweiten Generator im Heiß- und Kaltwasserzulaufrohr

Sortie d'eau avec illumination alimentée par un premier et un deuxième générateur situés dans les conduites d'admission d'eau chaude et froide

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Description

[0001] The present invention relates to a dispenser device for plumbing systems, particularly of the type of a faucet, shower head or the like.

[0002] Various kinds of dispensers for sanitary plumbing systems, such as for example faucets, shower heads or the like, are known.

[0003] Over time, these plumbing components have become increasingly important in the furnishing of a room, such as for example a bathroom, in which they are installed.

[0004] This importance has led to an increasing care for the aesthetic styling of these components and to an incentive to seek new functionalities aimed at further increasing the value of these objects.

[0005] In addition to furnishing requirements, very often the need is felt to improve the visual conditions in the region where these plumbing components dispense water.

[0006] WO 2004/0926z6 A, DE 203 17 375 U and DE 201 01 460 U disclose known tap water temperature sensing type of light emitting apparatuses that are adapted to emit different color lights according to the variations of water temperature in use of tap water, thereby not only enabling users to visibly check the instant water temperature but also allowing users to notice sudden changes in the water temperature.

[0007] The aim of the present invention is to improve these known dispensers for plumbing systems, particularly of the type of a faucet, shower head or the like, which have additional functionalities with respect to conventional ones, further achieving an aesthetically pleasant result.

[0008] Within this aim, an object of the invention is to provide a dispenser device which ensures optimum lighting conditions in the water dispensing region regardless of the lighting conditions of the room in which it is arranged.

[0009] Another object of the invention is to provide a dispenser device which gives maximum assurance of safety during use.

[0010] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a dispenser for plumbing systems, particularly of the type of a faucet, shower head or the like as claimed in claim 1.

[0011] Further characteristics and advantages of the invention will become better apparent from the description of some preferred but not exclusive embodiments of the dispenser device according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a partially sectional schematic view of the dispenser device according to the invention in a first embodiment, constituted by a faucet;

Figure 2 is a partially sectional schematic view of the dispenser device according to the invention in a second embodiment, constituted by a faucet;

Figure 3 is a partially sectional schematic view of the dispenser device according to the invention in a third embodiment, constituted by a faucet;

Figure 4 is a partially sectional schematic view of the dispenser device according to the invention in a fourth embodiment, constituted by a shower head; Figure 5 is a bottom plan view of the shower head of Figure 4;

Figure 6 is a schematic view of a possible circuit for the electric power supply of the lighting means;

Figure 7 is a schematic view of another possible circuit for supplying electric power and driving the lighting means.

[0012] With reference to the figures cited above, the dispenser device according to the invention, generally designated by the reference numerals 1a, 1b, 1c, 1d in the various embodiments, comprises a dispenser device body 2a, 2b, 2c, 2d, in which there is a passage 3a, 3b, 3c, 3d, which leads outside through at least one dispensing outlet 5a, 5b, 5c, 5d for the water. The passage 3a, 3b, 3c, 3d can be connected to a first hot water supply duct 4a, 4b, 4c, 4d and to a second cold water supply duct 24a, 24b, 24c, 24d, for example by means of a mixer 6a, 6b, 6c, 6d controlled by an actuation knob 7a, 7b, 7c, 7d.

[0013] In the first three embodiments shown in Figures 1 to 3, which refer to a dispenser constituted by a faucet, the mixer 6a, 6b, 6c is arranged within the body of the dispenser device 2a, 2b, 2c, while in the fourth embodiment shown in Figures 4 and 5, which refers to a shower head, the mixer 6d is separate from the body of the dispenser device 2d.

[0014] According to the invention, the dispenser device comprises lighting means 8a, 8b, 8c, 8d, which are adapted to emit at least one beam of light proximate to the dispensing outlet 5a, 5b, 5c, 5d. Said lighting means 8a, 8b, 8c, 8d comprise at least two light sources 9, 19 which are supplied with electric power by electric power supply means which comprise a first electric current generator 12, such as a turbine or Pelton-wheel or flow-controlled generator, which is arranged along the first supply duct 4a, 4b, 4c, 4d, and a second electric current generator 13, such as for example a turbine or Pelton-wheel or flow-controlled generator, which is arranged along the second supply duct 24a, 24b, 24c, 24d. Each one of the two electric current generators 12, 13 is driven by the flow of water along the corresponding water supply duct so that when the dispenser is opened, electric power is generated and can be used to supply the light sources 9, 19 of the lighting means 8a, 8b, 8c, 8d.

[0015] The lighting means 8a, 8b, 8c, 8d comprise at least two light sources 9, 19, preferably of the LED type, which are adapted to emit light beams of mutually different colors and can be supplied with power by means of the electric current generated by the current generators 12, 13 cited above. Optionally, the two light sources 9, 19 can be arranged in a single lighting body, such as for

example a known type of RGB LED or the like. The embodiments illustrated in the drawings refer to a solution of this type.

[0016] Each of the two light sources is powered by one of the two electric current generators by means of its own electric power supply circuit 11, 21, of the type shown schematically in Figure 6. In this case, if the dispenser is operated in order to dispense only cold water or hot water, only one of the two light sources 9, 19 is powered and emits a beam of light of the corresponding color, while if the dispenser device is operated to dispense hot water mixed with cold water, both light sources 9, 19 are powered and each one emits a beam of light of the corresponding color, obtaining a light beam which is the result of the combination of the two light beams, optionally with a higher luminous intensity for the light beam produced by the light source 9 or 19 powered by means of the current generator 12 or 13 arranged on the supply duct 4a, 4b, 4c, 4d or 24a, 24b, 24c, 24d that provides a greater flow-rate of water. In this manner, the coloring of the light beam produced by the combination of the two light beams gives an indication as to the temperature of the water that is being dispensed.

