

(19)



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(11)

EP 0 819 796 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

21.01.1998 Bulletin 1998/04(51) Int Cl.⁶: **E03C 1/23**(21) Application number: **97870106.8**(22) Date of filing: **15.07.1997**

(84) Designated Contracting States:

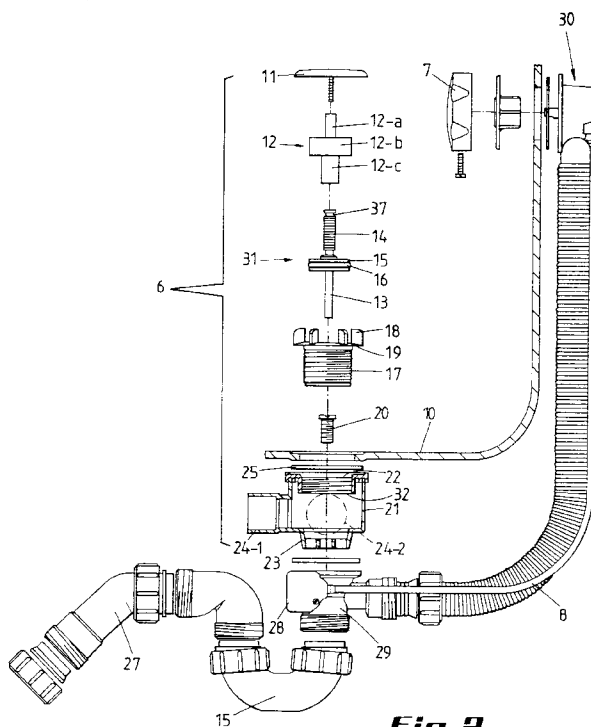
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Designated Extension States:

AL LT LV RO SI(30) Priority: **15.07.1996 BE 9600643**(71) Applicant: **Pole Invest N.V.****8800 Roeselare-Rumbeke (BE)**(72) Inventor: **Smagghe, Pierre****8800 Roeselare-Rumbeke (BE)**(74) Representative: **Quintelier, Claude et al****GEVERS Patents,
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1831 Diegem (BE)****(54) Waste outlet**

(57) A waste outlet (6) for a liquid container, which waste outlet (6) comprises a housing provided with an input (22), for putting in liquid and a first output (23), which is connectable with a waste conduct (27) for draining said liquid, which waste outlet further comprises a shut-off member (31) for shutting off said first output, which shut-off member is provided at a first, respectively

a second side, with a first (13), respectively a second (14) axis, for co-operating with a waste control mechanism, respectively for applying a cover plate, which second axis (14) is notched over at least a part of its outer mantle and wherein a sleeve (12-c) can be shifted over the second axis (14), wherein the inner mantle of the sleeve co-operates in a frictional manner with the outer mantle of the second axis.

**Fig. 2****EP 0 819 796 A1**

Description

The invention relates to a waste outlet for a liquid container, in particular a whirlpool bath, which waste outlet comprises a housing provided with an input for putting in liquid, and a first output, which is connectable with a waste conduct, for draining said liquid, which waste outlet further comprises a shut-off member for shutting off said first output, which shut-off member is provided at a first respectively a second side with a first respectively a second axis for co-operating with a waste control mechanism, respectively for applying a cover plate.

Such waste outlets are i.a. known from the British patent application No. 2 217 986. They are for example used in whirlpool baths, in order to assure on the one hand the drainage, and on the other hand the recirculation of the water in the bath. In the recirculation configuration the first output is closed by means of the shut-off member and the water can via the input flow towards the second output and thus reach the recirculation conduct. When the whirlpool bath treatment is finished, the first output is opened and the water can stream into the waste conduct. The opening and closing of the first output is realised by means of a waste control mechanism that co-operates with the first axis, applied on the shut-off member. The waste control mechanism pushes the first axis upwards or brings it downwards, in order to open or close the first output.

