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(71) Applicant and

(72) Inventor: ARSENIUK, Roman [PL/PL]; Woclawy 29A,  
PL-83-020 Cedry Wielkie, woj. pomorskie (PL).

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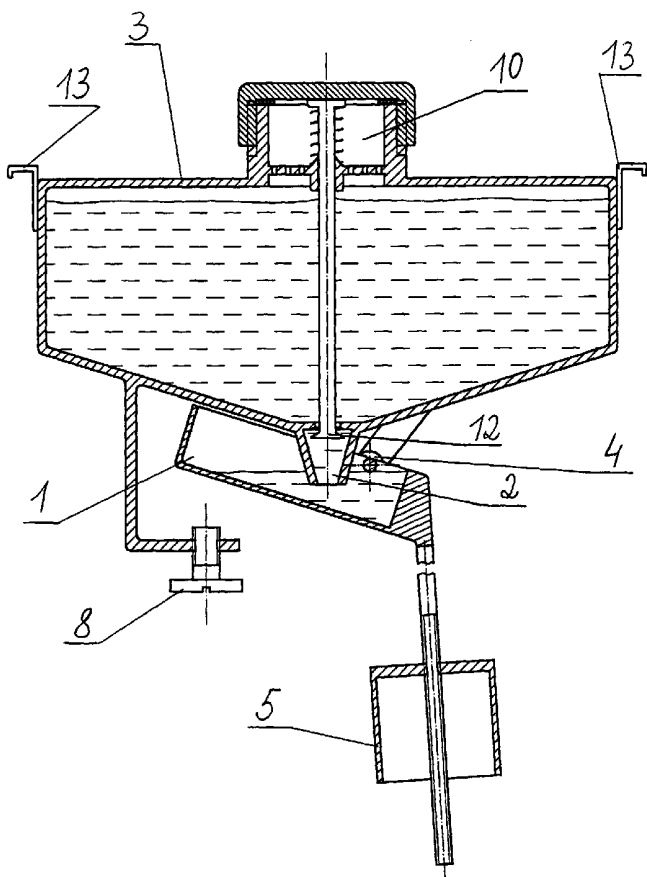
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(54) Title: LIQUID DISPENSER



(57) Abstract: A liquid dispenser for liquid detergents for lavatory flushing, comprising a tilting dosing pot (1) filled by liquid flowing from a dosing neck (2) outlet of the fluid tank (3). The dosing neck outlet (2) being situated below the fluid discharge level of the dosing pot (1). The dosing pot (1) movement can be forced by the uplift pressure of float (5), connected to the dosing pot (1). Adjusted upper-stop (7) can limit upper tilt of the dosing pot (1), and its lower position can be limited by adjustable lower-stop (8).



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## LIQUID DISPENSER

The object of the present invention is a liquid dispenser especially for liquid detergents for lavatory flushing helping in maintaining the required hygiene level of flushing and lavatory pan.

There are known dispensers placed inside flushing tank. One device known from Polish patent description no 175611 has a form of a spherical tank, which is filled with cleaning-disinfecting medium and placed directly in the flushing tank. After flushing, the tank drops to the bottom and the valve is open tapping a dose of medium into flushing tank. The increase of the water level closes the valve.

The disadvantage of mentioned solution is the necessity of dismantling the flushing for fluid tank for refilling and lack of ability to control the amount of dosed fluid.

The dispenser, according to the present invention, consists of a tilting dosing pot filled with liquid flowing from a dosing neck connected to the tight and appropriately stiffened fluid tank. The end of the dosing neck reaching into dosing tank is fixed under the fluid outlet level from dispenser.

The movement of the dosing pot hangs on a catch, preferably hinged, and could be forced by float uplift pressure. Preferably, the float should be connected to the dosing pot.

The tilt of the dosing pot could be also forced by a basket filled with water. Preferably, the basket is not watertight.

The up tilt of the dosing pot could be limited by adjustable up-stop and the down position could be adjusted by down-stop.