[0017] The two electric current generators 12, 13, as shown schematically in Figure 7, are connected to the two light sources 9, 19 by means of a control and monitoring element 30, preferably of the electronic type, which is capable of modulating the electric power supply of the two light sources 9, 19 and is connected to means for detecting the temperature of the water dispensed by the dispenser device through the dispensing outlet 5a, 5b, 5c, 5d. The means for detecting the temperature of the dispensed water can be constituted by a temperature sensor 31, which is arranged in the passage 3a, 3b, 3c, 3d preferably proximate to the dispensing outlet 5a, 5b, 5c, 5d and is connected in input to the control and monitoring element 30. In practice, depending on the temperature of the dispensed water, detected by the temperature sensor 31, the control and monitoring element 30 adjusts the luminous intensity of the two light sources 9, 19 so that the coloring of the light stream produced by the combination of the two light streams emitted by the light sources 9, 19 corresponds, in this case also, to the temperature of the water that is being dispensed.

[0018] The electric power supply of the lighting means 8a, 8b, 8c, 8d, performed by means of the control and monitoring element 30, shown in detail only in Figure 2 with reference to the second embodiment of the dispenser device, may also be used for the other embodiments of the dispenser device.

[0019] In the figures, the position of the temperature sensor 31 is merely an example, since it can vary according to the assembly and space occupation requirements of the dispenser device.

[0020] The lighting means 8a, 8b, 8c, 8d are preferably arranged so that they are adapted to emit the beam of light in the same direction in which the water is dispensed through the dispensing outlet 5a, 5b, 5c, 5d, and accord-

ing to requirements said beam of light can be substantially parallel to the direction in which the water is dispensed through the dispensing outlet 5a, 5b, 5c, 5d or can be oriented along a direction which is incident to the jet of water dispensed through the dispensing outlet 5a, 5b, 5c, 5d or can be emitted within the jet of water dispensed through the dispensing outlet 5a, 5b, 5c, 5d.

[0021] In the first embodiment of the dispenser device according to the invention, shown in Figure 1, in which the dispenser device is provided as a faucet, the lighting means 8a comprise two light sources 9, 19, constituted by light bulbs or LEDs, which are applied externally to the body 2a of the faucet proximate to the dispensing outlet 5a and are oriented so as to emit a beam of light along a direction which is substantially parallel or incident with respect to the direction of the jet of water dispensed by the dispensing outlet 5a.

[0022] In the second embodiment of the dispenser device according to the invention, illustrated in Figure 2, in which the dispenser device is provided as a faucet, the lighting means 8b comprise two light sources 9, 19, constituted by light bulbs or LEDs, which are arranged inside the body 2b of the faucet proximate to the dispensing outlet 5b. Preferably, in this case the light sources 9, 19 are arranged at the center of the dispensing outlet 5b.

[0023] In the third embodiment of the dispenser device according to the invention, shown in Figure 3, in which the dispenser device is again provided as a faucet, the lighting means 8c comprise two light sources 9, 19, constituted by light bulbs or LEDs, which are arranged in a remote region with respect to the dispensing outlet 5c. The light emitted by the light sources 9, 19 is transmitted to a region which is proximate to the dispensing outlet 5c by virtue of light transmission means, which can be constituted by an optical fiber 10c, which has an initial end which faces the light sources 9, 19 and an opposite end or terminal end, which is arranged proximate to the dispensing outlet 5c.

[0024] Preferably, the optical fiber 10c lies at least partially within the body 2c and even more preferably, at least in its final portion, lies coaxially with respect to the dispensing outlet 5c, and ends indeed at the dispensing outlet 5c.

[0025] In the fourth embodiment of the dispenser device according to the invention, illustrated in Figures 4 and 5, in which the dispenser device is provided as a shower head, the lighting means 8d comprise two light sources 9, 19, constituted by light bulbs or LEDs, which are arranged in a block 20 which is connected to the body 2d. The light emitted by the light sources 9, 19 is transmitted to a region which lies proximate to the dispensing outlets 5d, which are multiple outlets since this is a shower head, through light transmission means, which can be constituted by optical fibers 10d, which lie at least partially in the passage 3d and have an initial end which faces the light sources 9, 19 and an opposite end, or final end, which is arranged at each dispensing outlet 5d.

[0026] In the second embodiment, the electric wires

for supplying power to the light sources 9, 19 and, in the third embodiment, the optical fiber 10c, as well as the electric wires which connect the temperature sensor 31 to the control and monitoring element 30, can be accommodated within a tube 15b, 15c, which is arranged inside the passage 3b, 3c and is already available, though for other purposes, in some types of commercially available faucets.

[0027] Conveniently, it is also possible to provide a lamp which emits UVC rays in addition to, or as an alternative to, the light sources described above. Said UVC-ray emitting lamp is located proximate to the dispensing outlet 5a, 5b, 5c, 5d, so as to emit a beam of light proximate to the dispensing outlet 5a, 5b, 5c, 5d and can be supplied with electric power autonomously, for example by connection to the electric mains, or by means of said electric current generators 12, 13.

[0028] Operation of the dispenser device according to the invention is as follows.

[0029] When the dispenser device is opened, the light sources 9, 19 are switched on automatically and, either directly or by means of the optical fiber 10c, 10d or optical fibers, emit one or more light beams in the water dispensing region.

[0030] The emitted light beam, in addition to obtaining a particular aesthetic effect, lights the region below the dispensing outlet 5a, 5b, 5c, 5d and therefore makes it easier to use the dispenser device even in case of poor lighting of the room in which such device is installed.

[0031] Moreover, since the lighting means comprise, as described, two light sources 9, 19 adapted to emit light beams with mutually different colors, the coloring of the light beam gives the user an indication as to the temperature of the water being dispensed.

[0032] If a UVC-ray emitting lamp is provided, its activation performs a sanitizing function both on the dispensed water and on the objects that face the dispensing outlet 5a, 5b, 5c, 5d and are being washed.

[0033] In the examples of embodiments described above, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiments.

[0034] In practice it has been found that the dispenser device according to the invention fully achieves the intended aim, since it achieves a particular aesthetic effect, improves the visibility conditions in the region where the jet of water is dispensed and, if two light sources adapted to emit light beams with mutually different colors are used, it provides an indication as to the temperature of the water being dispensed.

[0035] Another advantage of the dispenser device according to the invention is that it can be derived, by means of modifications which are simple to perform, from plumbing components which are already commercially available.

[0036] In practice, the materials used, as well as the dimensions, may be any according to requirements and

to the state of the art.