A drawback of the known waste outlet is, that it is either only suitable for one dimension of containers, or that it comprises a plurality of adjustment parameters which have to be adjusted by means of nuts and/or bolts for adapting it to the different dimensions of the container. In such a manner the length of the second axis is adjusted by means of a nut. Such adjustment proceedings have to be done in a skilled manner, in order to avoid that bad shut-offs disturb the operation of the waste outlet. Moreover such adjustments by means of nuts and bolts can easily be deregulated because the user can easily distort them.

It is an object of the invention to realise a more easy adjustable waste outlet, which moreover is less sensible to deregulation.

The waste outlet according to the invention is therefore characterised in that a sleeve, on which said cover plate is mountable, is shiftable applied over the second axis, and wherein either the outer mantle of the second axis, or the inner mantle of the sleeve, or both, are notched over at least a part of their length, in such a manner that the outer mantle of the second axis and the inner mantle of the sleeve co-operate in a frictional manner, in order to realise a clamping co-operation. Because the sleeve is shiftable over the notched outer mantle of the second axis, the adjustment of the sleeve with respect to the second axis, and thus the adjustment of the cover plate, mounted on the sleeve, is realised by an easy shift of the sleeve over the second axis. Be-

cause moreover the notched outer mantle of the second axis co-operates in a frictional manner with the inner mantle of the sleeve, the latter will, once adjusted, clamp itself around the second axis, due to which the adjustment can not easily be deregulated.

A first preferred embodiment of a waste outlet according to the invention is characterised in that the notched part of the outer mantle of said second axis comprises a flattened stroke, which extends in longitudinal direction of the second axis. Due to this, an air channel is provided along the flattened stroke, along which, upon mounting the sleeve over the second axis, the air present in the sleeve, can escape.

A second preferred embodiment of a waste outlet according to the invention is characterised in that a fitting member is applied on said sleeve for centering the second axis with respect to said input. Due to this it is prevented that the shut-off member and the cover plate could capsize into the waste outlet.

It is favourable that the head of the second axis is provided with a circumferential groove in which an O-ring is applied. Due to this, the clamping co-operation between the second axis and the sleeve is strengthened.

A third preferred embodiment of a waste outlet according to the invention is characterised in that said first axis has a length of at least 5 cm. Due to this enough material is provided, and the shut-off member can be used for several waste control mechanisms.

It is favourable that the waste outlet is made of plastic, in particular ABS. Plastic has the advantage of a long lifetime and is less sensible for water deposit. ABS has moreover good friction properties, which influence the clamping co-operation between the sleeve and the second axis.

The invention will now be described by means of an embodiment shown in the drawings. In the drawings :

figure 1 shows a whirlpool bath, provided with a waste outlet according to the invention;
figure 2 shows an exploded view of a waste outlet according to the invention which is connected to a waste conduct and the waste control mechanism;
figure 3 shows a view from the underside of the sleeve which is part of the waste outlet according to the invention;
figure 4 shows a detailed view of the first and second axis and the shut-off member; and
figure 5 shows a further embodiment of the sleeve, the cover plate and the shut-off member.

In the drawing a same reference sign has been assigned to a same or analogous element. The invention will be described by means of an application to a whirlpool bath. It will however be clear that the waste outlet according to the invention is not limited to a whirlpool bath, but is applicable in every liquid container, be it for private or industrial use.

The whirlpool bath 10 shown in figure 1, comprises a number of venturi jets 1, which on the one hand are connected to an air conduct 2 and on the other hand to a liquid conduct 3. The air conduct 2 is connected with an air inhaler 5, along which air is supplied. The liquid conduct 3 is connected to an output of a liquid pump 4, of which an input is connected via a recirculation conduct 9 with a second output of a waste outlet 6. A first output of the waste outlet 6 is further connected with a waste trap 15, for draining the bathwater.

When a person now takes a whirlpool bath, the pump 4 pumps water from the bath via the second output of the waste outlet 6 and the recirculation conduct 9, towards the liquid conduct 3. Air is extracted via the air inhalers 5. The supplied water and air are mixed in the venturis 1 which eject a water-air jet.