The dosing pot capacity could be adjusted by screw. The filling of the dosing pot could be adjusted by screw joint changing the distance between dosing pot and dosing neck end. The required distance would preferably be achieved by rotation of the nut on the dosing neck joined to the dosing pot catch.

The fluid tank could have a tightly closed filling hole. The filling hole would preferably be separated from the fluid tank by filling pipe.

The fluid tank could also have a valve closing liquid discharge from dosing neck end. The discharge closing would preferably be connected with fluid tank filling hole opening.

The dosing neck could be separated from the fluid tank by filling pipe. The fluid tank would preferably be fixed to the flushing wall.

The dispenser could be separably mounted on a rack. Such a rack would preferably be placed inside flushing tank.

Bottom of the dosage pot could be supplied with cup closing the dosage neck end before installation of the dispenser.

The dispenser according to the present invention enables dosage of detergents into all kinds of flushing devices equipped with tanks. The dispenser solution has wider possible applications e.g. for hand cleaner dosage.

The solution according to the present invention would be explained on the examples presented on the figures, where, fig.1 to fig. 4 presents cross-sections of the fluid detergents dispensers mounted in flushing, and fig.5 presents cross-section of the general use dispenser. The dispenser consists of tight and suitably stiffened fluid tank (3) and tilting dosage pot (1) filled by fluid flowing from dosing neck (2) and suspended on the catch (4). The dosing neck (2) end reaching into dosing pot (1), is fixed under fluid outlet level from dosage pot (1). Such dosing neck (2) end location prevents uncontrolled fluid discharge. The dosing pot (1) volume could be adjusted by screw (9).

The filling hole (10) is removed from the fluid tank body (3) as well as from flushing by a filling pipe (11), which in this case is an elbow.

The proper work of the dispenser is conditioned by tightness of the filling hole (10) and elbow joint with fluid tank (3).

Discharge of the fluid from dosing pot (1) is forced by dosing pot (1) tilting induced by uplift pressure of the float (5), which is connected to it. Threaded float (5) catch allows for the change of float (5) position against water level in flushing. This makes possible the selection of the right moment of detergent dosage. It could even be connected with dosing option selection. The dosage after partial or full flushing emptying could be provided.

Fig.1b presents dosing pot (1) in maximum upper position forced by float (5). In that position, the dosing pot (1) is almost fully emptied.

Into the dosing neck (2) end is pressed down the seal placed on the bottom of the dosing pot (1). It protects against uncontrolled discharge of the fluid from the fluid tank (3) during refilling when the flushing device is full.

The liquid detergents' dispenser provided with hooks (13) for hanging on the flushing tank is presented in fig.2. The dispenser is equipped with valve (12) closing at time of opening of the filling hole (10) of the fluid tank (3). This eliminates the possibility of uncontrolled discharge of the fluid from dosing neck (2) during fluid tank (3) refilling.

In the presented example, the discharge of the fluid from tilted dosing pot (1) is forced by float (5) falling after water discharge from flushing. The water level rise and the float (5) rise will fix the dosing pot (1) in horizontal position with fluid discharge from dosing neck (2) stop when fluid fills the dosing pot (1) up to dosing neck (2) level. The horizontal position of dosing pot (1) is adjusted by

down-stop (8), in form of a screw located on the arm mounted to the fluid tank (3). Adjustment of that screw can change the dosed fluid portion.

The moment of dosing fluid to discharged flushing water could be controlled by float (5) displacement on the arm.

According to fig.3, the dosing neck (2) is mounted using one of the holes in the flushing device provided for water supply. The filling pipe (11) moves dosing neck (2) away from the fluid tank body (3), which is located outside the flushing device. The upper position of the dosing pot (1) is adjusted by upper-stop (7), which could be used for adjusting the fluid amount discharged into the flushing tank.

