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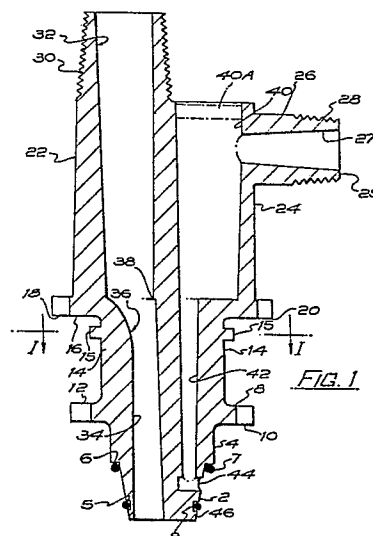
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54 **Dispensing closure for a fluid container.**

57 A dispensing coupling for chemical drum comprises a closure body for connecting to the drum aperture and a dispensing body for coupling in sealing fashion to the closure body. The dispensing body has passages enabling the coupling of a gas supply to the interior of the container through the dispensing body and the closure body and the dispensing of fluid from the drum through the closure body and dispensing body by the gas under pressure. The dispensing body and closure body are moulded along with identical moulding but can be made uniquely couplable by cropping parts of blocking on such so that only one dispensing body can couple with each closure body, preventing the coupling of the wrong dispensing body with the wrong closure body.



Description

Dispensing Closure for a Fluid Container

The invention relates to dispensing closure means for a chemical drum or other fluid container.

The chemical industry uses a large number of different liquids and other fluids, and it is quite common for different liquids to be contained in similar containers, and in spite of labelling and colour coding there remains a finite risk of the wrong liquid being used in a chemical process, and it is one object of the present invention to provide means whereby the residual risk is minimised, whilst other advantages may accrue from other features of specific embodiments as will be described hereafter.

According to the present invention there is provided a closure body for securing in a discharge aperture in a fluid container and for use in association with a discharge body having removable blocking means and a discharge passage, the closure body having (a) an opening for the passage of fluid and, surrounding the opening, a surface for sealing engagement with a co-operating surface of the discharge body surrounding the discharge passage so that said passage is in alignment with the said opening, and (b) at least one element for preventing the approach of the discharge body into the sealing engagement in the presence of the blocking means.

Preferably the closure body is provided with a plurality of approach preventing elements, at least one of which is removable.

According to a further aspect of the invention there is provided a combination of a closure body as aforesaid and having at least one approach preventing element, and a discharge body as aforesaid having said blocking means removed to permit the approach of the bodies into sealing engagement.

According to yet another aspect, the invention provides a combination as aforesaid together with a further discharge body as aforesaid, the further discharge body having blocking means present to prevent the approach of the associated co-operating surface into sealing engagement with the surface of the closure body.

The sealing surface may be provided by or at a conical depression in the closure body.

The approach preventing elements may comprise pegs extending towards a discharge body approaching the closure body in use, and are preferably parallel to and arranged circumferentially about the axis of the said depression.

The blocking means may define an annular surface capable of being recessed to allow entry of the or each peg.

Embodiments of the invention will now be described by way of example and with reference to the accompanying drawings of which:-

Fig. 1 is a longitudinal section of a discharge body;

Fig. 1A is a sectional end elevation of the discharge body of Fig. 1, the section being taken on lines I-I of Fig. 1;

Fig. 2 is an end elevation of the discharge

body of Fig. 1;

Fig. 3 is an elevation on the other end of the Fig. 1 body;

Fig. 4 is a longitudinal section of a closure body for use in connection with the discharge body of Fig. 1; and

Fig. 5 is an end elevation on the closure body of Fig. 4.

Dealing first with the discharge body, this largely comprises a one-piece plastics moulding which is substantially symmetrical with respect to the plane of the longitudinal section of Fig. 1. The moulding terminates at its lower end in a frusto conical portion or plug 2 above which is a cylindrical length portion 4 of diameter somewhat greater than the larger diameter of the portion 2, the shoulder 6 between the portions 2 and 4 providing a bed for a sealing O-ring 7. Towards the lower end of the portion 2 is a circumferential groove 5 for a further O-ring 9.

Above the cylindrical portion 4 is an integral disc 8 having diametrically opposed circumferential cut-outs 10, 12, seen more clearly in Fig. 2, of which cut-out 12 is circumferentially slightly lower than cut-out 10.

