



(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.08.2005 Bulletin 2005/31

(51) Int Cl.7: E03C 1/086

(21) Application number: 04425053.8

(22) Date of filing: 29.01.2004

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(72) Inventor: **Luglio, Salvatore**
28021 Fontaneto d'Agogna Novara (IT)

(74) Representative: **Siniscalco, Fabio**
JACOBACCI & PARTNERS S.p.A.
Via Senato, 8
20121 Milano (IT)

(71) Applicant: **RubINETterie Cristina S.p.A.**
28066 Galliate (Novara) (IT)

(54) Tap pipe terminal and tap pipe

(57) A terminal (50) for tap pipe (4), that can be associated to a dispensing nozzle (40) of a tap pipe (4) suitable to dispense a fluid flow. The terminal (50) comprises a cavity (53) counter-shaped in relation to the dispensing nozzle (40) in order to be fitted onto said nozzle (40), according to a forced coupling. The terminal (50) can rotate and slide in relation to the nozzle in order to be mounted on the dispensing nozzle (50) according to a desired configuration.

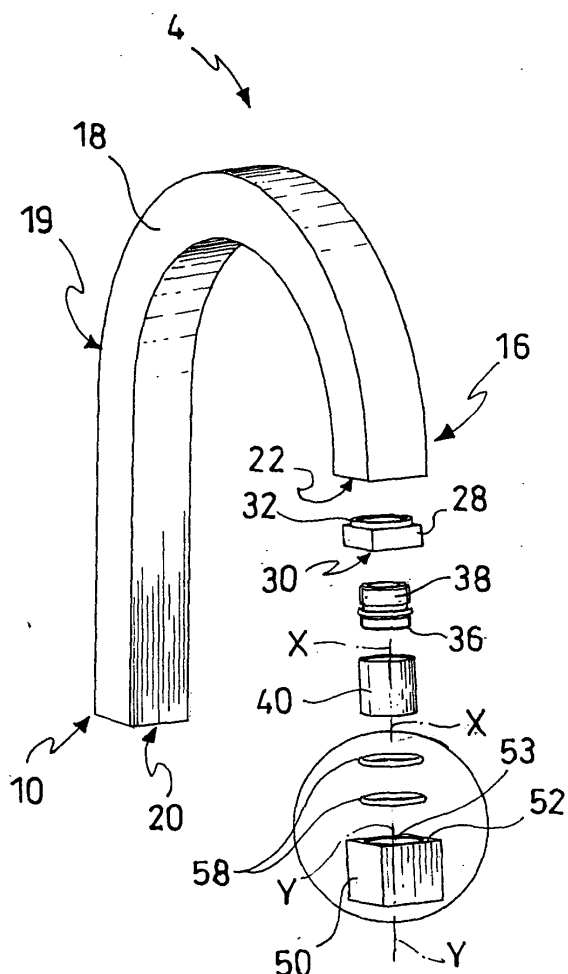


FIG. 2

Description

[0001] The present invention relates to a tap pipe terminal.

[0002] The present invention further relates to a tap pipe.

[0003] Tap pipes are known to comprise an attachment end suitable to receive a flow of fluid and a dispensing end, suitable to dispense said flow. The tap pipes may have various shapes for aesthetical or design purposes and they terminate at their dispensing ends with a dispensing nozzle, usually screwed to the pipe, that projects from the dispensing end, protruding from the pipe itself.

[0004] Since said dispensing nozzle is made in a standard manner with a cylindrical shape, whilst the pipe may have any shape, there is often no continuity of shape between the tap pipe and the dispensing nozzle protruding therefrom.

[0005] In order to overcome these drawbacks, embodiments are known wherein the dispensing nozzle is built inside the dispensing end, so that it can be dismantled by means of a suitable pin wrench.

[0006] This solution cannot however be adapted to small-sized tap pipes. Furthermore, this solution requires the use of non-standard dispensing nozzles and thus entails an increase in the costs of production of the tap pipe. Furthermore, the operation of dismantling the nozzle, which is indispensable for cleaning the nozzle itself, is slow and laborious and requires the use of specific equipment.

[0007] Such drawbacks and limitations are overcome by a tap pipe terminal in accordance with claim 1.

[0008] Further embodiments of the terminal according to invention are described in the subsequent claims.

[0009] Further characteristics and the advantages of the present invention will be further understood in view of the description provided below of the preferred and nonlimiting embodiments thereof, wherein:

[0010] figure 1 is a perspective view of a tap pipe complex, comprising a terminal according to the present invention;

[0011] figure 2 is a perspective view of the separate parts of the tap pipe complex in figure 1;

[0012] figure 3 is a perspective view of the tap pipe and the terminal in figure 1, separate from one another;

[0013] figure 4 is a perspective view of the terminal in figure 1;

[0014] figure 5 is a plan view from above of the tap pipe terminal of figure 1;

[0015] figure 6 is a sectional view of the tap pipe terminal of figure 1, according to plane VI-VI of figure 3;

[0016] figures 7A-7C are respectively a perspective view, plan view and sectional view of a tap pipe terminal according to a further embodiment of the invention;

[0017] figures 8A-8C are respectively a perspective view, plan view and sectional view of a tap pipe terminal according to a further embodiment of the invention;

[0018] figure 9A-9C are respectively a perspective view, plan view and sectional view of a tap pipe terminal according to a further embodiment of the invention;

[0019] figures 10A-10C are respectively a perspective view, plan view and sectional view of a tap pipe terminal according to a further embodiment of the invention;

[0020] figures 11A-11C are respectively a perspective view, plan view and sectional view of a tap pipe terminal according to a further embodiment of the invention.

