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[Continued on next page]

(54) Title: WASTE FITTING

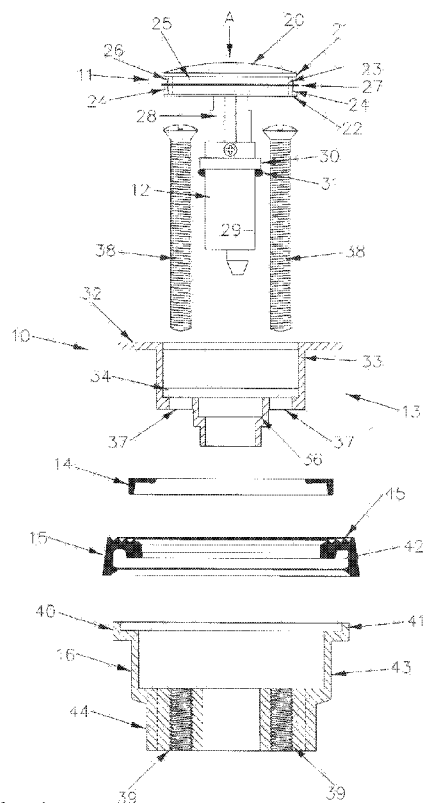


Fig.1

(57) Abstract: A waste fitting which includes a plug mounted upon a pop-up cartridge, a mounting plate, and a waste pipe connector; wherein the mounting plate provides a supporting bracket adapted to receive said pop-up cartridge and further provides mounting points for two or more supporting screws spaced around said bracket; each supporting screw being adapted to connect said mounting plate and said waste pipe connector.

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Title: Waste FittingTechnical Field

5 The present invention relates to a waste fitting for use in sanitary ware such as basins, sinks, baths and showers. A waste fitting is a component mounted in the base of the sanitary ware through which waste water passes into waste water outlet piping. The waste fitting of the present invention has been developed for a basin, and therefore will be described with particular reference to that application. However, it will be
10 appreciated that the waste fitting of the present invention also is suitable for use in sinks, baths, and showers.

Background Art

15 Any discussion of the prior art throughout this specification is not an admission that such prior art is widely known or forms part of the common general knowledge in the field.

Any waste fitting is required to provide easy access for waste water from the basin into
20 the waste water piping, and must also provide a means of blocking off access to the waste water piping for the occasions when the user wishes to fill the basin with water. Also, it is an advantage if the waste fitting is easy to keep clean.

The simplest and most widely used means for blocking access to the waste water
25 piping is a manually removable plug which covers the outlet hole in the waste fitting; a number of different designs of plugs have been developed. However, all plugs of this type suffer from the disadvantage that they are separate from the waste fitting and thus have to be tethered to the basin in some way or risk being lost or stolen.

30 To overcome this problem, "pop-up" plugs have been designed. Pop-up plugs are permanently or semi-permanently mounted in the waste fitting and can be manually pushed between a closed position in which the plug blocks off the outlet hole and an open position in which the lower surface of the plug lies above the outlet hole, so that water can flow through the outlet hole. Pop-up plugs are moved between the open
35 and closed positions by pressing down on the upper surface of the plug.

The most widely used design of pop-up plug has a pop-up cartridge and waste fitting mounted in an externally screw threaded pipe which is screwed into the basin outlet pipe. The pop-up cartridge is externally screw threaded near its lower end, and the cartridge screw thread engages an internally screw threaded collar formed in the interior of the pipe. This allows the pop-up cartridge to be removed for cleaning. However, basin outlet holes generally come in one of two sizes – 32mm and 40mm diameter. The design of this fitting is such that different sizes of fitting have to be produced for 32mm basin outlet and 40mm basin outlet; this means that the plumber has to carry additional stock.

10

A pop-up plug has been produced in which the internally screw threaded collar which receives the pop-up cartridge is elongated, to extend below the level of the spring cartridge and provides a socket for a securing screw which extends along the longitudinal axis of the waste fitting, below the waste fitting. This design is rather more versatile, but does have the drawback that the overall length of the fitting is increased, and this can be inconvenient, or completely unacceptable, if the combined geometries of the basin and outlet piping can accommodate only a short waste fitting.

15

Disclosure of Invention

20

An object of the present invention is the provision of a waste fitting which overcomes the above described disadvantages.

