

(19)



(11)

EP 3 214 231 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.09.2017 Bulletin 2017/36

(51) Int Cl.:
E03C 1/22 (2006.01) E03C 1/232 (2006.01)

(21) Application number: **17157360.3**

(22) Date of filing: **22.02.2017**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

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(30) Priority: **01.03.2016 IT UB20161196**

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(54) **DRAIN FOR SANITARY DISCHARGES IN SANITARY SYSTEMS**

(57) A drain (20) for sanitary discharges comprising a vertical tubular body (21), which terminates above at one of its ends with an edge (22) radially and peripherally enlarged projecting outwardly, wherein said tubular body (21), at a lower free end, provides a section of body externally threaded (23), characterized in that said section of body at least externally threaded (23) comprises at

least one area (25) without threading which defines at least one duct which extends from one end to the other passing through the whole threaded section (23). Furthermore, at least one pass-through opening (24) can be provided in the tubular body (21) in a central portion thereof.

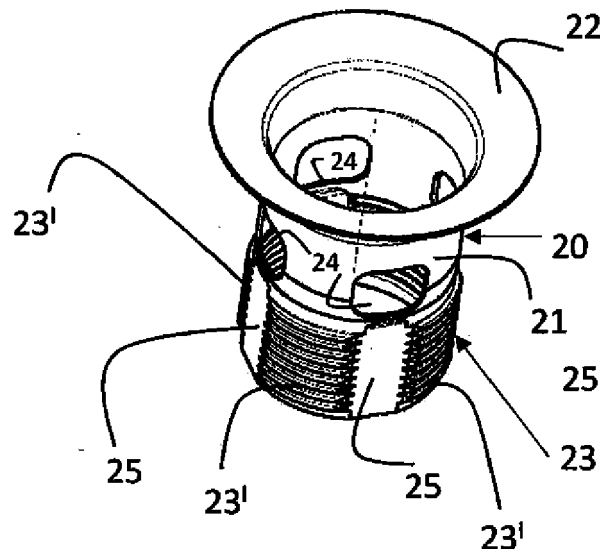


Fig. 5

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Description

[0001] The present invention relates to a drain for sanitary discharges in sanitary systems.

[0002] Drains, for sanitary discharges, are for example shown in US4807306A and in WO2004/027167A1.

[0003] In sanitary systems, for example in a washbasin, a so-called "drain" is provided for the discharge of water.

[0004] The term "drain" refers to a shaped metal ferrule on which the closing plug, in the example of the washbasin, is applied. Figures 1 to 4 show a generic washbasin 11 within a discharge hole 12 in which a drain 13 is provided. This drain 13 joins and connects the washbasin 11 with an underlying discharge body 14 which leads to a siphon (not shown) and is used for discharging washing water from the washbasin 11.

[0005] Current drains, such as that shown in figure 2 and indicated with 13, have, for example, a generally cylindrical form in a vertical tubular body 15 which terminates above with a rim 16, radially and peripherally enlarged projecting outwardly, like the brim of a hat.

[0006] The drain 13 is positioned on the discharge hole 12 of the washbasin 11 and on the one hand collaborates in allowing the water contained in the same washbasin 11 to drain, and on the other, in receiving the water that arrives, when the washbasin is plugged, from an overflow duct 17 of the basin 11 if the permissible level is exceeded in the same, to prevent the water from overflowing outside.

[0007] For its positioning, the drain provides, at a lower free end, a section of externally threaded body 18 before which one or more pass-through openings 19 are arranged connected to the overflow duct 17 of the washbasin.

[0008] The production of these drains is effected in various ways.

[0009] In a first production mode, the drain is initially formed from a brass blank obtained with a hot moulding process. This blank is then machined with the removal of material. The external threading indicated above is obtained, for example, and all the parts useful only for the hot moulding process are removed.

[0010] In a second production mode, the drain is produced by moulding from a metal strip with the subsequent formation of the perimetric threading by rolling the wall which must have the necessary thickness for effecting the whole threading. The process requires a greater thickness on wall to be rolled than that required on the rest of the drain.

[0011] The operational positioning of these drains has various problems for the correct functioning of the drain.

[0012] When the drain is positioned in the hole of the washbasin, its externally threaded lower free end 18 is arranged inside the discharge body 14 which leads to the siphon. Furthermore, the positioning is effected so that the openings 19 formed in the body are facing the overflow duct 17 of the washbasin. The position in height

of the slots with respect to the overflow duct depend on the thickness of the washbasin.

[0013] With said positioning and said known drain, most of the discharge water is sent towards the drain pipe 14, but stagnation areas are created.