A waste control mechanism, provided with a handle 7 and a cable 8, controls the waste outlet 6. Due to this, the first output of the waste outlet is opened or closed. When the first output is opened, the bathwater streams through that output towards the waste trap 15 and 20 towards the drain conduct. In the latter configuration, the pump 4 is not active, in order to avoid that water should be pumped from the drainage conduct. The pump is thereto provided with an underpressure detector, which detects the underpressure in the recirculation conduct, created by the opening of the first output of the waste outlet. As soon as the detector detects this underpressure, the pump will be switched off. When the first output is closed, then the water can reach the recirculation conduct 9 via the second output.

Figure 2 shows a detailed exploded view of i.a. the waste outlet 6 according to the invention. The waste outlet comprises a housing 21, preferably manufactured in plastic. Chromed brass or other metals could also be suitable, but the latter are more sensible to water deposit. As plastic, preferably ABS is used, because that material is strong, little sensible for water deposit and easy for processing.

The housing 21 comprises an input 22, along which the bathwater streams into the waste outlet. The input is in connection with the first output 23, which is situated underneath the input. At the lateral side of the housing, there is at least a second output 24 (24-1, 24-2), to which the recirculation conduct 9 is connectable. The housing is placed under the bathtub 10, and between the bath and the housing a sealing 25, is applied, in order to avoid leakage.

The first output 23 is connected with a further housing 29, which is a component of the waste control mechanism 30. There is a control valve 28 in this further housing, which control valve is connected with the control cable 8, which latter is also connected to a handle 7. By controlling the handle 7, a force is exerted on the cable 8, due to which valve 28 is controlled. In such a manner, the valve shifts in the further housing 29 and on its turn controls the shut-off member 16, for opening and closing the first output 23.

The further housing 29 further forms the connection between the waste outlet 6 and the waste trap 15, to which the drain conduct 27 is connected. In such a manner, when valve 28 has opened the first output, the water will be guided from the first output to the further housing 29 and the waste trap 15 towards the drain duct 27. The connection between the waste outlet 6 and the further housing is realised by means of a fixing screw 20, which is centrally drilled, in such a manner that the first axis 13 of the shut-off member can pass through it, in order to grip on the valve 28.

The housing 21 of the waste outlet 6 is preferably provided with a screw thread 32 at the height of the input 22. That screw thread co-operates with the one 17 applied on the outer wall of the passage piece, which is part of the waste outlet. That passage piece forms the connection between the inner- and outer part of the bath 10. Preferably the passage piece is provided with upstanding vanes 18, applied along the circumference thereof.

By means of the passage piece, the waste outlet is applied on the waste opening of the bath 10. The screw thread of the passage piece is screwed in the screw thread 32, until the waste outlet is fixedly mounted on the bathtub. A sealing 25 takes care of a watertight connection. The upstanding vanes 18 have the purpose to keep the closing plate 11, in closed configuration of the first output 23, at a distance of the input, in such a manner, that in the recirculation configuration the water can reach the second output. Due to the vanes 18 on the passage piece, they form also a grip upon mounting the passage piece.

Further the placement of the vanes 18 has the advantage that they remain fixed on their place and can not move, which would be the case if they would be applied on the cover plate 11.

The waste outlet 6 further comprises a shut-off member 31 formed by the first axis 13, the second axis 14 and a support piece 15, wherein an O-ring 16 is applied. The shut-off member 31 is preferably made of plastic, in particular ABS. The axes are each time applied on both sides of the support piece 15. The first axis 13 has preferably a length of at least 5 cm. Due to this, there is sufficient material available in order to make the shut-off member suitable for different types of waste control mechanisms. Because the first axis 13 co-operates with the valve 28, upon mounting the waste outlet 6 the length of the first axis can be adapted to the desired measure, in order to assure a good co-operation with the valve 28 and a good closing of the first output 23. By using plastic, it is enough, once the correct length has been determined, to cut the axis at the desired measure, in such a manner, that a permanent adjustment is guaranteed.

The footpiece 15 wherein the O-ring 16 is applied, assures the closing of the first input. The diameter of that footpiece 15 and the O-ring 16 joins the one of the first output 23, in such a manner, that upon closing that

first output, the footpiece and the O-ring fit in the first output 23.