The present invention provides a waste fitting which includes a plug mounted upon a pop-up cartridge, a mounting plate, and a waste pipe connector; wherein the mounting plate provides a supporting bracket adapted to receive said pop-up cartridge and further provides mounting points for two or more supporting screws spaced around said bracket; each supporting screw being adapted to connect said mounting plate and said waste pipe connector.

30

Preferably, the pop-up cartridge is designed to be a push-in grip-fit in said supporting bracket.

Preferably also the pop-up cartridge is formed with an external shoulder adapted to receive a seal which forms a substantially watertight seal between the pop-up

35

cartridge and the supporting bracket when the pop-up cartridge is pushed into the supporting bracket.

5 Preferably also the supporting bracket is formed with a central socket having an inner diameter slightly smaller than the outer diameter of said external shoulder on the pop-up cartridge, such that said socket can support said cartridge.

10 Preferably the supporting bracket also is formed with two apertures spaced one on each side of said central socket; each said aperture being designed to receive a securing screw.

Preferably also the mounting plate also provides an annular flange the outer diameter of which is sized to conceal a waste water hole in use.

15 Preferably also said waste pipe connector provides screw threaded holes for engagement with said supporting screws.

Brief Description of Drawings

20 By way of example only, a preferred embodiment of the present invention is described in detail, with reference to the accompanying drawings, in which:-

Figure 1 is an exploded side view, partly sectioned, of a waste fitting in accordance with the present invention;

25 Figure 2 is a sectional side view of a waste fitting of the present invention with the plug in the "open" position;

Figure 3 is a sectional side view of a waste fitting of the present invention with the plug in the "closed" position;

Figure 4a is a plan view of part of the fitting of Figures 1 - 3;

Figure 4b is a sectional side view of the part shown in Figure 4a;

30 Figure 5a is a plan view of part of the fitting of Figures 1 - 3; and

Figure 5b is a sectional side view of the part shown in Figure 5a.

Best Mode of Carrying out the Invention

Referring to the drawings, a waste fitting 10 in accordance with the present invention includes a plug 11, a pop-up cartridge 12, a mounting plate 13, a first mounting seal 14, a second mounting seal 15, and a waste pipe connector 16.

5 The plug 11 is of known type and consists of a disc which is circular in plan and has a slightly domed upper surface 20 having an outer rim 21 and a flange 22 which also is circular in plan and which has a slightly smaller diameter than the rim 21. The flange 22 is attached to the underside of the surface 20 by a wall 23, which is smaller in diameter than either of the rim 21 or the rim 22, so that the combination of the rims 21
10 and 22 and wall 23 forms a groove 24 in which a plug seal 25 of known type is mounted.

The plug seal provides a first annulus 26 which has an internal diameter such that the plug seal is a snug fit in the groove 24 and a height equal to the height of the groove
15 24. The plug seal also provides a second annulus 27 which is formed around the midpoint of the first annulus 26 and has an outer diameter slightly greater than that of the rim 21.

The pop-up cartridge 12 is connected to a socket (not visible) formed centrally on the
20 underside of the plug 11 by means of a screw threaded connection. The interior of the pop-up cartridge 12 is a known design and will not be described in detail:- it provides a sprung loaded stem 28 mounted in a cylindrical body 29; the stem 28 can be moved relative to the body 29 between "down" and "up" positions by manually applying pressure in the direction of Arrow A as shown in Figure 1.

25 In use, the position of the pop-up cartridge 12 relative to the remainder of the waste fitting 10 is adjusted such that when the stem 28 is in the "down" position, the plug 11 seats firmly on the mounting plate 13, with the second annulus 27 compressed against the sides of the mounting plate 13, to form a watertight seal, and when the stem is in
30 the "up" position, the plug 11 is raised above the mounting plate 13 to leave a sufficient gap between the underside of the rim in 22 and the top of the mounting plate 13, for water to drain freely from the basin.

However, the exterior of the pop-up cartridge 12 differs in design from the standard
35 commercially available pop-up cartridge in that the lower end of the cartridge is not screw threaded but smooth sided, and the cartridge is formed with a shoulder 30

around the exterior of the body 29 of the cartridge, a short distance below the upper edge of the body. The shoulder 30 provides a seating for an o-ring 31.

