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(54) Drain hopper

(57) The present invention relates to a drain hopper, associable to a collection device, for example a bath, comprising an overflow hole.

The hopper comprises a drain funnel, able to engage a seat of the collection device in such a way as to make a liquid flow inside it, the drain funnel comprising a drain compartment extending around a first axis.

The hopper comprises, in addition, a manifold, able to receive the liquid from the drain funnel and comprising an overflow duct, connected fluidically with the overflow hole, such overflow duct extending around a second axis incident to the first axis.

In addition, the drain funnel is shaped so as to form a prismatic coupling with the seat of the collection device and the manifold is engaged tight to the drain funnel so as to freely rotate around the first axis.

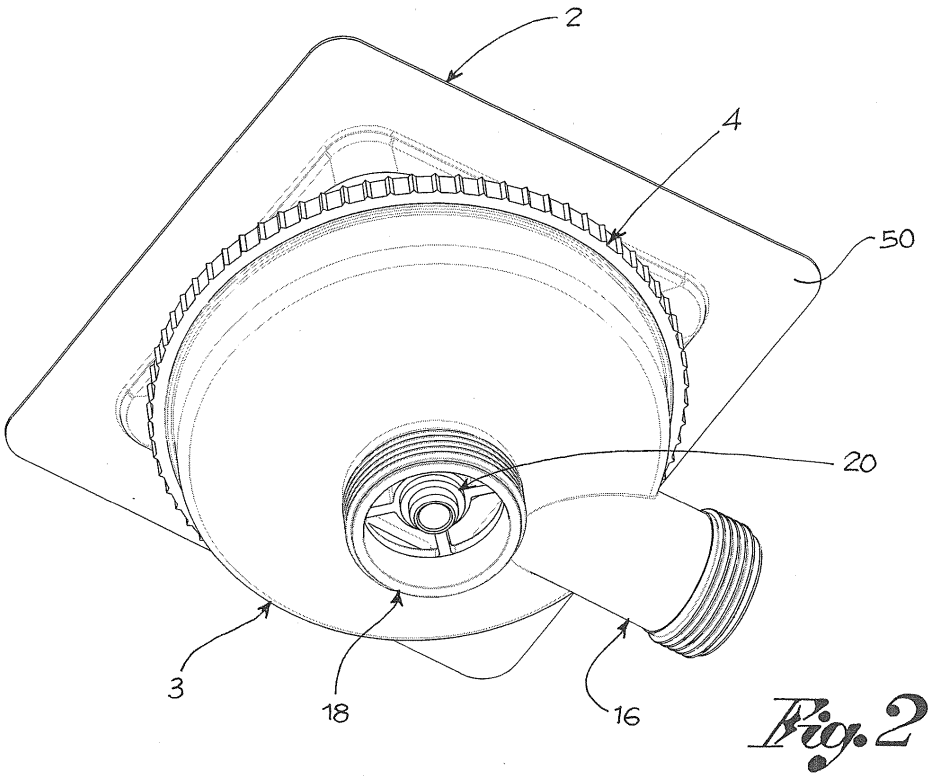

Fig. 2

EP 2 177 672 A2

Description

[0001] The present invention relates to a drain hopper.

[0002] Drain hoppers are elements able to channel liquids flowing in a collection device such as, for example, a sink, washbasin, bath or similar, into a suitable drainpipe.

[0003] The known hoppers have a drainpipe through which the liquids flowing into the drain hopper are emptied, and an overflow duct through which excessive filling of the collection device is prevented so that the liquids do not run the risk of brimming over.

[0004] The overflow duct is connected to an overflow hole, situated at the extremity of the free edge of said collection device, by means of a tubular connection element.

[0005] Such tubular connection element is generally rigid or semi-rigid, made in plastic material or steel.

[0006] To permit assembly of the connection element to the overflow hole and the overflow duct the hole and duct need to face each other, even if at different heights, since the connection element, being essentially rigid, can only be bent within certain limits.

[0007] Despite this being the case, the known, state-of-the-art hoppers are assembled without any difficulty since the upper part of the hopper, which is the part housed on the bottom of the sink, is a circular shape.

[0008] Said circular part can be rotated so as to rotate the entire hopper below the sink counter, as required, until the overflow duct is in a suitable position for assembly to the overflow hole by means of the said connection element.

[0009] If, however, the upper part of the hopper is not circular, but square or triangular for example, it is not possible to rotate said part inside the seat of the sink except according to the shaped couplings between the upper part and the seat.

