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(71) Applicant: **IDROLS, S.A.**
12080 Castellon (ES)

(72) Inventor: **GUAITA DE LILA, Ernesto**
E-12080 Castellon (ES)

(74) Representative:
Sanz-Bermell Martinez, Alejandro
Játiva, 4
46002 Valencia (ES)

(54) MECHANISM FOR FULL OR SELECTIVE FLUSHING OF TOILET TANKS

(57) The invention relates to improvements to the mechanism reaching the traction device. Said mechanism consists of a ring, which is the overflow (7) and that is fixed to regulating rod (8) having two sections. The floats (4, 5) are joined by a shaft (34, 35) arranged in a chord of the section of the bell (3) where they are located, said bells having a polygonal or faceted shape and a stepped crosspiece (36) that is interlocked and released, retaining the overflow tube (2) during flushing. The invention can be used in the production of flush systems for toilet tanks.

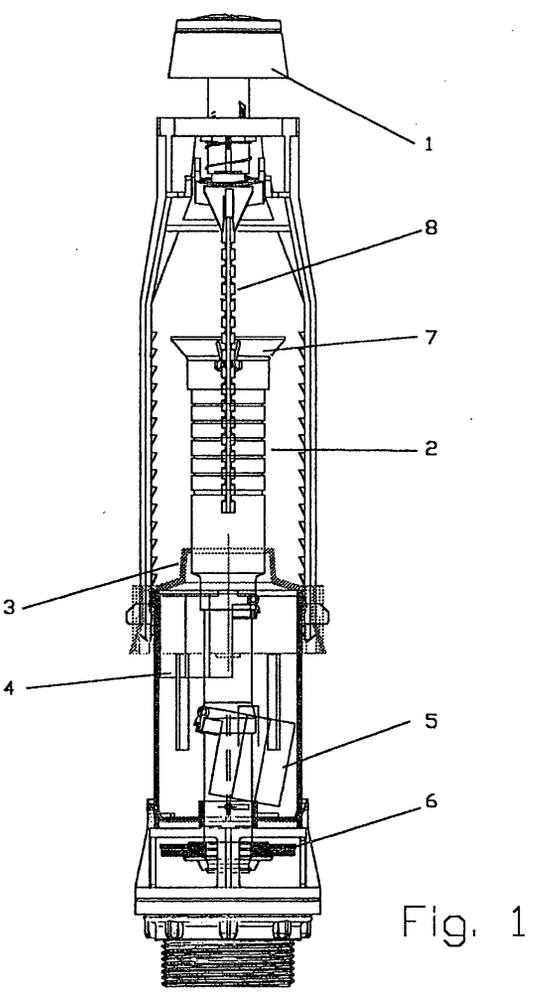

Fig. 1

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Description

[0001] The technical field involved in this patent, according to what is already stated in the main patent, is that of discharge devices for cisterns, and in particular selective discharge devices.

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

[0003] Discharge devices operated to cause the discharge are already known, there also being double discharge devices. There are some of these on the market with a double cistern, one larger and one smaller one, which selectively discharge one amount of water or another. The applicant of this patent also has ES P9302624 for a discharge device for cisterns with discharge interruption, consisting of an assembly fitted with a double valve with arms which, when the discharge mechanism is activated again, interrupt this.

[0004] ES P9601407 for the first additional certificate to the main patent P9302624 consisting fundamentally in an improvement in the hood fitted with retard valves.

[0005] ES P9602140 for a second additional certificate to the main patent P9302624 consisting in an assembly connected with the outer hood fitted with annular type retard valves around the overflow pipe and closed in a space with an access formed of a fine oblique pipe for emptying this space.

[0006] The object of this invention is a mechanism for full or selective discharge in toilet cisterns, which includes improvements as regards the discharge-activating device. A gate is thus held by two buoys at different heights, both of these having an identical layout, and being set up in such a way that during the discharge they hold the pipe connected to the gate which is lifted during the discharge, until the discharge volume required is reached. After reaching this discharge level, the pipe and the gate fall, interrupting the discharge in the case of partial discharge and in the other case, completely emptying the cistern. The buoys, the way these retain the discharge pipe in respect of the hood and also the means for pulling the activating device both in the single discharge and in the double discharge operations all involve specific characteristics.

[0007] The discharge takes place by means of pulling the overflow pipe. Partial discharge requires less displacement than full discharge. The pipe remains in this position, keeping the gate open during the corresponding discharge.

[0008] The pressing mechanism consists of a mechanism fitted with a single activation shaft but which, through the pressing movement and corresponding lever, pulls the overflow pipe to one extent or another. The buoys swing and lock and later free the overflow pipe.

[0009] Nevertheless, with a single buoy, the mechanism acts like any mechanism for full discharge.

[0010] The pressing device has a double configuration. Pressing the larger section causes a larger, full discharge. Pressing the smaller section causes a lesser, partial discharge.

[0011] The hood houses the buoys and their axes occupy a chord of the circumference defined by its perimeter. Both buoys preferably but not only take opposite positions, symmetrical at different heights, with parallel axes; and located by said position each on one side of the overflow pipe. They can nevertheless be parallel and occupy the same position at different heights.

[0012] In order to make the following explanation clearer, nine sheets of drawings are adjoined, representing the essence of this invention in sixteen figures.

