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(54) **Syphon apparatus.**

(57) The invention relates to a two or three part syphon apparatus (1) for a cistern, there being releasable interconnection means (4) whereby parts are secured together, and slidable interconnection parts (10) whereby the parts are rigidly held together in a desired spatial relation at a lower part of the apparatus.

The apparatus may be a two or three part apparatus.

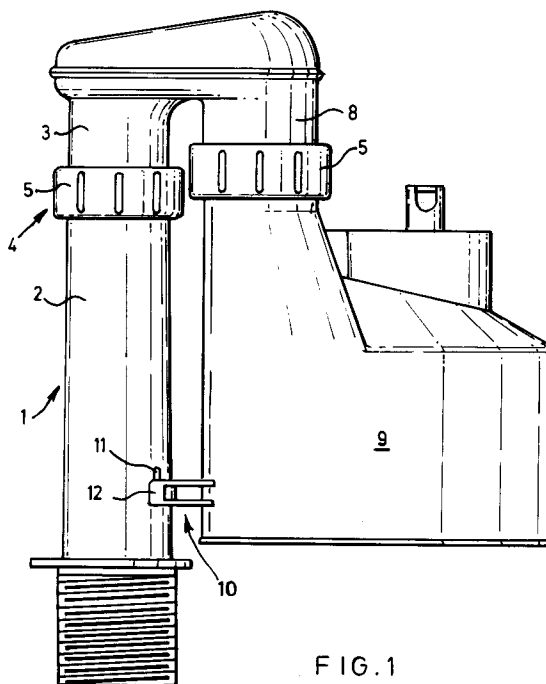


FIG. 1

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The invention relates to syphon apparatus.

Syphon apparatus is generally well-known, and usually comprises a bell chamber or the like connected a U- J- shaped discharge part which is adapted to be secured to a cistern wall so that water flow can, after initiating by a diaphragm in the bell chamber, move by syphonic action to say a lavatory bowl for flushing same. Such apparatus sometimes needs attention in the form of provision of a replacement for the diaphragm. This has the disadvantage that the diaphragm is not readily accessible. Moreover, it is often necessary for a particular syphon system to be used in cisterns of various designs, and this facility is not readily available with existing systems.

It is accordingly an object of the invention to seek to mitigate these disadvantages.

According to the invention there is provided syphon apparatus for a cistern, comprising separate interconnectible syphon portions each having interconnectible means which on interconnection are adapted to provide a syphon apparatus of variable dimensions.

Using the invention it is possible to provide a syphon system, of changed length and/or one which can be mounted in cisterns of various shapes, that is cisterns which have various types of bases, for example round, square, oval or parallelepiped.

The interconnectible means may comprise complementary means on, in use, respectively upwardly and downwardly facing legs or limbs of the portions. This provides a relatively simple construction.

The complementary means may comprise a double start lock nut and thread arrangement. This provides a relatively readily manipulable connection which can be operated in a cistern.

The interconnectible means may comprise a slidable connection on each of two laterally displaced (in use) parts of the apparatus. This provides for a rigid connection between the part without canting or skewing, at a lower part of the apparatus (in use).

The slidable connection may comprise a tongue on a leg of the apparatus and a groove on a bell housing of the apparatus. This provides for a positive connection which is nevertheless readily operable.

There may be two opposed tongues on the leg and complementary grooves on the bell housing. This again provides a positive fixing.

The or each tongue may have a tapered portion. This provides for ease of assembly and disconnection.

The tongue may have means whereby to latch the bell housing in position. This construction seeks to provide against disengagement.

The means may comprise a notch at or adjacent the base of the tongue. This provides for ease of manufacture during say moulding.

Syphon apparatus embodying the invention is hereinafter described, by way of example, with reference to the accompanying drawings.

Figs. 1 to 3 show side elevational views (Fig. 2 being in longitudinal section) of various syphon apparatus according to the invention assembled;

Figs. 4 to 6 show views similar to Figs. 1 to 3, but with apparatus disassembled;

Fig. 7 shows a part of a leg of syphon apparatus according to the invention, in elevation,; and

Fig. 8 shows a plan view of part of a bell housing of syphon apparatus according to the invention.

Referring to the drawings, in which like parts are identified by like numerals, there is shown syphon apparatus 1 for a cistern, comprising interconnectible syphon portions 2, 3 for assembly to provide a syphon apparatus 1 of variable dimension. The apparatus 1 is in three pieces.

Thus the portion 2, which is a downleg, can be provided in a variety of lengths, say in eight different lengths as in the embodiments shown whereby the syphon apparatus 1 can be mounted in a variety of lengths of cistern, and in a variety of base shape or dimensions of cisterns for example, round, square, oval or parallelepiped.