[0014] Regardless of the positioning of the drain in the drain pipe 14, in fact, water, and other organic and inorganic residues, stagnates above the externally threaded section of the body 18 of the drain 13 and beneath the various openings 19 facing the overflow duct 17 of the washbasin.

[0015] This stagnation leads to the formation of bacteria and unpleasant odours and can also create, with time, sealing problems towards the bottom due to erosion that can be triggered.

[0016] The general objective of the present invention is to provide a drain that is capable of solving the drawbacks of the drains of the known art indicated above in an extremely simple, economical and particularly functional manner.

[0017] A further objective of the present invention is to provide a drain that can be produced with simplified processes.

[0018] Another objective of the present invention is to provide a drain that does not give rise to the creation of any type of stagnation.

[0019] The structural and functional characteristics of the present invention and its advantages with respect to the known art will appear even more evident from the following description, referring to the enclosed schematic drawings, which show an embodiment of the same invention. In the drawings:

- figure 1 is a perspective view, partially split, showing a generic washbasin equipped with a drain of the known type;
- figure 2 is a perspective view of the drain alone of the known type of figure 1;
- figures 3 and 4 are two sectional views showing the positioning of the drain of figure 1;
- figures 5 and 6 are perspective views from below and above of a drain according to the invention;
- figure 7 is a view from above of the drain of figures 5 and 6;
- figures 8 and 9 are sectional views of the drain according to lines VIII-VIII and IX-IX of figure 7;
- figure 10 shows, in an enlarged partial view, a portion of threaded section of figure 9; and
- figure 11 is a sectional view of the drain of the invention, assembled;
- figures 12, 13 and 14 are perspective views of a second embodiment of the drain according to the invention, without openings;
- figure 15 is a sectional view of the drain of figures 12, 13 and 14, assembled.

[0020] With reference to figures 5 to 15, these show a drain 20 for sanitary discharges comprising a vertical tu-

bular body 21, generally cylindrical, which terminates above at an upper end with a rim radially and peripherally enlarged projecting outwardly, like the brim of a hat.

[0021] The body 21 of the drain 20, at a lower free end, has a section of body at least externally threaded, indicated as a whole with 23. In the embodiment of figures 5 to 11, before said threaded section 23, the body 21 of the drain 20, in a central portion, comprises at least one pass-through opening 24. In the example shown in figures 5-11, there are, in particular, one or more openings 24 in the form of windows, having forms and dimensions that can differ from those of the example shown, which form the connection to an overflow duct of a sanitary system, such as a washbasin, or in any case a direct discharge of the water. Figures 12 to 15 show how, in the second further embodiment, the body 21 of the drain 20 is without any overflow opening and has four gutters 25 defined by the sections without threading.

[0022] According to the invention, the section of externally threaded body 23 provides at least one area 25 without threading that extends from the free end of the drain as far as the central portion, with respect to the above-mentioned upper and lower end, said central portion providing, in the example of figures 5-11, at least one pass-through opening 24, said area 25, as can be clearly seen in figures 3, 6, 8 and 9, having a complementary or corresponding form that copies or fits with the profile of the vertical tubular body 21. A duct is thus formed which extends from one end to the other of the threaded section 23 passing through it completely.

[0023] As already indicated, however, the drain 20 can be produced without pass-through openings (figures 12-15) with separation of the direct discharge from the overflow drain. In this way, the overflow drain and also the overflow duct 17 are connected to the discharge body by means of at least one area 25 without threading with a water outflow passing from one or more duct-shaped sections free of threading.

[0024] In the two illustrative and non-limiting examples, a plurality of areas 25 without threading are provided, which define peripheral ducts that affect the whole threaded area of the drain and which, as clearly shown in figures 7 and 8 of the drawings, are parallel to the longitudinal symmetry axis X of the drain. Said ducts 25 can also have a tilted trend or be tilted or oblique with respect to said axis X. This configuration described above does not represent any limitation as the ducts or areas 25, i.e. the areas without threading, can be differently oriented. The ducts, for example, can be helical, and not partially cylindrical, and in any case can always be such as to interrupt the threaded area 23 passing through it completely, thus connecting the two terminal ends of the threaded area 23.

[0025] These areas without threadings 25 extend for the whole threaded section 23 thus connecting the end of the drain 20 to the portion of the body 21 in which there may or may not be openings 24.

[0026] If the drain has at least one pass-through open-

ing 24 or various openings 24, formed in the body 21 of the drain 20, said openings are aligned according to a direction parallel to the longitudinal symmetry axis X of the drain, above the at least one or more areas without threading 25.

[0027] The trend of these areas without threading 25 can either copy or fit the profile or form of the vertical tubular body 21, which can also be flat (figure 7) or even concave.