[0010] In other words, in the case of a square upper part for example, only four positions would be possible.

[0011] This makes connection of the overflow duct to the overflow hole of the sink difficult.

[0012] The present invention therefore sets out to overcome the drawbacks of the known technique and, specifically those mentioned above.

[0013] Such purpose is achieved by a drain hopper, according to claim 1. The dependent claims describe preferred embodiments of the invention.

[0014] Further characteristics and advantages of the invention will be evident from the description of the non-limiting examples below, according to the attached drawings, wherein:

[0015] - figure 1 shows an upper perspective view of a drain hopper according to the present invention;

[0016] - figure 2 shows a lower perspective view of the drain hopper in figure 1;

[0017] - figure 3 shows a cross-section of the hopper in figure 1;

[0018] - figures 4 and 5 respectively show a lateral view and a view from above of a drain funnel 2 according to one possible embodiment;

[0019] - figure 6 is an exploded view of the hopper according to the invention.

[0020] With reference to the aforesaid drawings, reference numeral 1 globally denotes a drain hopper comprising a drain funnel 2, through which the liquid coming from the collection device flows, such liquid being conveyed towards a manifold below.

[0021] The drain hopper comprises, in addition, a manifold 3 which receives the liquid from the drain funnel 2, and an adaptor element 4, positioned between the drain funnel 2 and the manifold 3.

[0022] The drain funnel 2 is positioned in a drain seat of the collection device, a sink for example, suitably shaped to ensure engagement, preferably by means of a shaped coupling.

[0023] The drain seat of the sink extends around a vertical axis X, perpendicular to a support counter T.

[0024] In one embodiment, the support counter T coincides with the sink which the hopper is assembled to.

[0025] Preferably, the drain funnel 2 comprises an upper portion having a connection frame 24 which extends on a plane parallel to the support counter T.

[0026] In other words, the frame 24 has a lower surface 50 able to abut against the collection device and an upper surface able to channel the liquids outside this.

[0027] According to one embodiment, the funnel 2 is made in two separate parts: an upper external part, which forms the connection frame 24, and a lower internal part 2' (also known as "drain"), which extends below and inside the connection frame.

[0028] In one preferred embodiment, said frame 24 is a quadrangular shape.

[0029] In a further variation, said frame 24 is a triangular or rectangular shape.

[0030] It is clear that the shape of the drain seat, for example of the sink, is the same as that of the frame 24.

[0031] The cross-section of the funnel 2 may vary vertically, for example the upper section is bigger than the lower section, so as to collect the liquids and channel them into a relevant drain hole 53 positioned on the bottom of said funnel, where the cross-section is smaller.

[0032] Specifically, the shape of the drain funnel 2 in its vertical extension, has an upper part 2a shaped like a prism or truncated pyramid, in other words with a square cross-section, and a lower part in the shape of a truncated cone, in other words with a circular cross-section.

[0033] Advantageously, the upper part 2a complies with the connection frame 24, so as to constitute an extension of it; the part of the drain funnel 2 in the shape of a truncated cone rather, permits the engagement, if necessary, with standard circular section gaskets easy to find on sale.

[0034] According to one embodiment, the lower part 2b of said drain funnel 2 has a seat 25 shaped so as to be engaged by a basket 29 able to withhold coarse material such as food residues or fragments of soap so that

these do not hinder the free transit of water downstream of the same.

[0035] In other words, according to this embodiment, the basket essentially acts as a filter or grating, able to allow the free transit of water and to withhold coarse material.

[0036] According to one advantageous variation, the lower part of said basket 29 bears a sealing gasket 51 able to form a seal with the inner surface of the lower portion 2b of the funnel 2.

[0037] Advantageously, the basket 29 is shaped like the upper part 2a of the funnel 2, in other words it, for example, quadrangular, while the gasket 51 is circular so as to adapt perfectly to the truncated cone shape of the lower part 2b of the funnel.

[0038] The basket 29 is moveable axially from a raised position, in which the sealing gasket 51 disengages from the funnel 2 to allow the transit of water, and a lowered position (shown for example in figure 3), in which the gasket 51 forms the seal with the lower part 2b of the funnel 2 to prevent the transit of water.

[0039] To such purpose, the basket 29 comprises an axial shaft 30 having an upper lifting portion 30' and a lower portion 30" which can be inserted so as to slide in a hollow attachment element 27, hereafter described, which extends from the hole 53 of the funnel.