[0021] The elements or parts of elements common to the embodiments described below will be indicated with the same numerical references.

[0022] With reference to the abovementioned figures, 4 generally indicates a tap pipe extending from an attachment end 10, suitable to receive an inlet flow of fluid to be dispensed at a dispensing end 16, which is suitable to dispense said flow of fluid.

[0023] According to a possible embodiment, the pipe 4 has overall a curved shape and it is hollow for the fluid to pass therethrough. Typically the tap pipe 4 is an elongated body with a prevalent extension S, such as a curved extension.

[0024] The tap pipe 4 comprises a pipe wall 18 that may have any shape and thickness, in relation to sectional plane.

[0025] By sectional plane is meant a plane substantially perpendicular to said prevalent extension S. The section, along the prevalent extension S can vary in shape and size and can be rotated differently in relation to an axis of rotation tangent to the extension S itself. In other words, along the prevalent extension S and in relation thereto, the thickness of the pipe wall 18 may vary and the wall itself may be twisted.

[0026] The pipe wall 18 is defined by an outer pipe surface 19, which can be viewed from outside the pipe, and an inner pipe surface 20, opposite the outer surface of the pipe 19, and lapped by the flow of fluid. On any sectional plane, the outer pipe surface 19 defines the outer profile of the section of tap pipe whereas the inner pipe surface 20 defines the inner profile of the section of the tap pipe. The outer surface of the pipe 19 may be of any shape, such as a cylindrical shape with a polygonal section.

[0027] In the vicinity of the dispensing end 16, the tap pipe 4 terminates with an aperture 22, e.g. circular, suitable to receive an adapter 28. The adapter 28 comprises a through hole 30, in order to enable the passage of the fluid through the adapter itself and a hooking portion 32 suitable to make a connection with said aperture 22. Said connection is fluid tight, and is achieved for example by welding or gluing.

[0028] A reducer 36 can be associated to the adapter 28, said reducer 36 having a fixing portion 38 suitable to make with the through hole 30, a coupling, preferably fluid tight, such as by welding or gluing.

[0029] At one free end of the reducer 36, opposite the fixing portion 38, a dispensing nozzle 40 is associated,

which is substantially cylindrical in relation to axis X. Said dispensing nozzle 40, in one assembly configuration on the dispensing end 16, projects from the dispensing end 16.

[0030] The dispensing nozzle 40 is substantially hollow, in order to enable the passage of the flow of fluid and preferably, at one end opposite to said dispensing end 16, comprises fluid division or filtration means, commonly denominated aerators, such as a metallic net of the known type.

[0031] In an assembly configuration of the dispensing nozzle 40 on the dispensing end 16 of the tap pipe 4, the dispensing nozzle 40 projects or rather protrudes from the dispensing end 16 by a stretch 42 with length L.

[0032] Advantageously, a terminal 50 for tap pipe 4, can be associated to the dispensing end 16 of the pipe 4 and, in particular, to the stretch 42 of the dispensing nozzle 40.

[0033] The terminal 50 comprises a terminal wall 52, having any predefined shape and section in relation to a section plane substantially perpendicular to said axis X. The terminal 50 has a cavity 53 passing through the terminal itself such as to enable the passage of the fluid. The terminal wall 52 is defined by an outer terminal surface 54, which can be viewed from outside, and an inner terminal surface 56 that is opposite said outer terminal surface 54 and that faces directly to the cavity 53.

[0034] In relation to any section plane substantially perpendicular to said axis X, the outer terminal surface 54 defines the outer profile of the outer terminal section whereas the inner terminal section 56 defines the inner profile of the inner terminal section.

[0035] Advantageously, the cavity 53 is substantially counter-shaped in relation to at least one portion of the dispensing nozzle 40, in particular in relation to the stretch 42 of the nozzle itself protruding from the dispensing end 16 of the tap pipe 4.

[0036] According to one embodiment, the dispensing nozzle is cylindrical around said symmetry axis X and the cavity 53 is cylindrical, having a diameter not inferior to the diameter of the nozzle, so that the cavity 53 may house at least partially the nozzle inside thereof.

[0037] Preferably, the dispensing nozzle 40 and the cavity 53 are cylindrical, with a circular section. The cavity 53 is axial symmetrical in relation to an axis Y so that, in an assembly configuration, the terminal 50 and the dispensing nozzle 40 are coaxial in relation to the axes X and Y that substantially coincide with one another.

[0038] Advantageously, the cavity 53 of the terminal 50 is counter-shaped in relation to the dispensing nozzle 40 such as to make a substantially forced coupling with the nozzle.

[0039] Such forced coupling enables a relative rotation and a sliding of the terminal 50 in relation to the dispensing nozzle 40, such as to arrange the terminal in relation the dispensing nozzle 40 according to a desired configuration. Advantageously, the rotation and sliding of the terminal in relation to the dispensing nozzle

are operatively independent of one another. In other words it is possible to make the movements of sliding and rotation singularly and independently of one another.

[0040] By arranged is meant both to rotate the terminal 50 in relation to the dispensing nozzle 40 around the axes X and Y, and slide the terminal 50 along the dispensing nozzle 40, i.e. parallel to axes X and Y.

[0041] Advantageously, the forced coupling enables the terminal to remain in position after assembly on the dispensing nozzle according to the desired configuration.

[0042] Furthermore, the forced coupling is such to enable the manual assembly of the terminal on the nozzle.

[0043] The terminal 50 is preferably a cylindrical body with any section in relation to a plane perpendicular to said axis Y. The terminal 50 comprises, in the vicinity of axial ends opposite with respect to the axis Y, a first base 57' and a second base 57".

