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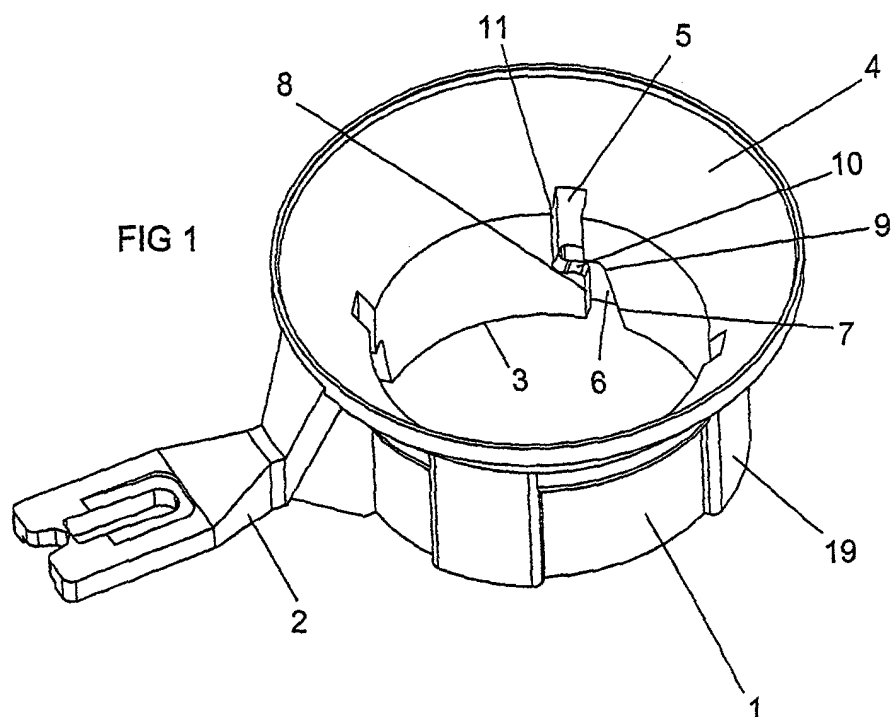
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(54) **OVERFLOW PIPE ASSEMBLY FOR TOILET TANK FLUSHING SYSTEMS**

(57) The invention relates to an overflow pipe assembly for toilet tank flushing systems. The inventive assembly comprises an overflow pipe of the type which is used for toilet tank flushing systems in which the pipe is connected to the flushing mechanism in such a way that the flush is determined by the movement of the pipe. The inventive pipe is provided with a ringed structure

and each ring comprises several pivots which can be connected to a complementary part that is used to actuate the movement of the pipe. Said complementary part is provided with grooves having a broken trajectory which comprises a support flange. The invention can be used in the production of flushing systems for toilet tanks.



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Description

[0001] The technical field involved in this invention is that of toilet cistern flushing mechanisms and in particular that of the structure of the overflow pipe which constitutes the means for operating the flush discharge mechanism.

[0002] Statement of the prior state of the art.

[0003] ES P9800161, by the same holder as this application, consists of a flushing assembly whose vertical pipe, which operates the flush discharge, is fitted with annular ribbing on which a ring is inserted by elastic pressure, this ring having an extension which is used to provoke the flushing action.

[0004] ES P200002034 consists of improvements to the previous one, similarly fitted with a vertical ringed pipe.

[0005] ES 1043720 involves an "improved device for controlled discharge of water in toilet cisterns" for flushing mechanisms fitted with a central vertically moving tubular body which moves the block for closure and blocking off the mass of water, also having a head which incorporates a slot or channel in which the rigid ring in plug form is housed and threaded to the body which constitutes the end piece of the flushing mechanism.

[0006] To sum up, the flushing mechanism pipe, whether this works by pushing or pulling, is fitted with a coupling generally threaded or by means of a part inserted by pressure.

[0007] The pressure coupling system has the advantage of easy insertion, but entails the disadvantage of any play becoming permanent and impossible to repair, as in general adhesives do not effectively join the materials of which these items are made.

[0008] The object of this invention is an overflow pipe assembly for toilet cistern flushing mechanisms which has advantages over the previous ones as regards the coupling means between the vertical pipe and the connection of the flushing mechanism.

[0009] It consists of an arrangement of the vertical pipe, fitted with pins. These pins coincide with the part for connecting with the flushing mechanism.