The portions 2, 3 are secured together by interconnecting means 4 such as a double start nut 5 and thread 6 arrangement on respective downwardly and upwardly (in use) facing portions, with a seal means such as an O-ring 7 incorporated therein.

The portion 3 is a "U" tube, a leg 8 of which connects with a bell housing 9 or syphon body. The leg 8 may be provided in a variety of lengths like the downleg 2, for example eight lengths so that the apparatus 1 can be mounted in a variety of cisterns of different size.

To assemble the apparatus 1 the leg 8 is attached to the body 9 by associated nut 5 and thread 6, and O-ring 7 and is then slid down to connect with the leg 2. The downleg 2 nut 5 is then tightened up to provide an assembled apparatus. In all the embodiments, the downleg 2 and bell housing 9 are also interconnectible by sliding interconnectible means 10.

In Figs. 1 to 6, this comprises an upstanding spigot 11 on a bracket on the leg and a socket or through bore 12 in a bracket projecting from the bell housing 9. In use, the part 3 is offered up to and lowered towards the part 2 and, with the spigot 11 and socket 12 aligned, the spigot 11 enters the socket 12 in effect to tie the two parts 2, 3 together. The parts 2, 3 can be disconnected by lifting the part 3 of the part 2 when the nut 5 is

unscrewed, so lifting the socket 12 clear of the spigot 11.

Referring now to Figs. 7 and 8, the upper part of the leg is not shown, and is identical to the parts shown in Figs. 1 to 6, as is the part 3 which is also not shown and which rises from the bell housing 9 in the manner shown in Figs. 1-6.

In Figs. 7 and 8, there is shown an embodiment in which the leg 2 and bell housing 9 are tied together by interconnectible means 10 in the form of a slidable connection comprising two opposed tongues or wings 13 which are integral with and project from the external surface of the leg 2 on a chord thereof.

Each tongue or wing 13 projects outwardly from the body 2, and has an upper inclined or tapered part 14 leading to a part 15 which is substantially parallel to the longitudinal arm of the leg 2. One tongue or wing 13 has a latch means in the form of a notch or indent 16. Complementary interconnection means comprises a groove defined by two facing groove parts 17 in a bracket 18 which is integral with and projects from the bell housing 9 and which bracket 18 has a concave part 19 to accommodate the curve of the body of the leg 2 in use. The lateral extent of the groove 17 defined by the groove parts is equal to or just greater than the lateral extent of the tongues or wings 13, and the width of the groove 17 is equal to or just greater than the thickness of the material of the tongues or wings 13.

In use, when part 3 is offered up vertically to the leg 2 and lowered in relation thereto, the bracket 18 slides over the tongues or wings 13 as those tongues enter the groove 17. The bracket 18 slides down to the latch or recess 16, and a part 20 of the bracket 18 can snap engage therein to provide firm fixing. The syphon apparatus so assembled, as with the Figs. 1 - 6 embodiments, is by the interconnection means 10 rendered a rigid structure which is tied together by the interconnection means so that even when stresses occur in use, a skewing or canting tendency is overcome and the parts 2, 3 of the syphon apparatus 1 remain in desired mutual relationship. This helps to avoid leakage from the base of a cistern in which the apparatus is installed as there is no stress placed on the connection of the downleg with the base of the cistern.

It will be understood that in all embodiments, the syphon apparatus may be in two parts, rather than the three parts illustrated. Thus the part 3 and bell housing 9 may form a J-shape part. Also, there may be a stiffener 21.

Claims

1. Syphon apparatus for a cistern, characterised

by separate interconnectible syphon portions (2,3) each having interconnectible means (4, 10) which on interconnection are adapted to provide a syphon apparatus of variable dimensions.

2. Syphon apparatus according to Claim 1, characterised by the interconnectible means comprising complementary means (4,10) on, in use, respectively upwardly and downwardly facing legs or limbs of the portions.

3. Syphon apparatus according to Claim 2, characterised by the complementary means (4) comprising a double start lock nut and thread arrangement.

4. Syphon apparatus according to any preceding claim, characterised by the interconnectible means (10) comprising a slidable connection on each of two laterally displaced (in use) parts (2, 9) of the apparatus.

5. Syphon apparatus according to Claim 4, characterised by the slidable connection comprising a tongue (13) on a leg (2) of the apparatus (1) and by a groove (17) on a bell housing (9) of the apparatus (1).

