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(72) Inventor: **Parra Torres, Francisco**

12002 Castellon (ES)

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(74) Representative: **Urizar Anasagasti, José Antonio**

Puerto Rico 6A, Bajo

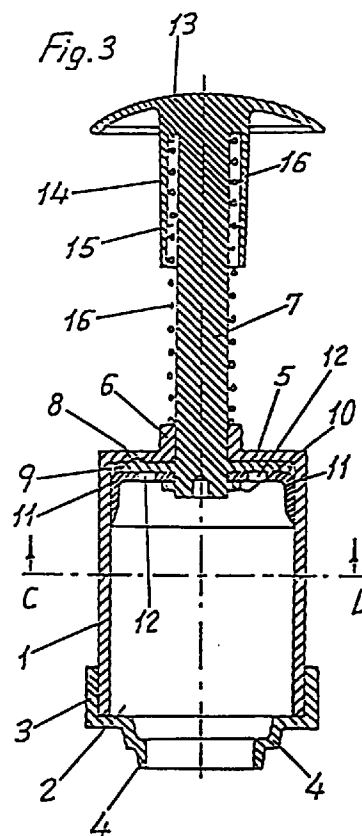
(71) Applicant: **Parra Torres, Francisco**

12002 Castellon (ES)

28016 Madrid (ES)

(54) IMPROVED CLEARING DEVICE FOR DRAINS

(57) Improved clearing device for drains, applicable to sinks and the like, comprising a hollow cylindrical part (1) open at its lower end (2) and to which is externally coupled and pressure fitted a resilient bushing (3) made of rubber or the like which presents at its external and lower portion a stepping (4) with various diameters so that it can be properly adapted to different diameters of drains, the hollow cylindrical part comprising, at its higher closed plane (5) a central hollow neck (6) protruding upwards and wherein is housed the pumping plunger (7) to produce the clearing of the drain; the upper plane of the cylindrical part has a plurality of through holes (12) arranged at equidistant and peripheral positions for the inlet and outlet of water through its upper side.



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Description

In the present description and the complementary drawings attached, we will tend to refer to a new clearing device for drains, with improvements which are an evident novelty in the field of this kind of tools, and it is designed so as to enable a completely comfortable and safe clearing of every kind of washbasins, sinks and the like, whatever drain-diameter of the element to be cleared may be, its design having been studied so as to obtain a clearing device of small dimensions, but with a completely efficient functionality, being preferably made of an unalterable plastic material, allowing an easy and effortless handling for user, and having structural and constitutive characteristics which notably differ from those of various clearing devices which exist at present, for which reasons together with its qualities of novelty and practical utility, it is considered to have a sufficient grounds so as to obtain the privilege of exclusive right claimed, concerning to its manufacturing and sale by the holder in Spain, as a consequence of the present register.

Essentially, the improved clearing device for drains which is the object of the present register, comprises fundamentally of two basic pieces, one of them formed by a hollow cylindrical body open at its lower end, in the opening of which there is an elastical and flexible piece attached, made of rubber or similar, externally provided with several concentric steppings, through which it is possible to adapt the clearing device to various diameters of drains. The piece in the form of a cylindrical body has, at its upper closed plane, a central neck, having a suitable hole, through which a pressure plunger passes, constituting the means for the clearing function, having on said upper plane and equidistantly spaced, several through holes, which allow the pass of outside water, during the pumping action, into the cylindrical body and its subsequent exit.

The other fundamental piece of the improved clearing device is formed by the impelling plunger itself, comprising a central cylindrical body, having at an upper end a head which is pushed by user's hand, the head having at its lower part, an annular descending body where the upper end of an antagonistic spring surrounding the central cylindrical body is lodged, and at its lower end it leans on the central salient neck which forms part of the hollow cylindrical body constitutive of the other piece of the clearing device.

The plunger is located at its lower end within the lower cylindrical body, and comprises a disk attached there to whose diameter is slightly lower than the hollow space of the cylindrical body through which it moves, the plunger having a flange at its end for retaining a resilient bushing coupled to the inner walls of the cylindrical body, said resilient bushing being provided with peripheral through holes for pressure balancing.

For a better comprehension of the general features described above, there are several drawings attached which show a case of practical incorporation of the

improved clearing device for drains object of the invention graphically represented, pointing out that, because of the eminently informative condition of said drawings, the figures designed on the same should be considered with the widest approach and without a limitative character of any part.

