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(54) **Mixer group with detachable hand-held shower**

(57) A mixer group (1) comprises a support (2) with a rotatable knob (12) and a hand-held shower (4) provided with a command (40) such as a push-button or a lever. A cartridge device is further provided housed in the sup-

port (2) and connected to the knob (12). The knob (12) is provided with a seat (20) for the hand-held shower (4), shaped and sized to permit the insertion of the shank (30) of the hand-held shower (4) solely unilaterally.

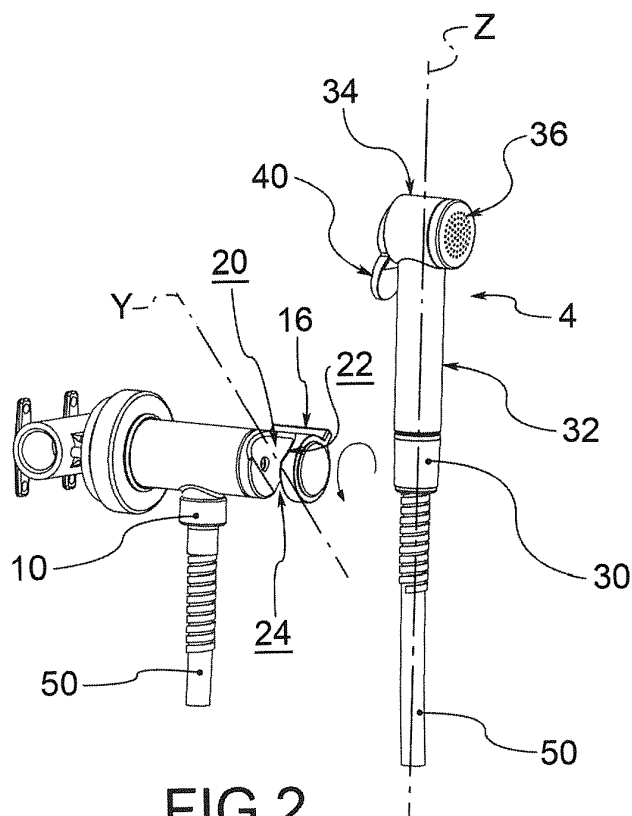


FIG.2

Description

[0001] The present invention relates to a mixer group with detachable hand-held shower for dispensing water, primarily intended for domestic use, for example in a kitchen or bathroom, or in public facilities.

[0002] Mixer groups provided with detachable hand-held showers are highly convenient to use, in that they allow the hand-held shower to be gripped, moved away from support and the jet of water directed where needed. The hand-held shower is in turn provided with its own command for dispensing the jet.

[0003] To prevent leaks of water, the support of the mixer group is also provided with a tap for opening or closing the dispensing upstream of the hand-held shower.

[0004] However, in the normal use of such groups, when the hand-held shower is replaced in its seat on the support, since the release of the command already blocks the water flow, the user forgets to also act on the tap. This often results in leaks of water.

[0005] An embodiment is known of in the sector in which the tap of the support needs to be shut off to correctly replace the hand-held shower in its seat. This embodiment is illustrated, for example, in the document WO2011/039701A1, in which the tap of the support, when open, obstructs the insertion of the hand-held shower in its seat. However, such embodiment, given that it uses the dimensions of the tap to create an obstacle to the insertion of the hand-held shower head in its seat, has the disadvantage of affecting and limiting adequate aesthetic choices.

[0006] The purpose of the present invention is to make a mixer group with a detachable hand-held shower which satisfies the above requirements and overcomes the disadvantages mentioned with reference to the prior art.

[0007] Such purpose is achieved by a mixer group according to claim 1. The dependent claims describe further embodiment variants.