[0010] This part externally clasps the discharge pipe, which tends to be the overflow pipe, and is fitted with mixed route slots, so that to get out, the pin requires a turn, a lifting movement and drop of the pipe in respect of the connection part, which in any event clasps the pipe.

[0011] In order to make the following explanation clearer, 5 sheets of drawings are included which in five figures represent the essence of this invention.

Figure 1 shows a perspective view of the part for connecting the pipe and the discharge mechanisms.

Figure 2 shows a perspective view of the pipe.

Figure 3 shows a cross-section of the connection part.

Figure 4 shows a detailed view of the slot.

Figure 5 shows a cross-section through a section perpendicular to that of Figure 3.

[0012] In these Figures 1 represents the connection piece between the pipe and the complementary part for causing the movement of this pipe, 2 being the complementary part, generally integrated in the same body as part 1, 3 being the interior perimeter surface that rotates, except the slots, 4 being the opening in the upper mouth forming inverted trunco-conical walls, rotating except for said slots, 5 being the slots as they stick out at the top or part 4, with 6 being the lower opening of the slots in the base of the rotating surface 3, 7 being the sloping wall of the lower opening, 8 the straight wall of the lower opening, forming an entrance of decreasing width between this and the previous one 8, 9 being the curve at the top end of the first section of the opening 6, 10 being the ledge in the horizontal section of the slot, 11 the wall of the upper slot, 12 the curve of the ledge 10, 13 the narrowing at the upper part of the slot 6, 14 the pipe, operating pipe, overflow pipe or support pipe for the flushing mechanism gate. 15 shows the annular ribbing of the pipe meant to be disposed of after determining the precise height depending on the vertical dimensions of the cistern or the water level required, 16 showing the pins or stubs set in each ring, so that only one of said pin sets links up with the inlet of the slot 6, the ring having to be disposed of in order to allow the following one in. 17 defines the external portion of the pipe, 18 defines the internal portion of the pipe, 19 being the box for housing the slots.

[0013] The overflow pipe assembly consists of a part fitted with annular ribbing constituting weakened parts able to be cut off to dispose of a set of pins able to engage in the corresponding slots of the connection part 1. The connection part 1 is fixed to the overflow pipe in such a way that any traction or pressure applied on the arm 2 or complementary part does not cause any displacement which might put the connection part 1 assembly out of place in respect of the overflow pipe 14. The connection part has a number of slots, four being shown in the figure, which have a large lower entrance 6, defined between the sloping 7 and straight 8 walls which converge in a narrowing 13 in which a curve 9 is made. At its upper part this curve 9 verges on an angle which defines a wall rising up to the upper slot 5, defined between two upper walls 11. At the opposite end of the slot, corresponding to the curve 9, there is a ledge 10 formed of a small protuberance. This protuberance causes a narrowing, which also limits the horizontal movement of the pin after this has been engaged in this part, this narrowing determining a housing formed in the base following said ridge. The protuberance is defined by a curve 10 which forms a limit within an elastic movement for rotatory transversal movement of the body of the connection part 1 in respect of tube 14.

[0014] An explanation of a form of embodiment has

been given in the previous description.

