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(54) **DISTRIBUTION MANIFOLD**

(57) A distribution manifold (1) for a plumbing and heating system comprises an internally hollow main body (2), an inlet connection (12), a plurality of outlet connections (20). The passage section (a) of the fluid in the main

body on a plane orthogonal to the main axis (x) is oblong to reduce the overall dimensions in the direction of thickness.

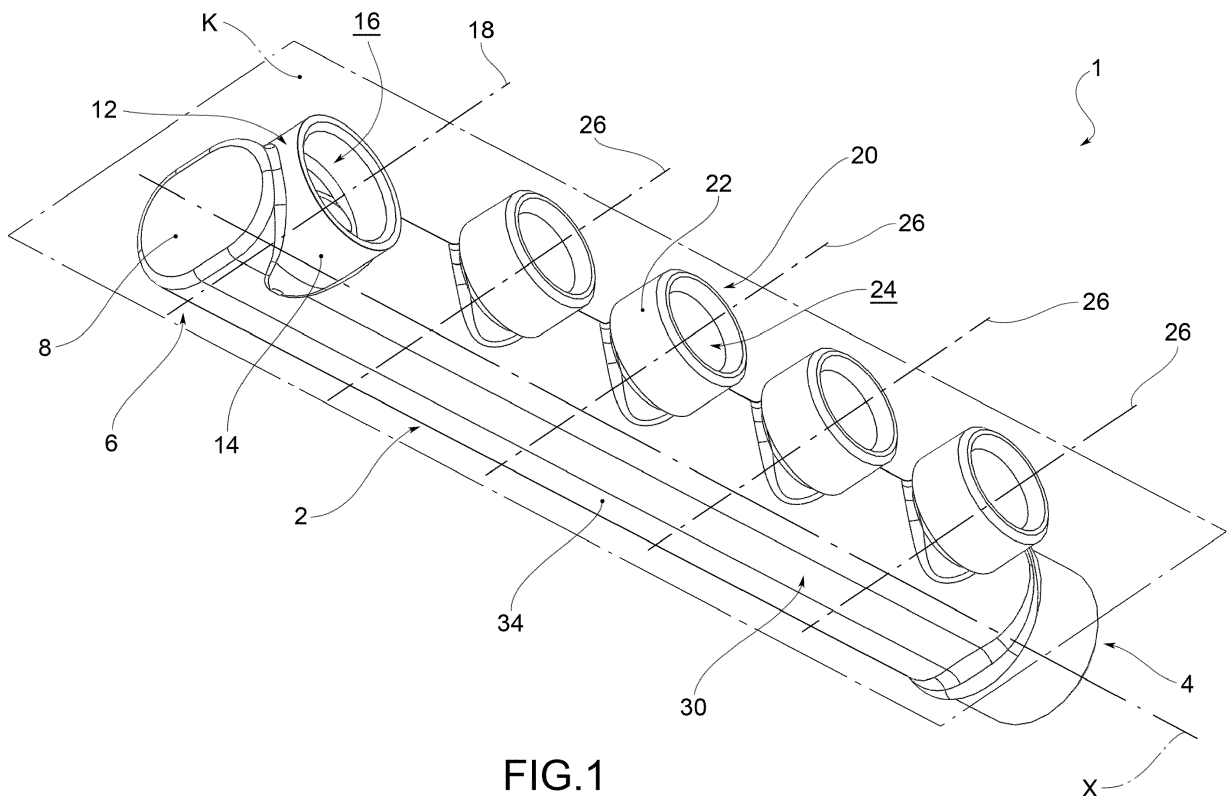


FIG.1

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Description

[0001] The present invention is in the field of components for the construction of plumbing and heating systems, for civil or industrial use. In particular, the object of the present invention is a manifold for the distribution of water to several users and a distribution group comprising said manifold.

[0002] According to current practice in the construction of new water distribution systems, within a room, such as a bathroom, there is a distribution box, usually recessed, within which is placed a manifold that is fed by a water inlet duct and provides for the distribution to several outlet ports, each of which is connected to a tube that brings water to the desired user.

[0003] When the number of users increases, it is necessary to use manifolds able to handle higher flow rates, whereby all the outlet ports are fed equally.

[0004] However, this means an increase in the size of the manifold, so much so that it is impossible to install it inside normal distribution boxes, especially if they are flush-mounted.

[0005] The object of the present invention is to construct a distribution manifold that satisfies the requirements of the field and overcomes the drawbacks mentioned in reference to the prior art.

[0006] Such purpose is achieved by a distribution manifold according to claim 1. The dependent claims describe further advantageous embodiments.