5 The mounting plate 13 provides an annular flange 32, the outer diameter of which is larger than the waste water hole in the bottom of the basin, and the inner diameter of which is only slightly larger than the outer diameter of the rim 21 of the plug 20, so that the plug 20 can be pressed into the mounting plate 13 and the flexible annulus 27 can seal against the inner surface 33 of the mounting plate 13 to provide a watertight seal.

10 The inner surface 33 of the mounting plate 13 is a curved wall of the same diameter as the inner diameter of the flange 32. A bracket 34 is secured to the lower edges of the inner surface 33, extending across a diameter of the flange 32. The bracket 34 has an enlarged central portion 35 which provides a socket 36 coaxial with the longitudinal axis of the mounting plate 13; the inner diameter of the socket 36 is slightly smaller
15 than the outer diameter of the shoulder 30 formed around the exterior of the body 29 of the pop-up cartridge 12, so that the socket 36 can support the pop-up cartridge 12, as shown in Figures 2 and 3. The pop-up cartridge 12 is simply a push-in grip-fit in the socket 36; this has three advantages:

- the cartridge is cheaper to manufacture because it is not necessary to screw thread
20 the body;
- because the cartridge does not need to be screwed into position, there is no risk of damage to the stem of the cartridge from the tools used to screw the cartridge into place;
- the cartridge can be pulled out for cleaning or replacement, without needing special
25 tools.

When the cartridge is positioned in the socket 36 as shown in Figure 2 and 3, the O-ring 31 is compressed to form a substantially watertight seal between the cartridge and the supporting bracket.

30

The first mounting seal 14 is annular in plan and is a conventional L-cross-section seal with an inner diameter slightly greater than the outer diameter of the surface 33, and an outer diameter slightly less than the outer diameter of the flange 32, so that the seal 14 is not visible when the fitting is installed as described below.

35

The bracket 34 also provides apertures 37, equidistantly spaced one on each side of the socket 36. The apertures 37 formed to receive securing screws 38. The lower end of each of the screws 38 is received in a screw threaded sleeve 39 secured to the waste pipe connector 16.

5

The waste pipe connector 16 is annular in plan and provides a first, upper portion 40 formed with an upstanding rim 41 for engagement with a corresponding groove 42 formed in the underside of the second seal 15, so that the seal 15 can be securely and positively engaged with the waste pipe connector. The second, intermediate portion
10 43 of the waste pipe connector is of a reduced diameter and connects the portion 40 to the third, lower portion 44 which is externally screw threaded for engagement with a conventional waste outlet pipe. The sleeves 39 can be omitted and the screws 38 received in screw-threaded holes formed directly in portion 44.

15 In the above described design, the securing screws 38 are located very much higher, relative to the pop-up cartridge 12, than in the conventional pop-up plug design which uses a securing screw located along the longitudinal axis of the pop-up cylinder, and extends very much further below the end of the pop-up cylinder. This greatly reduces the overall length of the fitting, and means that the fitting can be accommodated easily
20 inside any standard pipe fitting.

When fitted to a basin, (indicated in Figures 2 and 3 by broken lines 50) the above described fitting is arranged with the underside of the annular flange 32 on top of the first seal 14, surrounding the outlet hole in the basin. The second seal 15 is engaged
25 with the upper portion of the waste pipe connector 16 as described above; the second seal 15 surrounds the outlet hole on the basin on the underside of the basin. The second seal 15 is formed with a ridged upper surface 45 to provide a watertight seal when these ridges are compressed. When the screws 38 are tightened to the position shown in Figures 2 and 3, the mounting plate 13 and the waste pipe connector 16 are
30 pulled towards each other, and the seals 14 and 15 are compressed onto the upper and lower surfaces of the basin respectively, so that the fitting provides a watertight seal around the outlet hole of the basin. The lower portion 44 of the waste pipe connector 16 is engaged with a waste outlet fitting in known manner.

The pop-up cylinder 12 is located in the socket 36 as described above, and the plug 11 is moved between the open position shown in Figure 2 and the closed position shown in Figure 3 simply by applying manual pressure in the direction of Arrow A.

- 5 In the above described design, two securing screws 38 used, but it will be appreciated that the bracket 34 could be modified to provide sockets for 3, 4, or even more, securing screws if required.

10 The above described fitting may be made in any of a range of suitable materials, for example metal or plastic materials.