The second axis 14, which is with respect to the first axis 13, on the other side of the footpiece 15, is notched over at least a part of its outer mantle, such as shown in detail in figure 4. These notches are formed by successive grooves or by a screw thread, applied on the external mantle of the second axis. Due to this, the second axis 14 has then a larger diameter than the one of the first axis 13. The grooves have for example a depth of 1 to 2 mm. Preferably the second axis 14 shows on its notched outer mantle a flattened stroke 26. That stroke, which has a width of for example 8 mm, is obtained by milling the material from the outer mantle.

In the embodiment shown in figure 5, an O-ring is applied in groove 37, applied on the head of the second axis 14. The function of that O-ring will be explained hereinafter.

The notched outer mantle of the second axis co-operates with sleeve 12, which is shiftable applied over the second axis 14. The sleeve has an internal diameter d_1 (figure 3), which joins the external diameter d_2 of the second axis 14. The inner mantle of the sleeve 12-c is smooth, in such a manner that the sleeve can shift with its inner mantle over the outer mantle of the second axis. The diameters d_1 and d_2 and the notches are however selected in such a manner that the shifting of the sleeve over the second axis is not realised frictionless, but a certain friction resistance has to be overcome upon placing of the sleeve on the second axis. The sleeve preferably has a depth which corresponds with the length of the second axis, in such a manner that the second axis can be completely housed in the sleeve. When on the second axis 14, O-ring 36 is applied, the friction of the second axis in the sleeve 12-c is amplified. In the example shown in the figure, only the outer mantle of the second axis is notched. It is however also possible instead of having the notches applied on the outer mantle of the second axis, to apply them in the inner mantle of the sleeve and to smoothen the outer mantle of the second axis. In a further embodiment both the inner mantle of the sleeve and the outer mantle of the axis are notched.

The sleeve 12 is further provided with a passing 12-b for centering the sleeve and the second axis with respect to input 22 of the waste outlet. Indeed when the shut-off member is applied in the housing 21, the second axis and the sleeve are applied in the passage piece 17. The passing takes now care that the waste outlet is centered in the passage piece 17. The sleeve further comprises an extension axis 12 on which the cover plate 11 is applicable. Instead of a passing 12 it is also possible to provide the sleeve 12-c with wings 35, such as shown in figure 5.

Upon mounting the waste outlet according to the invention, after that the housing 21 and the passage piece 17 have been mounted on the bathtub, the first axis 13 is cut at the desired measure, in order to obtain a good

closing of the first output 23. Thereafter the first output 23 is closed by means of the shut-off member 31. Once the first output is closed, the sleeve and the cover plate 11 applied thereon, are applied over the second axis. By exerting a pressure on the cover plate 11, the sleeve 12 shifts now over the second axis 14 until the under border of the cover plate touches the upper side of the vanes 18. The flattened stroke 26 now enables the air present in the sleeve 12 to escape upon shifting the sleeve over the second axis. Due to the frictional shift of the sleeve over the second axis, the adjustment of the sleeve over the second axis is realised. Because the cover plate touches the vanes, a very accurate adjustment is obtained. The friction, eventually amplified by O-ring 36, between the notched outer mantle of the second axis 14 and the inner mantle of the sleeve, takes care that once adjusted, the sleeve will be in a way clamped on the second axis.

By that clamping connection a certain force is necessary to remove the sleeve from the second axis. The friction force is so large that even the pressure of the water in the housing 21 can not realise the tilting of the cover plate and could thus not cause the shifting of the sleeve on the second axis.

From the description given here before it appears that the adjustment of the waste outlet according to the invention can easily be realised because it is enough to, on the one hand, cut the first axis at the desired measure, and on the other hand, to shift the sleeve over the second axis until the correct adjustment is obtained. Because no use is made of nuts and bolts, the adjustment can not be easily disadjusted. Even in the case that the user would pull off the sleeve from the second axis, it is enough, when the first output is closed, to shift the sleeve again over the second axis until the cover plate reaches the vanes 18. The user can himself realise such an adjustment in an easy manner.