The figures represented in attached drawings show as hereinafter specified:

Figure 1.- Longitudinal projection in elevation of the improved clearing device, showing the disposition of the resilient bushing made of rubber or the like arranged at the lower mouth of the hollow cylindrical body, provided with a stepping so that it can be properly adapted to different diameters of drains, having an upper plunger provided with a surrounding spring which, resting at the lower end there of on a neck which forms part of the hollow cylindrical body, and at the upper end there of on the bottom of a neck which forms part of the plunger and below its pushing-head, tends to maintain the pieces separated, thus letting them ready for performing the clearing function by pressure.

Figure 2.- Transversal cross-section by A-B in upper plan view of Figure 1, showing the arrangement of through holes arranged at equidistant positions, for the entrance and exit of water from outside.

Figure 3.- Longitudinal cross-section in elevation of the whole mechanism constituting the improved clearing device, showing the disposal of the various constitutive parts as well as its operation.

Figure 4.- Transversal cross-section by C-D in upper plan view of the hollow cylindrical body according to Figure 3, where the inner resilient bushing is shown mounted at the end of the sliding plunger by means of a retention flange, said resilient plunger having a plurality of through holes in connection with a disk fixed to the plunger itself.

Always refering to the drawings attached, it should be pointed out that, in the various figures shown there in, there are numeral references incorporated in relation to the description of their characteristics and operation explained here in below, thus facilitating its immediate location, (1) being the hollow cylindrical body, opened at the lower end (2), to which the resilient bushing made of rubber or the like (3) is adapted, externally and at its lower part provided with the stepping (4), for allowing its adaptation to the different diameters of drains, said cylindrical body (1) being closed by means of the upper wall (5), in which there is the central neck (6) placed, for the passage of the plunger (7), as well as the through holes (8), arranged equidistantly in its periphery, for allowing the entrance of water from outside and to reach the necessary pressure for the clearing action.

Plunger (7) of a preferably cylindrical shape, in the part placed within the cylindrical body (1), is provided with the disk (9), firmly attached there to whose diame-

ter is slightly shorter than the inner diameter of the cylindrical body (1) itself, having near an end thereof, the flange or circular widening (10) with a groove between the latter and disk (9), for coupling the resilient membrane (11) thereto, provided with the through holes (12) arranged equidistantly and radially in order to drive out the water situated inside the same, the plunger (7) as such having an upper end in a curve-convex head (13), by which the proper pressure is exerted for operation of the clearing device, and which has a descending tubular body (14), with an annular housing (15), for placing the upper end of the antagonistic spring (16), which exerts pressure on the bottom of the annular housing (15), surrounding the plunger (7), and resting at its lower end on the central neck (6) of the cylindrical body (1), tending to hold the plunger (7) up and keep the clearing device ready for use whenever necessary.

Considering extensively described all and each one of the parts which constitute the improved clearing device for drains object of the present invention, it only remains to be noted the possibility for its different parts to be manufactured in a variety of materials, sizes, shapes and colours; in the same way, it is possible to introduce in its constitution, those constructive-kind variations which the practice would recommend, as long as the same is not capable of changing the essential points which are object of the present register.

Claims

1. Improved clearing device for drains essentially characterized in that it comprises a hollow cylindrical piece open at its lower end, where a resilient bushing made of rubber or the like is externally coupled and pressure fitted which externally, at its lower portion, has a stepping, adopting different diameters so that it can be properly adapted to different diameters of drains, the hollow cylindrical part having its higher plane closed and provided with a central hollow and upwardly salient neck, where a pumping plunger is placed to produce the clearing of the drain, the upper plane of the cylindrical part having also a plurality of through holes arranged at equidistant and peripheral positions for the entrance and exit of water through its upper part.
2. Improved clearing device for drains according to the previous claim, essentially characterized in that the plunger of a preferably cylindrical shape has, at its end located inside the cylindrical piece through its central neck, a firmly attached disk, whose diameter is slightly smaller than the inner diameter of the cylindrical body through which it is movable, the plunger having next to its end a flange or circular widening, with a peripheral groove between the latter and the firmly attached disk, wherein a resilient membrane made of rubber or the like, provided with through holes equidistantly arranged, for the

entrance and exit of water lodged inside it, is coupled, said membrane being adapted to the inner walls of the cylindrical body, the plunger ending, at its upper end, in a manual pressure operated curved-convex head, which head having descending tubular body with an annular housing to house the upper end of an antagonistic spring which exerts pressure on the bottom of the annular housing, surrounding the plunger, supported at its lower end on the upper edge of the central neck which forms part of the cylindrical body, tending to hold the plunger up and keep the clearing device ready for use.