Claims

1. A waste fitting which includes a plug mounted upon a pop-up cartridge, a mounting plate, and a waste pipe connector; wherein the mounting plate provides a supporting
5 bracket adapted to receive said pop-up cartridge and further provides mounting points for two or more supporting screws spaced around said bracket; each supporting screw being adapted to connect said mounting plate and said waste pipe connector.
2. The waste fitting as claimed in claim 1 wherein the pop-up cartridge is a push-in
10 grip-fit in said supporting bracket.
3. The waste fitting as claimed in claim 2, wherein the pop-up cartridge is formed with an external shoulder adapted to receive a seal which forms a substantially watertight seal between the pop-up cartridge and the supporting bracket when the pop-up
15 cartridge is pushed into the supporting bracket.
4. The waste fitting as claimed in claim 3, wherein the supporting bracket is formed with a central socket having an inner diameter slightly smaller than the outer diameter of said external shoulder on the pop-up cartridge, such that said socket can support
20 said cartridge.
5. The waste fitting as claimed in claim 4, wherein the supporting bracket also is formed with two apertures spaced one on each side of said central socket; each said aperture being designed to receive a securing screw.
25
6. The waste fitting as claimed in any one of the preceding claims wherein the mounting plate also provides an annular flange the outer diameter of which is sized to conceal a waste water hole in use.
- 30 7. The waste fitting as claimed in any one of the preceding claims wherein said waste pipe connector provides screw threaded holes for engagement with said supporting screws.