[0037] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A dispenser device (1a, 1b, 1c, 1d) for plumbing systems, particularly of the type of a faucet, shower head or the like, comprising a dispenser device body (2a, 2b, 2c, 2d) in which there is a passage (3a, 3b, 3c, 3d) for the water which leads outside through at least one dispensing outlet (5a, 5b, 5c, 5d) and can be connected to a first hot water supply duct (4a, 4b, 4c, 4d) and to a second cold water supply duct (24a, 24b, 24c, 24d); lighting means (8a, 8b, 8c, 8d) which are adapted to emit at least one beam of light proximate to said dispensing outlet (5a, 5b, 5c, 5d), said lighting means (8a, 8b, 8c, 8d) comprising at least two light sources (9, 19) which emit respective light beams of mutually different colors and being supplied with electric power by electric power supply means being driven by the flow of water; sensing means (31) for detecting the temperature of the water dispensed through said dispensing outlet (5a, 5b, 5c, 5d); a control and monitoring element (30), which is connected to said electric power supply means, to said sensing means (31) and to said two light sources (9, 19) in order to supply one or the other or both of said two light sources (9, 19) as a function of the temperature of the water dispensed through said dispensing outlet (5a, 5b, 5c, 5d); **characterized in that** said electric power supply means comprise a first electric current generator (12) arranged along said first water supply duct (4a, 4b, 4c, 4d) and a second electric current generator (13) arranged along said second water supply duct (24a, 24b, 24c, 24d), each one of said electric current generators (12, 13) being driven by the flow of water along the corresponding water supply duct, said control and monitoring element (30) being connected to said first and said second current generators (12, 13), each of said at least two light source (9, 19) being powered by one of the two electric current generators by means of its own electric power supply circuit.
2. The device (1a, 1b, 1c, 1d) according to claim 1, **characterized in that** each of said at least two light sources (9, 19) comprises at least one LED.
3. The device (1a, 1b, 1c, 1d) according to one or more

of the preceding claims, **characterized in that** said sensing means (31) are functionally connected to said at least two light sources (9, 19) in order to activate said light sources as a function of the temperature of the water dispensed through said dispensing outlet (5a, 5b, 5c, 5d).

4. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** said control and monitoring element (30) is adapted to vary the luminous intensity of each one of said two light sources (9, 19) as a function of the value of the temperature detected by said sensing means (31).
5. The device (1a, 1b, 14c, 1d) according to one or more of the preceding claims, **characterized in that** said lighting means (8a, 8b, 8c, 8d) are arranged so as to emit said at least one light beam in the same direction in which the water is dispensed through said dispensing outlet (5a, 5b, 5c, 5d).
6. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** said lighting means (8a, 8b, 8c, 8d) are arranged so as to emit said at least one beam of light substantially parallel to the direction in which the water is through said dispensing outlet (5a, 5b, 5c, 5d).
7. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** said lighting means (8a, 8b, 8c, 8d) are arranged so as to emit said at least one beam of light along a direction which is incident to the jet of water dispensed through said dispensing outlet (5a, 5b, 5c, 5d).
8. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** said lighting means (8a, 8b, 8c, 8d) are arranged so as to emit said at least one light beam within the jet of water dispensed through said dispensing outlet (5a, 5b, 5c, 5d).
9. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** said light source applied externally with respect to said device body (2a, 2b, 2c, 2d) proximate to said dispensing outlet (5a, 5b, 5c, 5d).
10. The device (1a, 1b, 1c, 1d) according to one or more of claims 1 to 8, **characterized in that** said lighting means (8a, 8b, 8c, 8d) are arranged inside said device body (2a, 2b, 2c, 2d) proximate to said dispensing outlet (5a, 5b, 5c, 5d).
11. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claim, **characterized in that** said light sources (9, 19) are arranged remotely with respect to said dispensing outlet (5a, 5b, 5c, 5d),

means being provided for transmitting the light emitted by said light sources to a region which is proximate to said at least one dispensing outlet (5a, 5b, 5c, 5d).

12. The device (1a, 1b, 1c, 1d) according to claim 11, **characterized in that** said light transmission means comprise at least one optical fiber (10c), which has an initial end which faces said at least one light source and an opposite end or terminal end which is arranged proximate to said at least one dispensing outlet (5a, 5b, 5c, 5d).
13. The device (1a, 1b, 1c, 1d) according to one or more of claims 11 and 12, **characterized in that** said optical fiber (10c) lies at least partially inside said device body (2a, 2b, 2c, 2d).
14. The device (1a, 1b, 1c, 1d) according to one or more of claims 11-13, **characterized in that** said optical fiber (10c) lies coaxially to said dispensing outlet (5a, 5b, 5c, 5d) at least in its final portion.
15. The device (1a, 1b, 1c, 1d) according to one or more of the preceding claims, **characterized in that** it comprises a lamp which emits UVC rays and is adapted to emit at least one beam of light proximate to said dispensing outlet (5a, 5b, 5c, 5d).
16. The device (1a, 1b, 1c, 1d) according to claim 15, **characterized in that** said UVC-ray emitting lamp is connected to said electric power supply means.

Patentansprüche

1. Eine Spendervorrichtung (1a, 1b, 1c, 1d) für Sanitärsysteme, insbesondere vom Typ einer Mischbatterie, eines Duschkopfes oder ähnliches, umfassend:

einen Spendervorrichtungskörper (2a, 2b, 2c, 2d), in dem es eine Durchführung (3a, 3b, 3c, 3d) für das Wasser gibt, das durch mindestens einen Abgabebauslass (5a, 5b, 5c, 5d) nach außen geleitet ist und die an eine erste Warmwasserversorgungsleitung (4a, 4b, 4c, 4d) und an eine zweite Kaltwasserversorgungsleitung (24a, 24b, 24c, 24d) anschliessbar ist; Beleuchtungsmittel (8a, 8b, 8c, 8d), die angepasst sind, um mindestens einen Lichtstrahl benachbart dem Abgabebauslass (5a, 5b, 5c, 5d) auszusenden, wobei die Beleuchtungsmittel (8a, 8b, 8c, 8d) mindestens zwei Lichtquellen (9, 19) umfassen, die entsprechende Lichtstrahlen von gegenseitig unterschiedlichen Farben aussenden und mit elektrischer Energie von elektrischen Energieversorgungsmitteln ver-