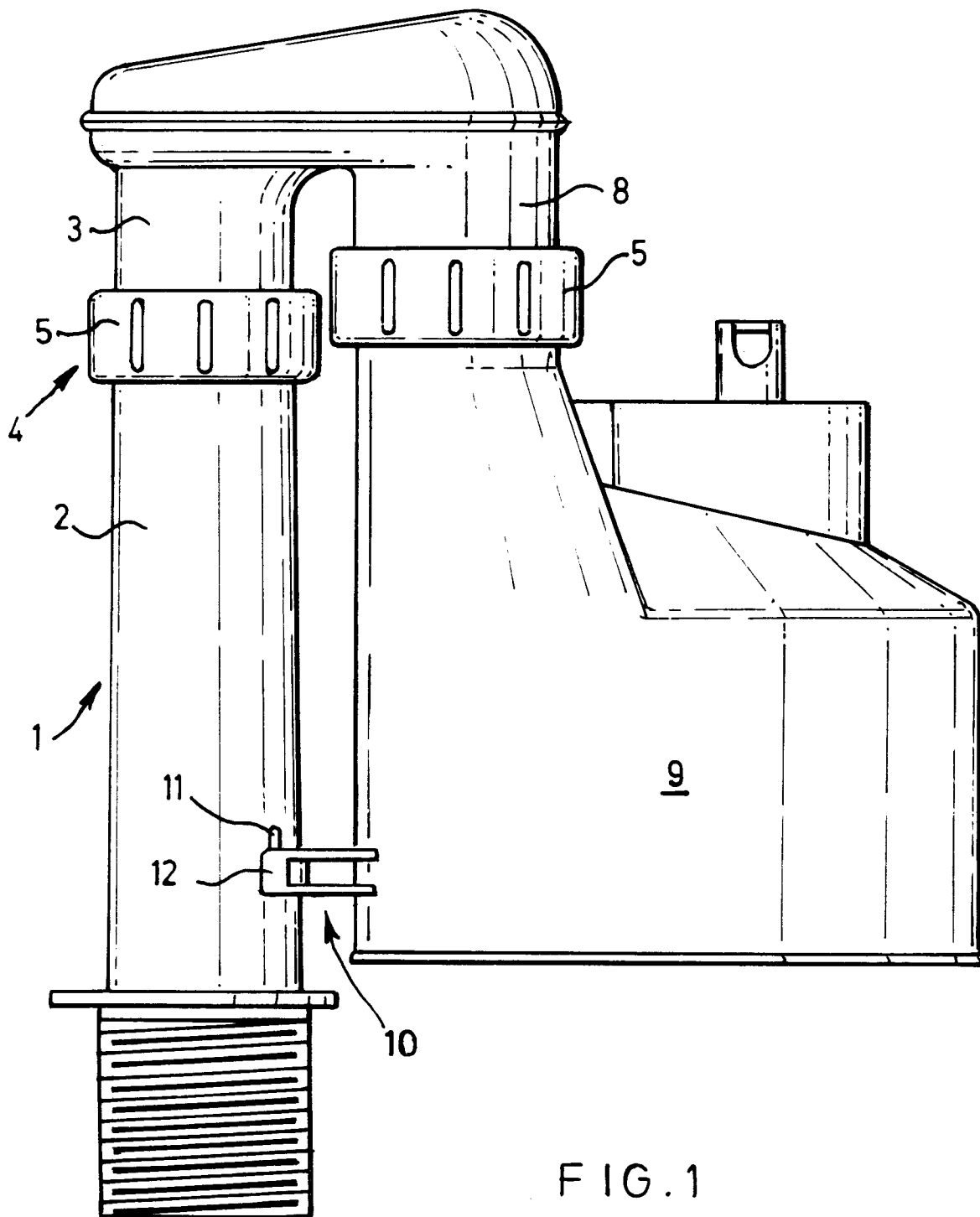
6. Syphon apparatus according to Claim 5, characterised by two diametrically opposed tongues (13) on the leg (2) and by complementary grooves (17) on the bell housing (9).