In the position as shown in fig. 3, the dosing pot (1) connected to the transparent basket (6) is raised by a spring. The portion of the liquid is discharged during rising of the dosing pot (1).

The filling of the flushing tank by water is connected with filling of the basket (6). When the flushing is activated, the water level rapidly goes down. Because of suitably small holes in the basket, the weight of water remains in it causing the dosing pot (1) to fall. During falling of that pot, the dosing neck (2) outlet for a short time is placed over fluid level in dosing pot (1). That will cause flow of the liquid from tank (3) to dosing pot (1), until the level of dosing neck (1) outlet is reached.

Fig.4 shows the dispenser mounted in the rack (14) stood on the flushing tank bottom. The dosing neck (2) is connected separably with fluid tank (3). The discharge of the fluid from the dosing pot (1) is caused by rising with incoming water of the float (5), whose movement is determined by rack bush. Lowering of the water level in the flushing along with lowering of the float (5) is connected with lower position establishment of dosing pot (1). The distance between dosing pot (1) and dosing neck (2) outlet depends on the height of screw on dosing neck (2) fixed with a catch (4). Lowering of that distance permits the reduction even down to zero of the fluid volume filled into dosing pot (1).

Fig.5 presents the dispenser mounted separably in the catch. The fluid discharge is forced by raising the dosing pot (1) by hand. Lowered dosing pot (1) is self filled because during lowering, the dosing neck (2) outlet will be for a moment over the fluid level in the dosing pot (1). That will cause flow of the liquid from tank (3) to dosing pot (1), up till the level of dosing neck (1) outlet is reached.

The solution of the hinge catch (4) making impossible the lowering of the dosing pot (1) below a specified level. The upper-stop (7) is in that case the nut on the dosing neck (2).

In the presented example, the plug (15) mounted on the dosing pot (1) bottom is the primary closure of fluid tank (3), which could be an adequately stiffened ordinary bottle.

## Claims:

1. A liquid dispenser especially for liquid detergents for lavatory flushing comprising the fluid tank characterized in that the dosing pot (1) is filled by liquid flowing from the dosing neck (2) outlet connected with a stiffened and tight fluid tank (3) and reaching inside the dosing pot (1), when the dosing neck (2) outlet is fixed below the fluid discharge level from dosing pot (1).
2. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) is suspended on the catch (4), profitably hinged.
3. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) movement is forced by float (5) uplift pressure, preferably joined with the dosing pot (1).
4. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) movement is forced by weight of water filled basket (6), preferably leaky.
5. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) upper tilt is limited by upper-stop (7).
6. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) lower tilt is limited by lower-stop (8).
7. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) capacity is reduced by screw (9).
8. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) distance from dosing neck (2) outlet is adjusted by threaded connection, preferably in form of a nut connected to the catch (4) rotated on the dosing neck (2).
9. A liquid dispenser as claimed in Claim 1 characterised in that the said fluid tank (3) has tightly closed filling hole (10), preferably moved away from fluid tank body (3) by a filling pipe (11).
10. A liquid dispenser as claimed in Claim 1 characterised in that the said valve (12) prevents fluid egression from dosing neck (2) of fluid tank (3), preferably at the moment of filling the hole (10) of fluid tank (3) opening.
11. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing neck (2) is moved away by a filling pipe (11) from the fluid tank (3), profitably mounted outside the flushing device.
12. A liquid dispenser as claimed in Claim 1 characterised in that the said fluid tank (3) has at least one hook (13) for mounting the dispenser in the flushing, preferably on the flushing wall.

13. A liquid dispenser as claimed in Claim 1 characterised in that the said is mounted separably in a rack (14), preferably placed inside the flushing tank.
14. A liquid dispenser as claimed in Claim 1 characterised in that the said dosing pot (1) bottom has a plug (15) primarily closing the dosing neck (2) outlet.