In conformity as a whole, in essence and to industrial aims, with what has been described in the preceding description and graphically represented by attached plan for a better comprehension.

Amended claims

1. Improved clearing device for drains comprising a hollow cylindrical piece open at its lower end, where a resilient bushing made of rubber or the like is externally coupled and pressure fitted and, which externally, at its lower portion, has a stepping, with various diameters so that it can be properly adapted to different diameters of drains, the hollow cylindrical part having its upper plane closed and provided with a central hollow neck upwardly salient, where a pumping plunger to produce the clearing of the drain is placed, the upper end of the plunger having at an end a manual pressure operated curved-convex head which has a descending tubular body with an annular housing for placing the upper end of an antagonistic spring there in which surrounds the plunger, resting at its lower end on an upper edge of the central neck which forms part of the cylindrical body, tending to hold the plunger elevated and keeping the clearing device ready for use, characterized in that the upper plane of the cylindrical piece has a plurality of through holes arranged at equidistant and peripheral positions for the entrance and exit of water through its upper side, and in that the plunger of a preferably cylindrical shape has, at its end located inside the cylindrical piece through its central neck, a firmly attached disk, whose diameter is slightly smaller than the inner diameter of the cylindrical body through which it is movable, the plunger having next to its end a flange or circular widening, with a peripheral groove between the latter and the firmly attached disk, wherein a resilient membrane made of rubber or the like, provided with through holes equidistantly arranged, for the entrance and exit of water located inside the same, is coupled, said membrane being adaptable to the inner walls of the cylindrical body.

Brief statement of amendment under article 19(1)

In order to amend the claims 1 and 2 of the international application referenced above, and on the basis of the International Search Report mailed on 20.09.95; new page (6) containing the new claim 1 is attached replacing pages 6 and 7 corresponding to claims 1 and 2 of the original application. 5

Amended claim 1 also comprises characteristics from claim 2 of the application. Claim 2 has been cancelled. All has been carried out in order to adapt the content of the claims of the application in relation to the documents of the present prior art. 10

With this amendment, the invention is claimed, on the basis of features disclosed in the specification. 15