[0013] In said figures:

[0014] 1 represents the pressing mechanism casing, for operating the discharge; 2 the annulated overflow pipe; 3 the hood; 4 the upper float; 5 the lower float; 6 the gate; 7 the overflow pipe; 8 the regulation rod; 9 the overflow arm 7; 10 the regulation rod insertion hole 11, over the discharge lever; 11 the head of the regulation rod; 12 the section of the wide part of the rod 8; 13 the section of the stepped part of the rod 8; 14 the cylindrical portion of the rod 8; 15 the shape of the cutaway in the stepped part of the rod 8; 16 the outer track of the rod, according to the external part of section 12; 17 the section of portion 14; 18 the tapering portion of the overflow pipe 7; 19 the cylindrical portion of the overflow pipe 7; 20 the notch for supporting the edge of the overflow pipe or insertion limit of this pipe; 21 the interior recess, or expansion of the internal diameter; 22 the lug at the base of the recess; 23 the coupling of the arm 9 to the tapering cone 18; 24 the reinforcement of the coupling 23; 25 the external part of the arm, open in two symmetrical parts; 26 the mouth between the two symmetrical parts for the rod shown as 8; 27 the inner projections of the mouth 26; 28 the hollow according to section 15 of the rod; 29 the support recess according to the shape of the rod section; 30 the lower recess which facilitates entry of the rod; 31 the angle between facets of the floats; 32 the vessel or vessels in the float; 33 the inverted vessel or hollow; the float strictly speaking; 34 the spindle pin; 35 the spindle pin; 36 the crosspiece; 37 the step of the crosspiece 36; 38 the elastic reinforcement; 39 the way through for the annulated overflow pipe 2; 40 the bracing bracket; 41 the slots in the overflow pipe that can be removed to adapt the height of the level to the relevant cistern; 42 the support step of the upper float; the support step of the lower float; 44 the form for fixing the gate; 45 the discharge action puller.

[0015] The discharge mechanism is operated by pulling the overflow pipe by means of the puller 45. The length of the overflow pipe 5 depends on the capacity and geometry of the cistern. For the installation of the device the surplus part of the pipe over the ideal level of the cistern must thus be eliminated.

[0016] The pulling takes place in this embodiment from the annular body arranged as an overflow 7 and inserted by elastic pressure, from which an arm 9 comes out perpendicularly. This arm has a "U" shape at the end 25. This "U" is inserted in the corresponding position to the length of the pipe depending on the geometry of the

cistern after having cut off the unwanted part of pipe 2. The engagement or securing takes place by the insertion of the "U" 25 in any position of the rod. The rod has a stepped section 13 able to allow the engagement of the arm being inserted in the hollow 28 after being inserted through mouth 26 and overcoming the interior projections 27 by elasticity. The arm is reduced with the upper recess 29 and lower recess 30 to facilitate greater thickness and resistance of its body, and let the rod in to the selected position.

[0017] The device for retaining the overflow pipe during discharge consists of floats 5 which in combination with said pipe 2, produce the effect of retaining or releasing the overflow pipe which has the gate at the bottom. The structure which determines how this operates can be appreciated in figures 1 and 2.

[0018] The hood 3 has holes corresponding to the spindle pins of the floats, whose unification determines a chord of the circumference located at the opposite end of the pipe 2 to the one occupied by each float. The floats 4 and 5 have the aforementioned pins able to be inserted in these holes. The spindle of the float determines a coupling according to said chord. When this is located in the eccentric position, the dry float tends to drop, swinging in respect of its spindles. When the cistern is filled with water, the floatability of its floating vessel keeps this in a horizontal position. The step 37 of the crosspiece 36 of the floats releases or retains the steps 42 and 43 of this pipe 2 and thus retains or stops the corresponding discharge section.

[0019] This device is for industrial application in making discharge devices for toilet cisterns.

Claims

1. Mechanism for full or selective discharge in toilet cisterns, of the sort that fully or partly open the discharge, selectively, through a similarly selective means of pressing/pulling having a puller (45) which is able to pull the overflow pipe, an overflow cone (7) which is inserted at the top end of an overflow pipe, a regulation rod (8) according to the height of the mechanism in accordance with the geometry of the cistern, and an assembly of at least one float (5) with means for temporarily retaining the drain pipe (2) which holds a gate (6), **characterized in that** there are floats (5) configured in such a way as to include at least one vessel (32), the vessels being set in opposite positions in the hood where they are located, to their spindle pins (34, 35) in respect of which these can swing, and said vessels are able to contain water and at least one inverted hollow vessel (32), able to contain the air filling its volume inside this, and **in that** the floats (5) have a crosspiece (36) fitted at its two bottom ends with two brackets (40), at both ends of which there are elastic reinforcements (38).

2. Mechanism, according claim 1, **characterised in that** the overflow body (17) includes inside an annular edge (20), constituting the limit of insertion in the overflow pipe (2), interrupted at several places on this by recesses (21) which have notches or lugs (20)at the bottom of these, able to be inserted in the slot (41), of the annulated overflow pipe (2).

3. Mechanism, according to claims 1 or 2, **characterised in that** the regulation rod (8) has an upper portion or head (11) fitted with a hole (10), able to insert the pull hook (45) corresponding to the traction mechanism and generally cylindrically shaped with two different longitudinal sections; one uniform longitudinal section 12 and a longitudinal section perpendicular to the one that has a stepped shape (13), transversally alternating a circular section (17) and a section (15) with a substantially rectangular shape.

4. Mechanism, according to any of claims 1 to 3, **characterised in that** the floats (5) have a polygonal or facetted shape (31).

5. Mechanism, according to any of claims 1, **characterised in that** the elastic reinforcements (38) have a "V" shaped layout, with one of their arms coupled to the body which has a pin (34 or 35) and the other to the portion holding the crosspiece (36).