[0007] The features and advantages of the distribution manifold according to the present invention will be apparent from the description provided below by way of non-limiting example, in accordance with the accompanying figures, wherein:

- figure 1 shows a distribution manifold according to an embodiment of the present invention;
- figure 2 represents a cross-sectional view of the manifold in figure 1;
- figure 3 illustrates an example embodiment of the manifold in a distribution system according to the present invention.

[0008] With reference to the attached figures, a distribution manifold is indicated collectively at 1.

[0009] The manifold 1 is preferably made in a single piece, preferably of metallic material, for example brass, by means of a die-casting process, usually with the use of a core.

[0010] The manifold 1 comprises a main body 2 with a predominant extension along a main axis X, between a first end 4 and a second end 6, opposite to the first end along the main axis X.

[0011] The main body 2, internally hollow, is sometimes open at both ends, in case additional manifolds need to be connected in series, or closed at only one end by a closure wall 8 and closed at the other end by means of the application of a cap 10.

[0012] The manifold 1 further comprises an inlet connection 12 consisting of an annular connection wall 14 peripherally delimiting an inlet opening 16 in communication with the inner cavity of the manifold 1.

5 **[0013]** The inlet opening 16 defines an inlet axis 18, incident to the main axis X, usually orthogonal thereto.

[0014] Preferably, the inlet connection 12 is placed at one of said ends 4, 6 of the main body 2.

10 **[0015]** The manifold 1 further comprises a plurality of outlet connections 20 arranged along the main axis X.

[0016] Each outlet connection 20 comprises a collar 22 consisting of an annular wall, which defines a respective outlet opening 24 with outlet axis 26. Said outlet axis 26 is incident to the main axis X, preferably orthogonal thereto.

15 **[0017]** All the outlet axes 26 lie on a same imaginary outlet axis plane K, which preferably also contains the inlet axis 18 of the inlet connection 12.

[0018] The main body 2 consists of an annular body wall 30 around the main axis X, provided with an inner side surface 32, having extension along said main axis X, oblong in shape, elongated in the outlet axis plane K.

20 **[0019]** For example, the section of the main body 2 with a plane orthogonal to the main axis X has an oval or elliptical shape, with a major axis on the outlet axis plane K.

[0020] Preferably, the outer surface 34 of the body wall 30 of the main body 2 takes the shape of the inner surface, whereby the body wall 30 as a whole is oblong in shape on the outlet axis plane K.

25 **[0021]** Advantageously, this allows an oblong passage section A to be obtained, wide enough to handle high flow rates, without increasing the size of the manifold in the direction of thickness of the distribution box.

30 **[0022]** According to an example embodiment of the manifold according to the present invention, a distribution system 100 comprises a distribution box 102 (made of metal in the example shown, or plastic according to other variants), generally consisting of a quadrangular frame, which, mounted on a wall or on a fixed support, has a width along a horizontal axis Y, a height along a vertical axis Z and a depth along a thickness axis S, orthogonal to the horizontal axis Y and the vertical axis Z.

35 **[0023]** The distribution system 100 further comprises at least one manifold 1, constructed as described above.

[0024] The manifold 1 is arranged inside the box 102, preferably with the main axis X parallel to the horizontal axis Y of the box 102 and the outlet axis plane K orthogonal to the thickness axis S.

40 **[0025]** Advantageously, the manifold 1, equipped with the oblong body wall 30, may be housed in the box 102, without problems of space in the direction of the thickness.

45 **[0026]** According to a further embodiment, the distribution system 100 comprises a plurality of manifolds 1, 1a, for example two in number.

[0027] The additional manifold 1a is arranged in the box 102 as described for the manifold 1; however, the

two manifolds 1, 1a are arranged at different heights relative to the vertical axis Z and in such a way that the respective outlet axis planes K, K' are parallel.

[0028] According to another example embodiment, not shown, the main axis X of the manifold 1, 1a is parallel to the vertical axis Y of the distribution box.

[0029] Innovatively, the manifold according to the present invention meets the needs of the field, as it allows one to manage a large number of users, and overcomes the drawbacks of the known art, because it does not present problems of space inside the distribution box.

[0030] It is clear that one skilled in the art, in order to meet contingent needs, may make changes to the manifold described above, all contained within the scope of protection defined by the following claims.

6. Distribution system according to claim 5, when dependent on claim 2, wherein said at least one manifold (1,1a) comprises a plurality of manifolds (1,1a), housed in said distribution box (102) at different heights and with respective outlet axis planes (K, K') spaced and parallel to each other.