[0040] According to one embodiment variation, in place of the basket, a plug may be provided, for example suitable for inserting so as to seal the lower part 2b of the funnel 2, and therefore a truncated cone shape.

[0041] In one embodiment, the hopper 1 comprises an attachment element 27, for example coaxial to the axis X, which allows the coupling of the funnel 2 to the manifold 3.

[0042] Said connection is made possible by engaging said attachment element 27 in a joint element 20, for example a bush, able to prevent the axial distancing of the two elements, which in turn engages in a tubular portion of the manifold 3 extending vertically.

[0043] In one embodiment, the bush 20 comprises a threaded portion, coupling to the attachment element 27, and a portion of extremity, facing the opposite part of the drain funnel 2, comprising an annular boss 20' able to abut against the lower portion of the tubular portion 19.

[0044] When the hopper 1 is assembled, in the lower part of the drain funnel 2 a seal is formed by the sealing devices 5.

[0045] The seal is formed by coupling an inner surface 15 of the drain funnel 2, for example of its upper frame 24, and a corresponding upper surface 12 of the sealing device 5.

[0046] The sealing device 5 is an annular shape, defined vertically by the surface 12, suitable for abutment with the surface 15 and by a lower surface 13 parallel to the support counter T, and by an external surface 14, for example essentially perpendicular to the support counter T.

[0047] According to one embodiment variation the sealing devices have a toroidal conformation.

[0048] The outline of the sealing device 5, permits a shaped coupling in the upper part with the drain funnel 2, as said, and in the lower part a shaped coupling with the adaptor element 4.

[0049] Said coupling ensures the seal between the adaptor element 4 and the sealing device 5.

[0050] Said outline of the sealing device 5 is defined by a series of concentric crests decreasing in height towards the centre.

[0051] The adaptor element 4 is an annular shape, defined radially by an external surface 6.

[0052] The upper part of the adaptor element 4 comprises a seat 31 shaped so as to allow a shaped coupling with the sealing element 5.

[0053] Said seat 31 comprises a support surface 7, parallel to the counter T and a shoulder 9 perpendicular to the counter T, which radially defines such seat.

[0054] Said coupling occurs by positioning the sealing device 5 in the seat 31 of the adaptor element 4, with subsequent coupling of the respective horizontal surfaces 7, 13 and of the shoulder 9 with the external surface 14.

[0055] According to one embodiment, the adaptor element 4 has a lower portion 8 which can be inserted in the mouth of the manifold 3, for example with the interposition of a sealing gasket 11.

[0056] By bringing the manifold 3 and the adaptor element 4 close together, the gasket 11 abuts and forms a seal with a support surface 22 of the manifold 3.

[0057] Said seal prevents the leakage of liquid from the lateral surface of the hopper.

[0058] In one embodiment variation, the joint between the manifold 3 and the adaptor element 4 is furtherly made possible through the presence of releasable joining devices, preferably snap-release.

[0059] Said joining devices join the manifold 3 and the adaptor element 4 allowing their relative rotation around the vertical axis X but preventing axial disengagement.

[0060] The manifold 3 is in fluidic connection with an overflow duct 16.

[0061] In other words, the manifold 3 has an overflow duct 16, for example threaded externally, connectible to an overflow pipe, and a second, tubular portion, called the drain duct 18, for example threaded externally, connectible to a pipe draining towards an urban water collection system.

[0062] The axis Z of the overflow duct 16 is staggered angularly in relation to the vertical axis X.

[0063] According to one embodiment variation, the two axes X and Z form a right angle.

[0064] Innovatively, the hopper according to the present invention permits the relative rotation of the manifold 3 and hence of the overflow duct 16 associable to the overflow pipe, in relation to the remaining elements constituting the hopper.

[0065] Advantageously, the adaptor element 4, regardless of the external shape of the funnel 2, makes it possible to define an outer surface with a circular cross-

section in relation to which the manifold 3 is free to rotate.

[0066] Advantageously, the technical solution proposed makes it possible to produce a hopper of any non-circular shape and thereby allow greater freedom in customising the collection device.

[0067] Advantageously, the hopper permits easy assembly.

[0068] According to one embodiment variation, the shape of the hopper is triangular, quadrangular or similar.

[0069] It is clear that a person skilled in the art may make modifications to the hopper described above so as to satisfy contingent and specific requirements, for example giving it a quadrangular or triangular shape while remaining within the scope of protection as defined by the following claims.