[0008] The characteristics and advantages of the mixer group according to the present invention will be evident from the description given below, made by way of a non-limiting example, according to the appended drawings, wherein:

- figure 1 shows a mixer group with a detachable hand-held shower according to one embodiment of the present invention, in a configuration of the tap closed and the hand-held shower housed in its seat;
- figure 2 shows the mixer group in figure 1, in a partially open configuration of the tap and separate hand-held shower;
- figure 3 shows the mixer group in figure 1, in a totally open configuration of the tap and separate hand-held shower;
- figure 4 shows a diagram of the operation of a support of the mixer group in the closed tap configuration as in figure 1;

- figure 5 shows a diagram of the operation of the support in figure 4 in the partially open tap configuration as in figure 2;
- figure 6 shows a diagram of the operation of the support in figure 4 in a further partially open tap configuration; and
- figure 7 shows a diagram of the operation of the support in figure 4 in a totally open tap configuration as in figure 3.

[0009] With reference to the appended drawings, reference numeral 1 globally denotes a wall-mounted mixer group, comprising a support 2 suitable to be attached to a supporting wall, and a hand-held shower 4, suitable to be supported by the support 2 and detachable therefrom.

[0010] The support 2 comprises hydraulic connection means 6 for the hydraulic connection to the water distribution system and in particular for connection to the cold water distribution system and to the hot water distribution system.

[0011] Generally, the hydraulic connection means 6 can be sunk into the wall and suitably concealed from view.

[0012] The support 2 also comprises an outer casing 8, of a cylindrical shape with a main extension along a support axis X, for example of a circular or elliptical cross-section; once the support has been installed on the wall, said support axis X has a direction substantially perpendicular to the wall.

[0013] In addition, the support 2 comprises a coupling 10 which extends from the casing 8.

[0014] The support 2 further comprises a knob 12 associated to the casing 2, rotatable around the support axis X, or, in a further alternative embodiment (not shown), around an axis parallel to the support axis X. The support axis X or said axis parallel thereto defines a rotation axis for the knob 12.

[0015] Preferably, the knob is positioned at the top of the casing, i.e. alongside the casing 8 along the support axis X.

[0016] The knob 12 comprises a knob body 14, for example of a cylindrical shape, preferably dimensioned and arranged so as to be flush with its outer surface with the outer surface of the casing 8, and preferably a lever 16 to facilitate the grip, for example projecting from the lateral surface of the knob body 14 or, according to an embodiment not shown, projecting from a surface of the head 18 of the knob body 14.

[0017] The knob 12 provides a seat 20 for the insertion of the hand-held shower 4. In particular, the seat 20 is made through the knob body 14 and extends transversely along a seat axis Y lying on an imaginary plane perpendicular to the support axis X.

[0018] In particular, the seat 20 extends along the seat axis Y between an insertion opening 22, which opens onto one side of the lateral surface of the knob body 14, and an opposite bottom opening 24, which opens onto the side opposite the lateral surface of the knob body 14.

The two openings are different from each other.

[0019] When the mixer group is in a closed configuration (figure 1) the insertion opening 22 is facing upwards and the seat axis Y is substantially perpendicular to a ground plane of reference. In said configuration, the bottom opening 24 instead is facing downwards.

[0020] For example, the insertion opening 22 and the bottom opening 24 are circular and the insertion opening 22 has a larger diameter than the bottom opening 24; the seat 20 thus has a truncated cone conformation along the seat axis Y.

[0021] The hand-held shower 4 comprises a shank 30 shaped for insertion into the seat 20 solely through the insertion opening 20; i.e. said shank 30 is shaped so as not to be insertable into the seat 20 through the bottom opening 24.

[0022] For example, in the embodiment illustrated, the shank 30 has a truncated cone shape, so as to be insertable into the seat 20 only through the insertion opening 22, since the bottom opening 24 is sufficiently narrow to prevent the insertion of the shank 30. In this embodiment, the seat 20 is thus counter-shaped to the shank 30.

[0023] In other words, the seat 20 is shaped and dimensioned so as to allow the unilateral insertion of the shank 30 of the hand-held shower 4, i.e. the insertion from only one of said openings 22, 24.

[0024] The hand-held shower 4 comprises a grip 32, for example of a cylindrical shape along a grip axis Z, alongside the shank 30, on the side opposite the shank 30 along the grip axis Z, a dispensing head 34, provided with a plurality of holes 36 for dispensing the jet of water.