[0028] The number of these areas without threading 25 is indicated, in the example, as four, but it can differ or in any case be such as to favour the emptying and drainage of any water deposit and residues inside the overflow and positioning area of the drain.

[0029] In any case, in fact, regardless of whether or not there is the presence or alignment of the openings 24 with the overflow duct of the washbasin and the number of the same, a complete discharge is effected. This complete discharge exploits the passages between the upper part and lower part with respect to the threading 23 formed in the areas without threading 25. These areas without threading 25 allow an unhindered discharge not only of the water and residues possibly coming from the overflow duct, but also of the water and residues of the normal direct discharge if they can flow outside the body through the openings 24.

[0030] A drain according to the present invention, for example, can be produced from the processing of a metal strip with subsequent shearing, deep drawing and forming steps of the threaded sections.

[0031] The material used for this type of drain can be any material that can be subjected to deep drawing, also stainless steel, without requiring coating treatment by chrome plating or similar treatment, that can become damaged with time or in any case have a lower environmental compatibility.

[0032] According to the invention, moreover, internal threaded sections 23' can be produced with an internal counterprofile (not shown) as illustrated in figure 10. In this way, a very reduced thickness can be used with a considerable saving of material for producing the overall drain.

[0033] The reduced thickness allows a reduced thickness of the flange 22 to be easily obtained, with a consequent reduction in stagnation of water and residues between the work surface and thickness of the flange.

[0034] All of this does not prevent the drain of the present invention from being produced by the machining of a normal drain produced according to the usual techniques currently used, intervening on the normal perimetric threading and creating areas without threading, removing sections of the same and in any case creating said areas without threading directly in the moulding step of the whole drain.

[0035] A further advantageous feature of the present invention is the possibility of having high production rates as the threaded sections 23' are obtained with undulated forming, i.e. by deformation through curvature and

stretching.

[0036] The forms of the structure for the production of a drain according to the invention, as also the materials and assembly modes, can naturally differ from those shown for purely illustrative and non-limiting purposes in the drawings.

[0037] The objective mentioned in the preamble of the description has therefore been achieved.

[0038] The protection scope of the present invention is defined by the enclosed claims.