- sorgt sind, die vom Wasserstrom angetrieben sind;
 Fühlermittel (31) zum Erfassen der Temperatur des durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegebenen Wassers;
 ein Steuer- und Überwachungselement (30), das mit den elektrischen Energieversorgungsmitteln, dem Fühlermittel (31) und den zwei Lichtquellen (9, 19) verbunden ist, um eine von beiden oder beide Lichtquellen (9, 19) abhängig von der Temperatur des durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegebenen Wassers zu versorgen;
dadurch gekennzeichnet, dass die elektrischen Energieversorgungsmittel einen entlang der ersten Wasserversorgungsleitung (4a, 4b, 4c, 4d) angeordneten ersten elektrischen Stromgenerator (12) und einen entlang der zweiten Wasserversorgungsleitung (24a, 24b, 24c, 24d) angeordneten zweiten elektrischen Stromgenerator (13) umfasst, wobei jeder der elektrischen Stromgeneratoren (12, 13) vom Wasserstrom entlang der entsprechenden Wasserversorgungsleitung angetrieben ist, wobei das Steuer- und Überwachungselement (30) mit dem ersten und zweiten Stromgenerator (12, 13) verbunden ist, und wobei jede der mindestens zwei Lichtquellen (9, 19) von einem der zwei elektrischen Stromgeneratoren mittels seines eigenen elektrischen Energieversorgungsschaltkreises betrieben ist.
2. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß Anspruch 1, **dadurch gekennzeichnet, dass** jede der mindestens zwei Lichtquellen (9, 19) mindestens eine LED umfasst.
 3. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Fühlermittel (31) funktionell mit den mindestens zwei Lichtquellen (9, 19) verbunden ist, um die Lichtquellen abhängig von der Temperatur des durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegebenen Wassers zu versorgen.
 4. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Steuer- und Überwachungselement angepasst ist, um die Lichtstärke von jeder der zwei Lichtquellen (9, 19) abhängig von dem vom Fühlermittel (31) erfassten Temperaturwert zu verändern.
 5. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Beleuchtungsmittel (8a, 8b, 8c, 8d) derart angeordnet sind, um den mindestens einen Lichtstrahl in die gleiche Richtung auszusenden, in der das Wasser durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegeben wird.
 6. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Beleuchtungsmittel (8a, 8b, 8c, 8d) derart angeordnet sind, um den mindestens einen Lichtstrahl im Wesentlichen parallel zu der Richtung auszusenden, in der das Wasser durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegeben wird.
 7. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Beleuchtungsmittel (8a, 8b, 8c, 8d) derart angeordnet sind, um den mindestens einen Lichtstrahl entlang einer Richtung auszusenden, die mit dem durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegebenen Wasserstrahl zusammenfällt.
 8. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Beleuchtungsmittel (8a, 8b, 8c, 8d) derart angeordnet sind, um den mindestens einen Lichtstrahl innerhalb des durch den Abgabeauslass (5a, 5b, 5c, 5d) abgegebenen Wasserstrahls auszusenden.
 9. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Lichtquellen (9, 19) in Bezug auf den Vorrichtungskörper (2a, 2b, 2c, 2d) benachbart dem Abgabeauslass (5a, 5b, 5c, 5d) außen angebracht sind.
 10. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** die Beleuchtungsmittel (8a, 8b, 8c, 8d) innerhalb des Vorrichtungskörpers (2a, 2b, 2c, 2d) benachbart dem Abgabeauslass (5a, 5b, 5c, 5d) angeordnet sind.
 11. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Lichtquellen (9, 19) in Bezug auf den Abgabeauslass (5a, 5b, 5c, 5d) entfernt angeordnet sind, wobei Mittel zum Weiterleiten des von den Lichtquellen ausgesendeten Lichts in einen Bereich, der dem mindestens einen Abgabeauslass (5a, 5b, 5c, 5d) benachbart ist, bereitgestellt sind.
 12. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß Anspruch 11, **dadurch gekennzeichnet, dass** die Lichtweiterleitungsmittel mindestens eine optische Faser (10c) umfassen, die ein erstes Ende aufweist, das der mindestens einen Lichtquelle gegenübersteht

und ein gegenüberliegendes Ende oder Abschlus-
sende, das dem mindestens einen Abgabeauslass
(5a, 5b, 5c, 5d) benachbart angeordnet ist.

13. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der Ansprüche 11 und 12, **dadurch gekennzeichnet, dass** die optische Faser (10c) zu-
mindest teilweise innerhalb des Vorrichtungskör-
pers (2a, 2b, 2c, 2d) liegt. 5
14. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der Ansprüche 11-13, **dadurch gekenn-
zeichnet, dass** die optische Faser (10c) zumindest
in ihrem Endbereich koaxial zum Abgabeauslass
(5a, 5b, 5c, 5d) liegt. 10
15. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß einem oder mehreren der vorhergehenden Ansprüche, **da-
durch gekennzeichnet**, dass sie eine Lampe um-
fasst, die UV-C-Strahlen aussendet und angepasst
ist, um mindestens einen Lichtstrahl benachbart
dem Abgabeauslass (5a, 5b, 5c, 5d) auszusenden. 15
16. Die Vorrichtung (1a, 1b, 1c, 1d) gemäß Anspruch
15, **dadurch gekennzeichnet, dass** die UV-C-
Strahlen aussendende Lampe mit den elektrischen
Energieversorgungsmitteln verbunden ist. 20

Revendications

1. Dispositif de distribution (1a, 1b, 1c, 1d) pour systè-
mes hydrauliques, en particulier du type robinet,
pomme de douche ou analogues, comprenant
un corps (2a, 2b, 2c, 2d) de dispositif de distribution
dans lequel se trouve un passage (3a, 3b, 3c, 3d)
pour l'eau qui sort à travers au moins une sortie de
distribution (5a, 5b, 5c, 5d) et peut être relié à un
premier conduit d'alimentation en eau chaude (4a,
4b, 4c, 4d) et à un deuxième conduit d'alimentation
en eau froide (24a, 24b, 24c, 24d);
des moyens d'illumination (8a, 8b, 8c, 8d) qui sont
adaptés pour émettre au moins un faisceau de lu-
mière à proximité de ladite sortie de distribution (5a,
5b, 5c, 5d), lesdits moyens d'illumination (8a, 8b, 8c,
8d) comprenant au moins deux sources de lumière
(9, 19) qui émettent des faisceaux de lumière res-
pectifs de différentes couleurs et étant alimentées
en énergie électrique par des moyens d'alimentation
en énergie électrique actionnés par le flux de l'eau;
des moyens de détection (31) pour détecter la tem-
pérature de l'eau distribuée à travers ladite sortie de
distribution (5a, 5b, 5c, 5d);
un élément de commande et de monitoring (30), qui
est relié auxdits moyens d'alimentation en énergie
électrique, auxdits moyens de détection (31) et
auxdites deux sources lumineuses (9, 19) afin d'ali-
menter l'une ou l'autre ou les deux sources lumineu- 30