Claims

1. Distribution manifold (1) for a plumbing and heating system, comprising an internally hollow main body (2), extending along a main axis (X), an inlet connection (12) having an inlet opening (16) with an inlet axis (18), a plurality of outlet connections (20) arranged along the main axis (X), each outlet connection (20) having an outlet opening (24) with outlet axis (26) incident to the main axis (X), wherein all the outlet axes (26) lie on an imaginary outlet axis plane (K), the inlet axis (18) lies on said outlet axis plane (K), and the passage section (A) of the fluid in the main body on a plane orthogonal to the main axis (X) is oblong. 20
2. Manifold according to claim 1, wherein said passage section is elliptical or ovoidal. 35
3. Manifold according to any one of the preceding claims, wherein the main body (2) consists of an oblong body wall (30) . 40
4. Manifold according to any one of the preceding claims, made in a single piece, for example made of metallic material, for example brass, for example by means of a die-casting process. 45
5. Distribution system (100) comprising:
 - at least one manifold (1,1a) according to any one of the preceding claims;
 - a distribution box (102) having a predefined width along a horizontal axis (Y), a predefined height along a vertical axis (Z) and a predefined depth along a thickness axis (S);
 - wherein the manifold (1,1a) is housed in the distribution box so that the passage section is oblong in the vertical direction or in the horizontal direction. 55