[0044] According to one embodiment, the bases 57' and 57" are substantially flat and parallel to one another, and the distance between them, considered in relation to a direction parallel to the axis Y, defines an axial thickness of the terminal 50. Said thickness coincides with the height of the cylindrical cavity 53. At least one of the bases 57' and 57" is suitable to abut a portion of the dispensing end 16 of the tap pipe 4. Preferably, the thickness of the terminal 50 is not less than the stretch 42 of the dispensing nozzle 40, so that, in one assembly configuration of the terminal on the nozzle 40, the stretch 42 is substantially covered by the terminal 50, and thus not in sight.

[0045] Preferably at at least one of said bases 57' and 57" the terminal comprises a circumferential bevel 57''' suitable to favour the insertion of the terminal 50 on the dispensing nozzle 40.

[0046] According to an advantageous embodiment, the terminal 50 comprises forced coupling means 58, housed inside the cavity 53 such as to cooperate with the cavity 53 and with the dispensing nozzle 40.

[0047] The forced coupling means 58 are suitable to assure a locking in position of the terminal 50 on the nozzle 40, i.e. they ensure that, following the assembly of the terminal 50 on the nozzle 40 according to a desired configuration, the terminal 50 remains locked in position on the nozzle 40.

[0048] The forced coupling means 58 work substantially by exerting a friction action on the outer surface of the stretch 42 of the dispensing nozzle 40.

[0049] According to one embodiment, the forced coupling means 58 comprise at least one ring 64, preferably in elastomeric material, suitable to enable a relative sliding and a rotation between the terminal 50 and the dispensing nozzle 40 in an assembly phase and to ensure that the terminal 50 is subsequently locked in position on the nozzle 40.

[0050] Preferably the terminal 50, at the inner terminal surface 56 facing said cavity 53 comprises at least one

circular seat 70, coaxial in relation to the Y axis, suitable to house the elastic ring 64.

[0051] According to a preferred embodiment, the terminal comprises two circular seats 70 for housing as many rings 64, said seats 70 being coaxial to one another, so that, in an assembly configuration of the terminal 50 on the nozzle 40, the seats are coaxial in relation to the axis X and the axis Y.

[0052] Each circular seat has a radial depth R and an axial depth A. By radial depth R is meant the depth or extension of the seat in relation to a plane perpendicular to the axis X, whereas by axial depth A is meant the depth or extension of the seat 70 in relation to a direction parallel to axis X.

[0053] Preferably the axial depth is such to ensure the introduction of the ring substantially without backlash, i.e. fitted, in relation to the axial direction defined by the axis X or Y. Preferably the radial depth is such that following the introduction of the ring in the respective seat, at least one portion of the ring projects radially from the inner terminal surface 56, such as to ensure a contact between the ring and the outer nozzle wall in an assembly configuration of the terminal on the nozzle.

[0054] According to one possible embodiment, the forced coupling means 58 comprise a substantially cylindrical sheath suitable to adhere to the inner terminal surface 56. For example the adhesion between the sheath and the terminal can be made by gluing. According to a further embodiment, the terminal provides a ring-shaped seat suitable to house said sheath, so that, following the introduction of the sheath in the relative seat, at least one portion of the sheath protrudes radially towards the cavity.

[0055] According to a further embodiment, the terminal 50, comprises at least one of the bases 57', 57'', flow diffusion means, such as a net.

[0056] The coupling between the terminal and the dispensing nozzle is substantially forced; in other words there is a friction action between the terminal and the nozzle such as to enable the introduction of the terminal on the nozzle and to ensure its locking in position. Preferably this action of friction is exerted between the nozzle and the forced coupling means 58, suitable to deform elastically following the assembly of the terminal. Preferably the cavity, counter-shaped in relation to the nozzle, is such to enable the introduction of the terminal on the nozzle with slight backlash, so that the action of contact and friction is exerted by the forced coupling means. Thus the forced coupling between the terminal and the nozzle is made by the forced coupling means that, being deformable, facilitate the operations of assembly and dismantling of the terminal.

[0057] The assembly of the terminal according to the invention will now be described.

[0058] Supposing to have a tap pipe already assembled, having in particular a dispensing nozzle that projects from the dispensing end 16 for a stretch of length L, the terminal 50 is moved closer to the stretch

42 in order to make substantially coincide the axis Y of the cavity 53 with the axis X of the dispensing nozzle 40.

[0059] Then one fits the terminal 50 on to the dispensing nozzle 40, thus substantially covering the stretch 42 of the dispensing nozzle 40 with the terminal 50.

[0060] When one fits the terminal 50 onto the nozzle 40 one takes the inner surface of the terminal 56 at least partially in contact with the outer wall of the nozzle, such as to make a friction action between the terminal 50 and the nozzle 40. Preferably, the terminal is provided with the forced coupling means 58, so that in one assembly configuration, the at least one elastic ring 64 is brought into contact with the nozzle 40.

[0061] One establishes the arrangement of the terminal on the nozzle 40, i.e. the rotation and the sliding of terminal 50 in relation to the dispensing nozzle 40.

[0062] In particular one can rotate the terminal itself around the symmetry axis of the cavity as desired in order to confer to the tap pipe a desired configuration. For example, if the pipe and the terminal have a cylindrical shape with a square section, it is possible to rotate the terminal in order to make coincide the corresponding faces of the terminal and the pipe, without interruption, i.e. by conferring to the tap pipe complex a cylindrical shape with a square section.