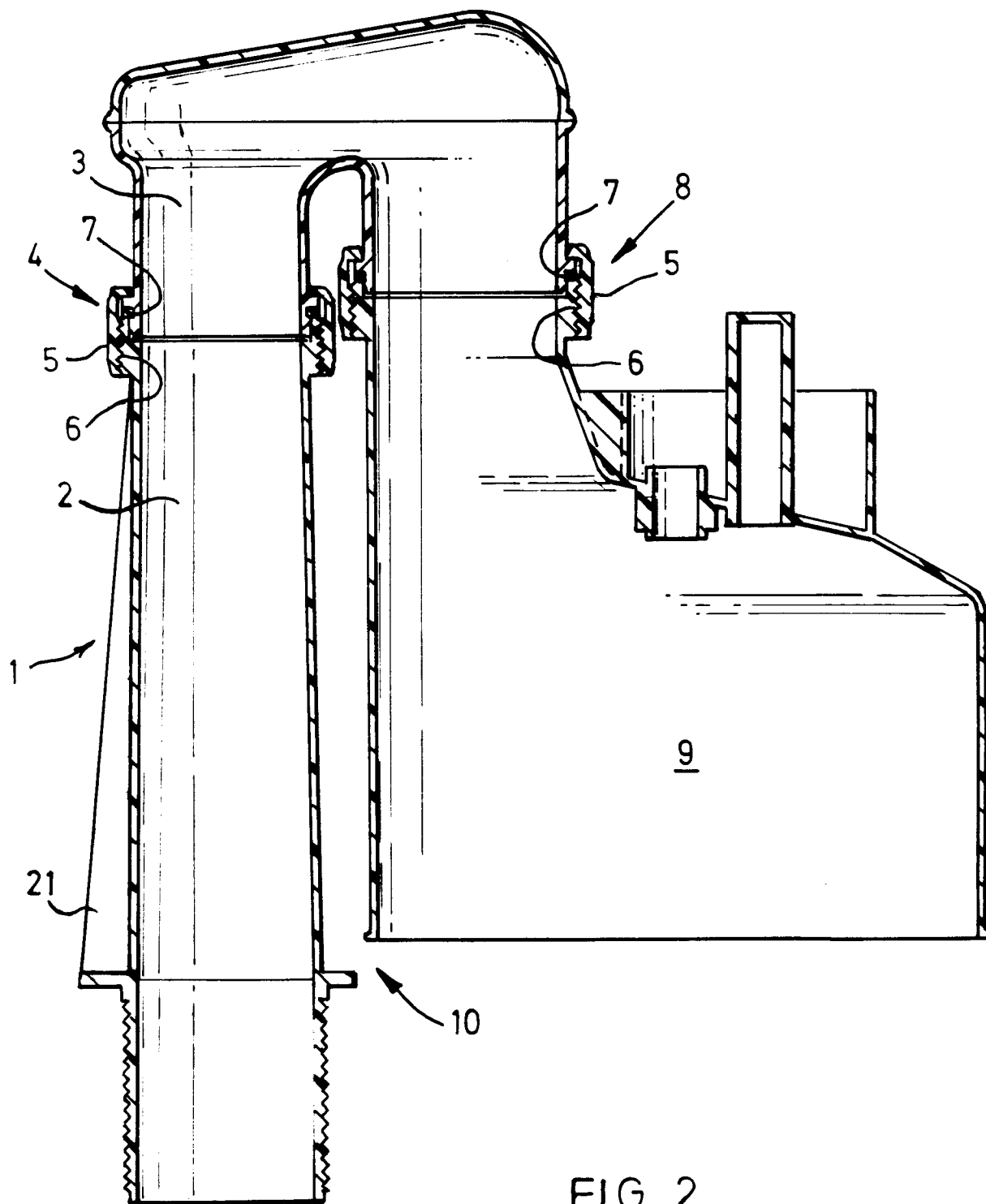
7. Syphon apparatus according to Claim 5 or Claim 6, characterised by the or each tongue (13) having a tapered portion (14).