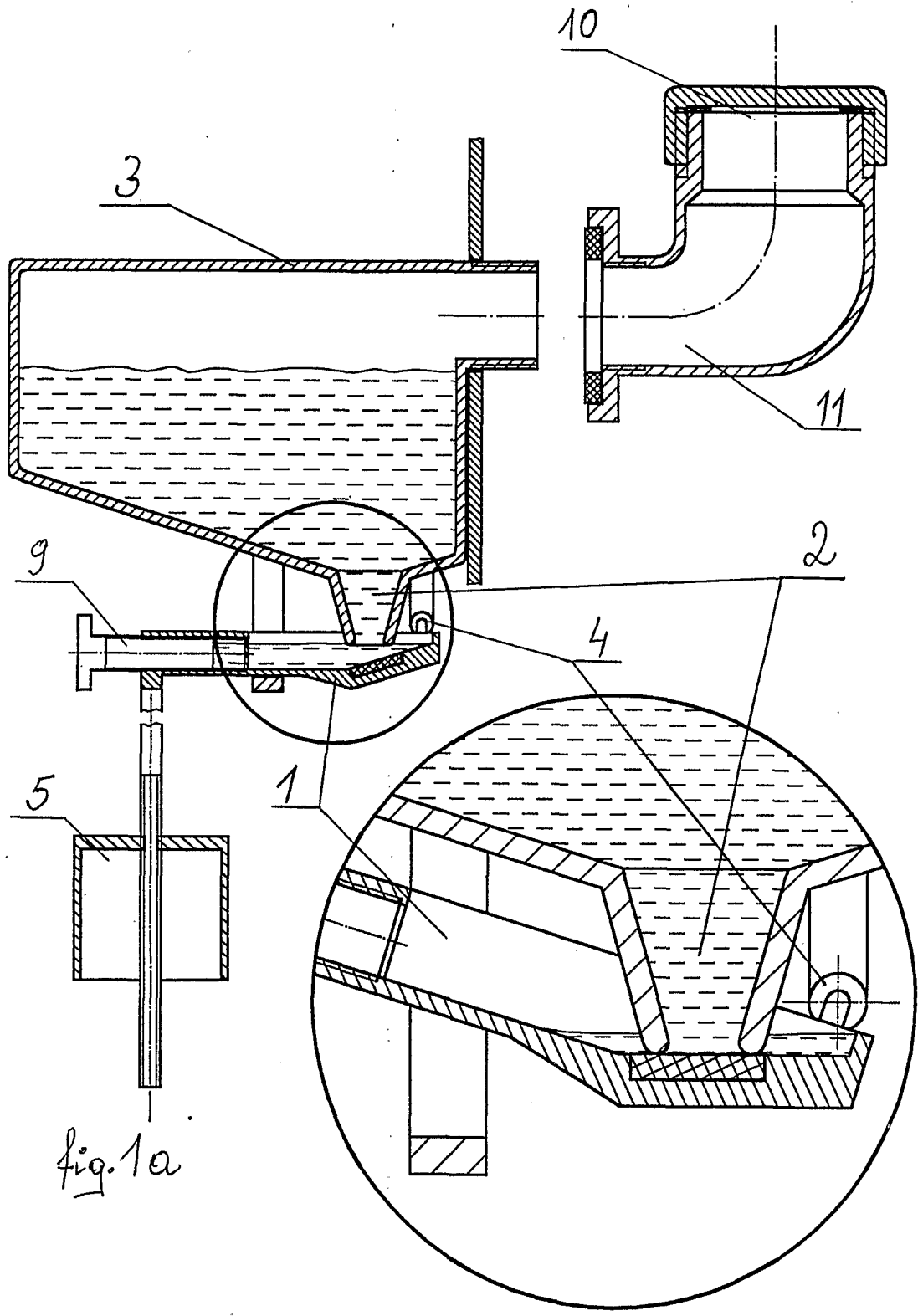


fig. 1a