[0063] Furthermore, it is possible to slide the terminal 50, i.e. insert as desired the terminal 50 on the stretch 42 of length L, for example by taking a base 57', 57'' of the terminal 50 to abut said dispensing end 16.

[0064] The forced coupling between the terminal and the nozzle ensures the locking in position of the terminal after the assembly thereof on the dispensing nozzle.

[0065] As may be appreciated from what has been described, the drawbacks presented by the tap pipes of the prior art can be overcome by the terminal described.

[0066] In particular, by the terminal according to the invention the aesthetical appearance of the dispensing end of a tap pipe can be modified as desired.

[0067] Furthermore, the terminal described is convenient to assemble and to arrange on the tap pipe; furthermore the terminal is interchangeable.

[0068] The terminal described can be applied to pre-existent tap pipes, having any shape or section.

[0069] A further advantage is that the terminal described is convenient and fast to dismantle. In fact it must be removable in order to allow operations of routine maintenance on the dispensing end of the tap pipes, such as the cleaning of the dispensing nozzle. This maintenance operation is particularly easy and does not require any type of instrument or tool.

[0070] A further advantage is that the assembly of the terminal on the nozzle is stable and safe as the terminal itself is not subject to the pressure of the fluid dispensed that would otherwise tend to slide the terminal off the nozzle.

[0071] Obviously, a man skilled in the art, in order to satisfy contingent and specific requirements, will be able to make further modifications and variants to the termi-

nals described above, all of which being contemplated within the scope of protection of this invention such as defined by the following claims.

Claims

1. Terminal (50) for tap pipe (4), which can be associated to a dispensing end (16) of the tap pipe (4), said dispensing end (16) comprising a dispensing nozzle (40), **characterised by** the fact of comprising forced coupling means (58) for the connection of the terminal (50) to the dispensing nozzle (40), wherein said forced coupling means (58) enable, in a step of assembling the terminal (50) onto the nozzle (40), a rotation and a sliding of the terminal (50) in relation to the dispensing nozzle (40) according to a desired configuration.
2. Terminal (50) for tap pipe (4) according to claim 1, wherein said rotation and said sliding of the terminal (50) in relation to the dispensing nozzle (40) are operatively independent of one another.
3. Terminal (50) for tap pipe (4) according to claim 1 or 2, wherein said terminal comprises a cavity (53) counter-shaped in relation to at least a portion of said dispensing nozzle (40) for making a substantially forced coupling between the terminal (50) and the dispensing nozzle (40).
4. Terminal (50) for tap pipe (4) according to any of claims 1 to 3, wherein, in an assembly configuration, said terminal (50) is coaxial with said nozzle (40).
5. Terminal (50) for tap pipe (4) according to any of the previous claims, wherein said forced coupling means (58) are interposed between said terminal (50) and said nozzle (40), in order to ensure a locking in position of the terminal (50) on the nozzle (40), according to a desired configuration.
6. Terminal (50) for tap pipe (4) according to any of the previous claims, wherein said forced coupling means (58) comprise at least one elastic ring (64).
7. Terminal (50) for tap pipe (4) according to claim 6, comprising at least one circular seat (70) suitable to house said at least one elastic ring (64).
8. Terminal (50) for tap pipe (4) according to claim 7, wherein said circular seat (70) is coaxial with said cavity (53).
9. Terminal (50) for tap pipe (4) according to claim 7 or 8, comprising two circular seats (70) suitable to house said at least one elastic ring (64).
10. Terminal (50) for tap pipe (4) according to claim 9, wherein said circular seats (70) are coaxial to one another.
11. Terminal (50) for tap pipe (4) according to any of the previous claims, comprising at least one base (57', 57'') suitable to abut said dispensing end (16).
12. Terminal (50) for tap pipe (4) according to claim 11, wherein said base (57', 57'') comprises a circumferential bevel (57''') suitable for the terminal (50) to be fitted on said dispensing nozzle (40).
13. Pipe for tap (4) comprising a terminal (50) according to any of the previous claims.