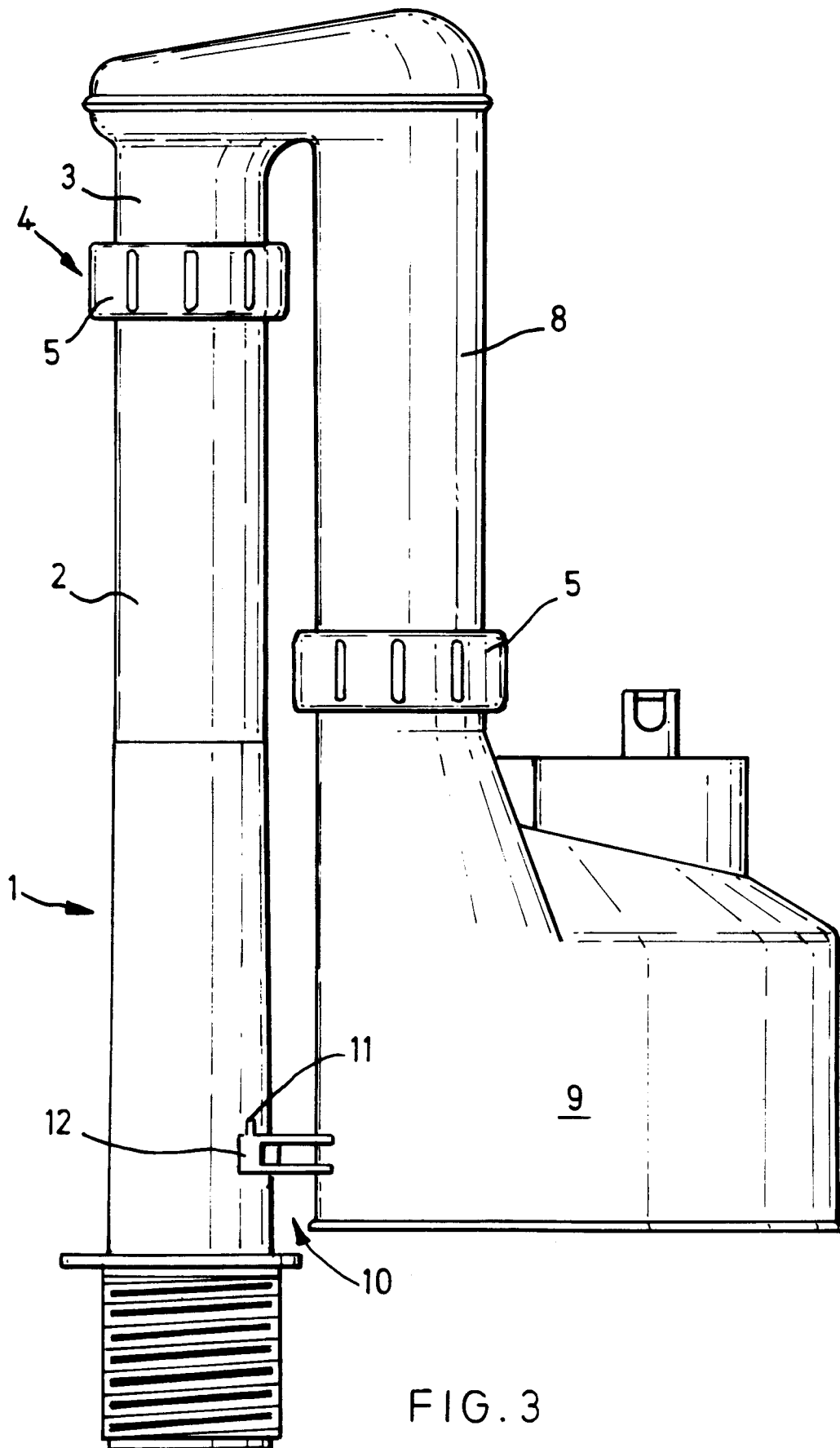
8. Syphon apparatus according to Claim 6 or Claim 7 when dependent thereon, characterised by a tongue (13) having a latch (16).

9. Syphon apparatus according to Claim 8, characterised by the latch (16) comprising a notch at or adjacent the base of the tongue (13).