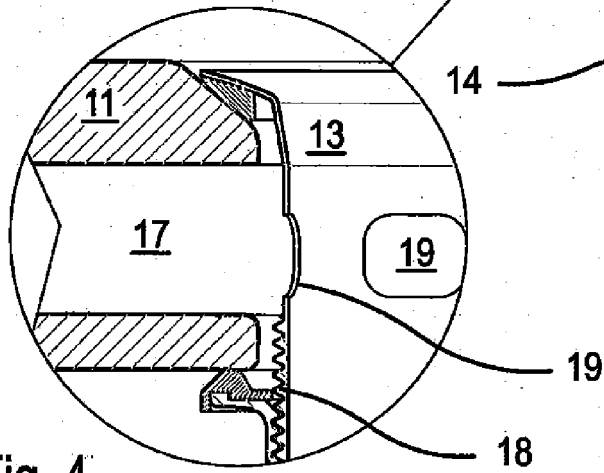
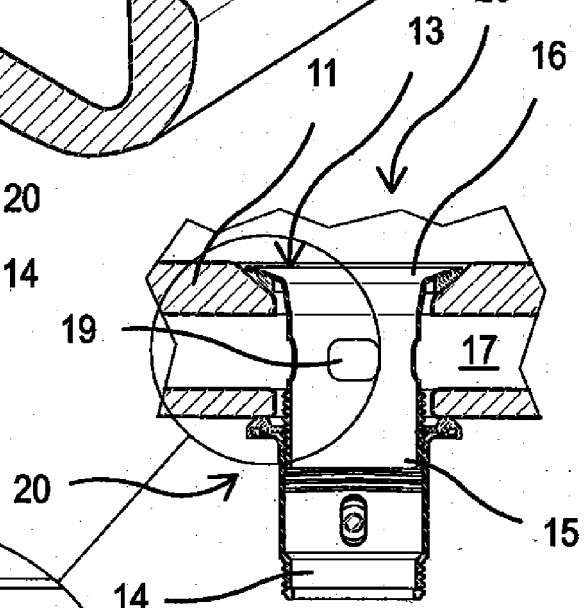
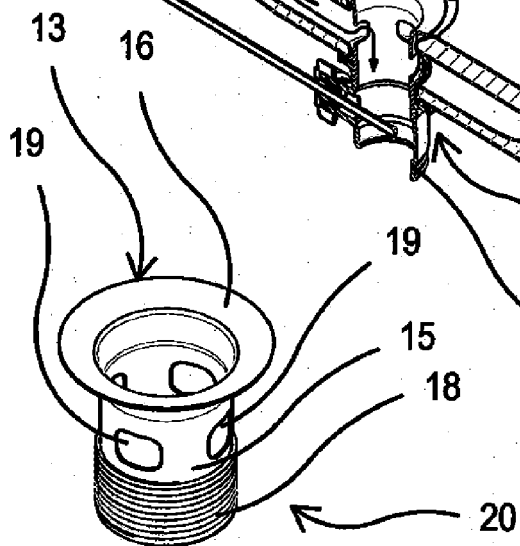
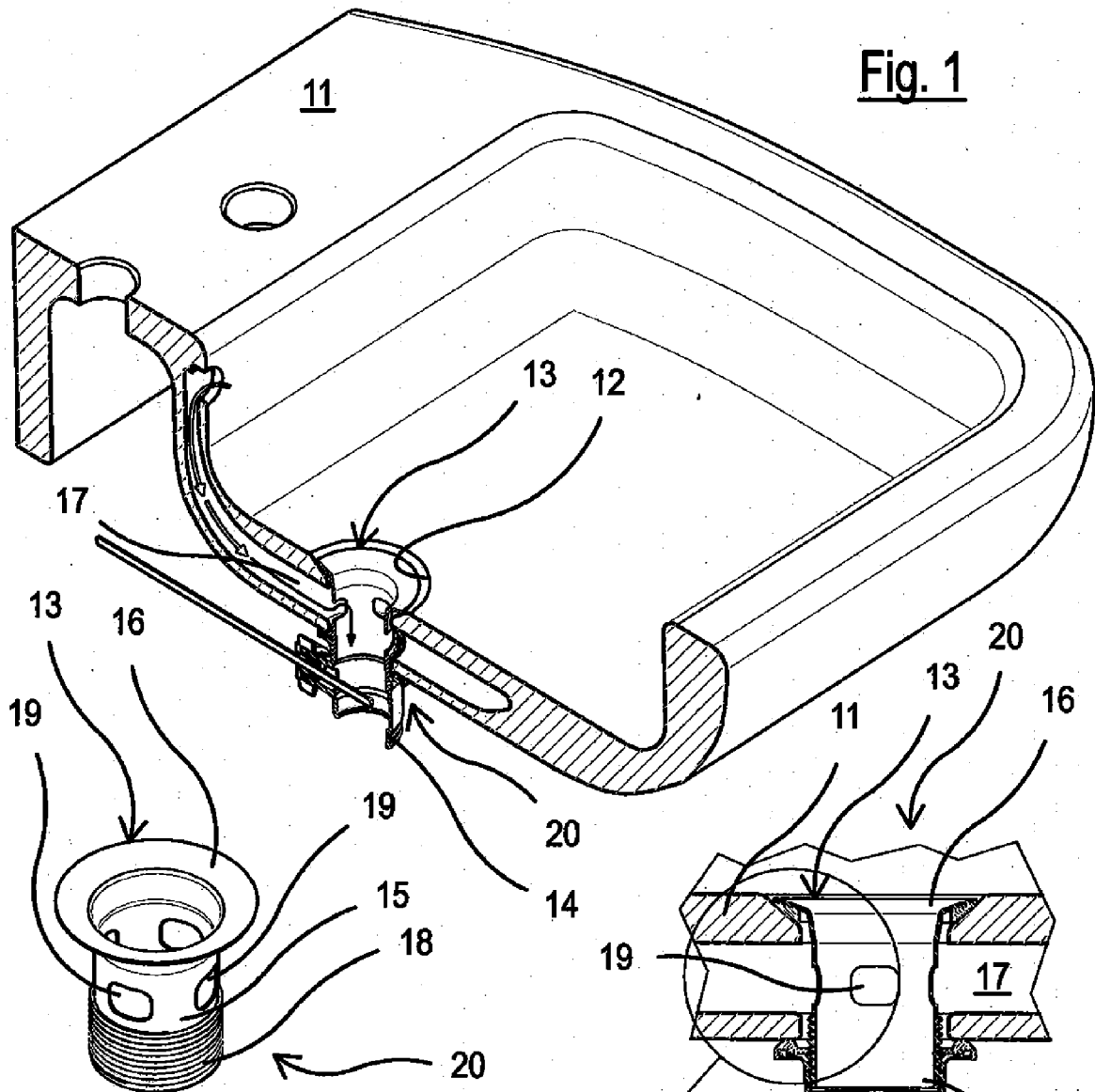
9. The drain according to one or more of the previous claims, **characterized in that** said vertical tubular body (21) is cylindrical.

5 10. The drain according to claim 2, **characterized in that** said at least one pass-through opening (24) is formed in the body (21) of the drain (20) aligned according to a direction parallel to or tilted with respect to the longitudinal symmetry axis of the drain.