fig. 1b



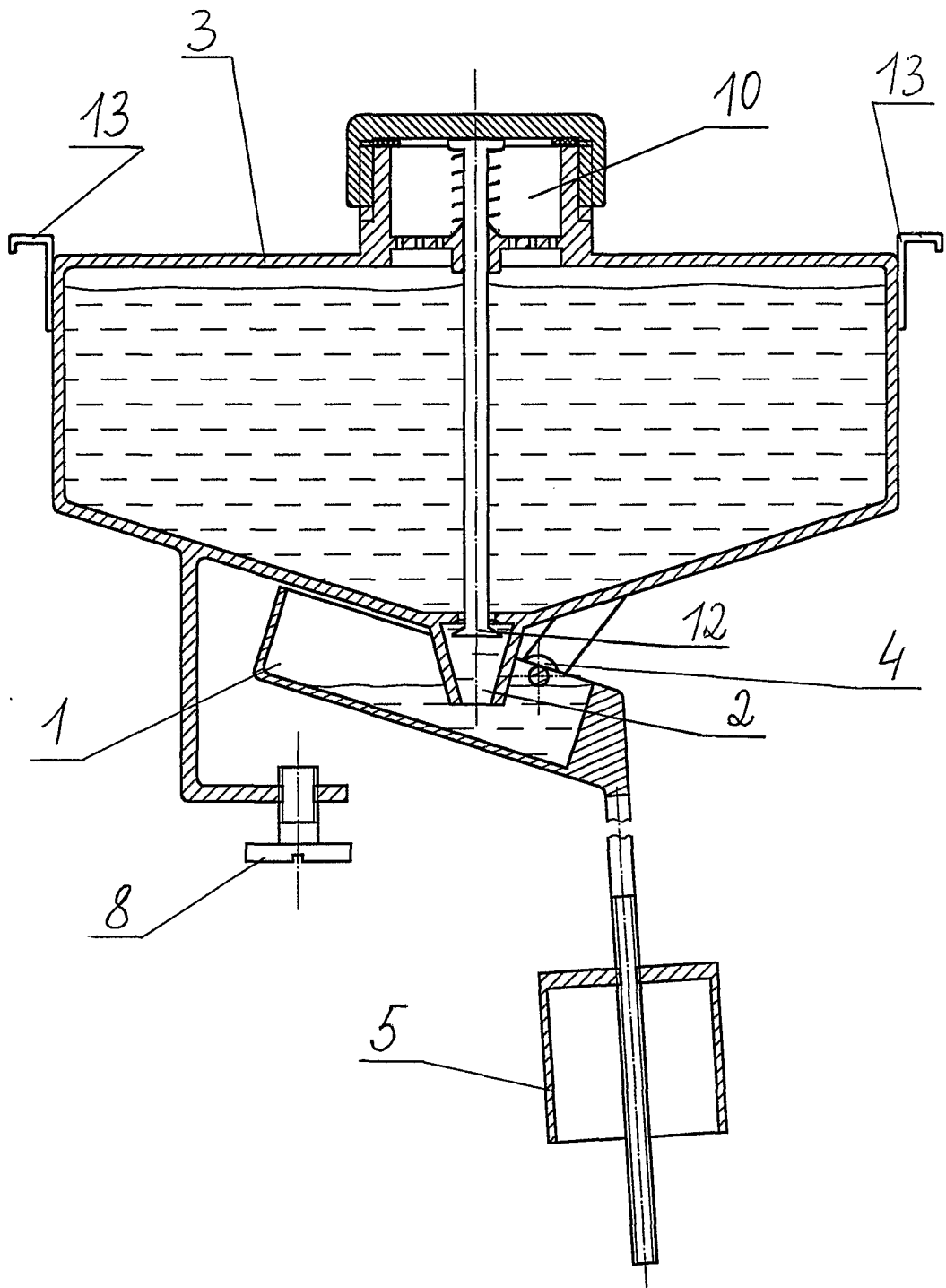


fig. 2