10. Syphon apparatus according to any preceding claim characterised by being assemblable from two or three parts.







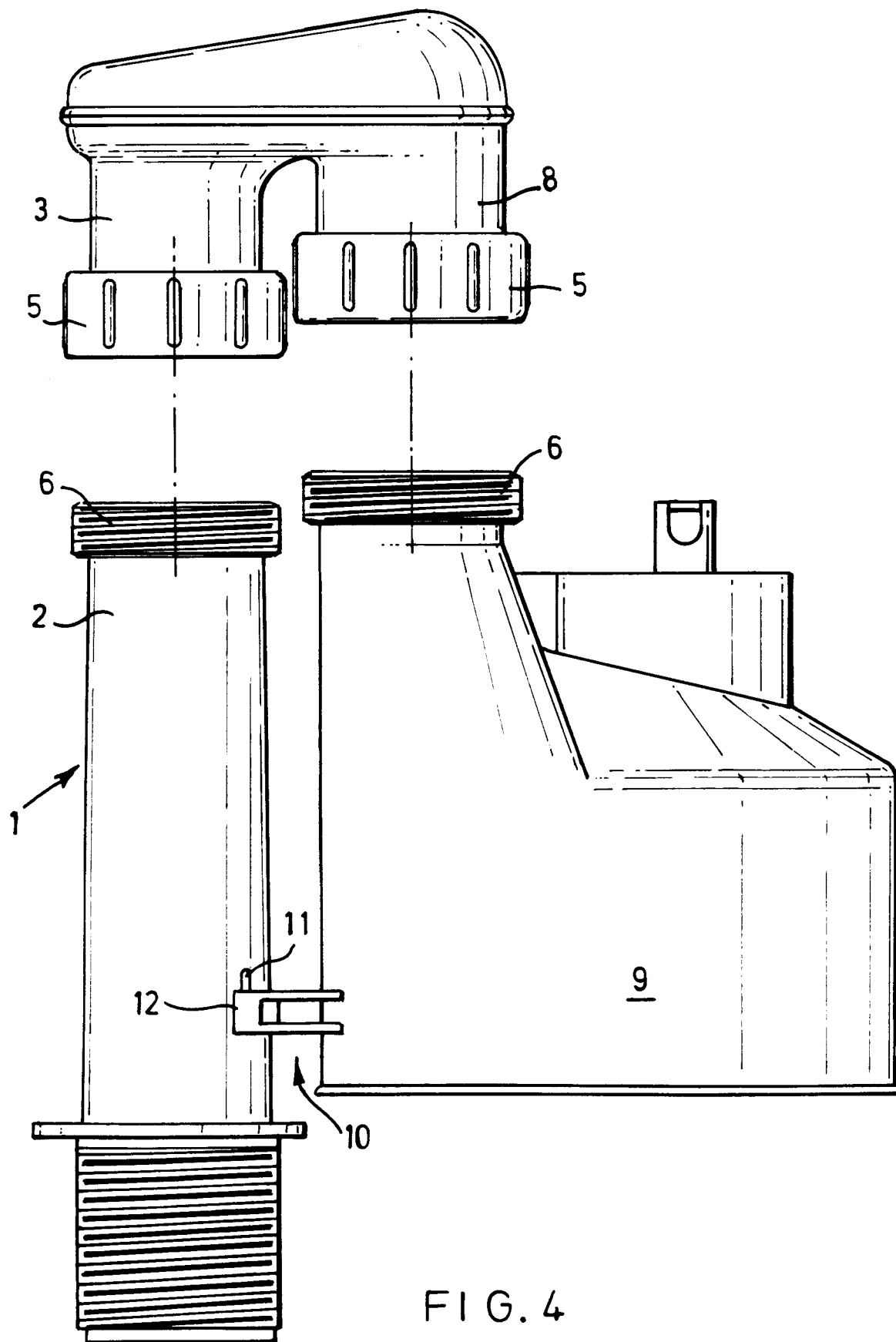
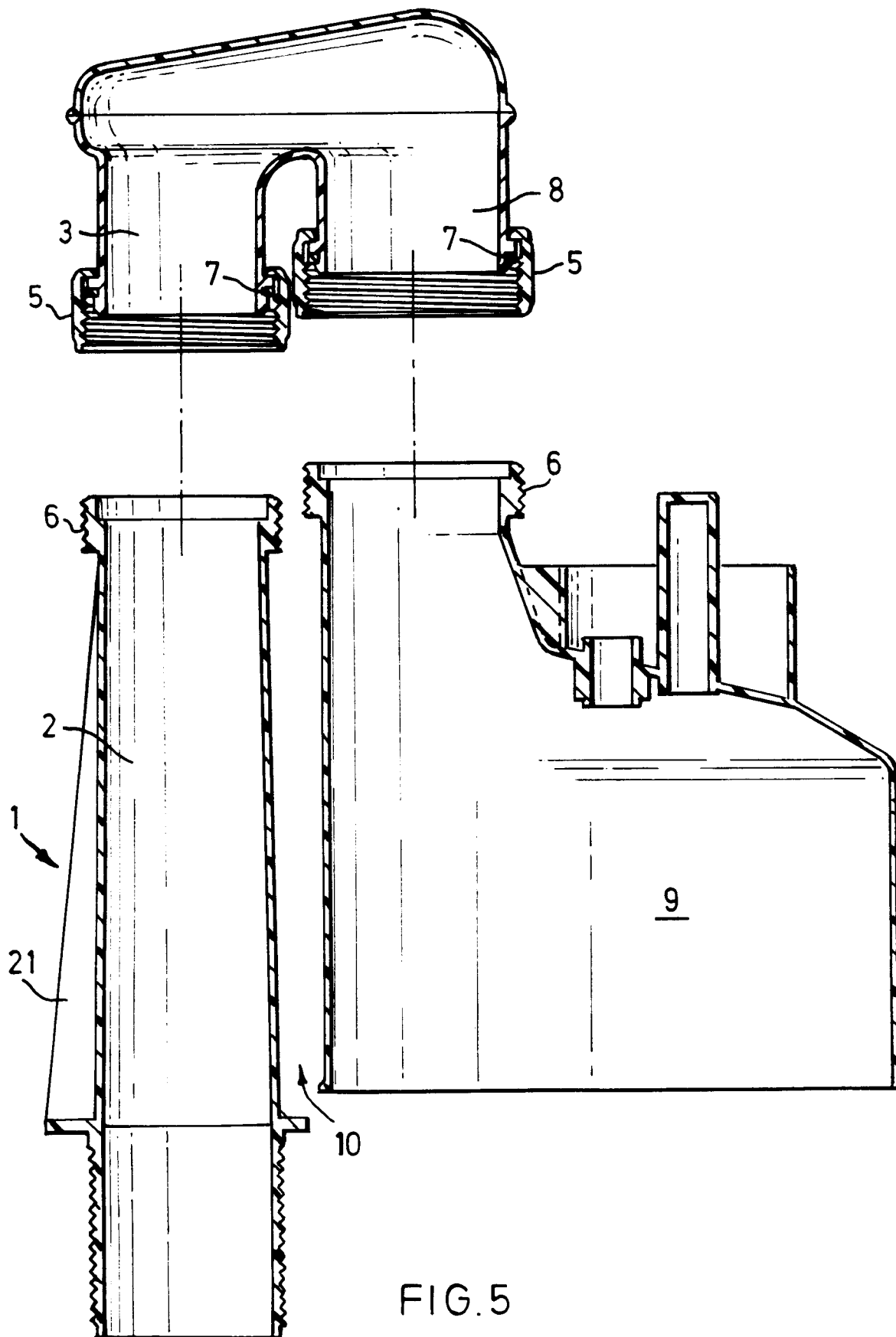