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Claims

1. A drain (20) for sanitary discharges comprising a vertical tubular body (21), which terminates above at an upper end with an edge (22), radially and peripherally enlarged projecting outwardly, wherein said tubular body (21), at a lower free end, provides a section of body at least externally threaded (23), **characterized in that** said section of body at least externally threaded (23) comprises at least one area (25) without threading which defines at least one duct which extends from said upper end to said lower end passing through the whole threaded section (23). 15
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2. The drain according to claim 1, **characterized in that** said tubular body (21) in a central portion thereof with respect to said upper and lower ends, provides at least one pass-through opening (24). 30
3. The drain according to claim 1 or 2, **characterized in that** said at least one area (25) without threading has a flat form. 35
4. The drain according to claim 1 or 2, **characterized in that** said at least one area (25) without threading has a form that copies or fits the corresponding profile of the vertical tubular body (21). 40
5. The drain according to claim 1 or 2, **characterized in that** said at least one area (25) without threading has a concave form.
6. The drain according to claim 1 or 2, **characterized in that** said at least one area (25) without threading has a helical form. 45
7. The drain according to claim 1 or 2, **characterized in that** said at least one area (25) without threading is parallel to the longitudinal symmetry axis X of the drain. 50
8. The drain according to claim 1, **characterized in that** said at least one area (25) without threading has a tilted or oblique trend with respect to the longitudinal symmetry axis X of the drain. 55