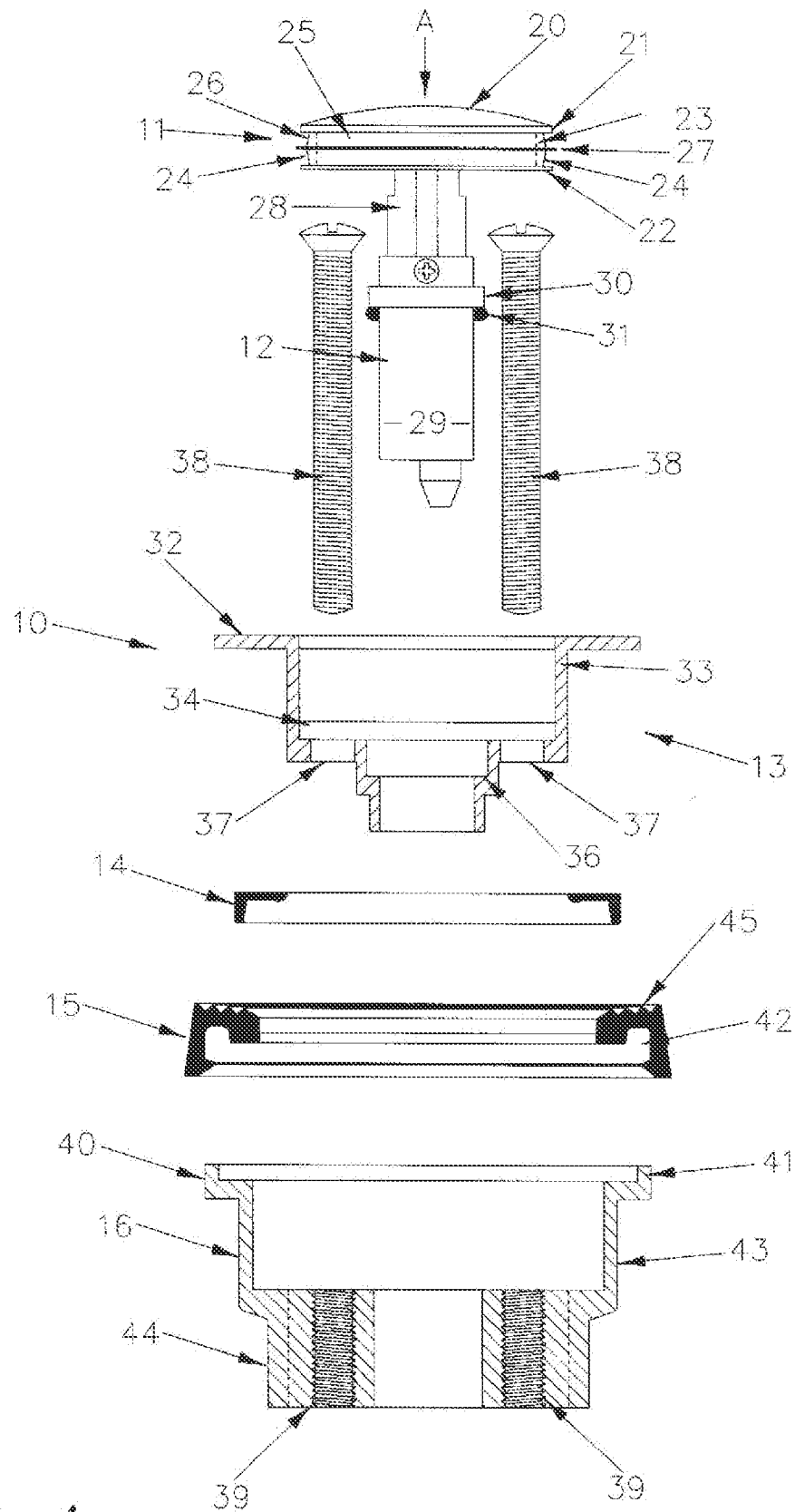
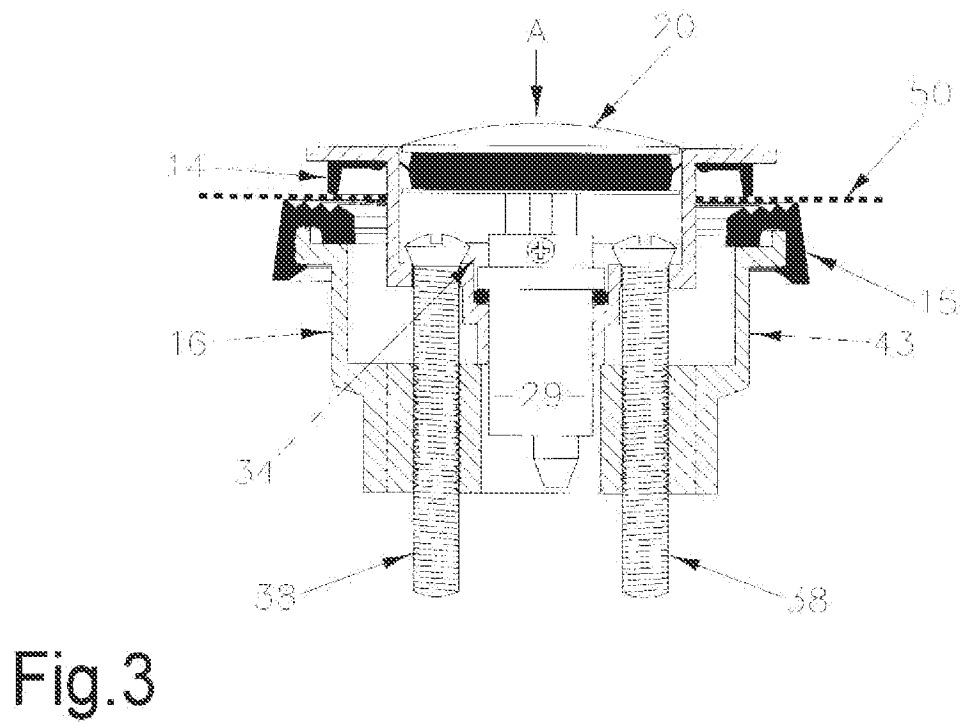
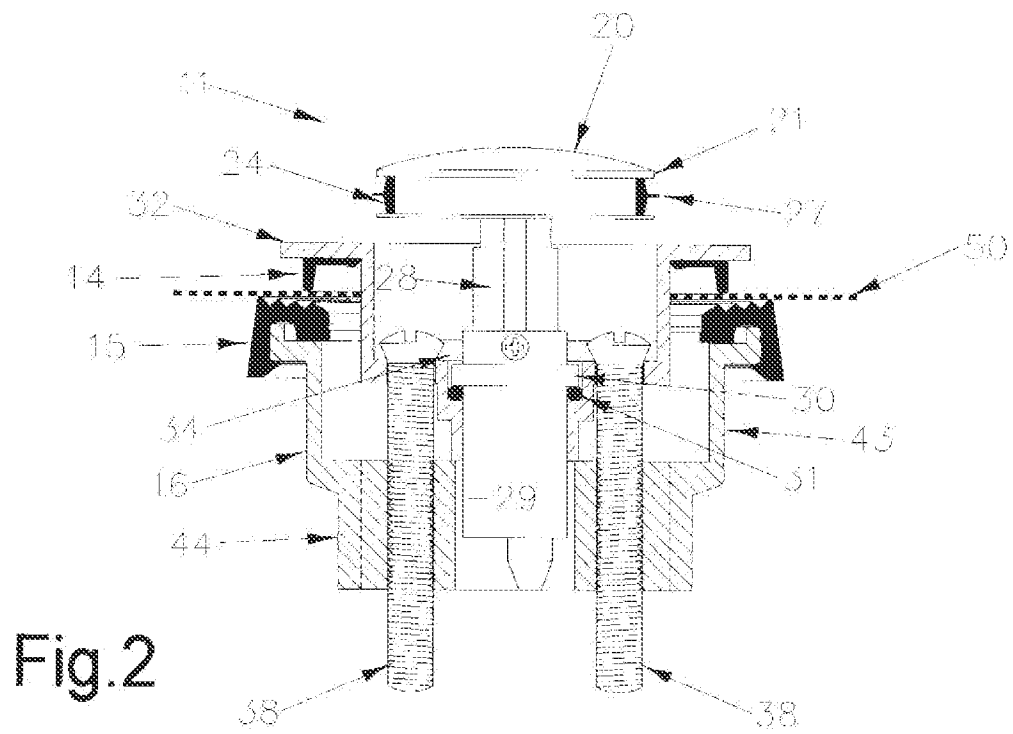