Claims

1. A waste outlet for a liquid container (10), in particular a whirlpool bath, which waste outlet (6) comprises a housing provided with an input (22), for putting in liquid and a first output (23), which is connectable with a waste conduct (27) for draining said liquid, which waste outlet further comprises a shut-off member (31) for shutting off said first output, which shut-off member is provided at a first, respectively a second side, with a first (13), respectively a second (14) axis, for co-operating with a waste control mechanism, respectively for applying a cover plate, characterised in that a sleeve (12-c), on which said cover plate is mountable, is shiftable applied over the second axis (14), and wherein either the outer mantle of the second axis, or the inner mantle of the sleeve, or both, are notched over at least a part of their length, in such a manner, that the outer

mantle of the second axis and the inner mantle of the sleeve, co-operate in a frictional manner, in order to realise a clamping co-operation.

2. A waste outlet as claimed in claim 1, characterised in that the notched part of the outer mantle of said second axis comprises a flattened stroke (26), which extends in longitudinal direction of the second axis. 5
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3. A waste outlet as claimed in claim 1 or 2, characterised in that a fitting member (12-b, 35) is applied on said sleeve for centering the second axis with respect to said input. 15
4. A waste outlet as claimed in anyone of the claims 1 to 3, characterised in that the head of the second axis is provided with a circumferential groove (37) in which an O-ring (36) is applied. 20
5. A waste outlet as claimed in anyone of the claims 1 to 4, characterised in that said input is provided with screw thread (17) wherein a passage piece is applied, which forms the connection between the inner and outer part of the container, which passage piece is provided with upstanding vanes (18), which are applied along the circumference of the passage piece. 25
6. A waste outlet as claimed in anyone of the claims 1 to 5, characterised in that said first axis has a length of at least 5 cm. 30
7. A waste outlet as claimed in anyone of the claims 1 to 6, characterised in that it is made of plastic, in particular ABS. 35
8. A waste outlet as claimed in anyone of the claims 1 to 7, which waste outlet further comprises at least a second output connectable with a recirculation conduct, characterised in that said second axis has a length which is at the most equal to the diameter of said second output. 40
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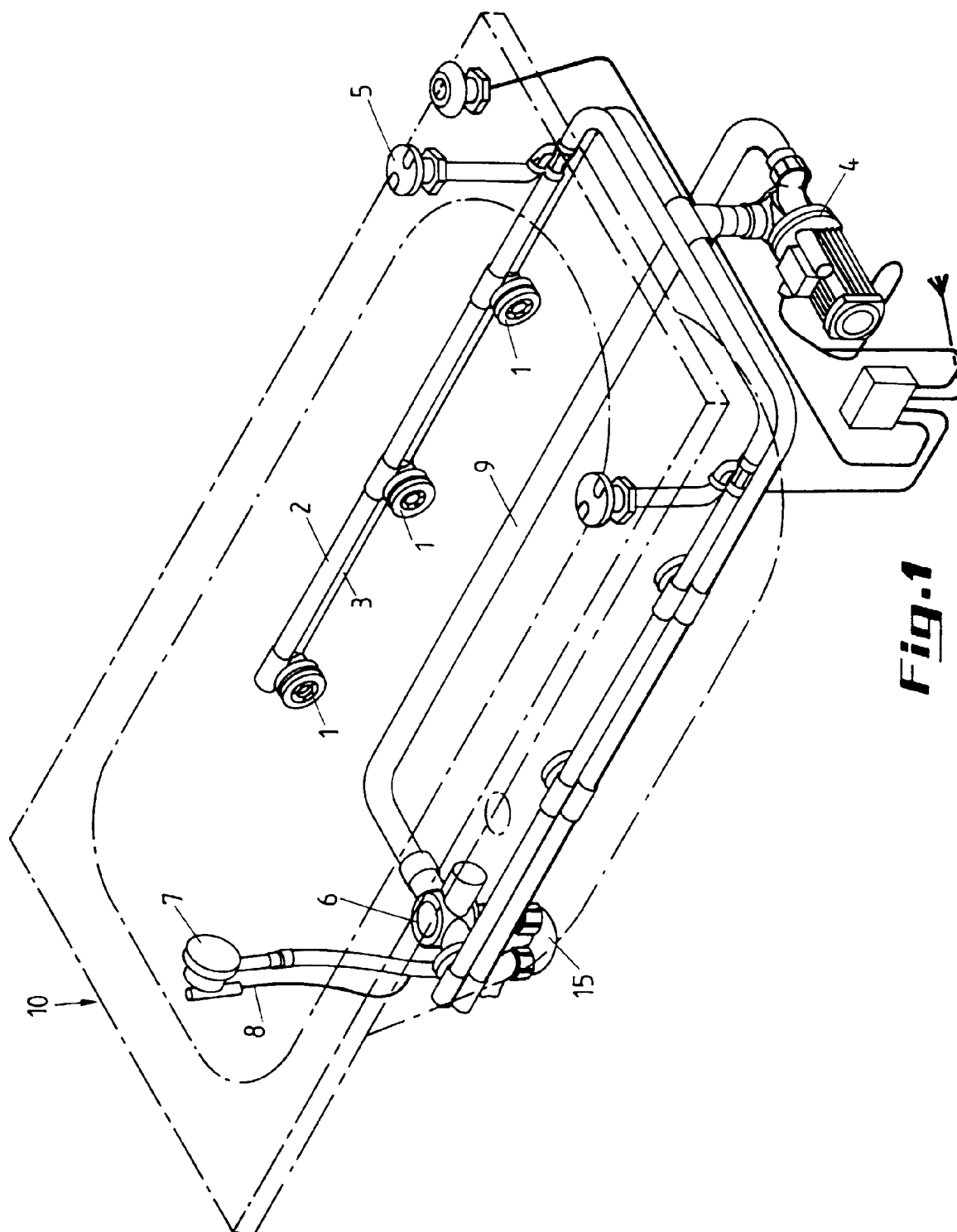