6. Mechanism, according to any of claims 1 to 5, **characterised in that** the crosspiece (36) has a stepped shape, corresponding on the inside with a small step (37) able to hold or release the step of the annulated overflow pipe by means of corresponding steps (42, 43).

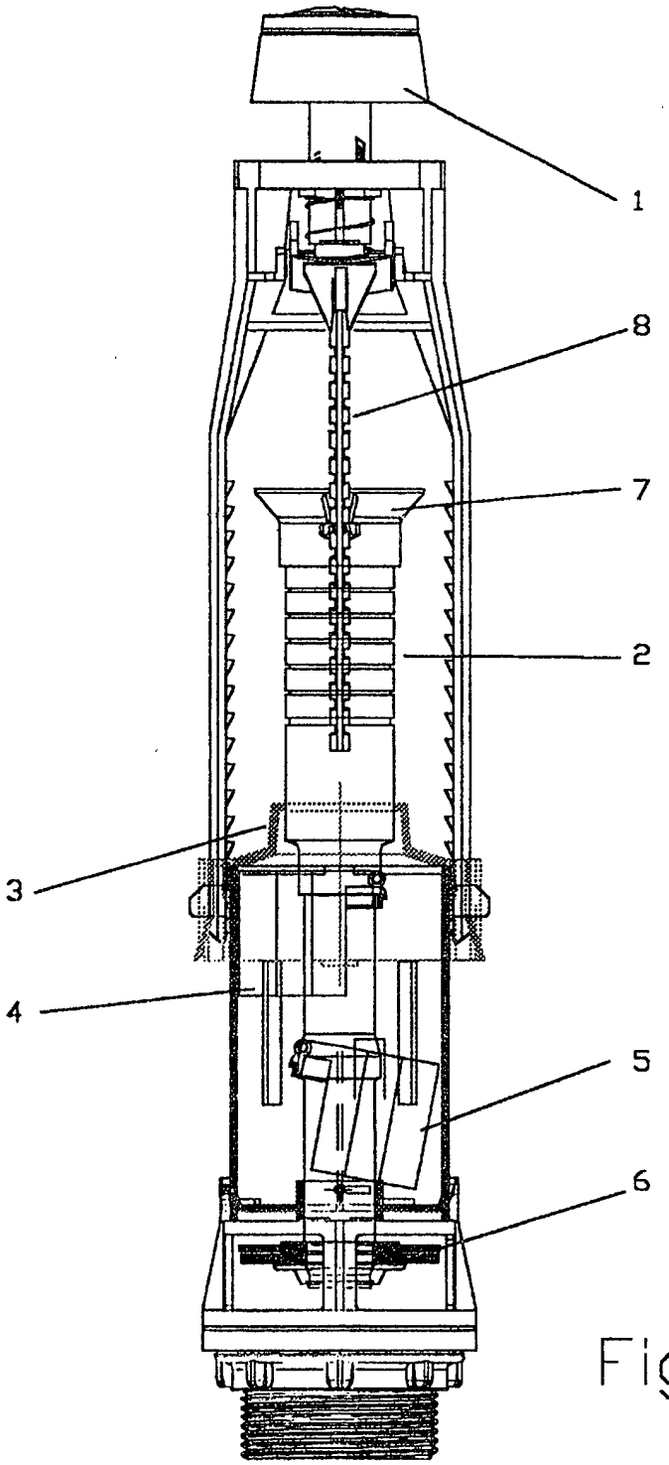

Fig. 1

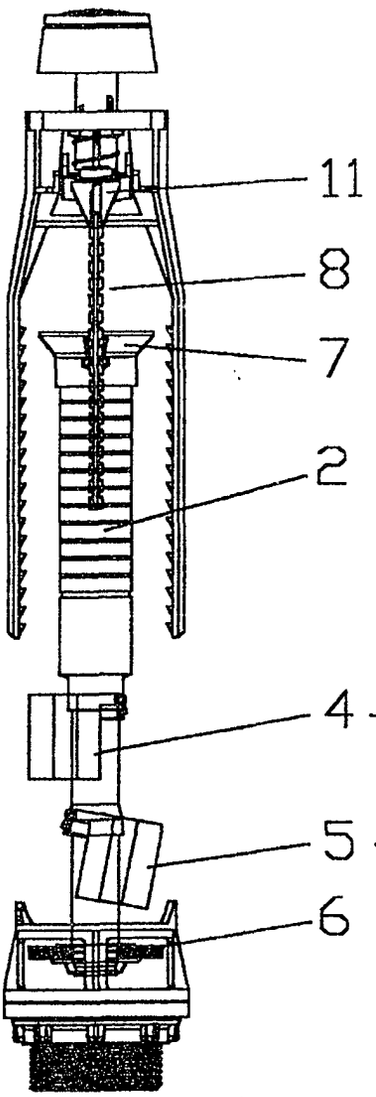

Fig. 2

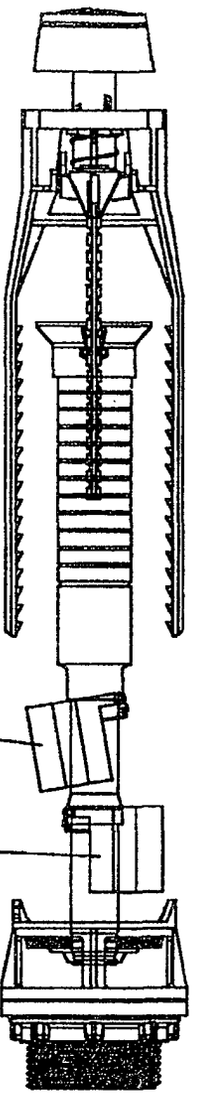

Fig. 3

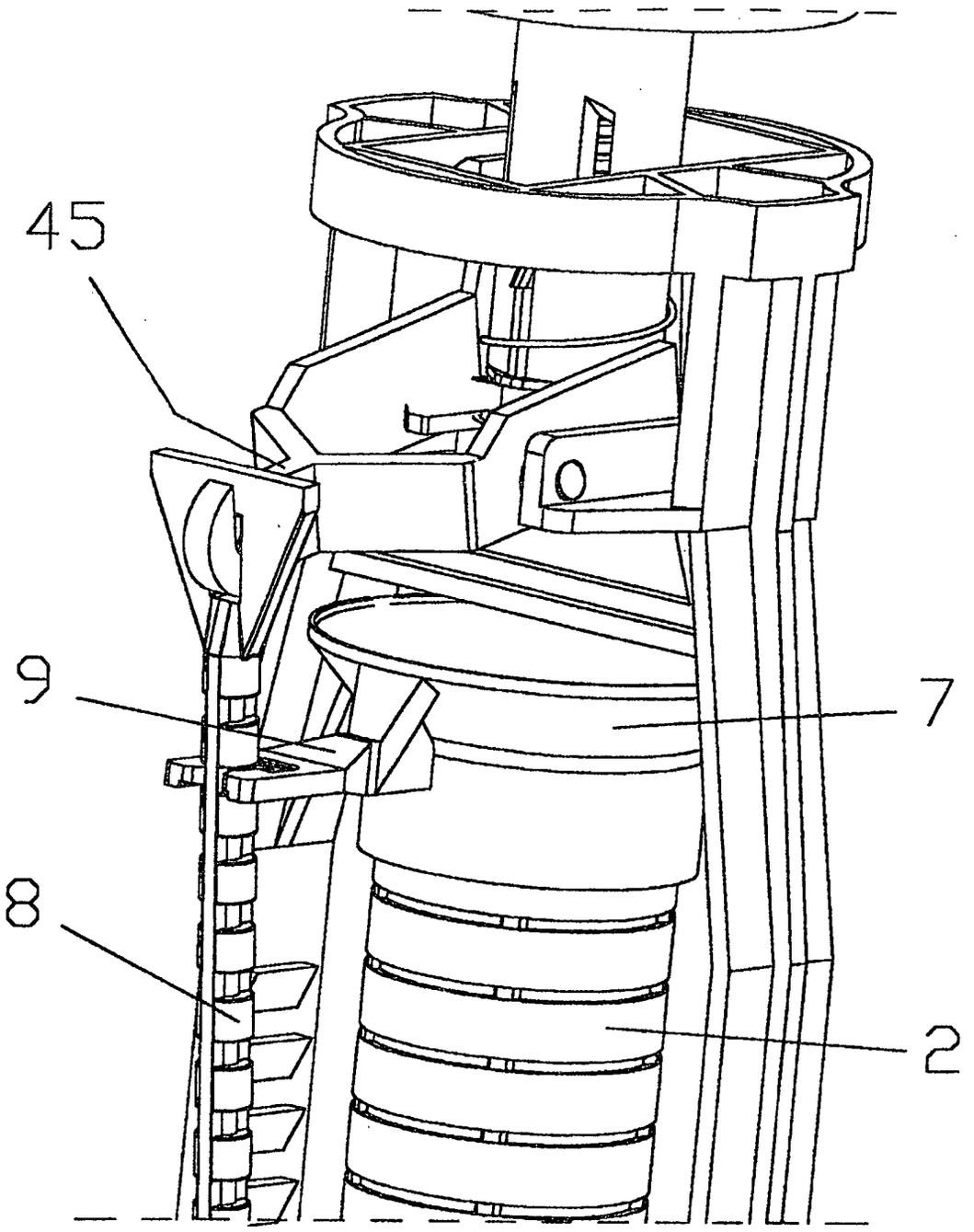

Fig. 4

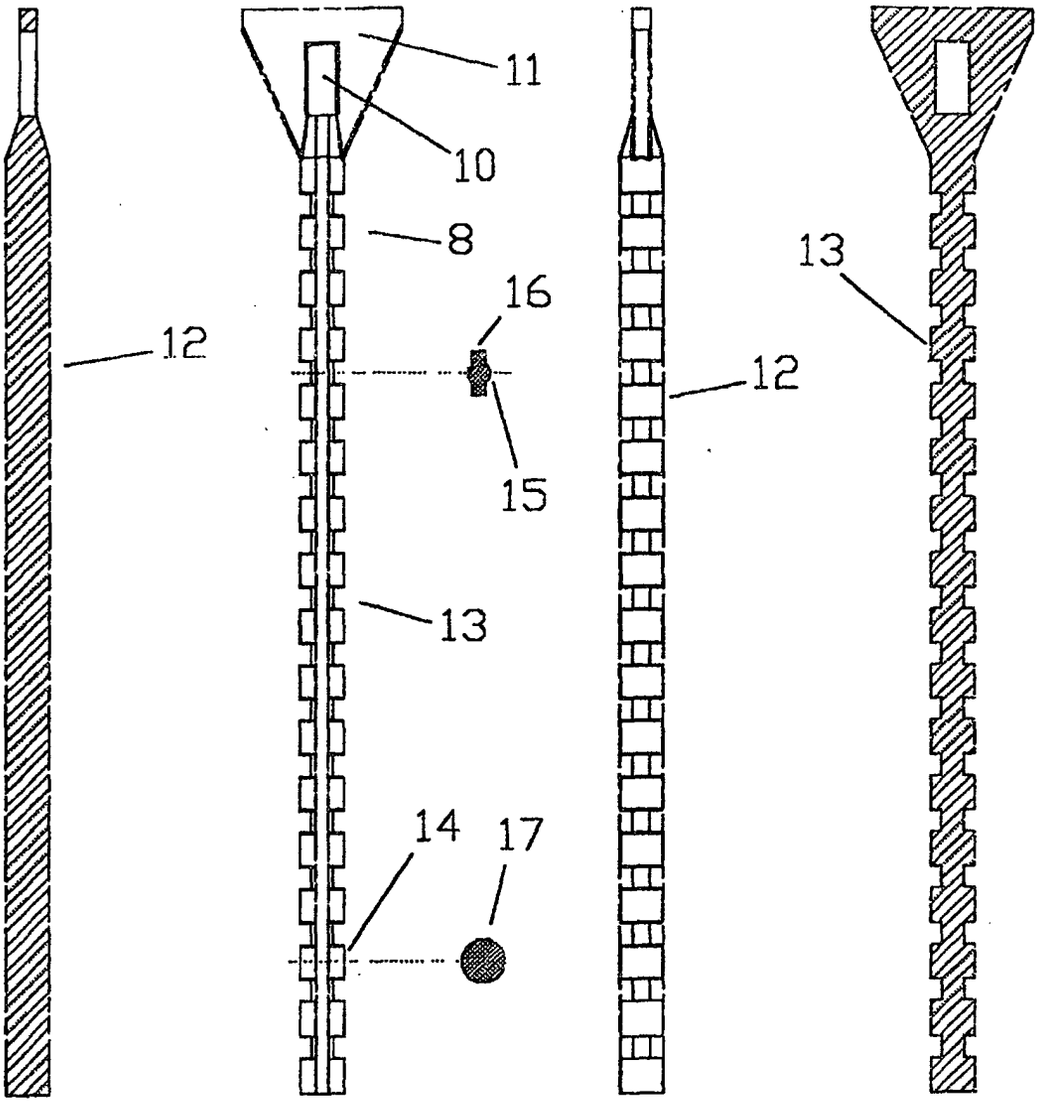