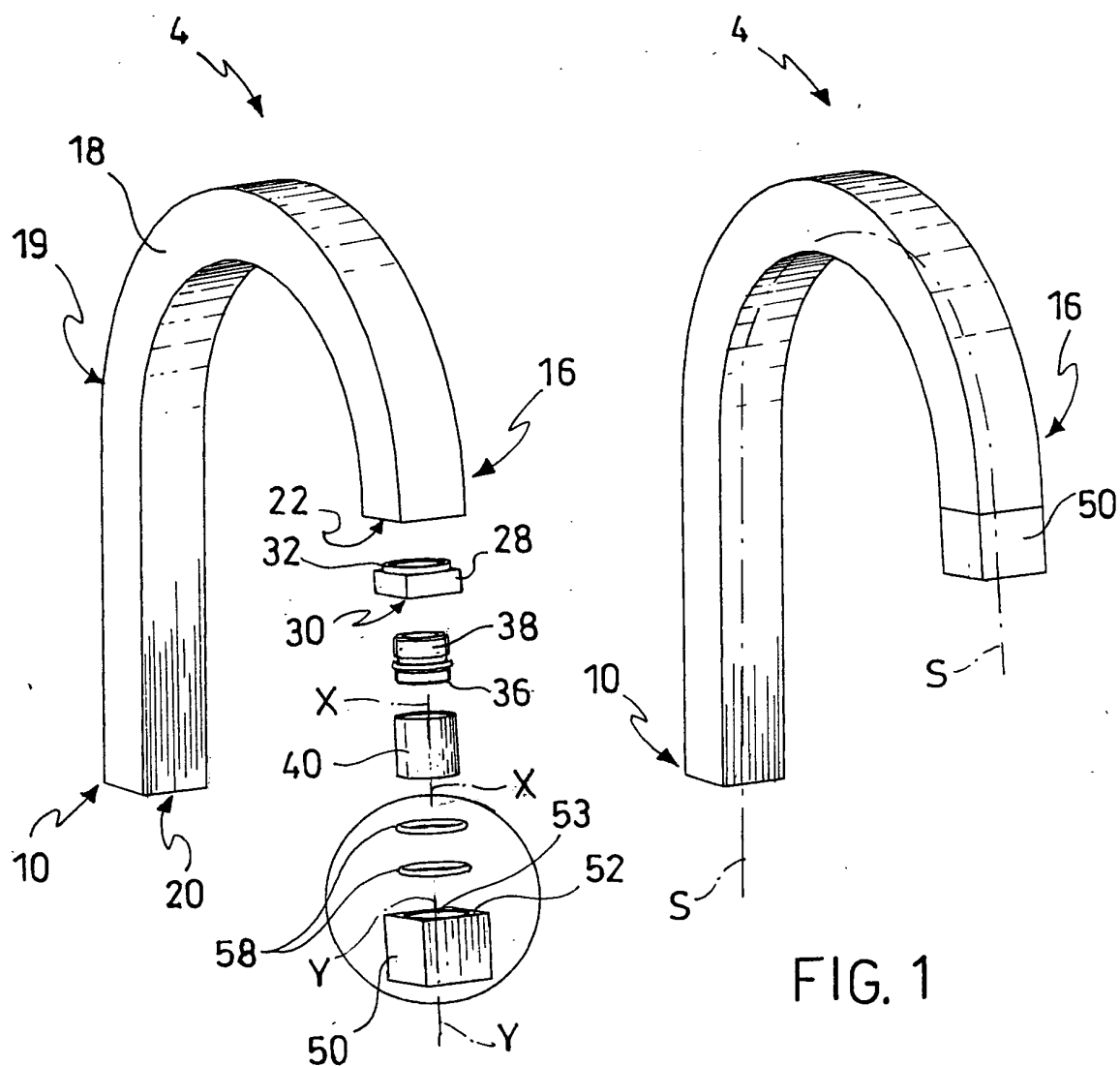


FIG. 2

FIG. 1

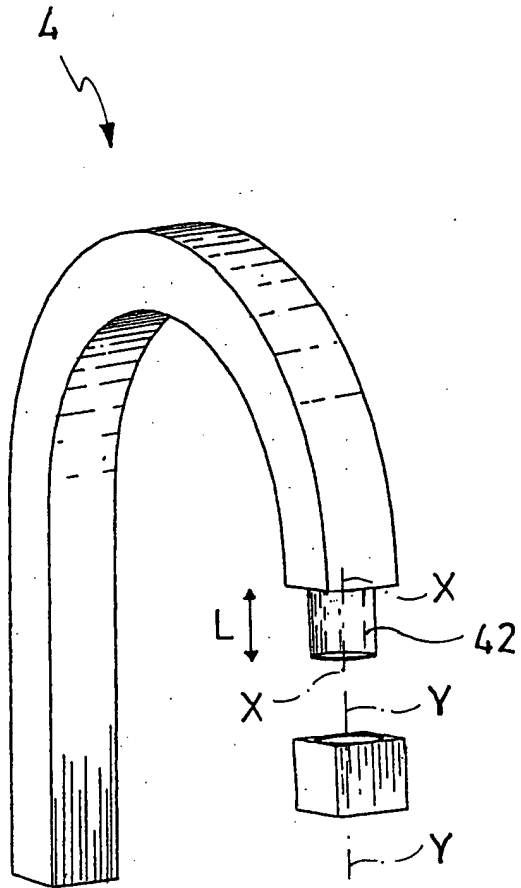


FIG. 3

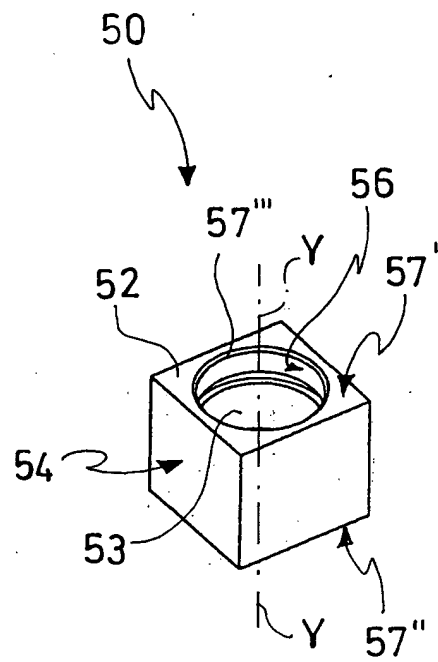


FIG. 4

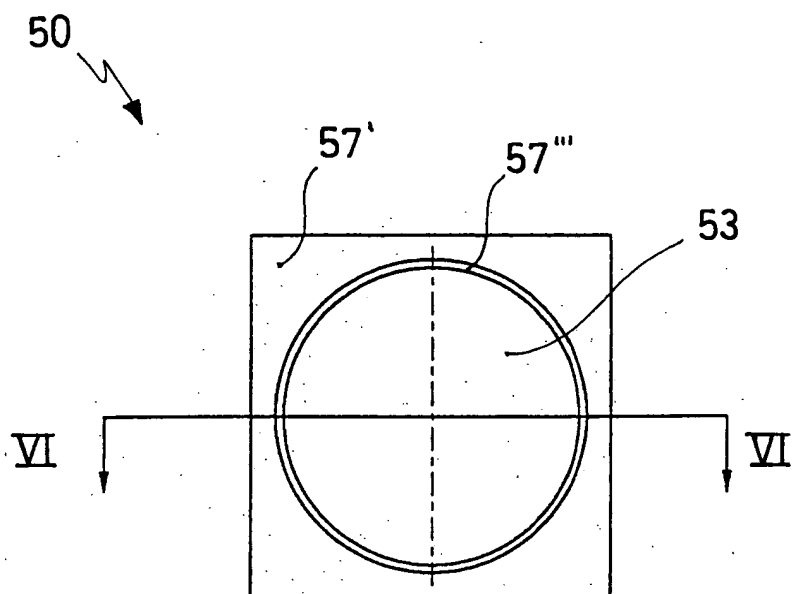


FIG. 5

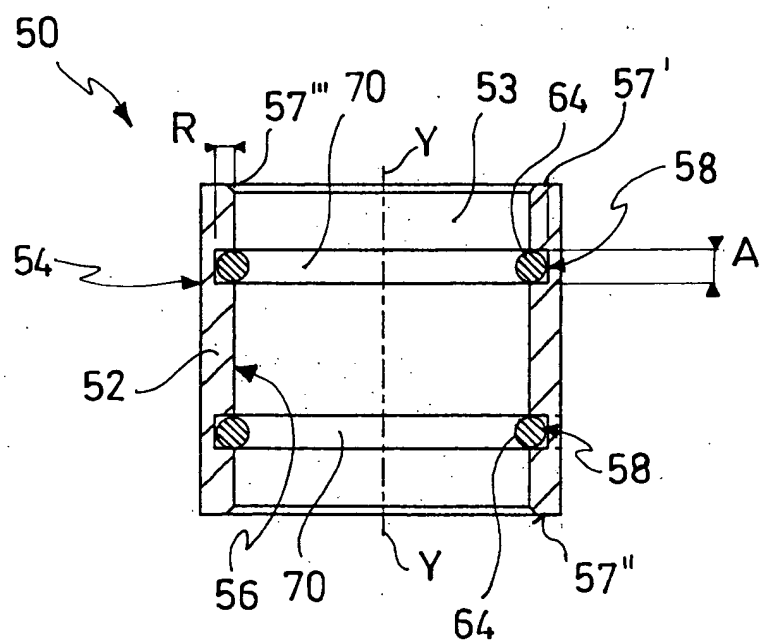


FIG. 6

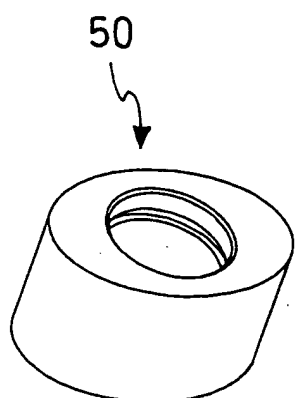


FIG. 7a

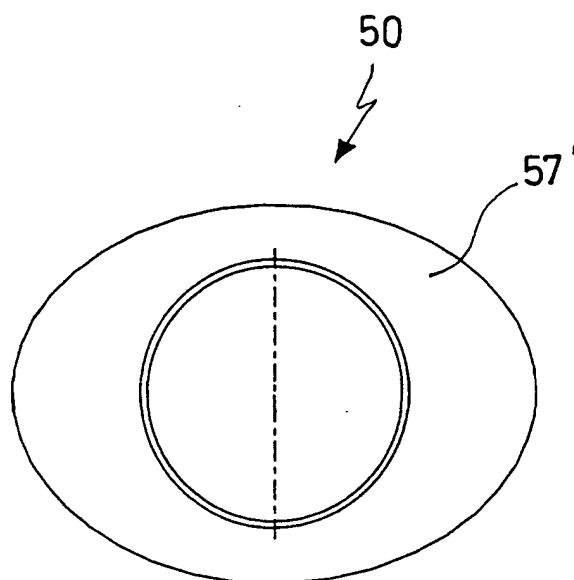


FIG. 7b

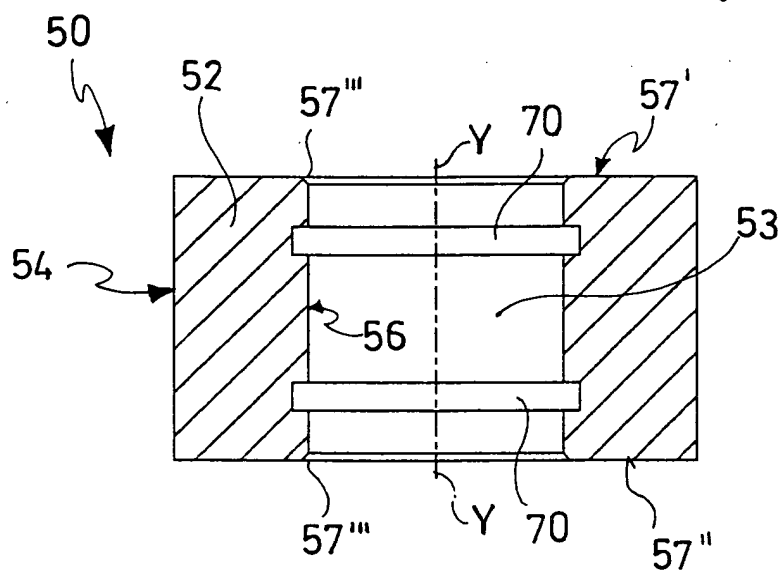


FIG. 7c

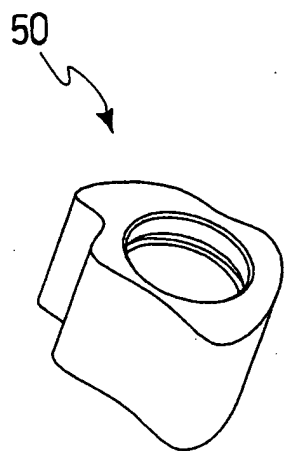


FIG. 8a

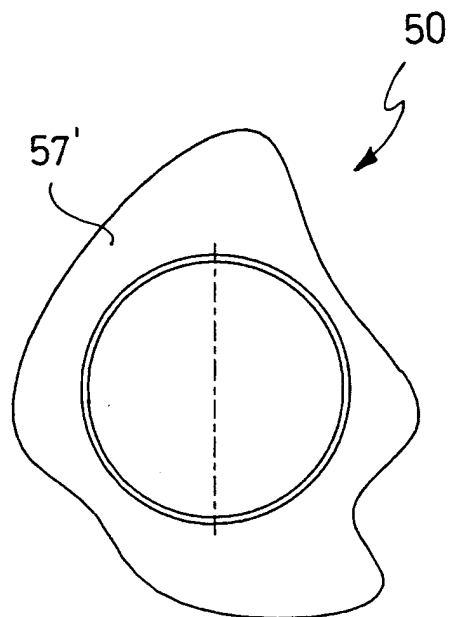