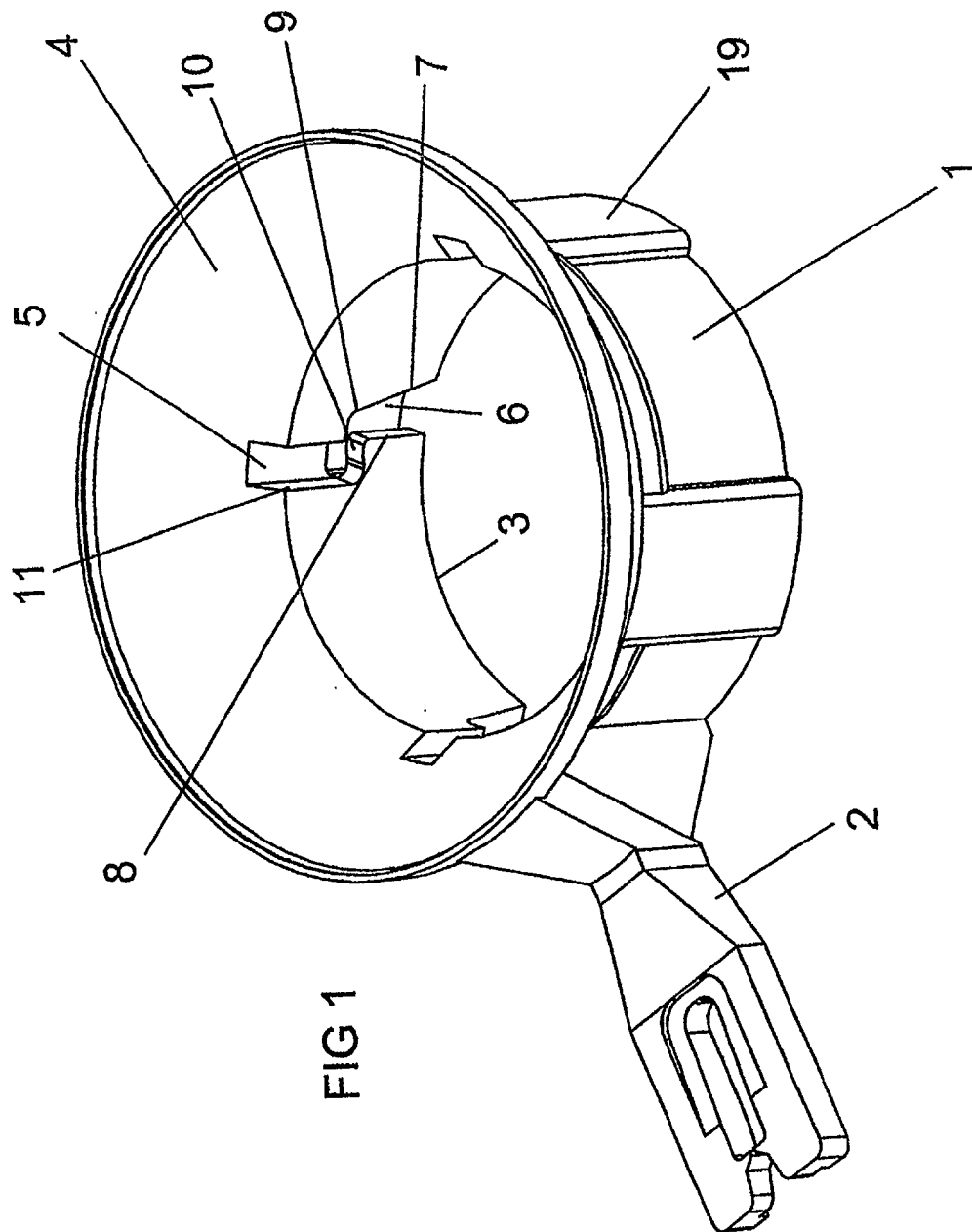
[0015] This is for industrial application in the making of cistern flushing mechanisms.

Claims

1. Overflow pipe assembly for toilet cistern flushing mechanisms, of the sort that connect said pipe with the cistern flushing gate which has an external position or end (17) and an internal position or end (18) eventually connected to the flushing system, **characterised in that** the pipe (14) has stubs or pins (16) which are able to constitute the item for insertion into a connection part (1) being fitted with a means for acting on said overflow pipe. 5
2. Pipe assembly, according to claim 1, **characterised in that** the annular body is inserted into the pipe by its external portion (17). 10
3. Pipe assembly, according to claim 1 or 2, **characterised in that** the body or connection part (1) has inside at least one slot (6) which has at least two sections, a vertical portion and horizontal portion, separated by a retaining ledge (10). 15
4. Pipe set, according to any of claims 1 to 3, **characterised in that** the retaining ledge (10) has a curved-convex shape and is arranged in a vertical position at the edge of the horizontal section of the slot which forms the two-part route. 20
5. Pipe assembly, according to any of claims 1 to 4, **characterised in that** the entrance for the pins or stubs (16) in the connection part (1) is given a large shape at the opening (6). 25
6. Pipe assembly, according to claim 1 and any of claims 2 to 5, **characterised in that** the inlet slot (6) for the stubs or pins 16 in the connection part (1) is defined by a convergent sloping wall (7) and a straight wall (8). 30
7. Pipe assembly, according to claim 1 and any of claims 2 to 6, **characterised in that** the ridge (10) is curved and defines an arrowing shape able to limit the horizontal movement of a pin housed in the base adjacent to said ridge. 35
8. Pipe assembly, according to claim 1 and any of claims 2 to 6, **characterised in that** the ridge (10) is curved and defines an arrowing shape able to limit the horizontal movement of a pin housed in the base adjacent to said ridge. 40
9. Pipe assembly, according to claim 1 and any of claims 2 to 6, **characterised in that** the ridge (10) is curved and defines an arrowing shape able to limit the horizontal movement of a pin housed in the base adjacent to said ridge. 45
10. Pipe assembly, according to claim 1 and any of claims 2 to 6, **characterised in that** the ridge (10) is curved and defines an arrowing shape able to limit the horizontal movement of a pin housed in the base adjacent to said ridge. 50