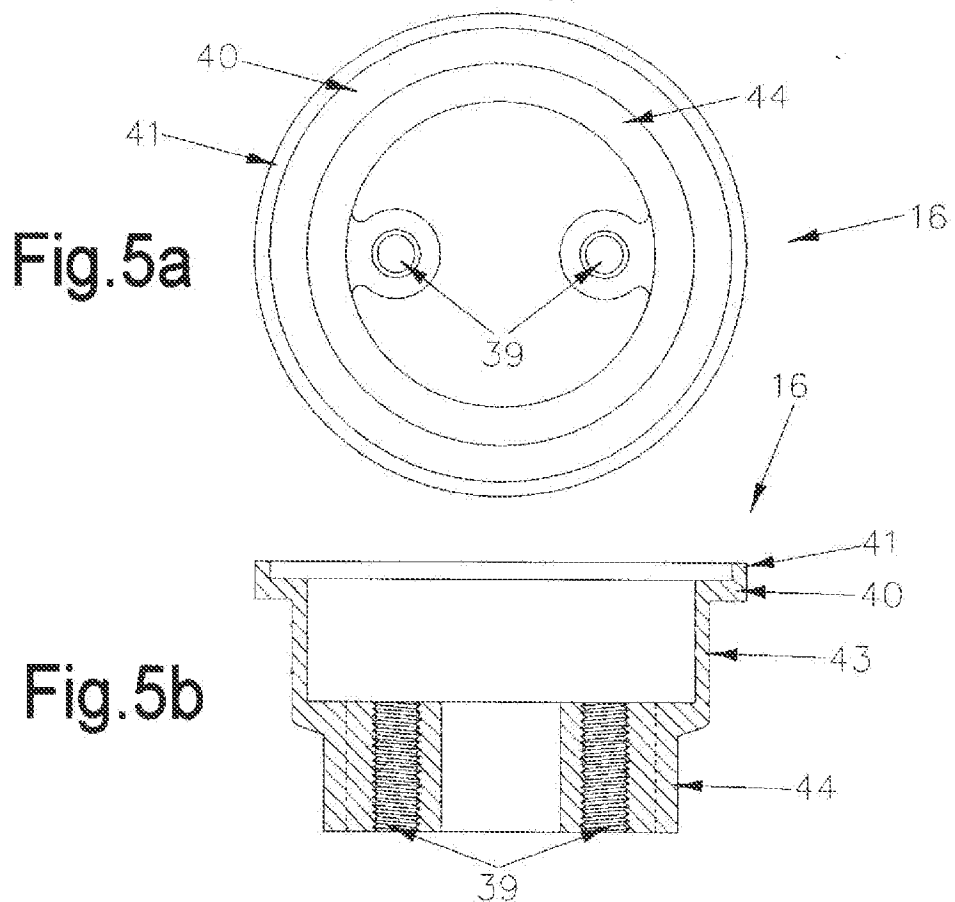
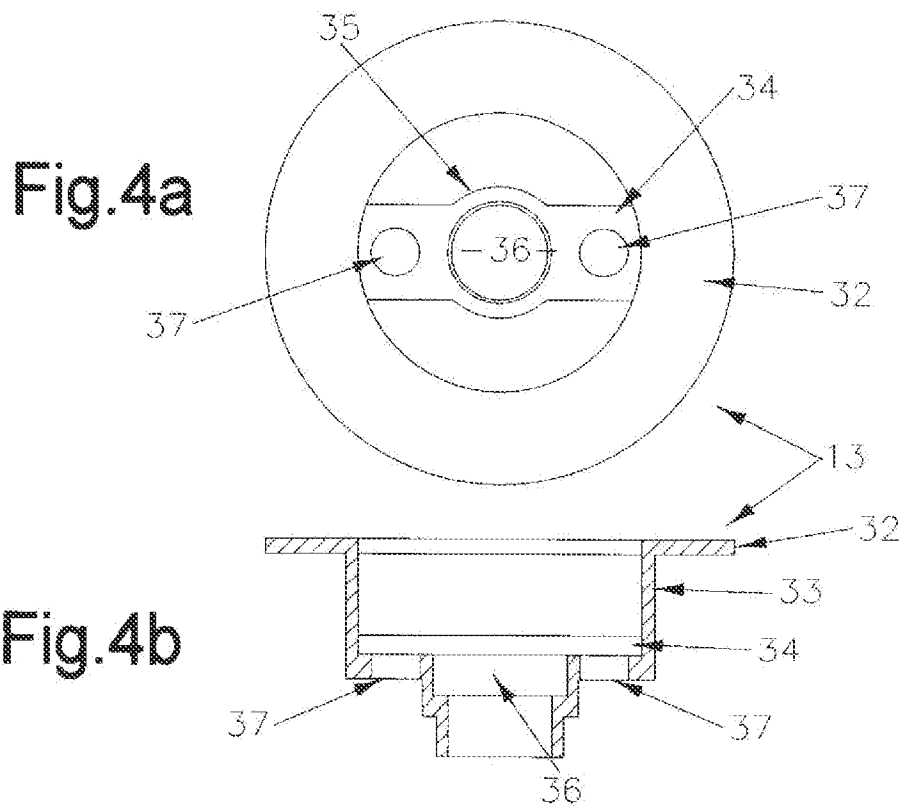