Claims

1. Drain hopper (1), associable to a collection device, for example a bath, comprising an overflow hole; said hopper (1) comprising:

   - a drain funnel (2), able to engage a seat of the collection device so as to make a fluid flow inside it, the drain funnel (2) comprising a drain compartment (32) extending around a first axis (X), and
   - a manifold (3) able to receive the liquid from the drain funnel (2) and comprising an overflow duct (16), in fluidic connection with the overflow hole, said overflow duct (16) extending around a second axis (Z) incident to the first axis (X),

   characterised by the fact that the drain funnel (2) is shaped in such a way as to form a prismatic coupling with the seat of the collection device and by the fact that the manifold (3) is engaged watertight by the drain funnel (2) in such a way as to be freely rotatable around said first axis (X).

2. Hopper according to claim 1, comprising an adaptor element (4), interposed between the drain funnel (2) and manifold (3), said adaptor element (4) defining an external surface with a circular cross-section in relation to which the manifold (3) is free to rotate.

3. Hopper according to the previous claims, comprising sealing devices (5) which form a seal between the adaptor element (4) and the drain funnel (2).

4. Hopper according to any of the previous claims, wherein the drain funnel (2) comprises an upper part (2a) of a prismatic or truncated pyramid shape and a lower portion (2b) of a truncated cone shape.

5. Hopper according to any of the previous claims, wherein the drain funnel (2) comprises a connection frame (24) which extends on a plane essentially parallel to the counter (T)which the drain hopper rests on.

6. Hopper according to the previous claim, wherein the frame (24) of the collection funnel (2) has an inner surface (15) able to abut with the collection device and an upper surface able to channel the liquids outside this.

7. Hopper according to any of the previous claims, wherein the frame (24) is a quadrangular or triangular or rectangular shape.

8. Hopper according to any of the previous claims, comprising an attachment element (27) which extends from the bottom of the funnel (2) and which allows the connection of said drain funnel (2) to the manifold (3).

9. Hopper according to the previous claim, wherein said attachment element (27) is engaged by a joining element (20) acting as a support for the manifold (3).

10. Hopper according to the previous claim, wherein the joining element (20) forms an annular boss (20') on which a tubular portion (19) of the manifold (3) coaxial to the first axis (X) rests.

11. Hopper according to any of the previous claims, wherein the adaptor element (4) internally defines a seat (31) for the sealing element (5).

12. Hopper according to any of the previous claims, wherein the adaptor element (4) comprises a lower portion (8) which can be inserted so as to seal the mouth of the manifold (3).

13. Hopper according to any of the previous claims, wherein the outline of the sealing device (5), permits a shaped coupling in the upper part with the drain funnel (2).

14. Hopper according to any of the previous claims, wherein said outline of the sealing device (5) is defined by a number of concentric crests of decreasing height towards the centre.

15. Hopper according to any of the previous claims, comprising a basket (29) positionable in the funnel (2) and able to regulate the transit of water towards the manifold and act as a filter of coarse material such as food residues, soap etc.

16. Hopper according to claim 15, wherein the basket is the same shape as the upper part (2a) of the funnel (2).

17. Hopper according to any of the claims from 15 to 16, wherein the basket (29) is axially moveable in relation to the funnel and comprises a sealing gasket (51) able to form a seal with the inner surface of the lower portion (2b) of the funnel.

18. Hopper according to any of the claims from 15 to 17, wherein the basket (29) comprises an axial shaft (30) having an upper lifting portion (30') and a lower portion (30") which can be inserted so as to slide in an axial hole made in the attachment element (27).