ses (9, 19) en fonction de la température de l'eau
distribuée à travers ladite sortie de distribution (5a,
5b, 5c, 5d);

caractérisé en ce que lesdits moyens d'alimenta-
tion en énergie électrique comprennent un premier
générateur de courant électrique (12) agencé le long
dudit premier conduit d'alimentation en eau (4a, 4b,
4c, 4d) et un deuxième générateur de courant élec-
trique (13) agencé le long dudit deuxième conduit
d'alimentation en eau (24a, 24b, 24c, 24d), chacun
desdits générateurs de courant électrique (12, 13)
étant actionnés par le flux de l'eau le long du conduit
d'alimentation en eau correspondant, ledit élément
de commande et de monitoring (30) étant relié
auxdits premier et deuxième générateurs de courant
(12, 13), chacune desdites au moins deux sources
lumineuses (9, 19) étant alimentées par l'un des
deux générateurs de courant électrique au moyen
de son propre circuit d'alimentation en énergie élec-
trique. 10

2. Dispositif (1a, 1b, 1c, 1d) selon la revendication 1,
caractérisé en ce que chacune desdites au moins
deux sources lumineuses (9, 19) comprend au moins
un LED. 15

3. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des
revendications précédentes, **caractérisé en ce que**
lesdits moyens de détection (31) sont reliés de façon
fonctionnelle auxdites au moins deux sources lumi-
neuses (9, 19) afin d'activer lesdites sources lumi-
neuses en fonction de la température de l'eau dis-
tribuée à travers la sortie de distribution (5a, 5b, 5c,
5d). 20

4. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des
revendications précédentes, **caractérisé en ce que**
ledit élément de commande et de monitoring (30)
est adapté pour varier l'intensité lumineuses de cha-
cune desdites deux sources lumineuses (9, 19) en
fonction de la valeur de la température détectée par
lesdits moyens de détection (31). 35

5. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des
revendications précédentes, **caractérisé en ce que**
lesdits moyens d'illumination (8a, 8b, 8c, 8d) sont
agencés de sorte à émettre ledit au moins un fais-
ceau de lumière dans la même direction dans laquel-
le l'eau est distribuée à travers ladite sortie de dis-
tribution (5a, 5b, 5c, 5d). 40

6. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des
revendications précédentes, **caractérisé en ce que**
lesdits moyens d'illumination (8a, 8b, 8c, 8d) sont
agencés de sorte à émettre ledit au moins un fais-
ceau de lumière sensiblement parallèle à la direction
dans laquelle l'eau est distribuée à travers ladite sor-
tie de distribution (5a, 5b, 5c, 5d). 45

7. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdits moyens d'illumination (8a, 8b, 8c, 8d) sont agencés de sorte à émettre ledit au moins un faisceau de lumière le long d'une direction qui est incidente au jet d'eau distribuée à travers ladite sortie de distribution (5a, 5b, 5c, 5d).
8. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdits moyens d'illumination (8a, 8b, 8c, 8d) sont agencés de sorte à émettre ledit au moins un faisceau de lumière à l'intérieur de jet d'eau distribuée à travers ladite sortie de distribution (5a, 5b, 5c, 5d).
9. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdites sources lumineuses (9, 19) sont appliquées extérieurement par rapport audit corps (2a, 2b, 2c, 2d) de dispositif à proximité de ladite sortie de distribution (5a, 5b, 5c, 5d).
10. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications 1 à 8, **caractérisé en ce que** lesdits moyens d'illumination (8a, 8b, 8c, 8d) sont agencés à l'intérieur dudit corps (2a, 2b, 2c, 2d) de dispositif à proximité de ladite sortie de distribution (5a, 5b, 5c, 5d).
11. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdites sources lumineuses (9, 19) sont agencées de façon éloignée par rapport à ladite sortie de distribution (5a, 5b, 5c, 5d), des moyens étant prévus pour la transmission de la lumière émise par lesdites sources lumineuses à une région qui est à proximité de ladite au moins une sortie de distribution (5a, 5b, 5c, 5d).
12. Dispositif (1a, 1b, 1c, 1d) selon la revendication 11, **caractérisé en ce que** lesdits moyens de transmission de lumière comprennent au moins une fibre optique (10c) qui présente une extrémité initiale qui fait face à ladite au moins une source lumineuse et une extrémité opposée ou extrémité terminale qui est agencée à proximité de ladite au moins une sortie de distribution (5a, 5b, 5c, 5d).
13. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications 11 et 12, **caractérisé en ce que** ladite fibre optique (10c) se trouve au moins partiellement à l'intérieure dudit corps de dispositif (2a, 2b, 2c, 2d).
14. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications 11 à 13, **caractérisé en ce que** ladite fibre optique (10c) se trouve coaxiale à ladite sortie de distribution (5a, 5b, 5c, 5d) au moins dans sa
- partie finale.
15. Dispositif (1a, 1b, 1c, 1d) selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'il** comprend une lampe qui émet des rayons UVC et qui est adaptée pour émettre au moins un faisceau de lumière à proximité de ladite sortie de distribution (5a, 5b, 5c, 5d).
16. Dispositif (1a, 1b, 1c, 1d) selon la revendication 15, **caractérisé en ce que** ladite lampe qui émet des rayons UVC est reliée auxdits moyens d'alimentation en énergie électrique.