Above the disc 8, and spaced from it by radially extending rectangular blocks 14 and transverse webs 14A (as shown in Fig. 1A), is a further disc 16 having a cut-out 18 of the same width as and aligned with cut-out 12, and a diametrically opposed cut-out 20 of the same width as cut out 18 and aligned with the cut-out 10 of the disc 8. A stud 15 projects outwardly from each of the blocks 14 slightly further in a radial direction than the base of the cut-out 10.

Above the disc 16 the body defines two cylinders 22, 24, the axes of which are both in the plane of Fig. 1 and which merge together intermediate their axes. Cylinder 24 is shorter than cylinder 22 and has, at its top edge an outwardly extending cylindrical boss 26 of which the free end has an external thread 28. The upper free end of the cylinder 22 also has an external thread 30, for connection to a chemical flow-line.

The cylinder 22 has an axial bore 32 which reduces in diameter from the upper to the lower end and communicates with a bore 34 in the lower part of the body extending from the upper face of the disc 16, through one of the blocks 14, to the lower extremity of the portion 2. As shown in Fig. 1 the bore 34 lies to the left of the centre line of the lower part of the body and reduces in diameter from the lower end and merging with the bore 32 by opposed surfaces 36, 38.

The cylinder 24 likewise has an axial bore 40 reducing in diameter from the upper end and communicating at its lower end with a bore 42 in the lower part of the body. The bore 42 extends from the upper face of the disc 16, passes through one of the blocks 14 and terminates within the portion 2 which communicates with a radial bore 44 which opens at the face 46 of the portion 2 above groove 5. Towards its upper end the bore 40 communicates with a radial

bore 27 axial at boss 26 and opening at the end 29 thereof. The upper end of bore 40 is sealed by a cap 40A so that its only openings are via the radial bores 44 and 27.

As shown in Fig. 2, (and by way of example only) the disc 8 has in addition to the cut-outs 10, 12 a further, U-shaped, key cut-out 48 extending to the perimeter of the disc along a radius at 45° to the symmetrical plane of the body, the disc may, depending upon the code selected, as will be described hereinafter, be provided with further or other cut-outs about the portions of the perimeter between the cut-outs 10 and 12. The purpose of this cut-out or these cut-outs will be described below in relation to the closure body to be described.

Turning to Fig. 4, there is shown a further one-piece plastics moulding, substantially symmetrical about the central axis.

The lowermost portion of the body is a tube 50 of which the outer surface, in section, presents a ratchet-like appearance whereby a rubber or similar tube may be easily and securely fitted over it in conventional manner.

The other part of the body is essentially a hollow cylinder 52 which merges with the tube 50 by an intermediate portion 54 presenting externally a concave section.

The lower part of the cylinder 52 is provided with a coarse external thread 56 by which the body is intended in use to be screw-fitted into a circular opening in a liquid container. The screw portion 56 has an annular shoulder 58 which is intended to seal the body to the outer surface of the container when screwed hard down. At the top edge of the cylindrical portion 52 and to one side there is a projection 60 of which the depth from the top edge extends downwardly slightly as it extends peripherally so as to exert a wedge-like action on a screw action cap (not shown) by which the discharge body previously described may be secured in engagement with the closure body.

The cylindrical portion 52 is provided with a wide bore 62 which reduces in diameter slightly as it extends downwardly whereby the upper portion of the body is in effect a circular wall of thickness diminishing slightly upwardly.

Inwardly of the bore 62, and coaxially with it, a further upstanding circular wall 64 having a flat outer face 66 and a threaded inner surface 68. The inner surface 68 leads to a frusto conical depression 70 which corresponds in dimensions with the portion 2 of the discharge body shown in Fig. 1.

Below the depression 70 is a cylindrical depression 72 which communicates with the bore in the pipe 50.

Internally of the cylindrical portion 52 there are diametrically opposed vertical ribs 74, 76 (one only shown) which correspond in width and depth with the slots 20 and 10 and respectively slots 18 and 12 of the discharge body shown in Fig. 1. One of these ribs being slightly wider than the other results in the discharge body being able to enter into the closure body, in use, in only one orientation.

Between the inner face 62 of the cylinder 52 and the outer face 66 of the wall 64, and in the arcuate

space between ribs 74 and 76, there are eight upstanding pegs 78 angularly spaced apart as clearly seen in Fig. 5. The same angular spacing of the pegs 78 corresponds with the position shown in Fig. 2 of the U-shaped cut-outs such as 48.