[0025] The hand-held shower 4 further comprises a command 40 to enable dispensing of water from the head 34, such as a push-button or a lever; for example, the command 40 is associated to the head 34, on the side opposite the holes 36.

[0026] The mixer group 1 further comprises a flexible hose 50 for the hydraulic communication between the coupling 10 of the support and the hand-held shower 4, in particular connecting to said hand-held shower 4 at the shank end 30.

[0027] The group 1 comprises a cartridge device housed in the casing 8 of the support 2, downstream of the hydraulic connection means 6 and the upstream of the coupling 10 to control the water supply and mixing of hot and cold water. The cartridge device is operatively connected to the knob 12, so that the rotation of the knob corresponds to the opening or the closing of the cartridge device.

[0028] In a closed configuration of the mixer group 1 (figure 1 and 4), the knob 12 is placed in a closed position in which it acts on the cartridge device so as to prevent the transit of hot water and cold water from the hydraulic connection means 6 to the coupling 10.

[0029] In said closed position of the knob 12, the seat axis Y is substantially perpendicular to the ground plane and the hand-held shower, inserted from above into the seat 20, is supported in a stable condition.

[0030] In this configuration of the support 2, operating on the command 40 of the hand-held shower 4 does not produce any dispensing of water, since the supply is interrupted upstream of the hand-held shower 4, thanks to the cartridge device in the closed configuration.

[0031] In a configuration of partial opening of the mixer group 1 (figure 2 and 5), the knob 12 is rotated in relation to the angular closure position by a first angular extent, for example such as to operate on the cartridge device to allow the transit of cold water only between the hydraulic connection means 6 and the coupling 10.

[0032] In this configuration, operating the command 40 of the hand-held shower 4 results in the dispensing of cold water.

[0033] In said configuration, the seat 20 is "crooked", i.e. the seat axis Y is evidently inclined to the ground plane.

[0034] In this configuration of partial opening, the rotation of the knob 12 is limited, so that the shank 30 of the hand-held shower 4 being inserted in the seat 20, the hand-held shower 4 is in a stable condition, but is obviously "crooked", so as to clearly indicate to the user the need to intervene, to return the knob 12 to the closed position.

[0035] In a further configuration of partial opening of the mixer group 1 (figure 6), the knob 12 is further rotated with respect to the previous angular position, such as to operate on the cartridge device so as to allow the transit of the cold water and hot water between the hydraulic connection means 6 and the coupling 10.

[0036] In this configuration, operating the command 40 of the hand-held shower 4 results in the dispensing of mixed hot and cold water.

[0037] In said configuration, the seat 20 is notably "crooked", even more so than in the previous configuration, since the seat axis Y is evidently inclined to the ground plane.

[0038] In such configuration, the rotation of the knob 12 is such that the shank 30 of the hand-held shower 4 being inserted in the seat 20, the hand-held shower 4 is in stable condition, but is obviously "crooked", or the shank 30 of the hand-held shower 4 being inserted in the seat 20, the hand-held shower 4 tends to come out of the seat 20 by gravity.

[0039] In either case, the need to intervene to return the knob 12 to the closed position, before reinserting the hand-held shower is evident to the user.

[0040] Lastly, in a fully open configuration (figure 3 and 7), the knob 12 is rotated by 180° relative to the closed position and acts on the cartridge device so as to prevent the transit of cold water and allow the transit of hot water only from the hydraulic connection means 6 to the coupling 10. As a result, by operating on the command 40 of the hand-held shower 4, the dispensing of hot water only is achieved.

[0041] In said fully open position, the seat axis Y is substantially perpendicular to the ground plane, but the insertion opening 22 is positioned downwards and the

bottom opening 24 upwards. In this condition, the shower head cannot be inserted from above into the seat 20, but only from below and clearly falls out of the seat by gravity.

[0042] Before replacing the hand-held shower 4 in the seat 20, the user must therefore turn the knob 12 to return it to the closed position.

[0043] Innovatively, the mixer group according to the present invention satisfies the needs of the sector since it imposes turning off the tap upstream of the command of the hand-held shower before replacing the hand-held shower, and overcomes the drawbacks of the prior art, since it does not require members obligatorily arranged in specific positions or of specific dimensions to act as an obstacle to the insertion of the hand-held shower in the seat.