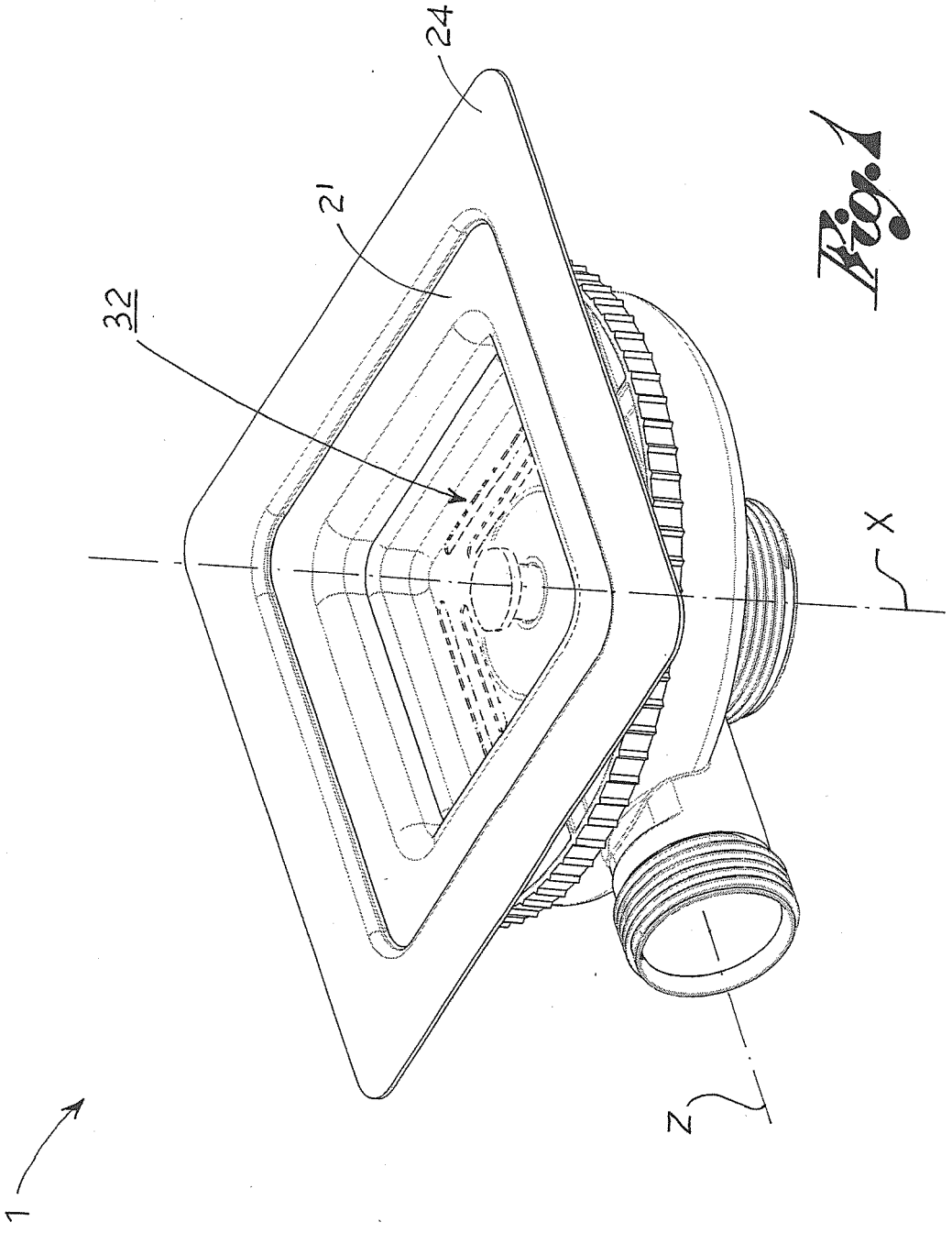

Fig.1

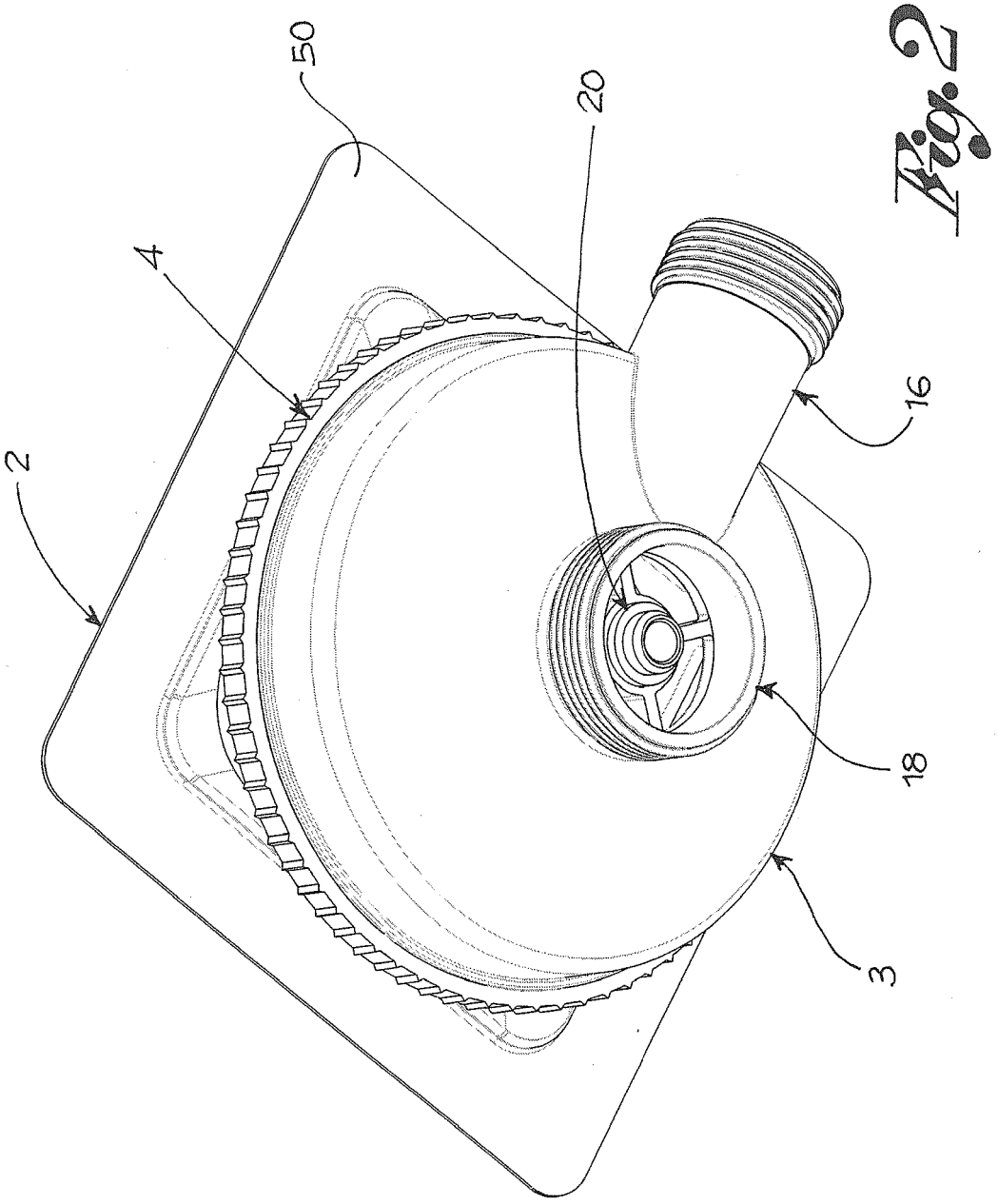

Fig. 2