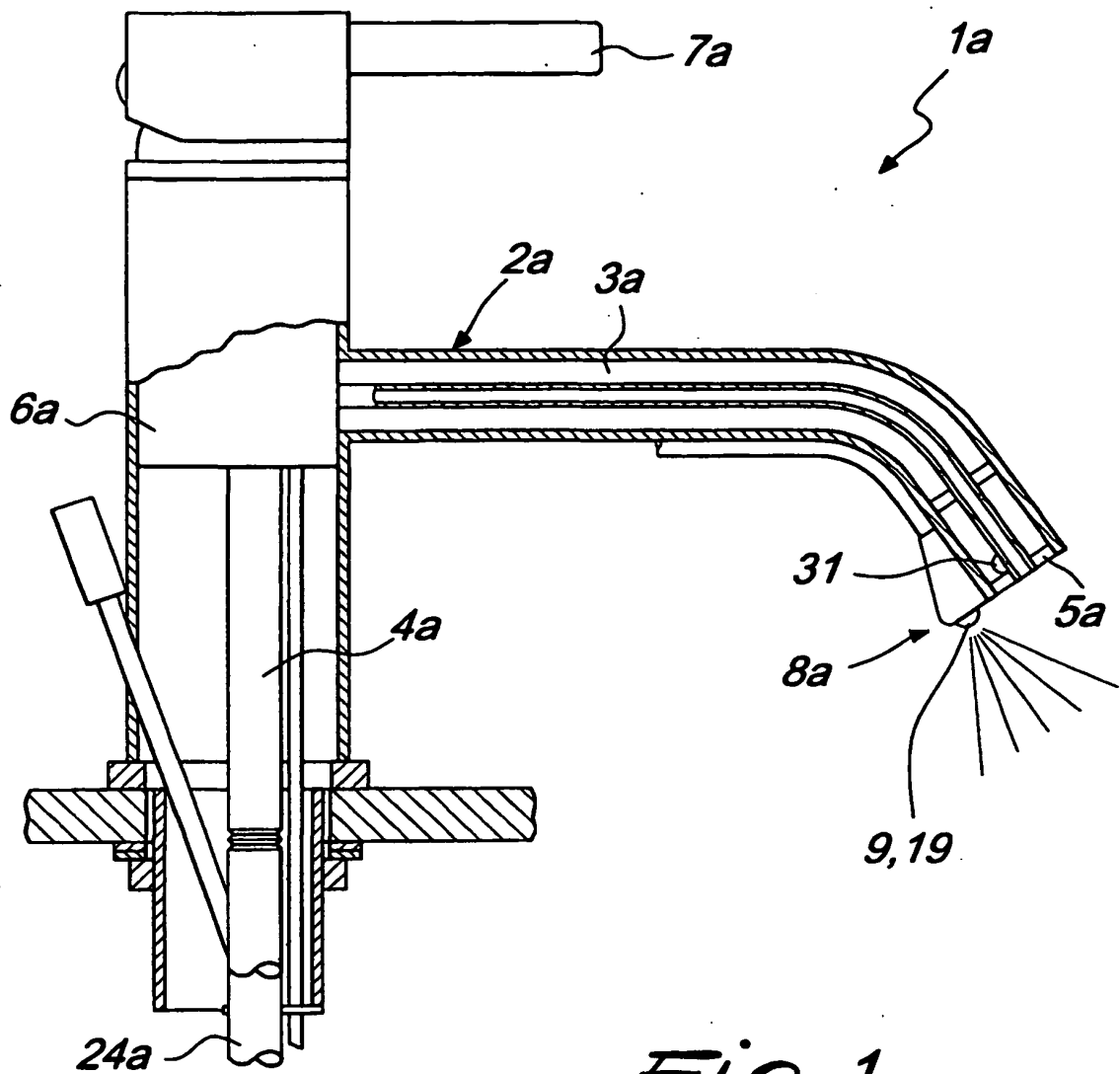


Fig. 1

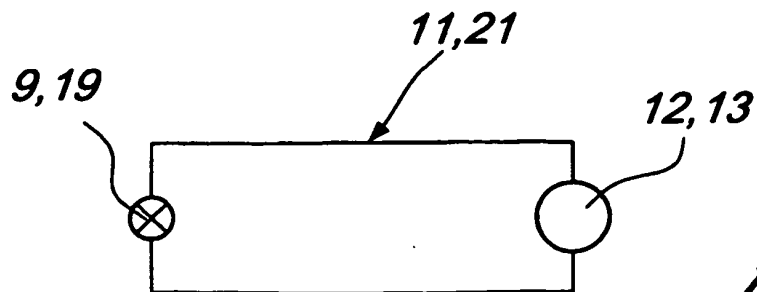


Fig. 6