[0044] Advantageously, therefore, the shapes of the mixer group are particularly clean and linear, in concurrence with the prevailing taste.

[0045] It is clear that a person skilled in the art may make modifications to the mixer group described above so as to satisfy specific requirements. Such modifications are also contained within the scope of protection as defined by the following claims.

Claims

1. Mixer group (1) for dispensing water, comprising:

- a support (2) applicable to a support wall, comprising a knob (12) rotatable around a rotation axis (X); 30
- a hand-held shower (4) hydraulically connected to the support (2), provided with a command (40) for the dispensing of water and with a shank (30); 35
- a cartridge device housed in the support (2), operatively connected to the knob (12) to permit or prevent the passage of cold and/or hot water from a plumbing system towards the hand-held shower according to the rotation of said knob (12); 40

wherein the knob (12) is provided with a seat (20) for the hand-held shower (4), shaped and sized to permit the insertion of the shank (30) solely unilaterally. 45

2. Mixer group according to claim 1, wherein the support (2) comprises a casing (8) of a cylindrical shape along a support axis (X), coinciding or distinct and parallel with the rotation axis of the knob, and wherein the cartridge device is housed in said casing (8). 50

3. Mixer group according to claim 2, wherein the knob (12) is positioned alongside said casing (8) along said support axis (X). 55

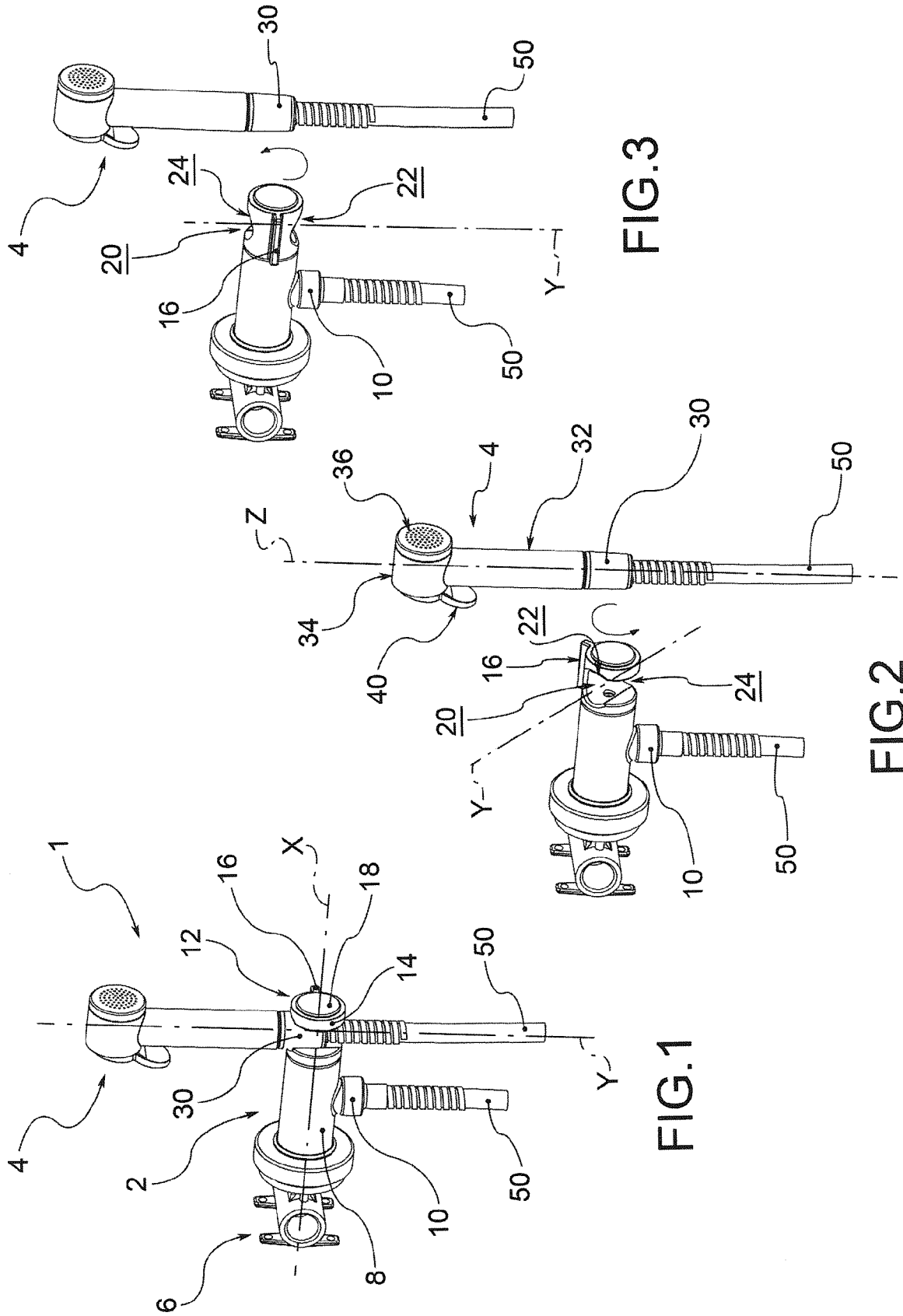
4. Mixer group according to any of the previous claims, wherein the shank (30) is a truncated cone shape and the seat (20) of the knob (12) is counter-shaped to the shank (30). 5