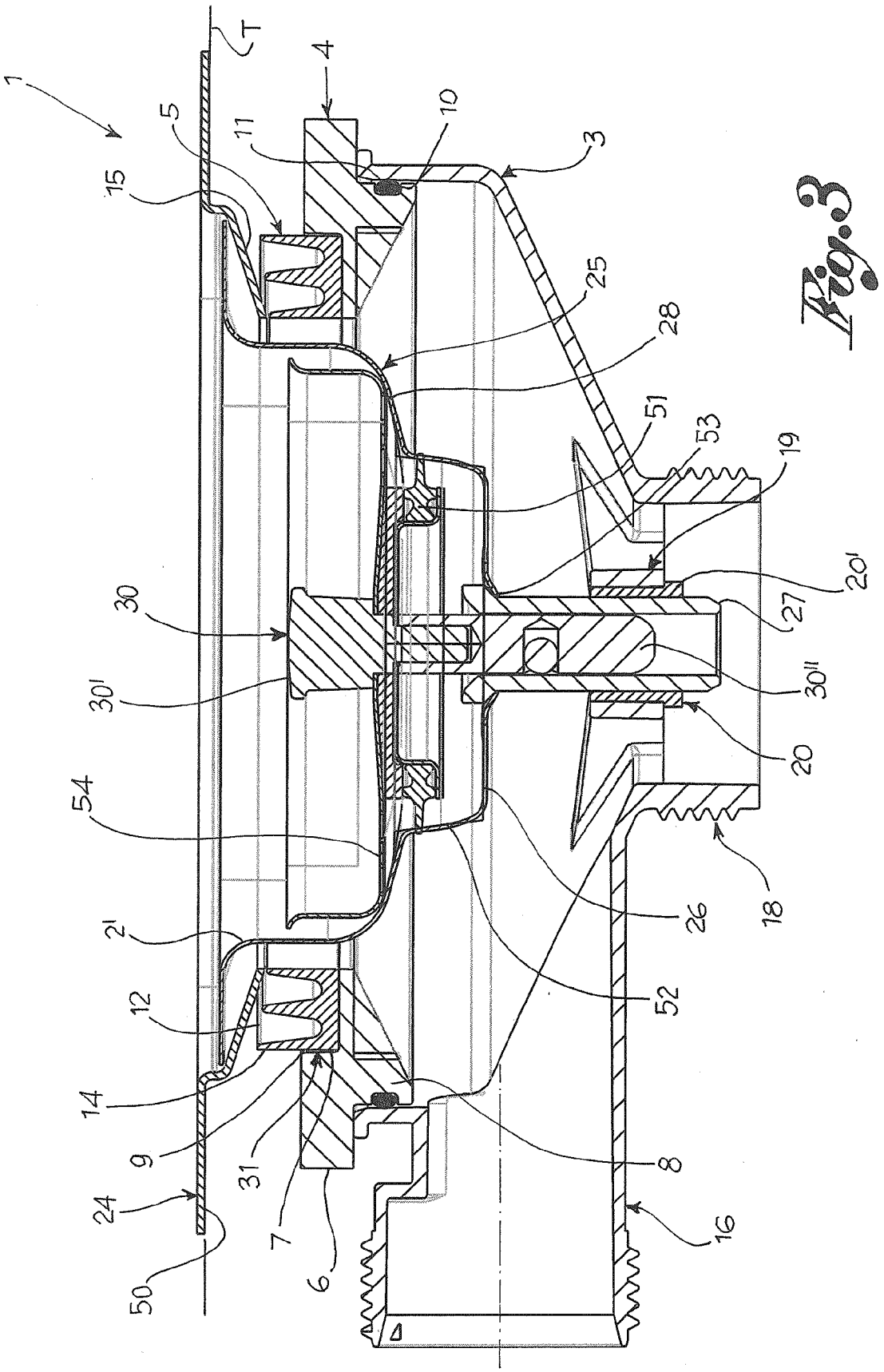
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Fig.3