FIG. 4



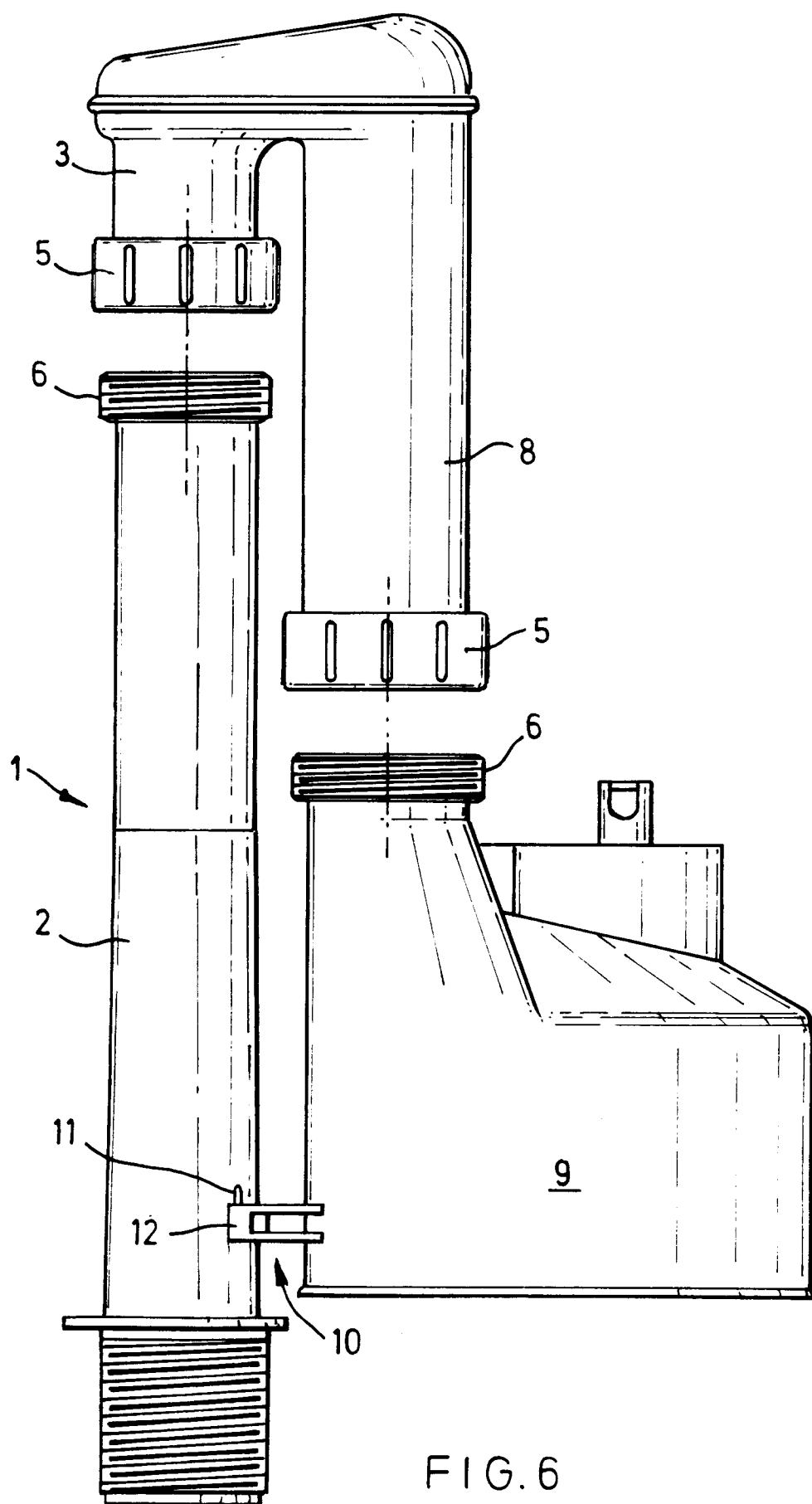


FIG. 6

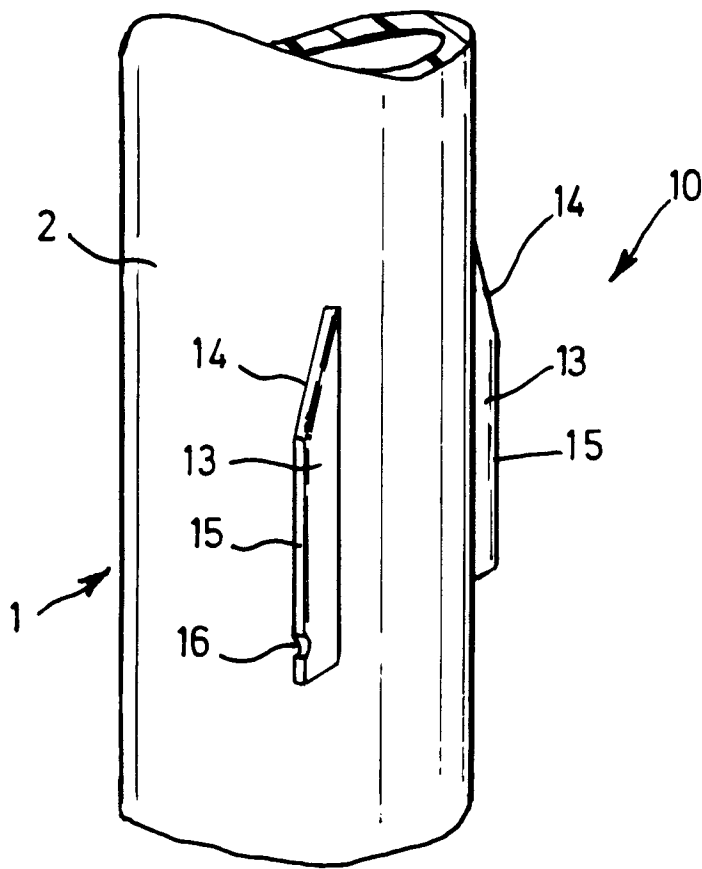


FIG. 7

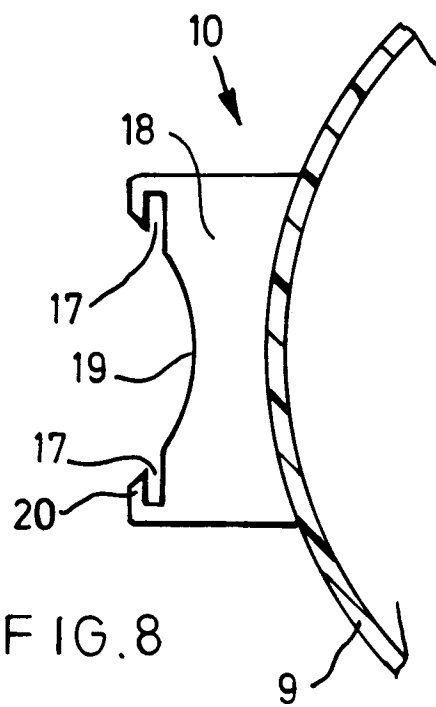


FIG. 8



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EUROPEAN SEARCH REPORT

Application Number

EP 91 31 0330

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.5)
X	EP-A-0 183 337 (T. DUDLEY)	1, 2, 4, 5, 10	E03D1/06
Y	* page 4, line 15 - page 6; figures *	7	
A	---	3, 6	
X	GB-A-2 083 851 (T. DUDLEY)	1, 2, 4, 10	
	* page 1, line 113 - page 2, line 2 *		
	* page 2, line 115 - page 3, line 103; figures 3, 6, 10 *		

Y	GB-A-802 838 (CROSSLAND LTD)	7	
	* page 1, line 72 - line 77; figures 1, 2 *		

			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E03D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 FEBRUARY 1992	Examiner KRIEKOUKIS S.
CATEGORY OF CITED DOCUMENTS			
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