5. Mixer group according to any of the previous claims, wherein the hand-held shower (4) comprises a grip (32) which extends mainly along a grip axis (Z) and the shank (30) is positioned alongside the grip (32) along said grip axis (Z). 10

6. Mixer group according to claim 5, wherein the hand-held shower comprises a head (34) positioned alongside the grip (32) along the grip axis (Z), placed on the opposite side to the shank (30), wherein said head bears a plurality of holes (36) for the dispensing of the jet of water, and said command (40), on the side opposite the holes (36). 15

7. Mixer group according to claim 6, wherein the command (40) is a push-button or a lever. 20

8. Mixer group according to any of the previous claims wherein the hand-held shower (4) is connected to the support (2) by means of a flexible hose (50). 25



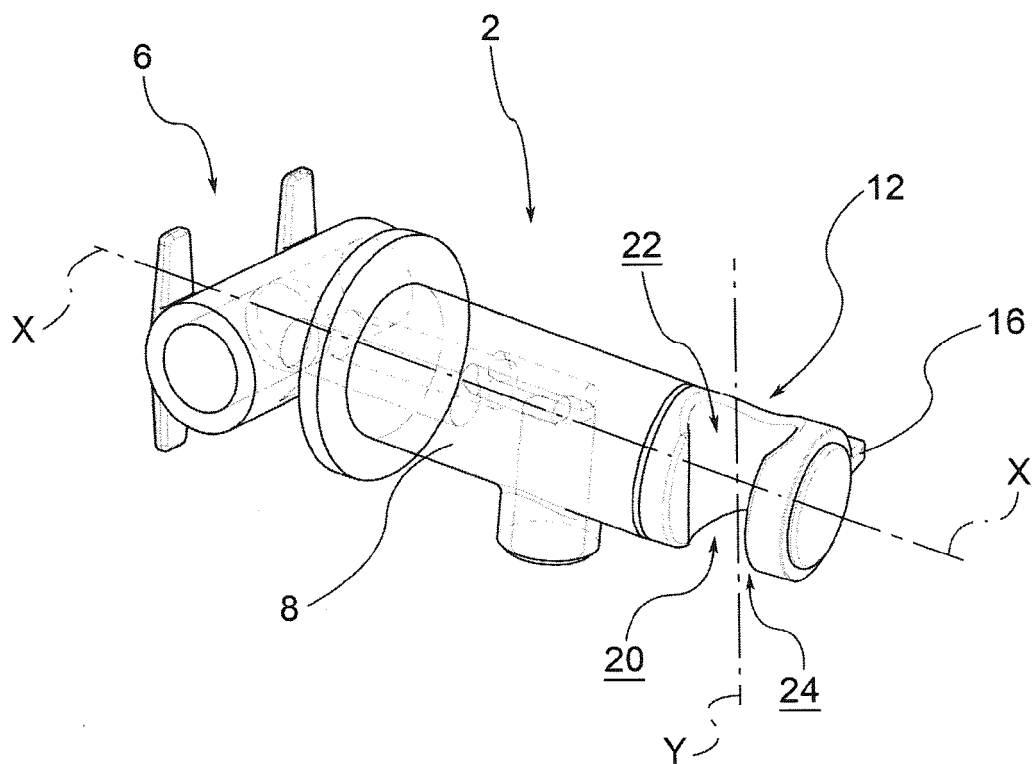


FIG. 4

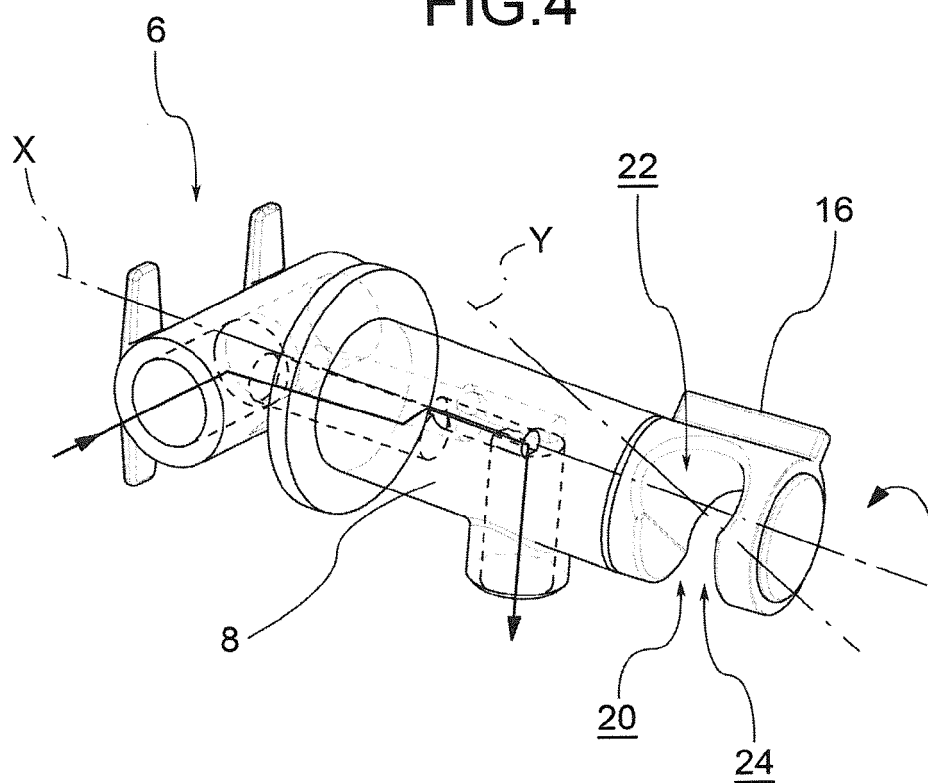


FIG. 5

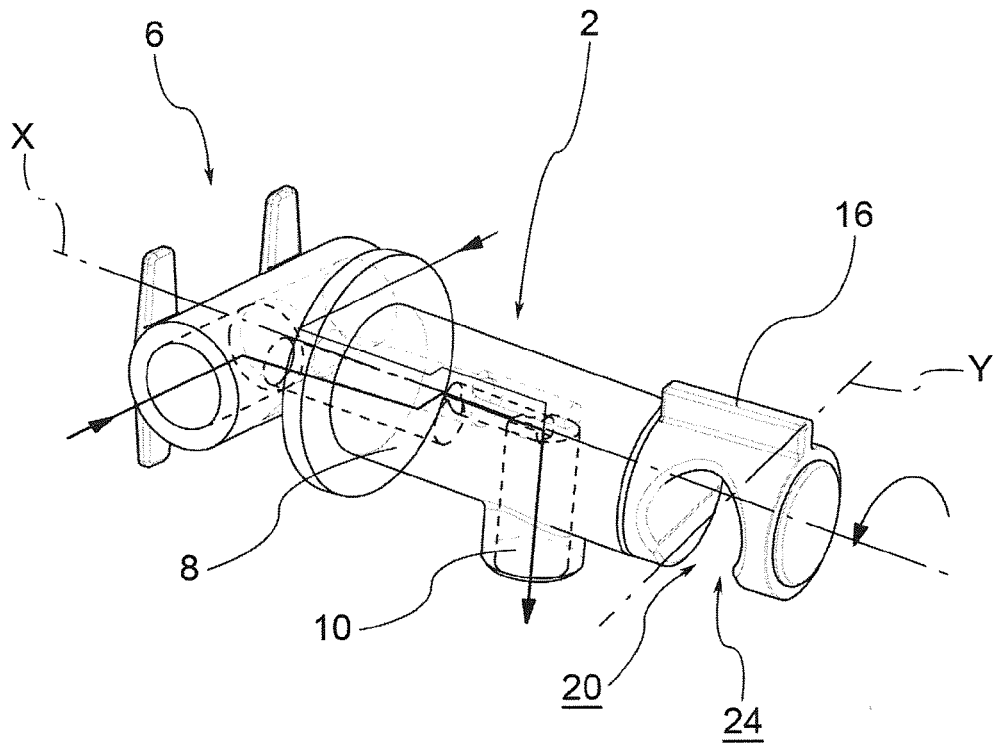


FIG. 6

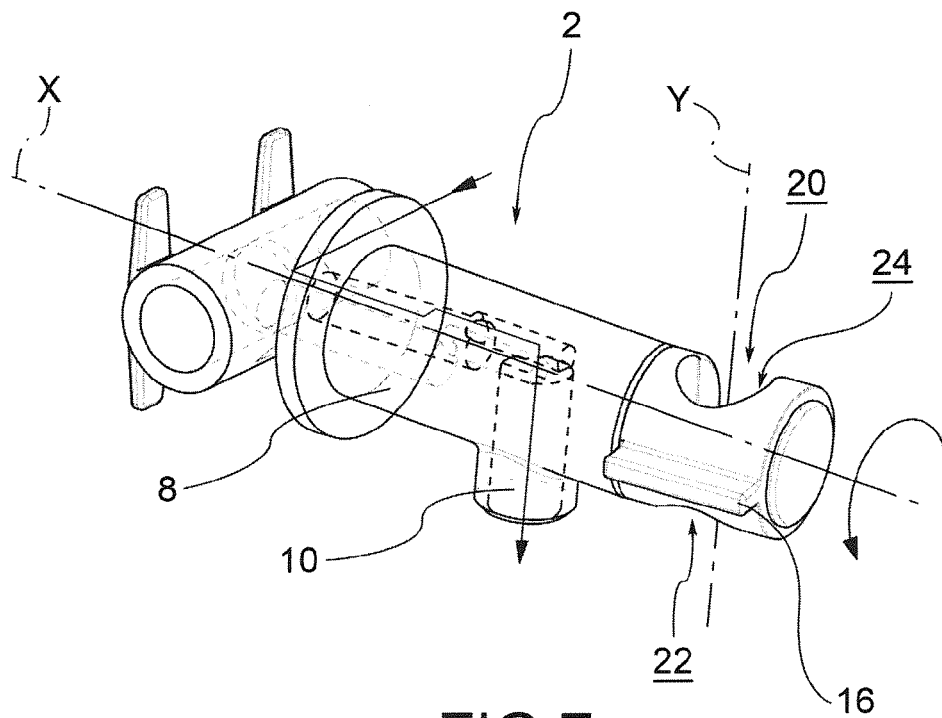


FIG. 7



EUROPEAN SEARCH REPORT

Application Number
EP 15 15 1535

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	DE 41 40 433 A1 (XIAMEN SOLEX HIGH TECH IND.) 9 June 1993 (1993-06-09) * column 2, paragraph 1; figure 1 *	1-8	
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			E03C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 28 May 2015	Examiner Leher, Valentina
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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28-05-2015

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REFERENCES CITED IN THE DESCRIPTION

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