Amended claims under Art. 19.1 PCT

1. Overflow pipe assembly for toilet cistern flushing mechanisms, of the sort that connect said pipe with the cistern flushing gate which has an external position or end (17) and an internal position or end (18) eventually connected to the flushing system, **characterised in that** the pipe (14) has stubs or pins (16) which are able to constitute the item for insertion into a connection part (1) being fitted with a means for acting on said overflow pipe. 55



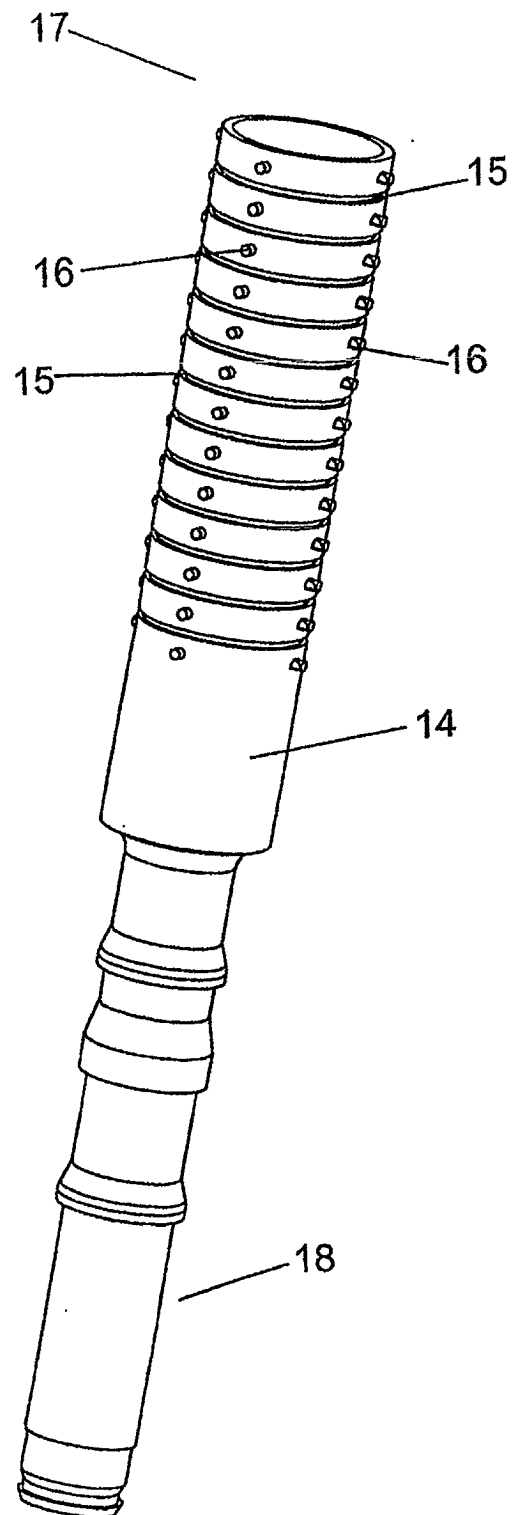


FIG 2

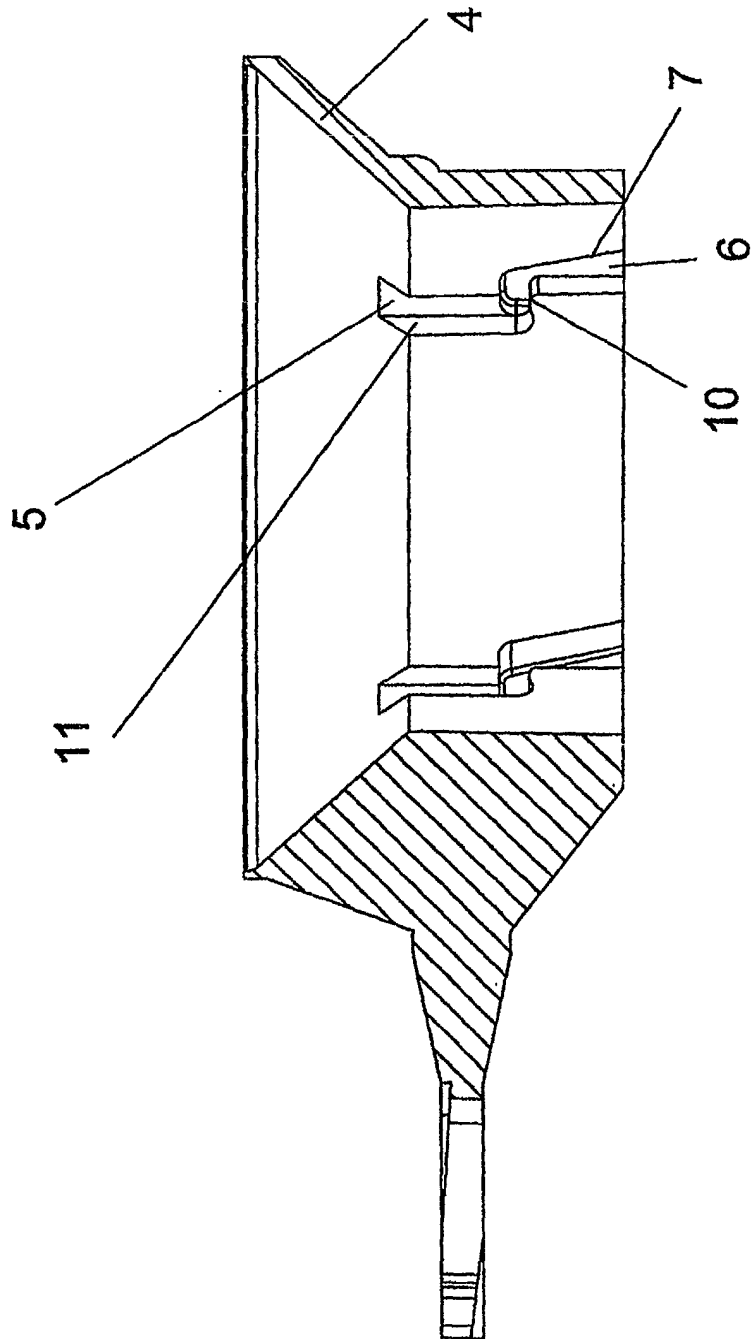
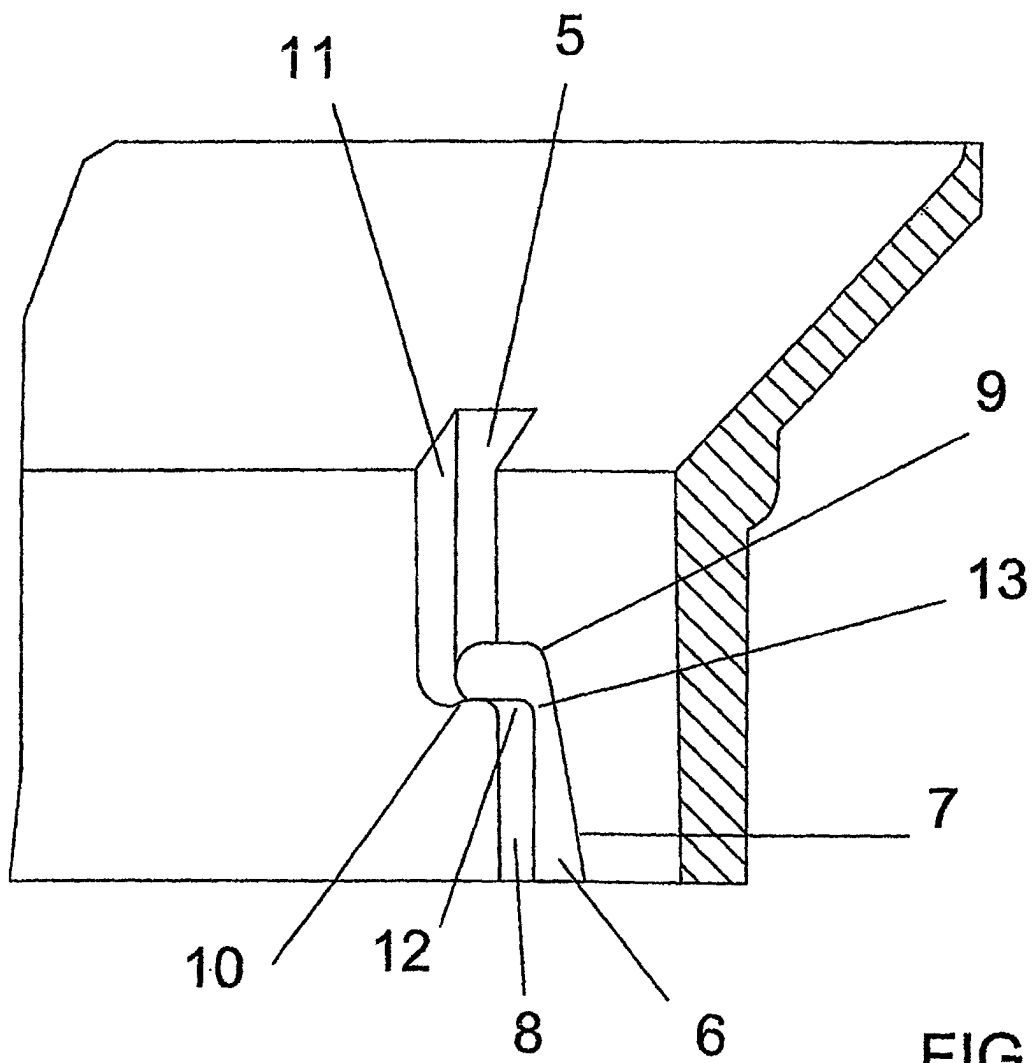