The intermediate portion 74 has transverse bores 80 extended between the outer surface and the depression 70 so that, with the discharge body fitted in the closure body as will be described below, the bores 80 communicate with the bore 44 in the discharge body.

In use of the apparatus, with the closure body firmly fitted in a container, it is intended that the discharge body be inserted into the closure body with the portion 2 of the discharge body fitting firmly into the depression 70 and with a sealing ring fitted against the shoulder 6 and a further sealing ring in the groove 5 below the transverse bore 44 providing seals against the passage of fluid. However, whilst the cut-outs 18, 20, 12 and 10 accommodate the ribs 74, 76 if the two parts are correctly oriented, and the studs 15 bear resiliently against the ribs 74, 76 to provide stability, the pegs 78 will abut against the disc 8 where there is no appropriately positioned U-shaped cut-out such as 48. Accordingly, therefore, the disc 8 is provided with as many cut-outs such as 48 as there are pegs 78 in the closure body and conversely any one or more but not all of the pegs 78 may likewise be cut off below the level of the wall 64 which obviates the necessity for U-shaped cut-outs in the disc 8. By leaving one or more upstanding pegs 78 in place according to a prearranged code, and providing appropriately numbered and positioned cut-outs 48 in the disc 8, the user can be assured that only discharge bodies of the correct coding can be fitted into the closure body, and this can be arranged to ensure that only prescribed fluids can be discharged in a particular situation. It is to be noted that a large number of similar discharge bodies and closure bodies can be produced from the same mould, each with an uncropped flange or disc 8 and with eight pins or pegs 78. The bodies are then slidably uniquely cropped by renewing portions of the flanges and cropping the pins to provide lock and key type coupling of the discharge and closure bodies and the danger of the wrong discharge body being coupled to the wrong closure body and house the wrong container is reduced or eliminated.

The discharge of the fluid contained in the container may be effected by introducing a gas under pressure into the bore 27 so that it passes into bore 40 and leaves the discharge body by bore 44. The O-rings fitted against shoulder 6 and in groove 5 bear sealingly against the surface of depression 70 respectively above and below the bores 80 so that the gas can only pass through the bores 80 into the container. The gas cannot escape to atmosphere and likewise atmospheric air cannot enter the container.

Fluid in the container is displaced by the entering gas which forces it up a rubber or other tube fitted over tube 50, and into tube 50 itself.

The fluid then passes upwardly into the cylindrical portion 72 and, since the O-ring in the groove 5

prevents its passage into conical portion 74 it enters bore 34. The fluid then passes into bore 32 and thence to whatever flow-line is connected to the upper end of cylinder 22. In this regard the end of bore 32 may have a one-way valve to prevent back flow of fluid into the container.

In other circumstances, the fluid is drawn from the container by negative pressure, compensating gas being allowed into the container via the bore 27. The paths of gas and fluid are as above and as aforementioned the O-rings prevent both gas and fluid escaping from their intended paths and avoid ingress of atmospheric air, which latter is important if the fluid is to be kept free from contaminating influences.

Claims

1. A dispensing closure means for a chemical drum or other fluid container comprising

a) a closure body for securing in a discharge aperture on a fluid container; and

b) a discharge body for coupling to the closure body to enable the passage of fluid from or to the container through the closure body and discharge body which form a sealed coupling, the improvement residing in that the closure body and discharge body can be sealingly coupled to enable the passage of fluid to or from the container through the closure body and discharge body only when selective portions of blocking means portions on either the discharge body, the closure body or both have been removed whereby the discharge body and closure body become uniquely couplable in similar fashion to a key and lock.

2. A dispensing closure means according to claim 1, wherein said blocking means comprises a flange on the discharge body and of which portions which open to the periphery can be removed, and the blocking means of the closure body comprise a plurality of pins adapted to engage said flange unless said flange has appropriate portions removed and/or appropriate ones of said pins are removed or cropped.

3. A dispensing closure means according to claim 2, wherein there are eight of said pins arranged in two groups of four on each side of a centre line, the pins of each group being equally spaced.

4. A dispensing closure means according to claim 1, 2 or 3, wherein said discharge body and closure body are one-piece plastics moulding.