Fig. 5 Fig. 6 Fig. 7 Fig. 8

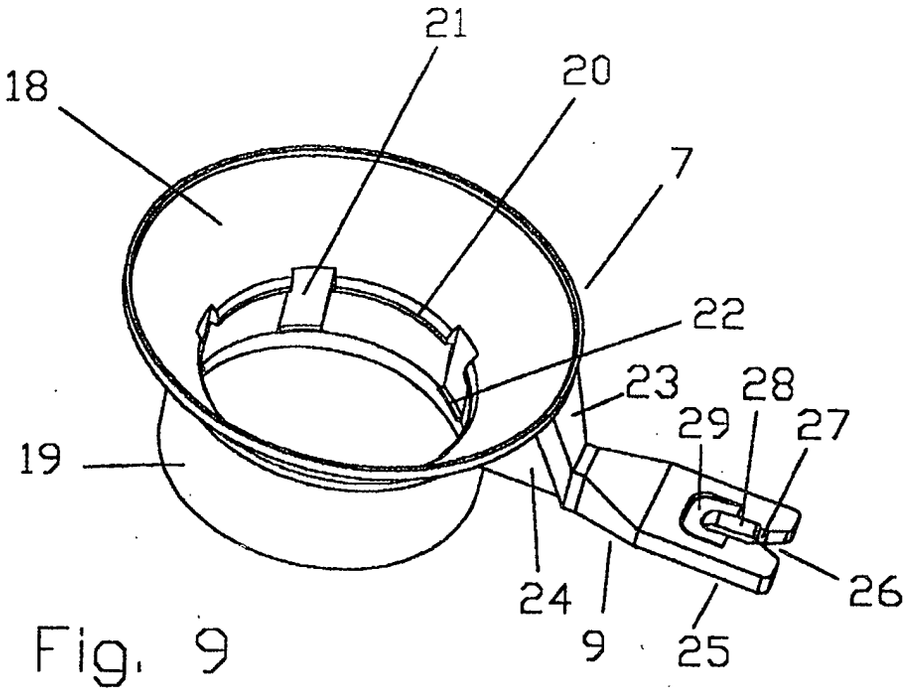
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Fig. 9

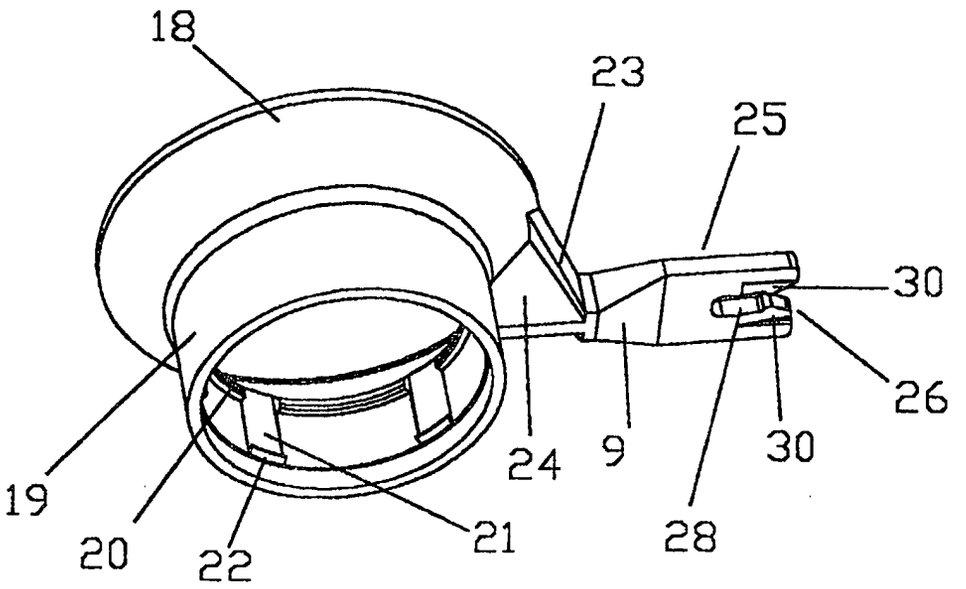
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Fig. 10