FIG. 8b

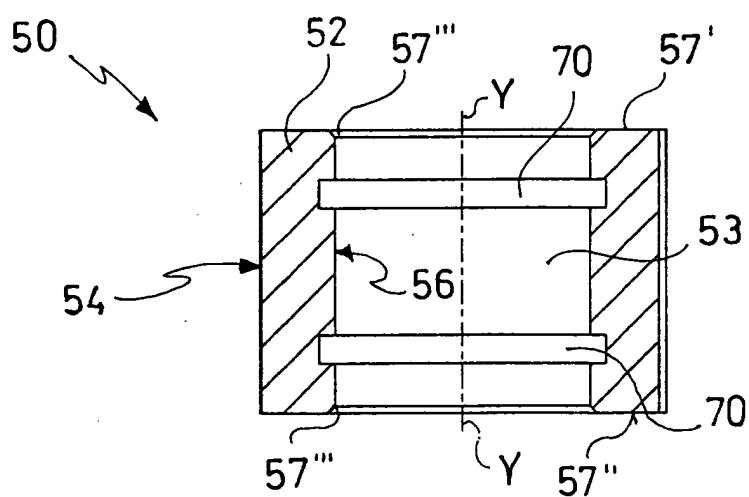


FIG. 8c

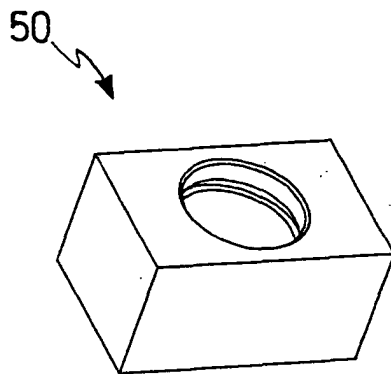


FIG. 9a

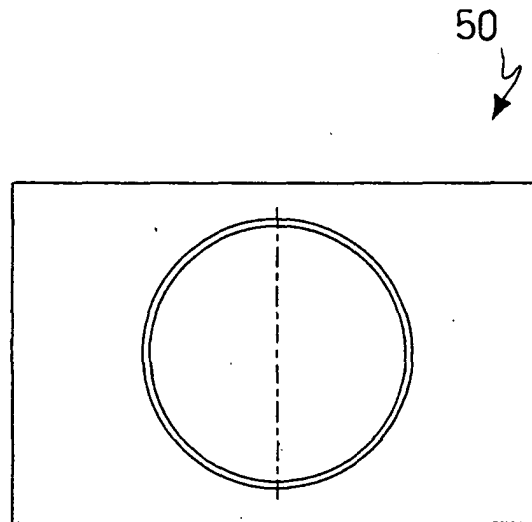


FIG. 9b

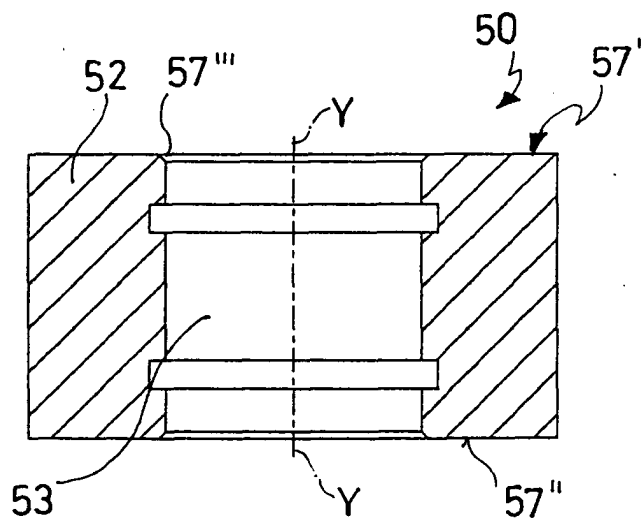


FIG. 9c

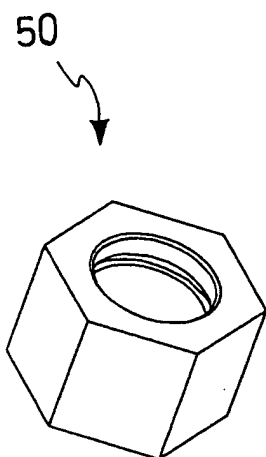


FIG. 10a

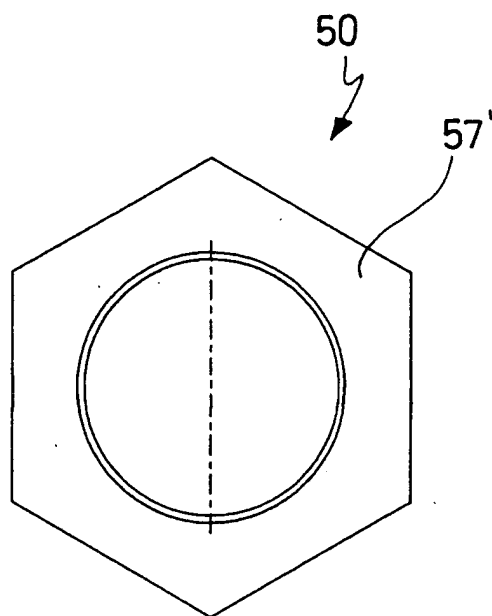


FIG. 10b

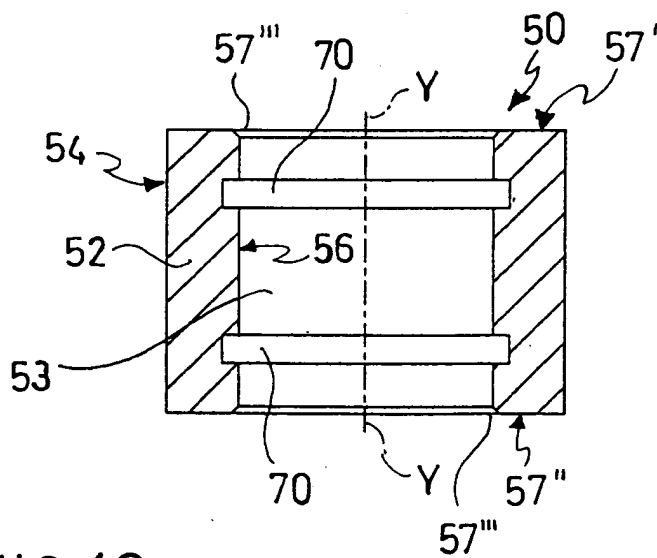


FIG. 10c

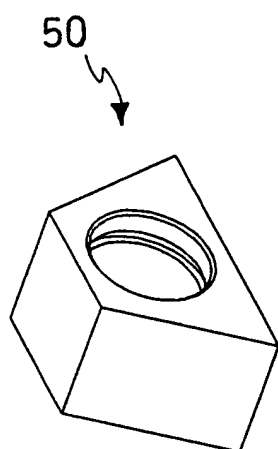


FIG. 11a

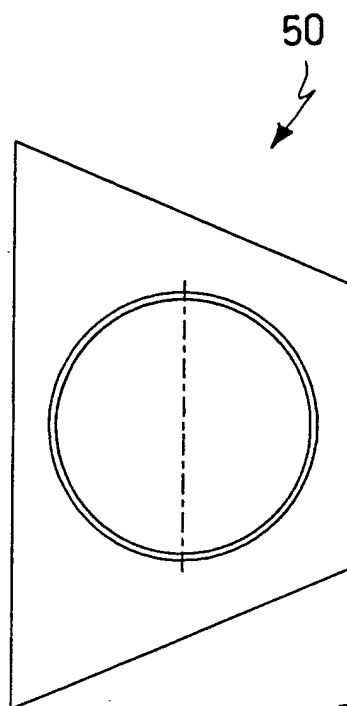


FIG. 11b