Fig.1





INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2011/051211

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.: *A47K 1/14* (2006.01), *E03C 1/22* (2006.01), *E03C 1/23* (2006.01).

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, IPC, ECLA: A47K1, E03C1 and keywords (plug, stop, pop, screw, bolt, friction, grip, fit, interference, tight)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 20101787 U1 (FRANZ VIEGENER 11 GMBH & CO.KG) 18 July 2002. Please see pages 4 and 5 and figures 4 and 5.	
A	GB 627911 A (BADEN) 18 August 1949. Please see page 2 lines 31 to 82 and figure 1.	
A	US 3428295 A (DOWNEY et al) 18 February 1969. Please see columns 2 and 3 and figures 1 and 2.	
A	US 4860390 A (OHTA) 29 August 1989. Please see columns 2 to 4 and figure 1.	



Further documents are listed in the continuation of Box C



See patent family annex

* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified);	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 01 June 2011	Date of mailing of the international search report 10 JUN 2011
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer R. WEBER AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : +61 2 6283 2546

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2011/051211

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5819328 A (LEWIS) 13 October 1998. Please see columns 5 and 6 and figures 1 and 2.	
A	US 6195819 B1 (WANG) 6 March 2001. Please see columns 3 and 4 and figure 6.	
A	US 2008178382 A1 (PINETTE et al) 31 July 2008. Please see pages 4 and 5 and figures 13 to 16.	
A	WO 2006/027811 A1 (BONOMINI) 16 March 2006. Please see pages 4 to 6 and figures 4 and 5.	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/IB2011/051211

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
DE	20101787U	EP	1229174		
GB	627911	NONE			
US	3428295	NONE			
US	4860390	EP	0288731	JP	63176166U
US	5819328	AU	77930/91	EP	0531316 WO 9116847
US	6195819	NONE			
US	2008178382	NONE			
WO	2006027811	EP	1792020	IT	BS20040094
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					