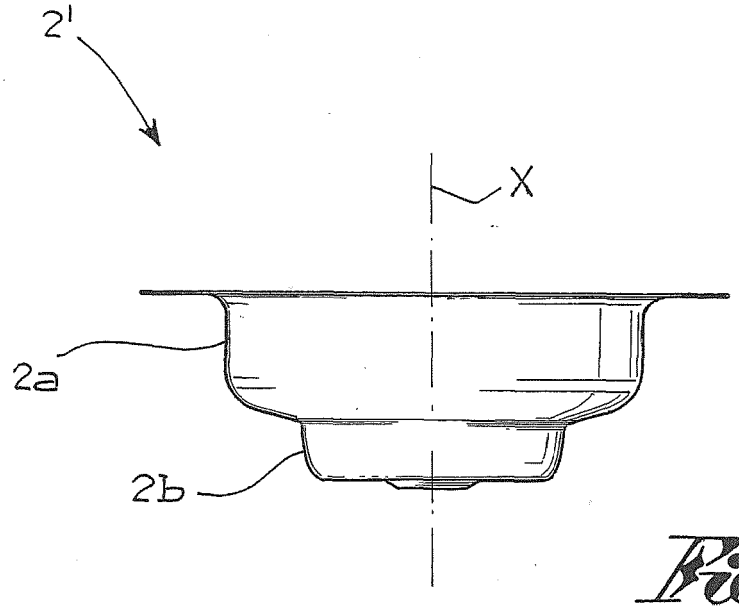

Fig. 4

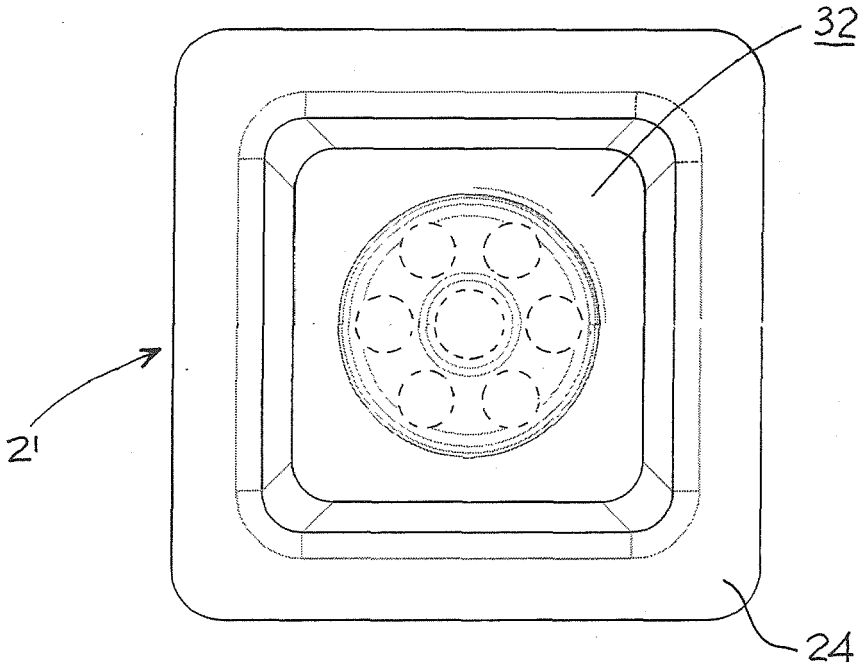