Fig. 1

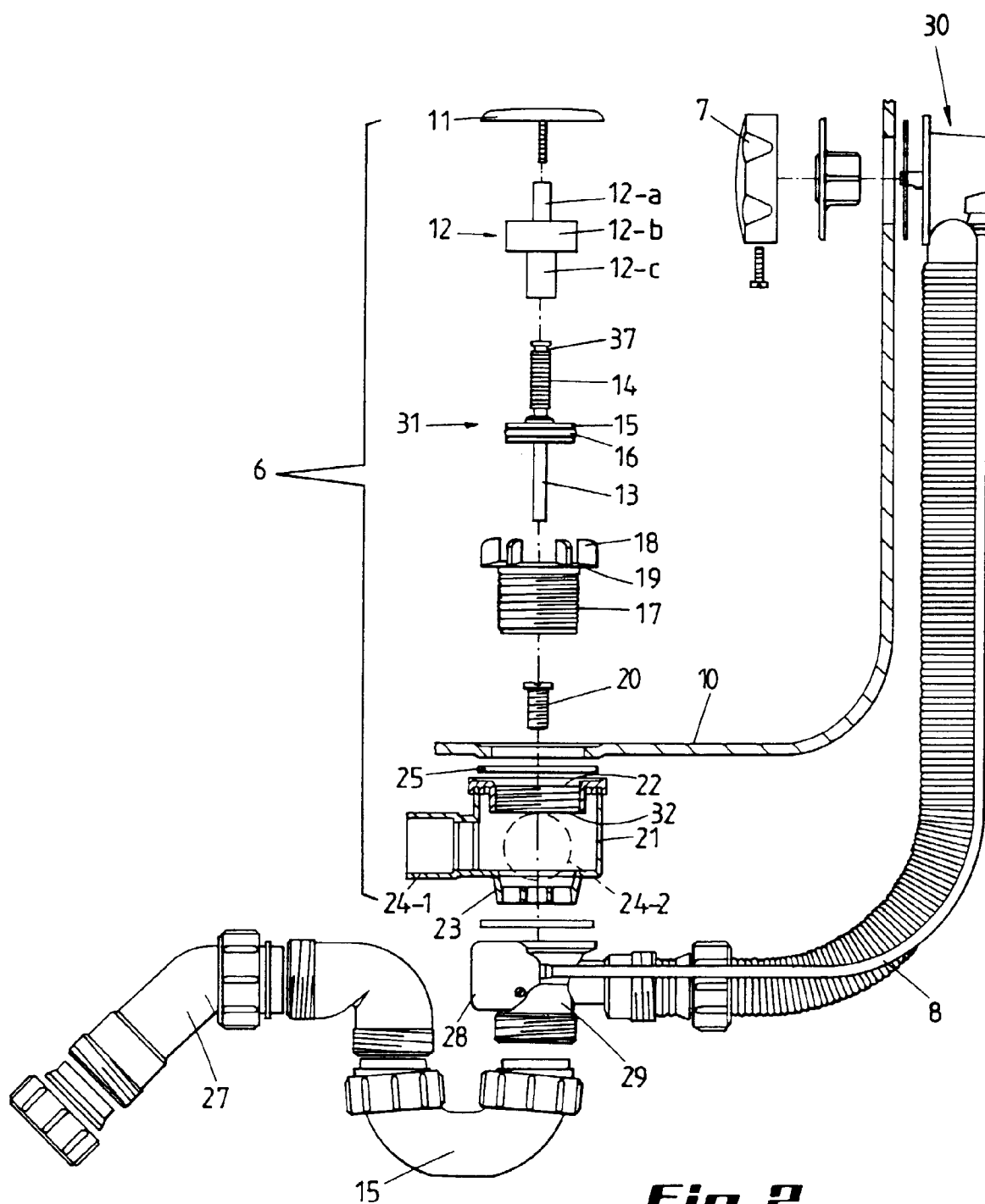


Fig. 2

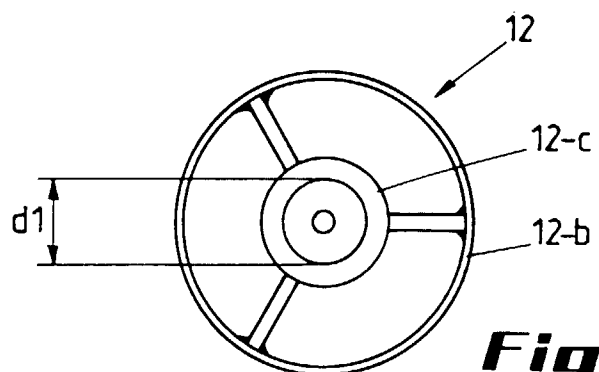


Fig. 3

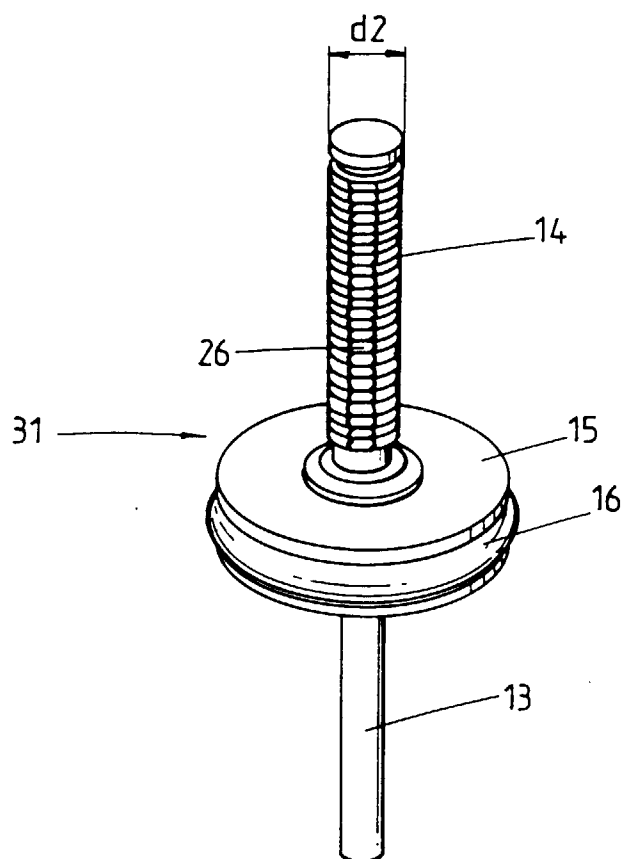


Fig. 4

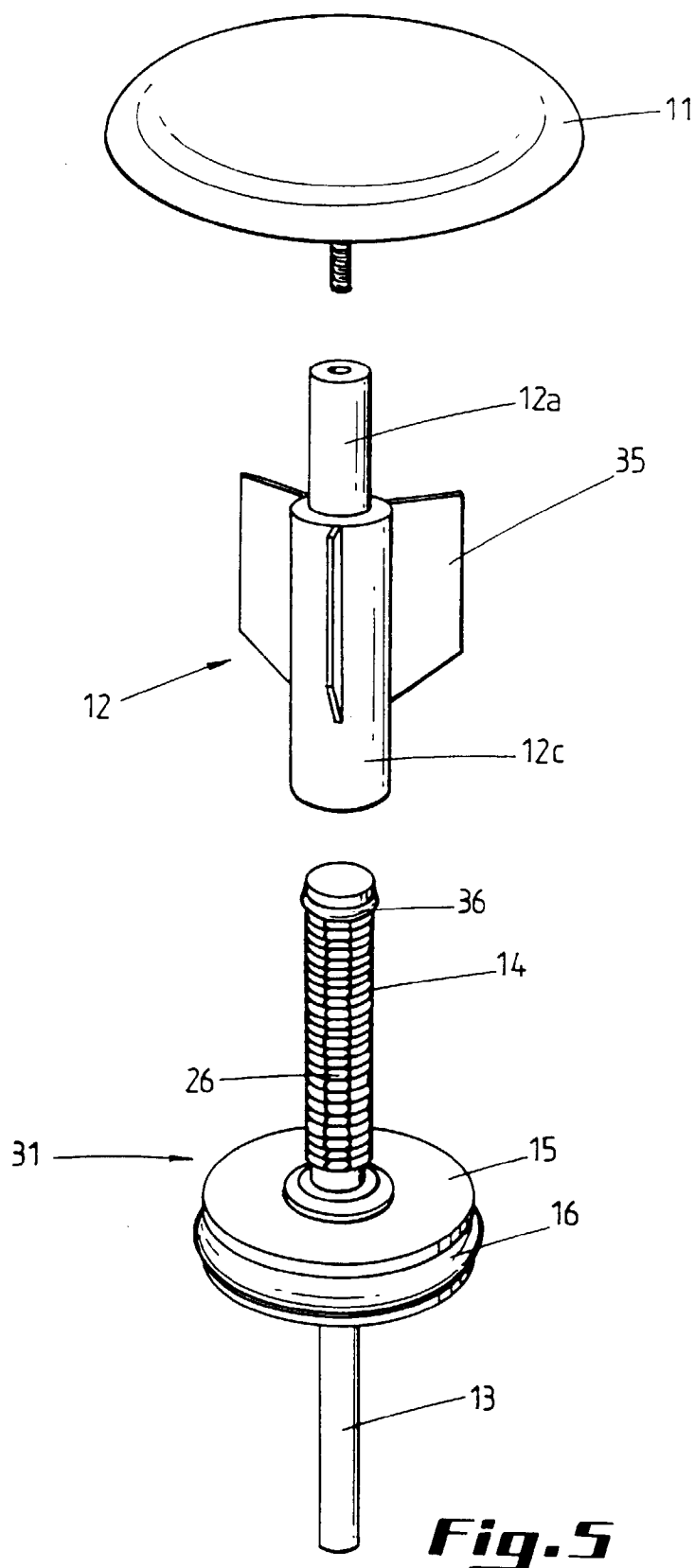


Fig. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 97 87 0106

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	GB 2 217 986 A (MURFIN) 8 November 1989 * page 2, line 25 - page 5; figures *	1,4,7	E03C1/23
Y	DE 28 42 490 A (THORWARTH & GREBE) 10 April 1980 * page 8, paragraph 2 - page 11; figures *	1,4,7	
A	FR 2 352 113 A (IDEAL-STANDARD) 16 December 1977 * the whole document *	3	
A	DE 295 18 564 U (VIEGENER) 11 January 1996		
A	WO 86 01100 A (AQUATECH MARKETING) 27 February 1986		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E03C A61H
Place of search THE HAGUE		Date of completion of the search 9 October 1997	Examiner Vijverman, W
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