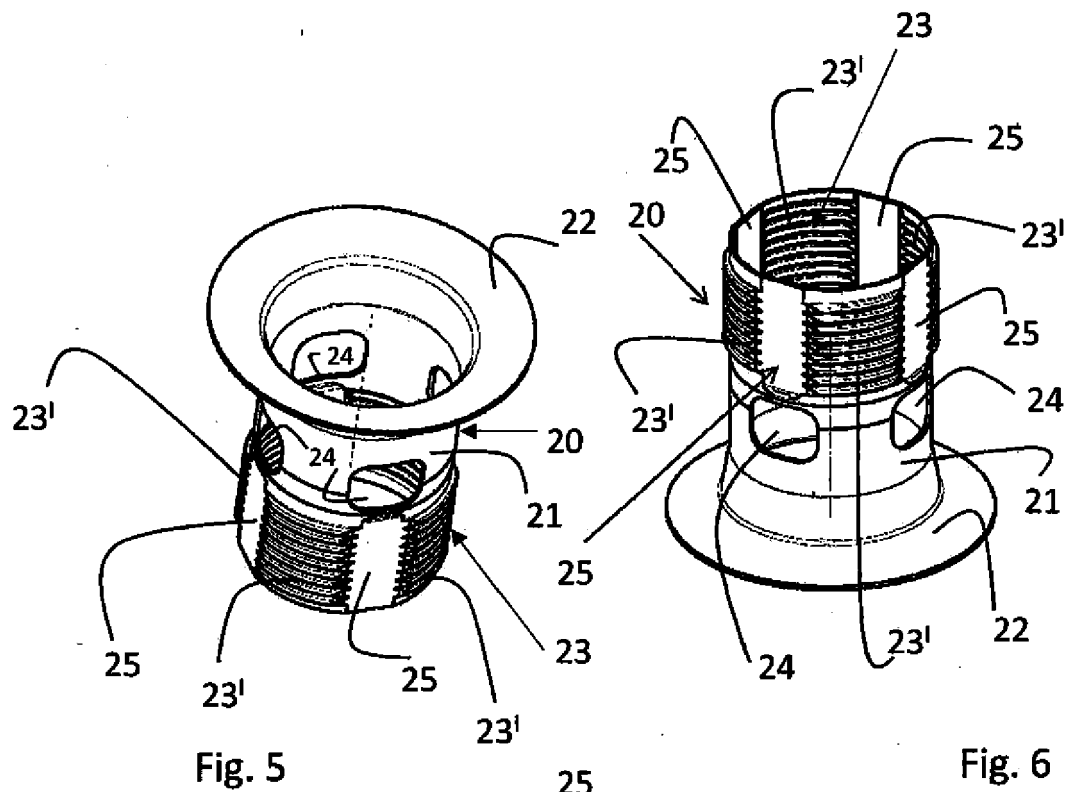


Fig. 5

Fig. 6

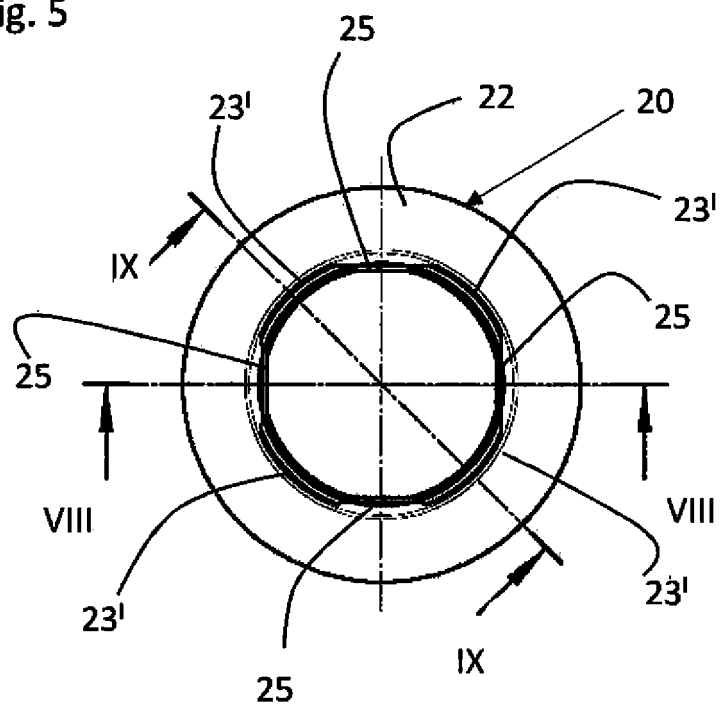
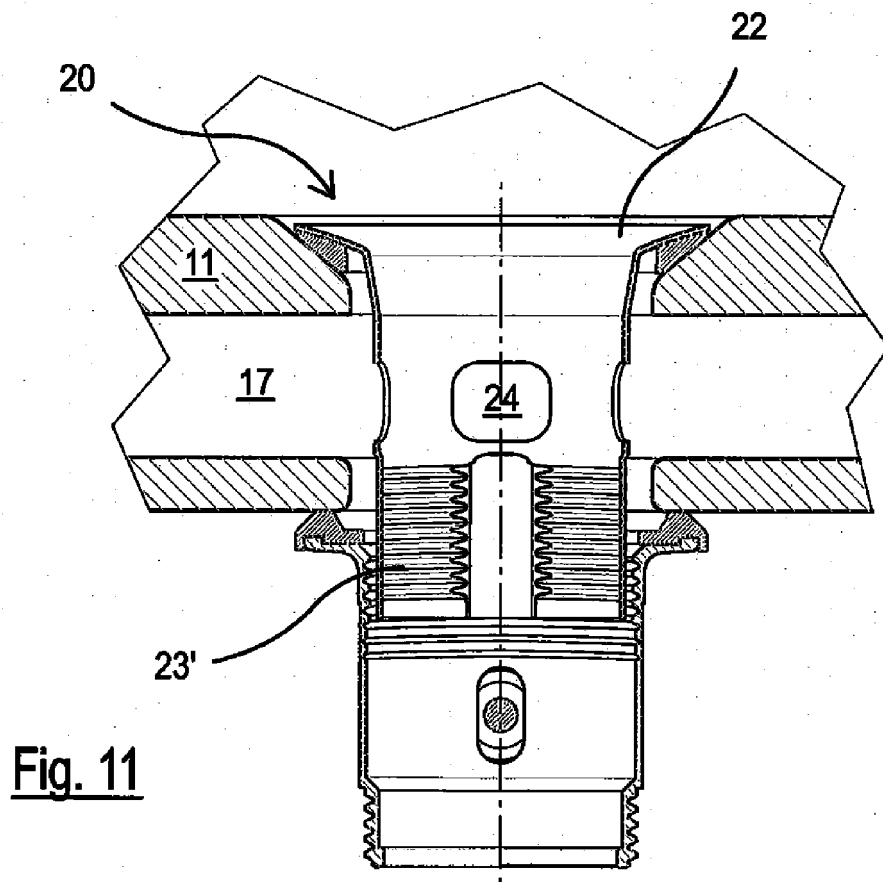
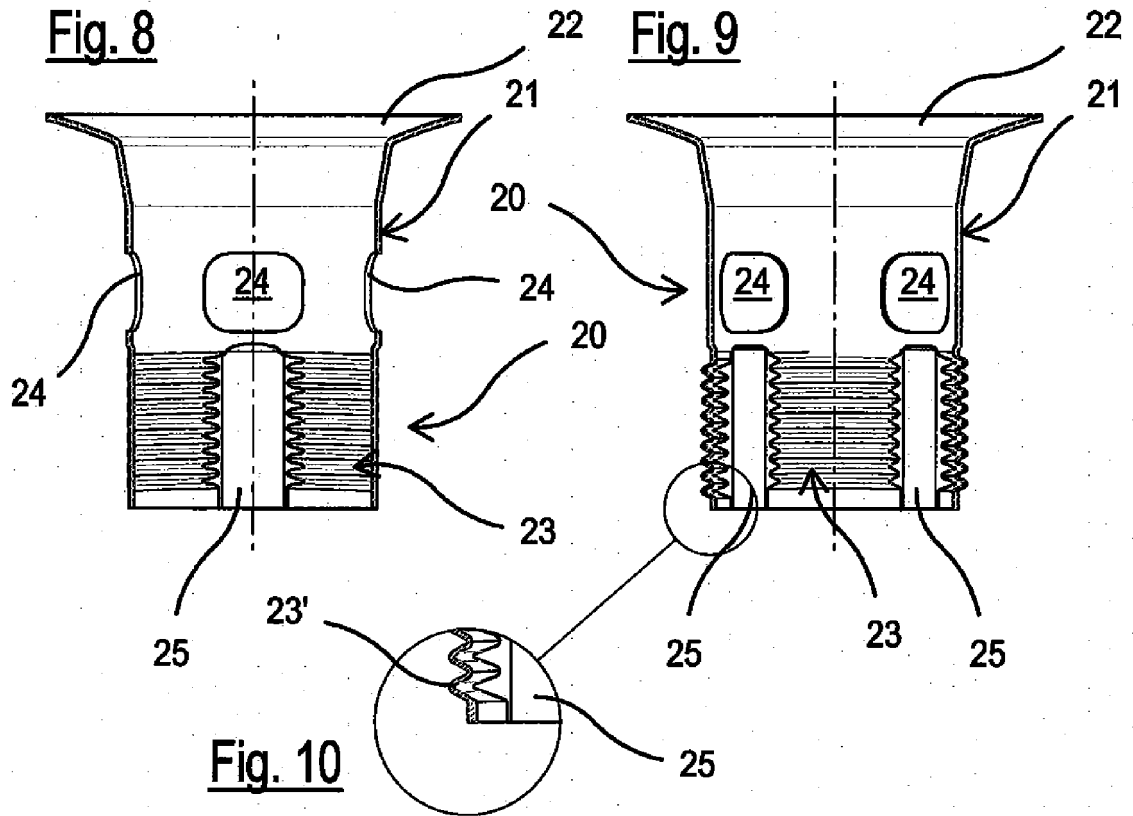
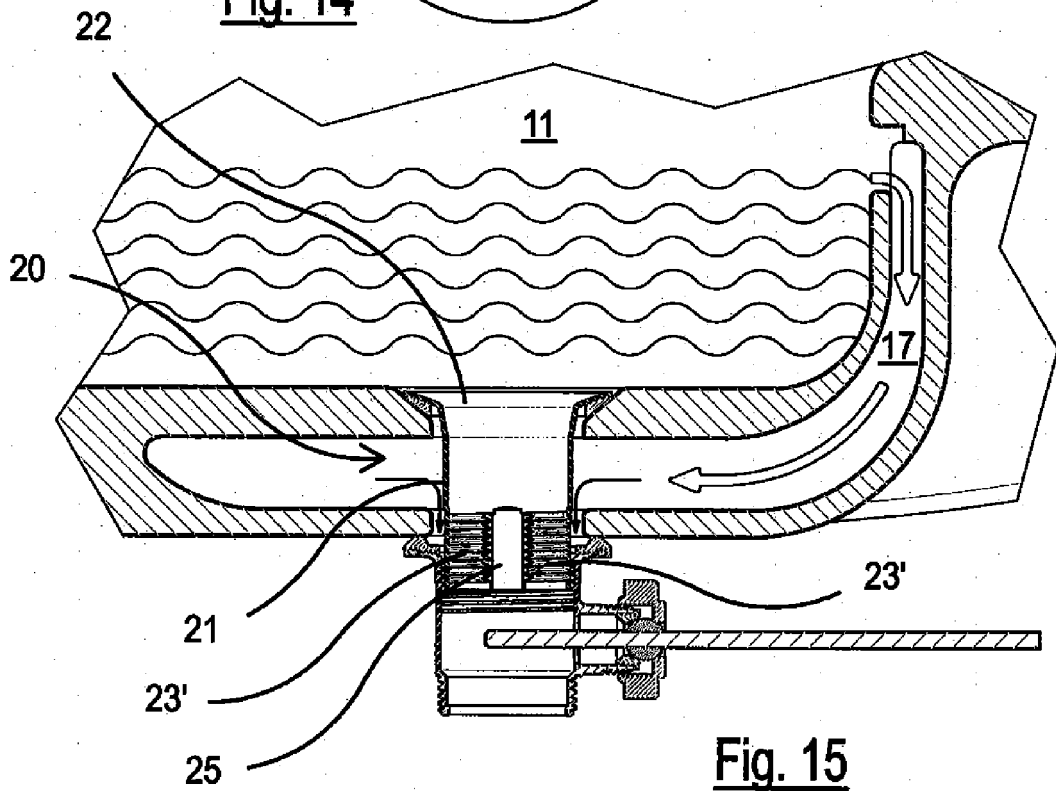
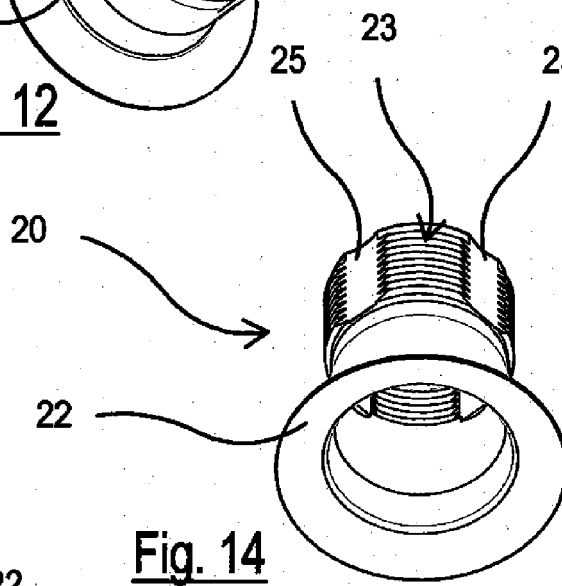
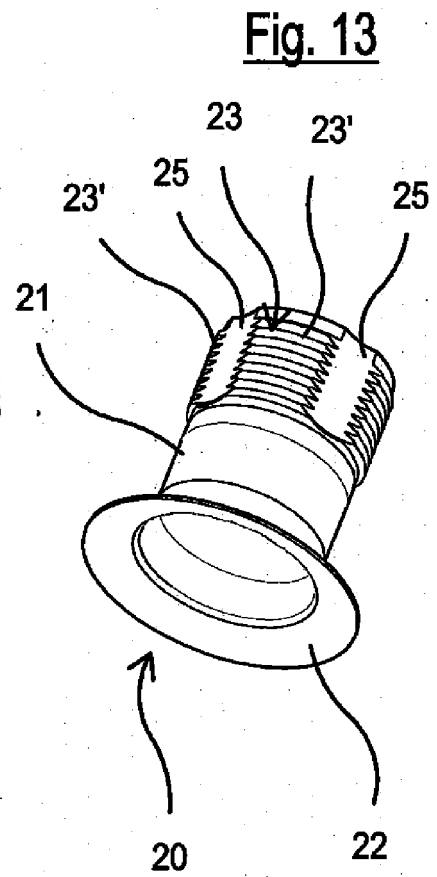
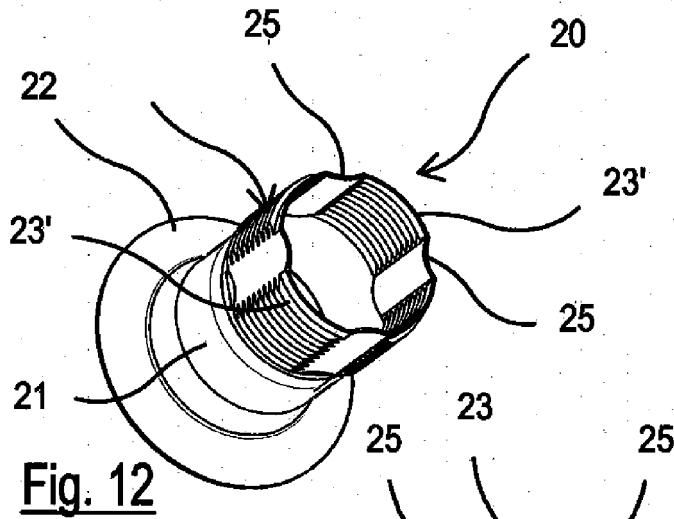


Fig. 7







EUROPEAN SEARCH REPORT

Application Number
EP 17 15 7360

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 4 807 306 A (HAYMAN DENNIS J [US] ET AL) 28 February 1989 (1989-02-28) * column 2, line 51 - line 65; figure 1 * -----	1,2	INV. E03C1/22 E03C1/232
A,D	WO 2004/027167 A1 (CAROMA IND LTD [AU]; WOOLDRIDGE COLIN WILLIAM [AU]) 1 April 2004 (2004-04-01) * page 3, line 7 - line 31; figures 1, 3, 6, 7, 8 * -----	1,2	
			TECHNICAL FIELDS SEARCHED (IPC)
			E03C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 June 2017	Examiner Fajarnés Jessen, 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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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21-06-2017

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