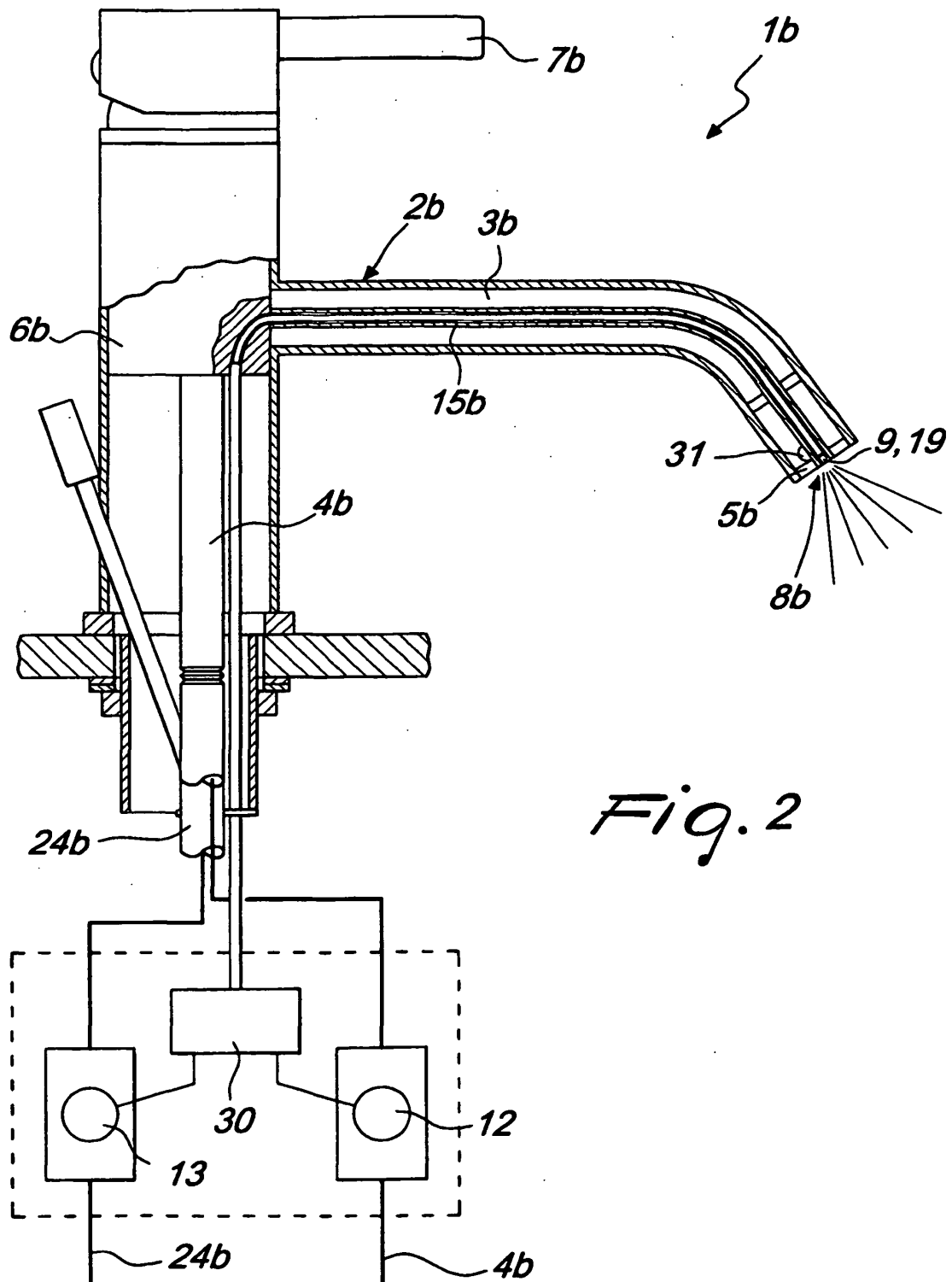


Fig. 2

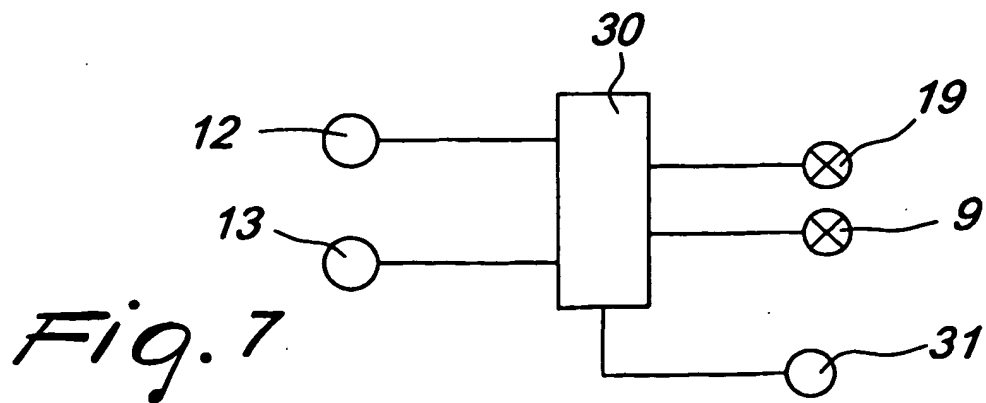
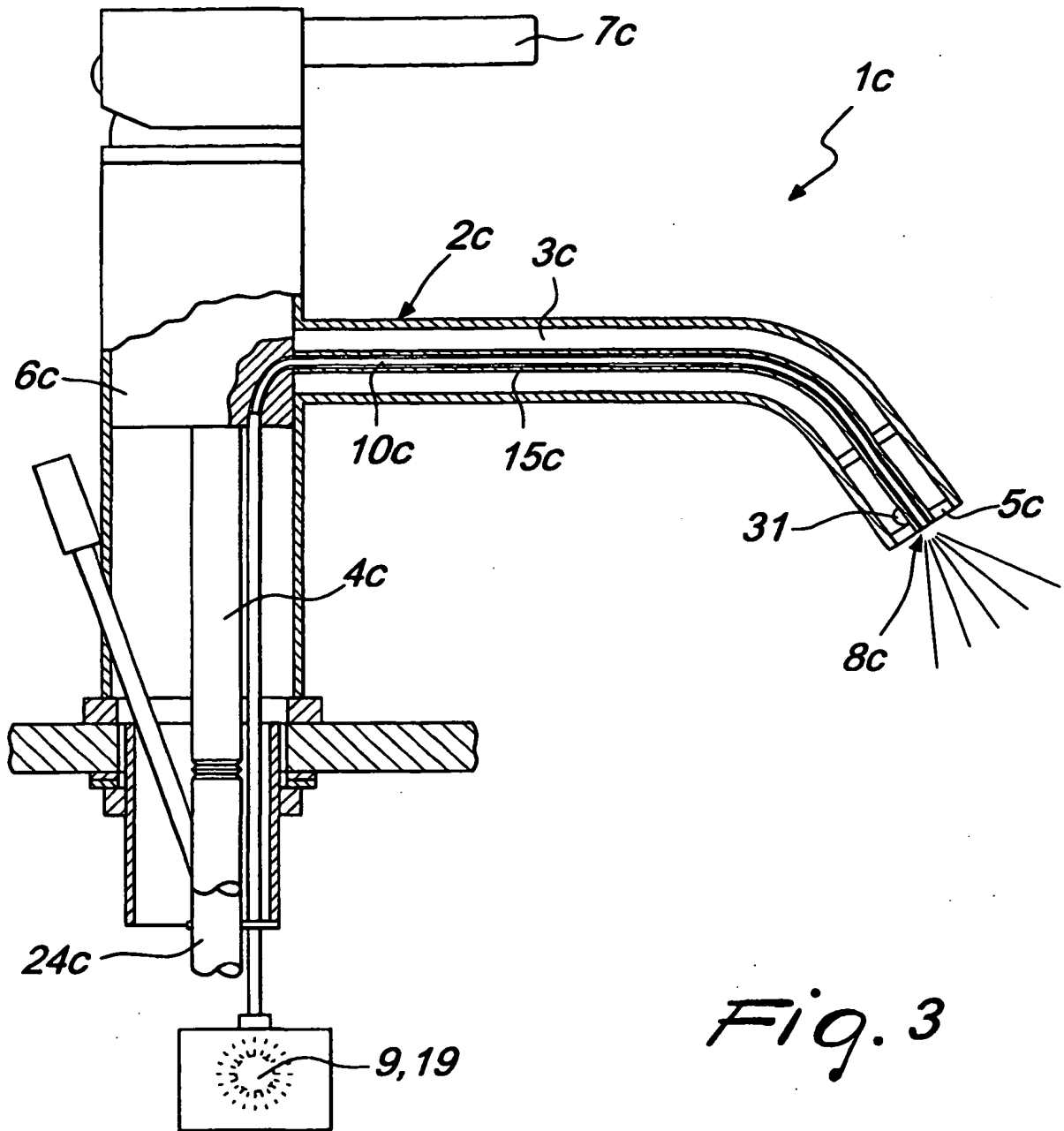