5. A dispensing closure means according to any preceding claim wherein said dispensing body has two dispensing passages therein, a sealing plug, spaced sealing ring on said plug, a first aperture in said plug between said sealing ring, one of said passages communicating with said first aperture, a second aperture in the end of the plug, the other of said passages communicating with said second aperture, said closure body comprising a bore, said bore

having a cavity for sealingly receiving said plug of the discharge body, a radial channel in the closure body which communicates with the said first aperture of the said plug and the interior of the container, and an axial bore which communicates with the second aperture and with the interior of the container.

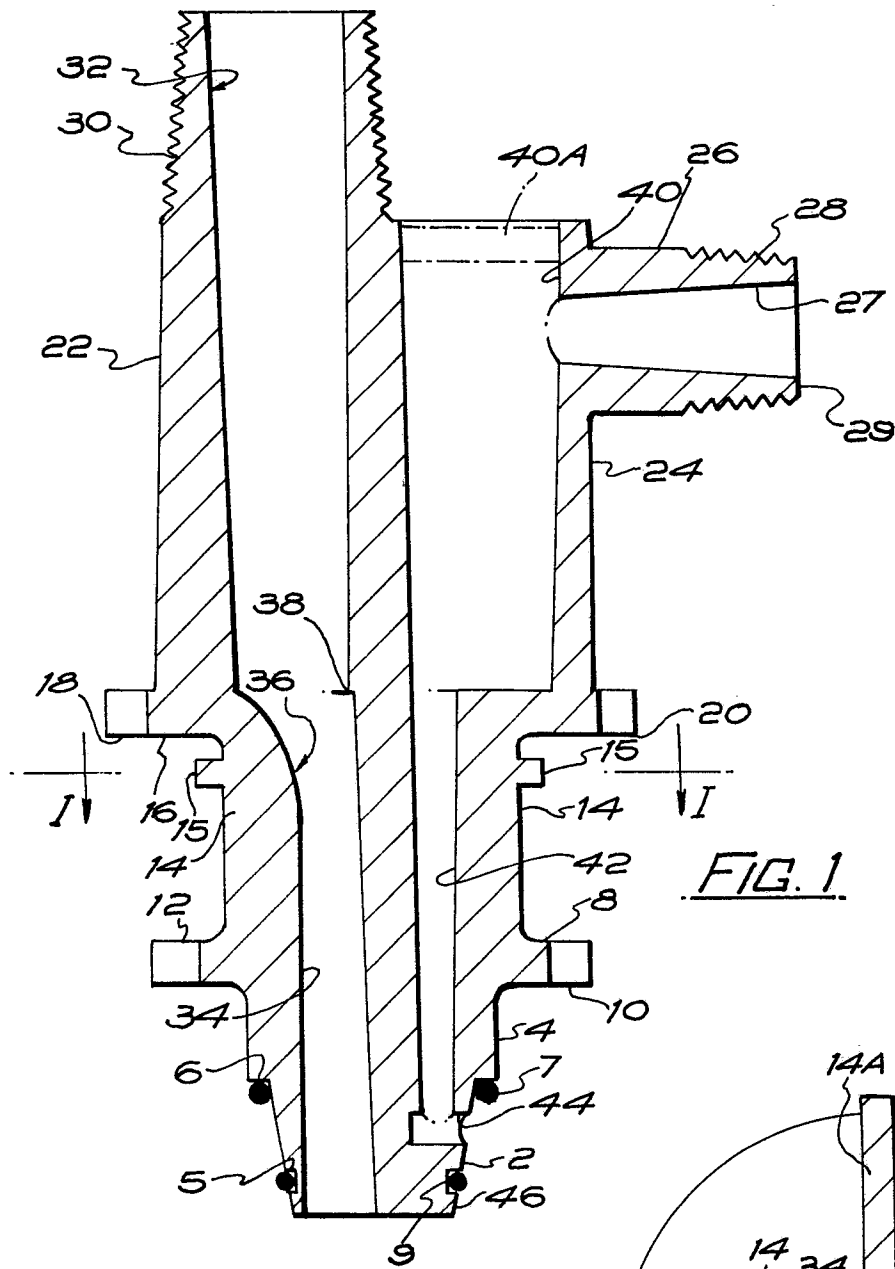


FIG. 1

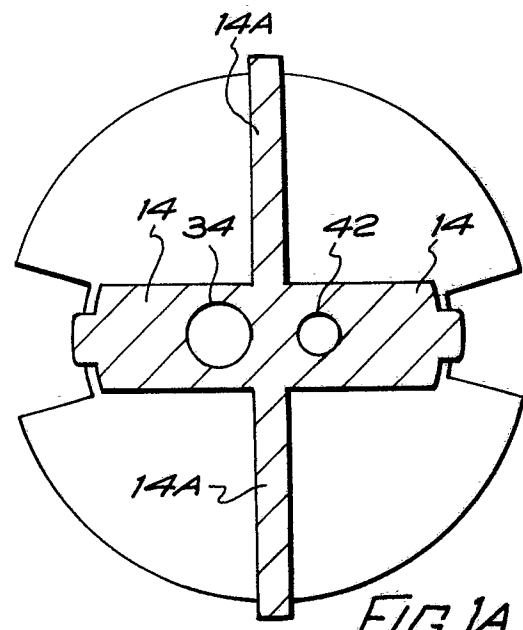
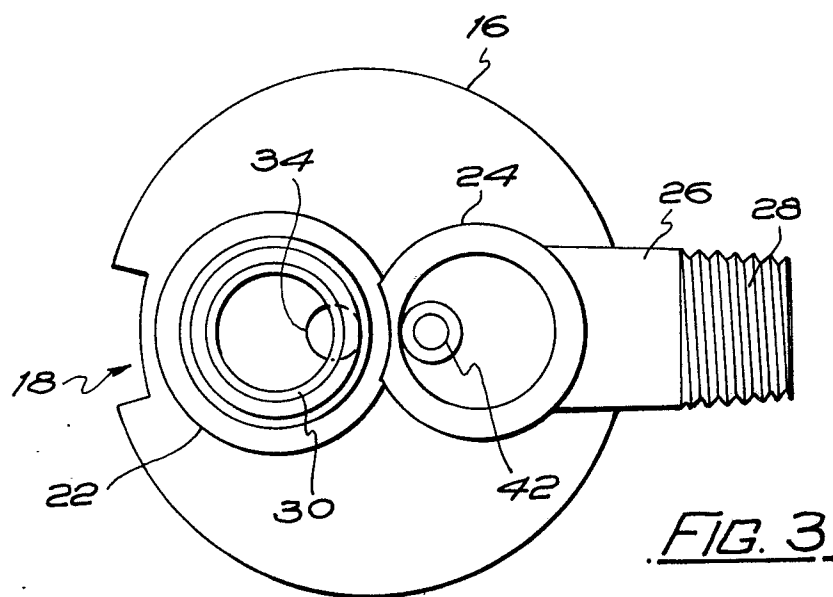
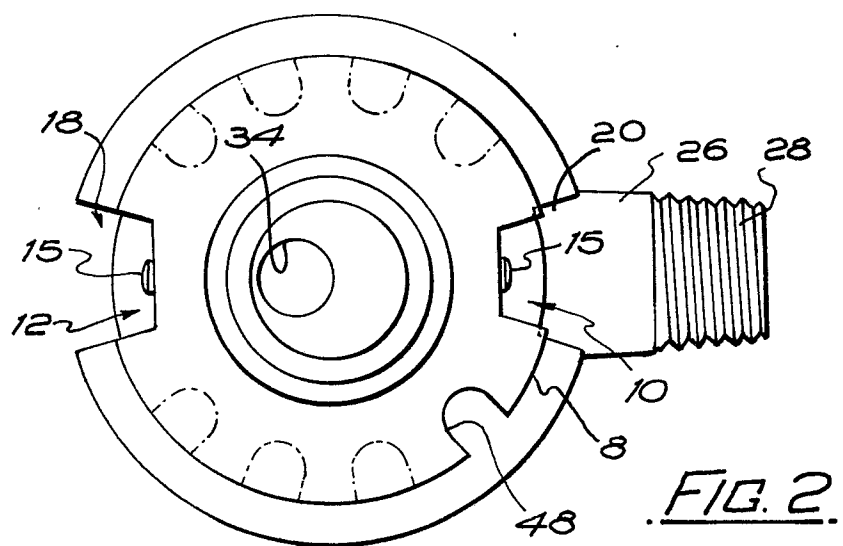
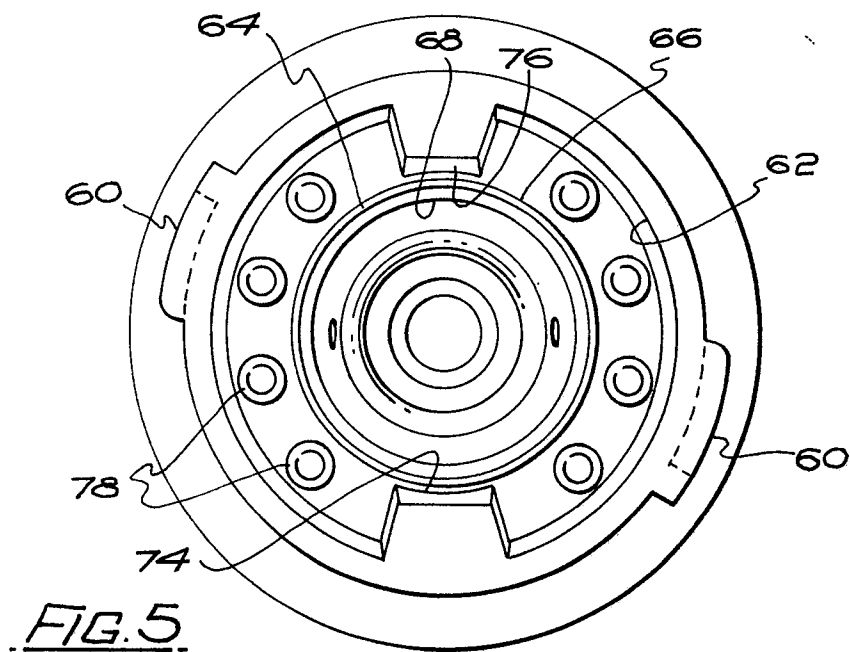
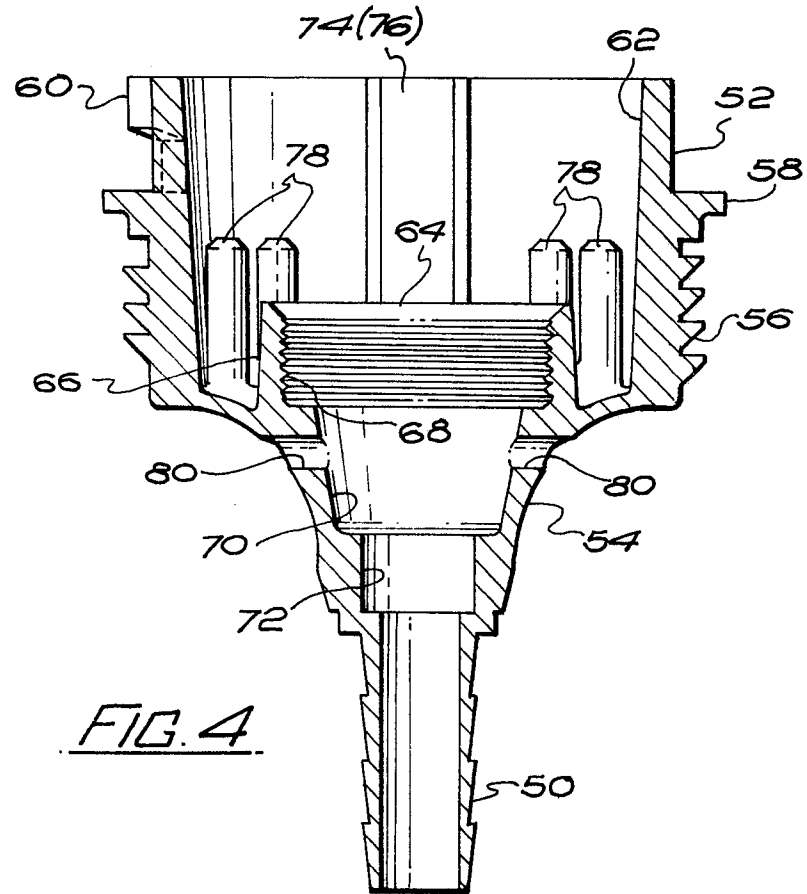


FIG. 1A







EP 89 30 5559

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. 4)
X	DE-A-3 608 300 (GRANT) * Figures 2,7,9-12; page 21, line 29 - page 22, line 7; page 24, line 21 - page 26, line 19 *	1,2,4	B 67 D 1/08 B 67 D 5/02
A	EP-A-0 202 199 (EUROBASE S.p.A.)		
A	DE-U-8 508 940 (WELLA AG)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 67 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16-08-1989	Examiner DEUTSCH J.P.M.
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	