FIG 3



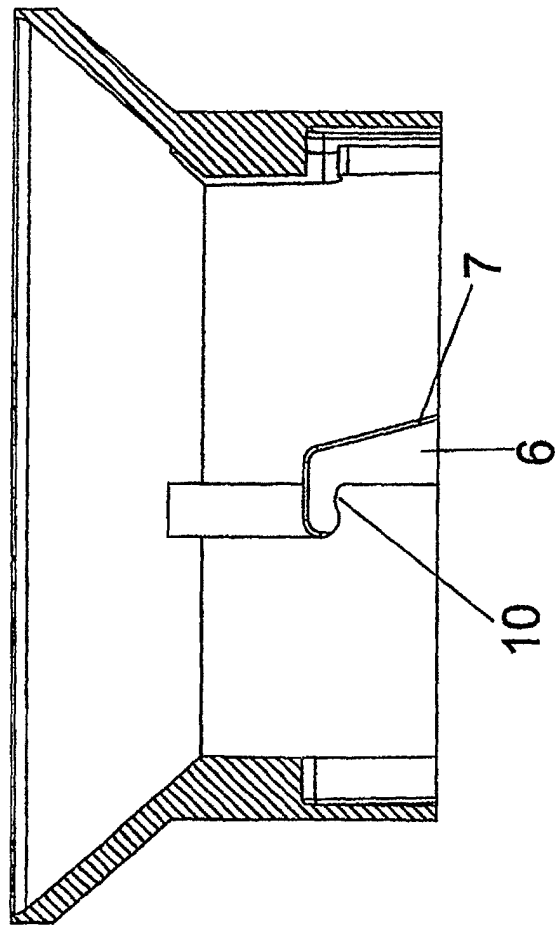


FIG 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 02 / 00470

A. CLASSIFICATION OF SUBJECT MATTER		
IPC ⁷ E03D1/14		
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)		
IPC ⁷ E03D1		
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)		
CIBEPAT, EPODOC, WPI, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 0212645 A1 (IDROLS S.A.) 14.02.2002; figures 9-10, 14	1-2
Y	ES 2136547 A1 (P. FOMINAYA AGULLO) 16.11.1999; column 4, lines 55-62; figures	1-2
Y	ES 2151374 A1 (IDROLS S.A.) 16.12.2000; column 2, lines 37-41; figures 3, 7	1-2
A	ES 1043720 U (E. ALARCON ANDRES) 01.01.2000; column 3, line 24-column 4, line 24; figures	1
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier document but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "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 "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 "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 "&" document member of the same patent family		
Date of the actual completion of the international search (27.12.2002)		Date of mailing of the international search report 17. 01. 03
Name and mailing address of the ISA/ S.P.T.O.		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/ ES 02 / 00470

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0212645 A1	14.02.2002	AU 7256701	18.02.2002
ES 2136547 A1	16.11.1999	NONE	
ES 2151374 A1	16.12.2000	NONE	
ES 1043720 U	01.01.2000	NONE	

Form PCT/ISA/210 (patent family annex) (July 1992)