Fig. 4

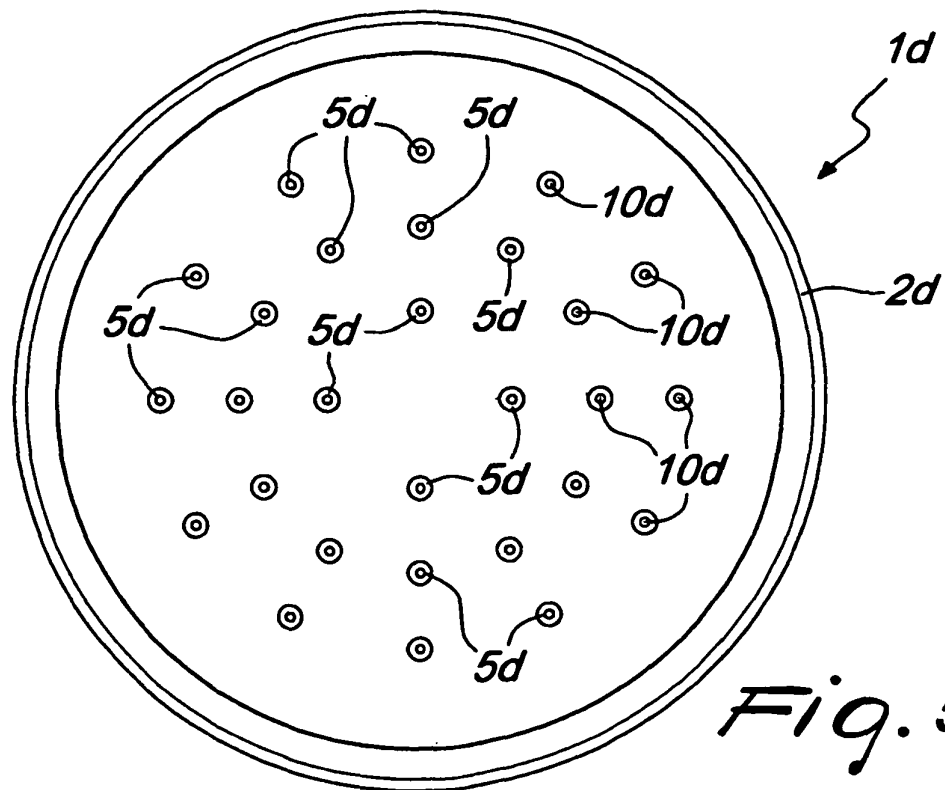
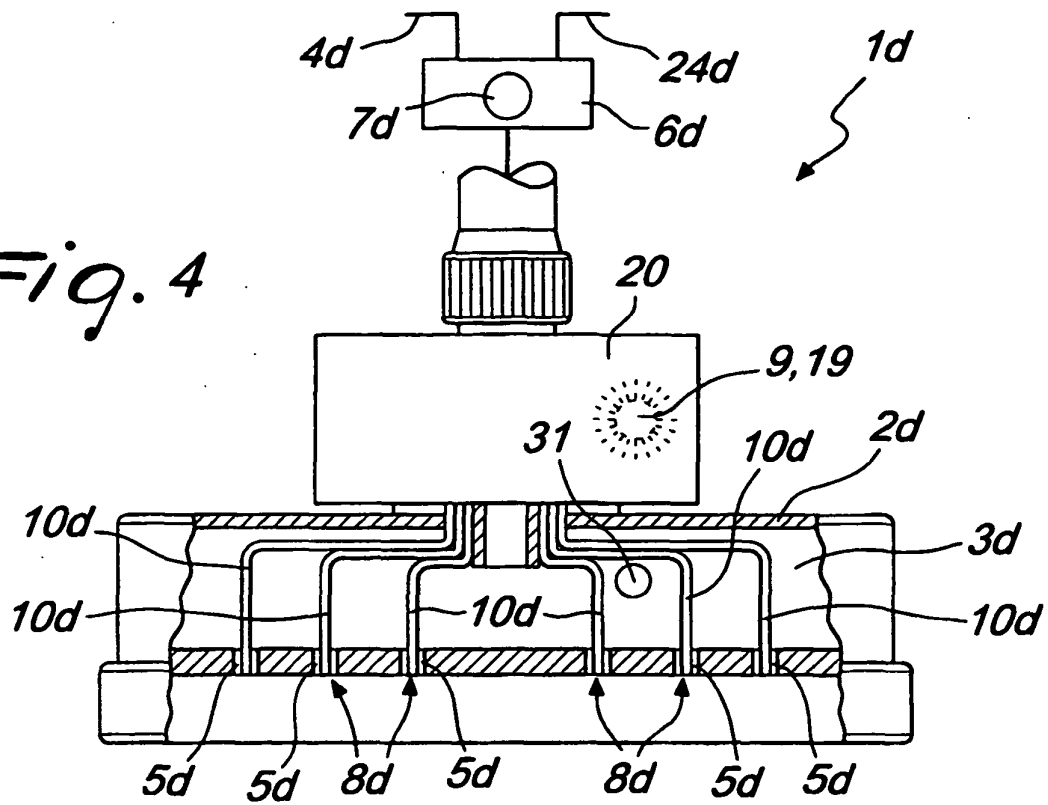


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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