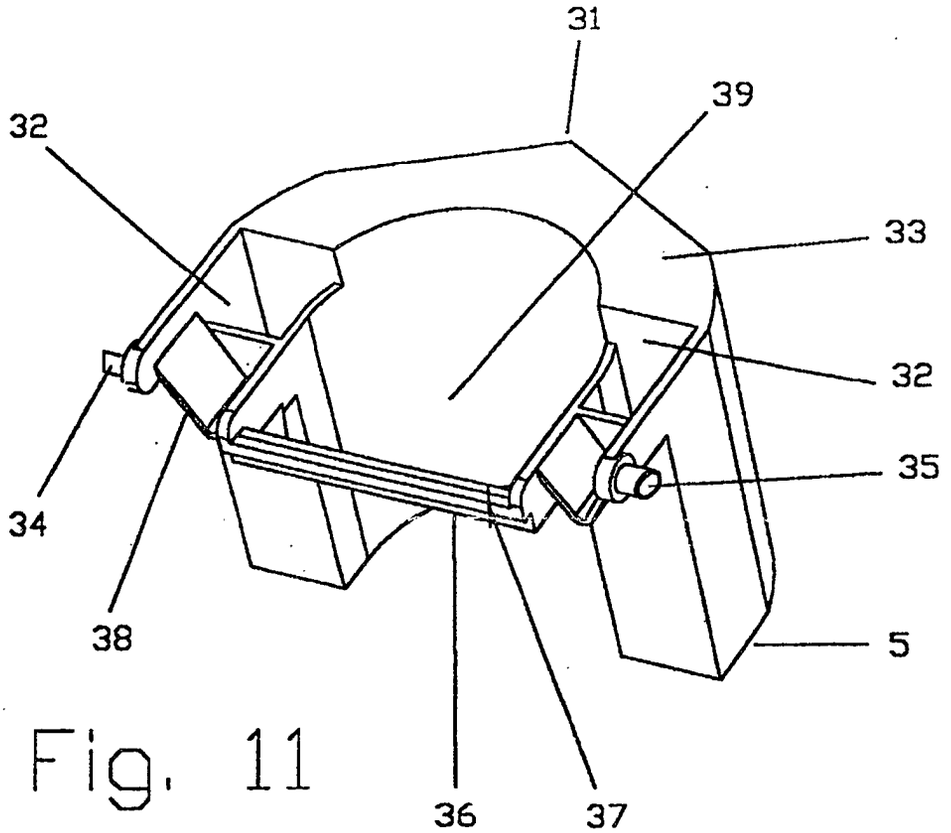

Fig. 11

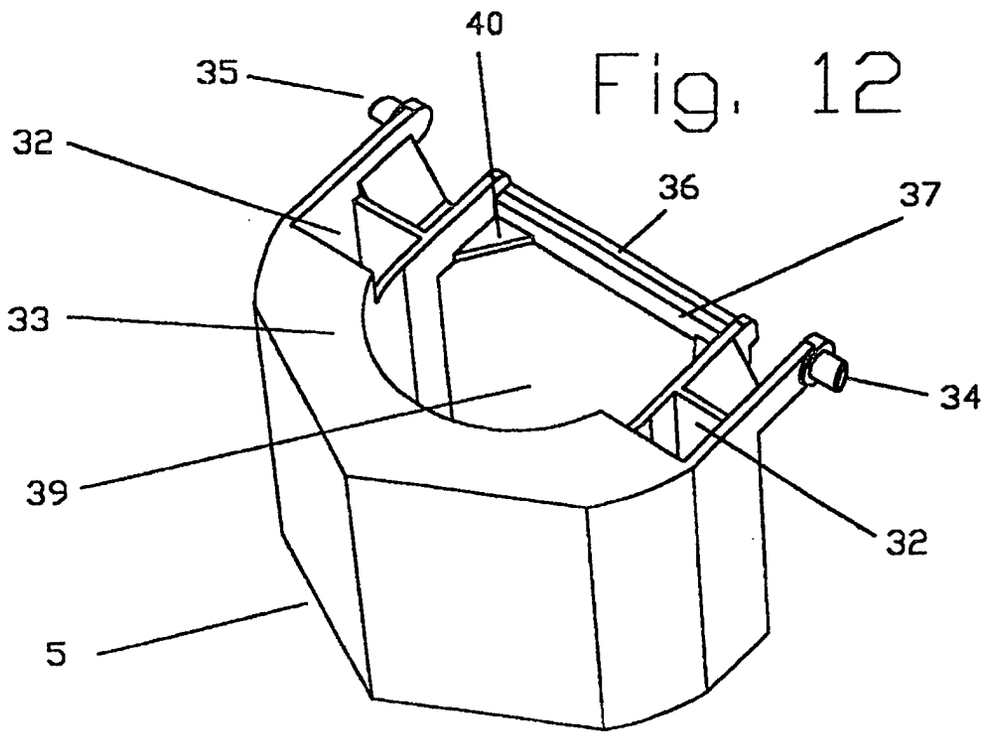

Fig. 12

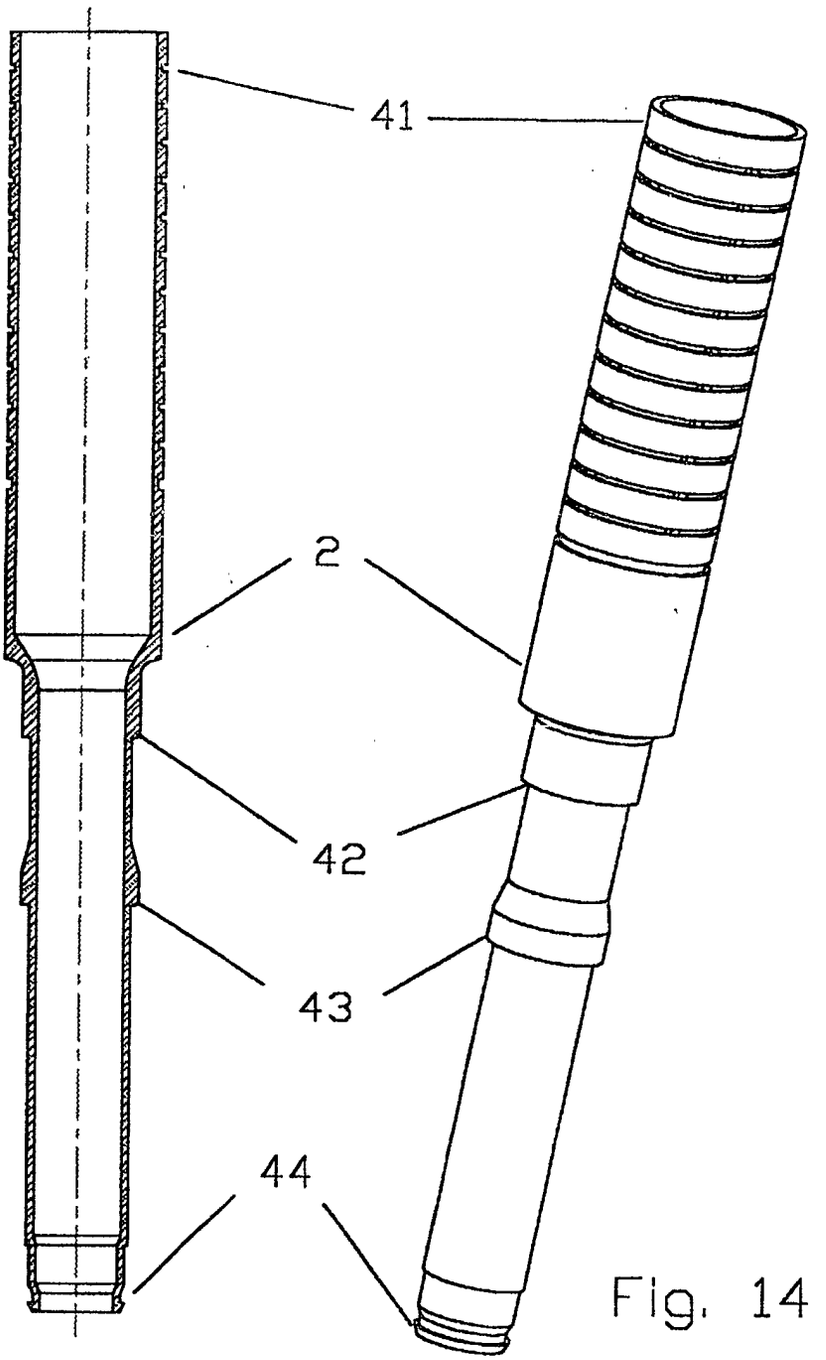

Fig. 13

Fig. 14

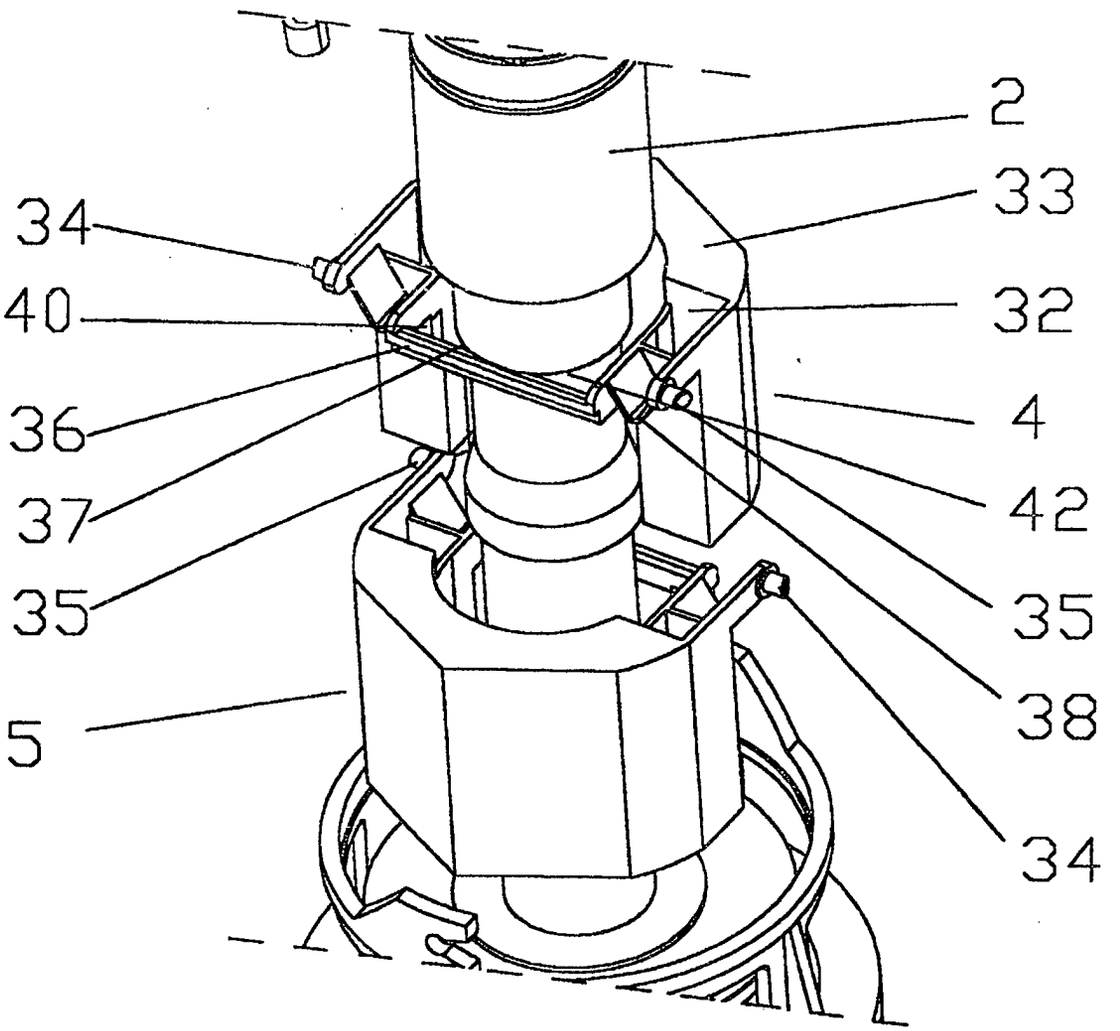

Fig. 15

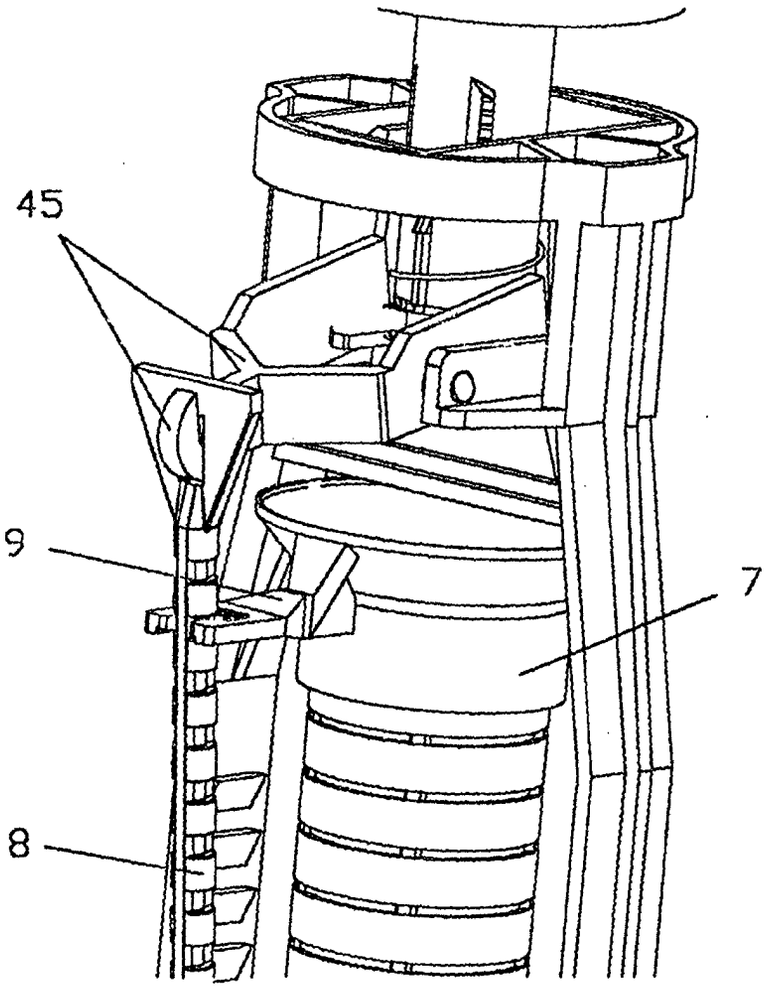

Fig. 16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 01/00289

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E03D 1/14

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 E03D

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)

WPI, EPODOC, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	EP 0727533 A (WISA B.V.) 21.08.1996; column 3, line 3-column 6, line 10 ; figures 1-6.	1-3, 6 7
Y A	WO 0015914 A (FLUIDMASTER, INC.) 23.03.2000; PAGE 8,line 18- PAGE 9, line 18 ; PAGE 12, line s 12-20 ; figures 2-4,7,10.	1-3, 6 4
A	EP 0685605 A (SIAMP CEDAP) 06.12.1995; column 3 , line 31-column 4, line 46 ; figure 1.	1,5
A	ES 1037249 U (ROCA-RADIADORES S.A.) 16.01.1998 ; THE WHOLE DOCUMENT	1,6
A	ES 1018394 U (IDROLS S.A.) 16.01.1992 ; figures.	5

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26.11.2001	04. 12. 01
Name and mailing address of the ISA/ S.P.T.O. Facsimile No.	Authorized officer Telephone No.

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ES 01/00289

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ES 1037249 U	16.01.1998	NONE	
ES 1018394 U	16.01.1992	NONE	

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