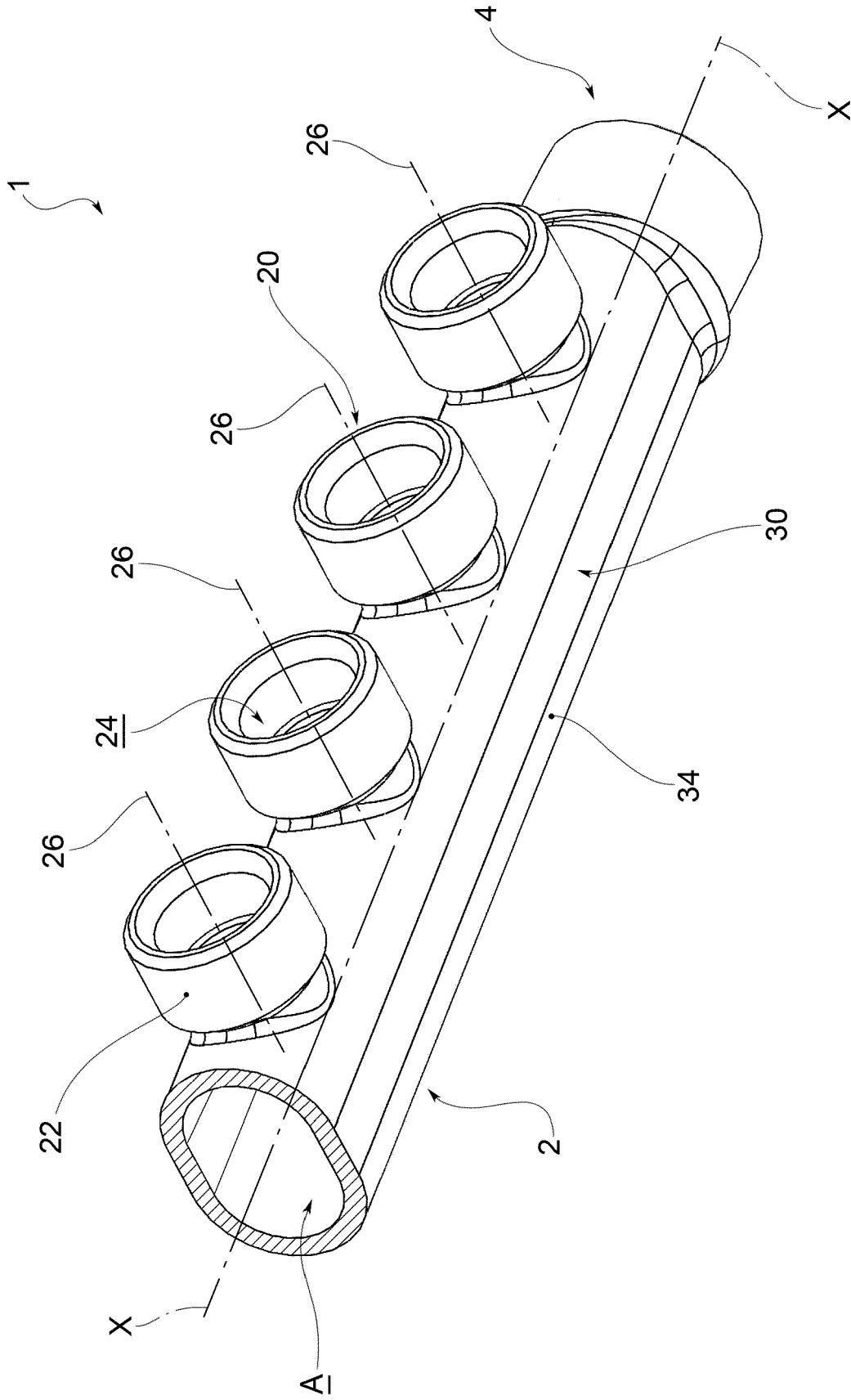


FIG.2

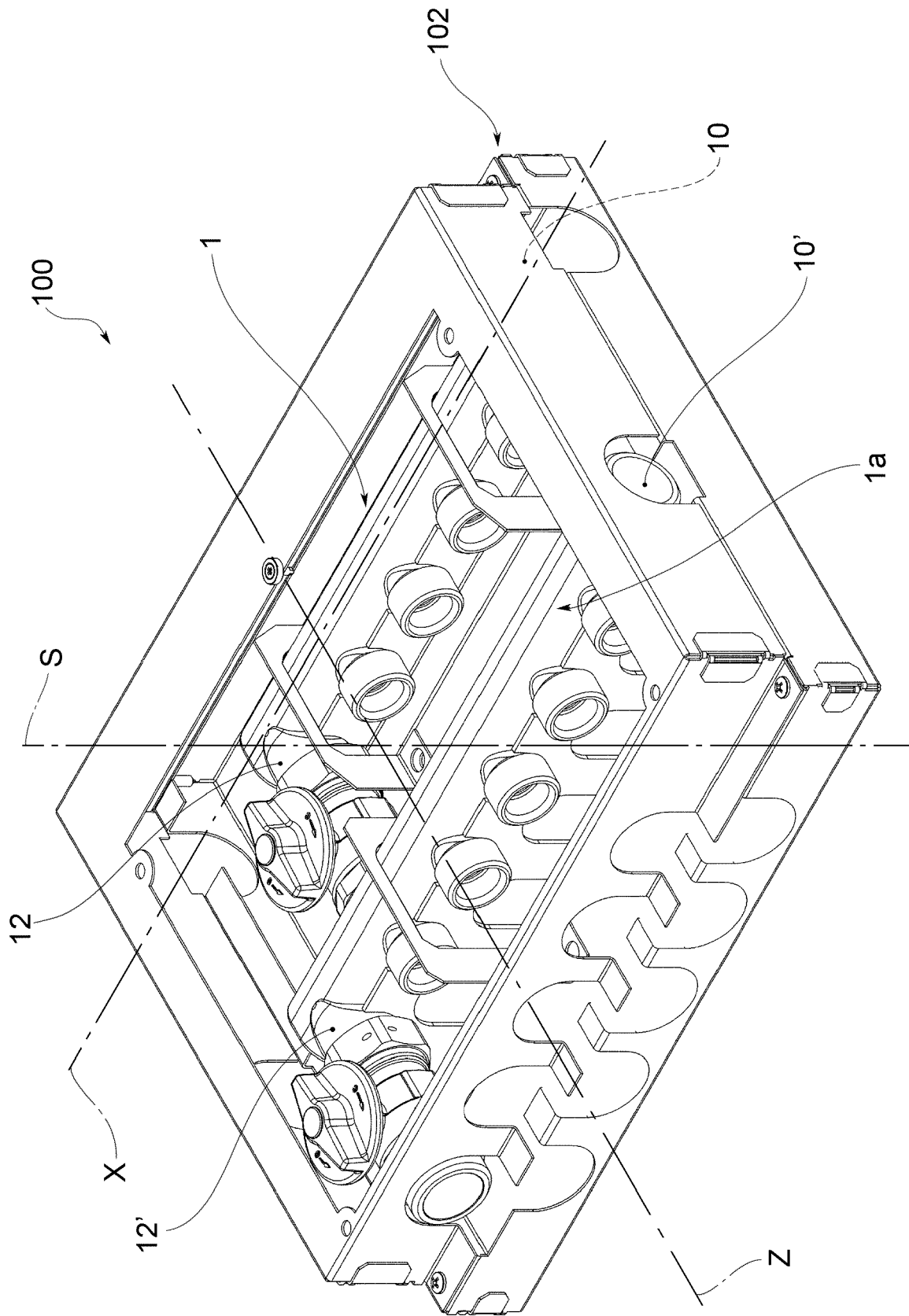


FIG.3



EUROPEAN SEARCH REPORT

Application Number
EP 19 15 9917

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 July 2019	Examiner von Mittelstaedt, A
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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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82