Fig. 5

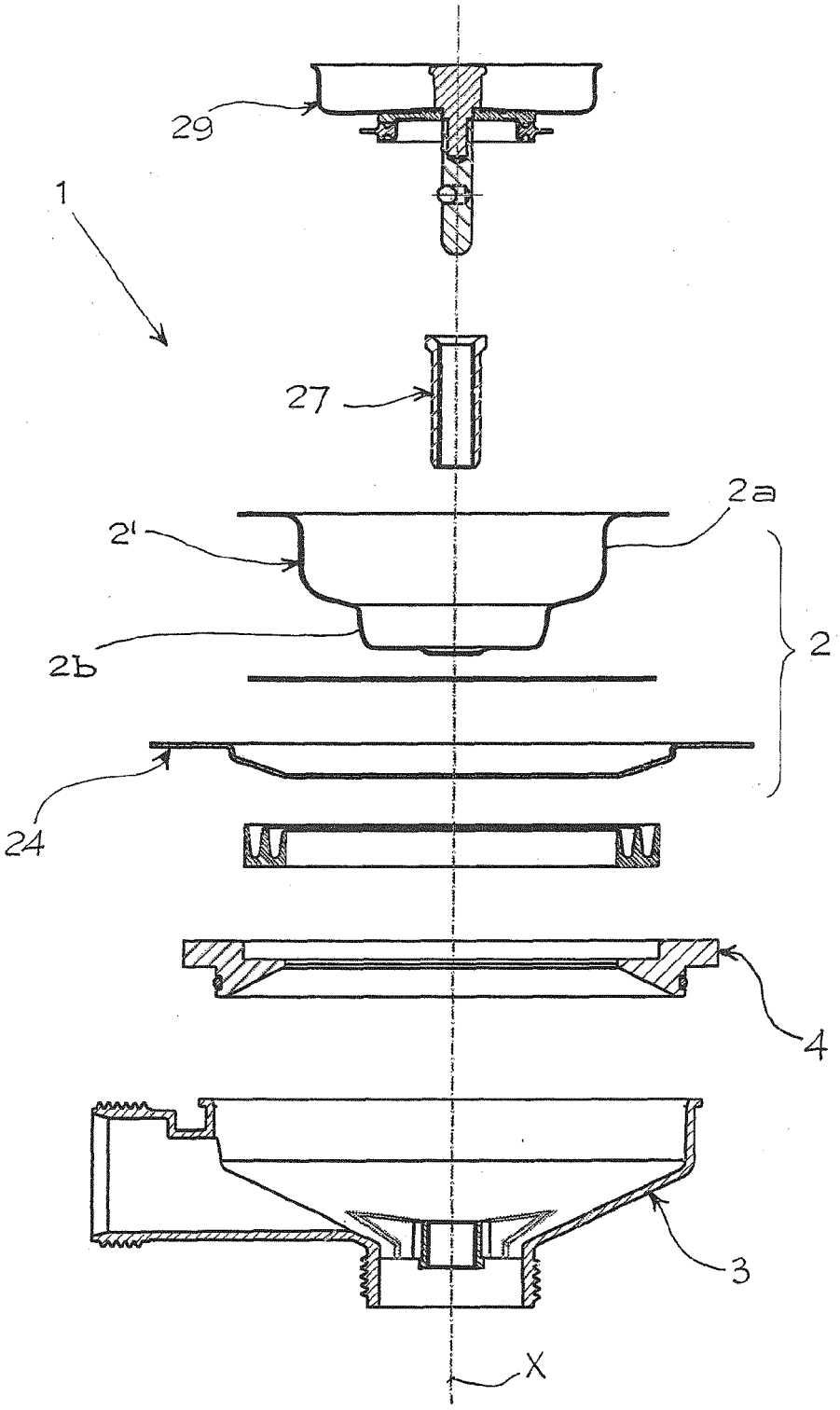

Fig. 6