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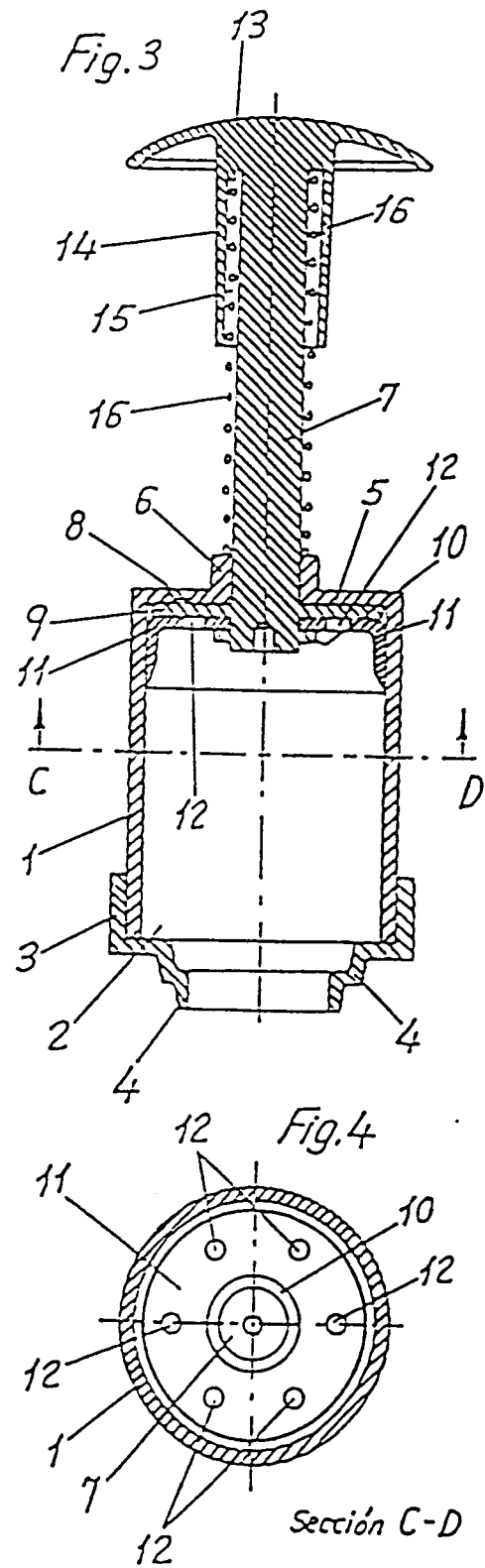
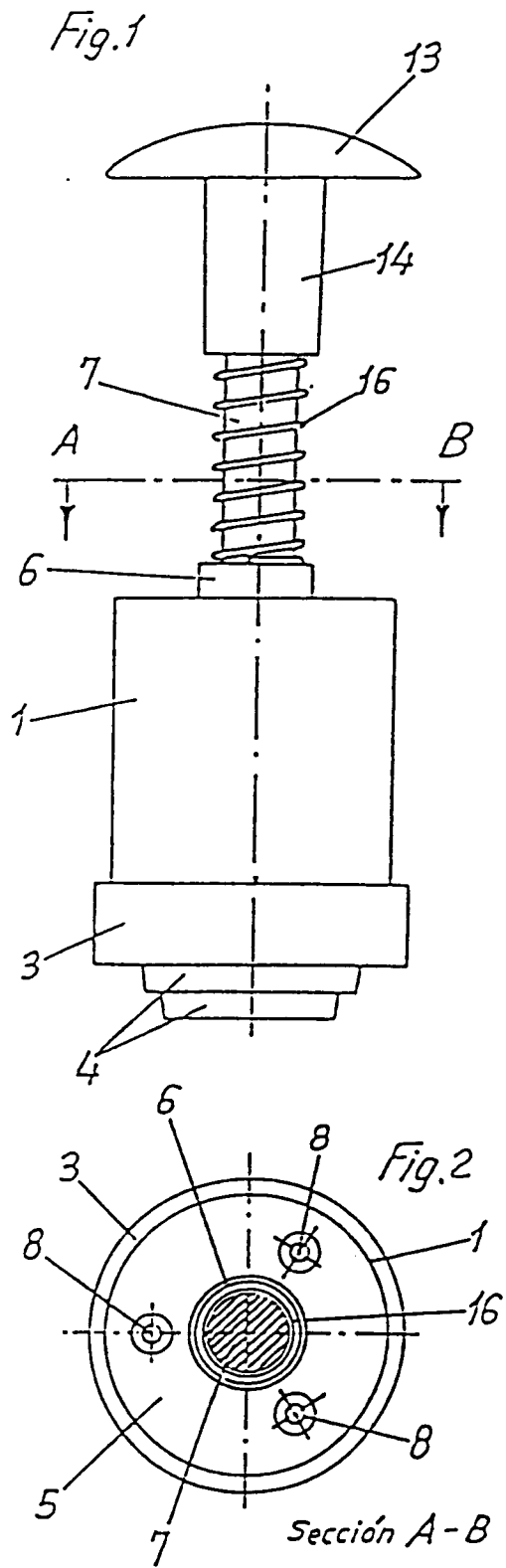
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/ES 95/00071

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 E03C1/308		
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 6 E05C E03C		
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 practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE,A,38 25 426 (SCHELLER) 1 February 1990	1
Y	see the whole document ---	2
Y	US,A,2 128 217 (ANDERSEN) 30 August 1938 see the whole document ---	2
A	US,A,4 733 414 (WILKES) 29 March 1988 see column 3, line 40 - column 6, line 42; figures 1-6 ---	1,2
A	US,A,3 934 280 (TANCREDI) 27 January 1976 see the whole document -----	1,2
☐ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" 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 15 September 1995		Date of mailing of the international search report 20.09.95
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer DE SENA, A

INTERNATIONAL SEARCH REPORT

International Application No
PCT/ES 95/00071

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-3825426	01-02-90	NONE	
US-A-2128217	30-08-38	NONE	
US-A-4733414	29-03-88	NONE	
US-A-3934280	27-01-76	NONE	