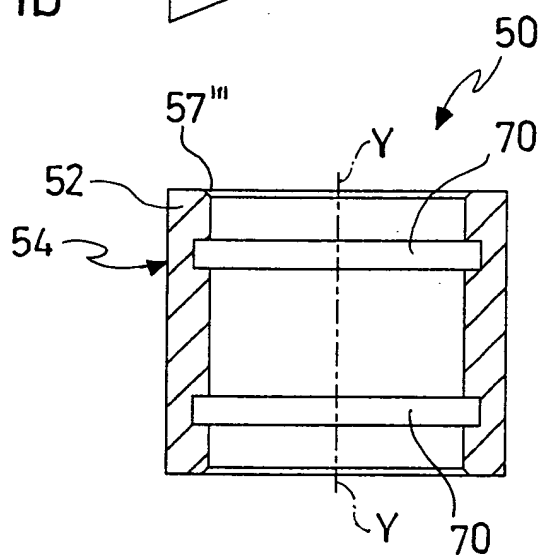


FIG. 11c



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5053

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.7)
X	DE 202 08 404 U (RUHNKE CHRISTOF ;RUHNKE MATTHIAS (DE)) 24 October 2002 (2002-10-24) * page 4, line 1 - page 5, line 2; figure *	1-13	E03C1/086
X	FR 340 509 A (WEBB) * figures 1,2 *	1,13	
A	GB 2 316 151 A (SKR ADVANCED TECHNOLOGIES LIMI) 18 February 1998 (1998-02-18) * page 6, paragraph 2; figures 4,5 *	1,13	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E03C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		22 June 2004	De Coene, P
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			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 42 5053

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-06-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 20208404 U	24-10-2002	DE 20208404 U1	24-10-2002
FR 340509 A		NONE	
GB 2316151 A	18-02-1998	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82