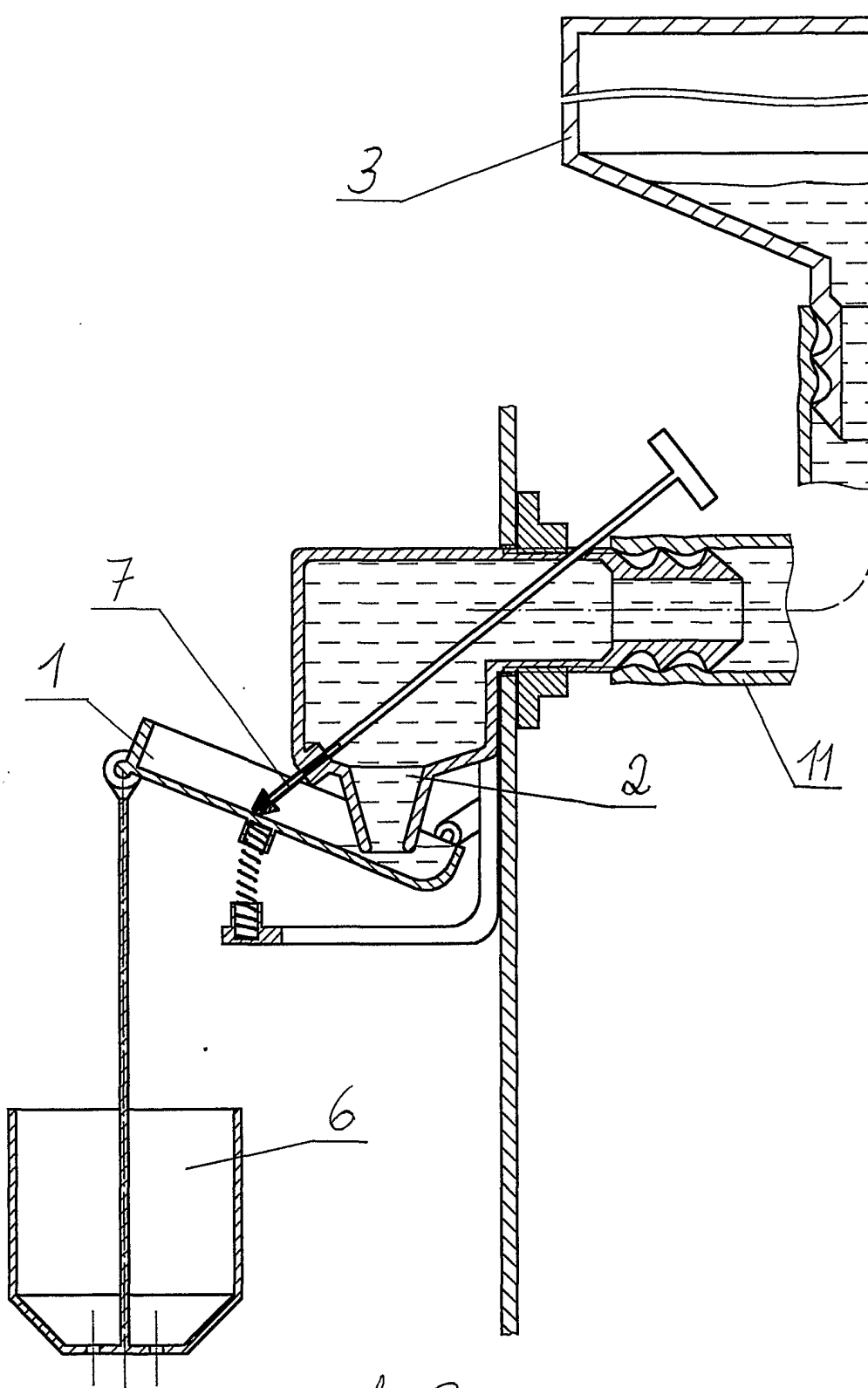


fig. 3  
3/5

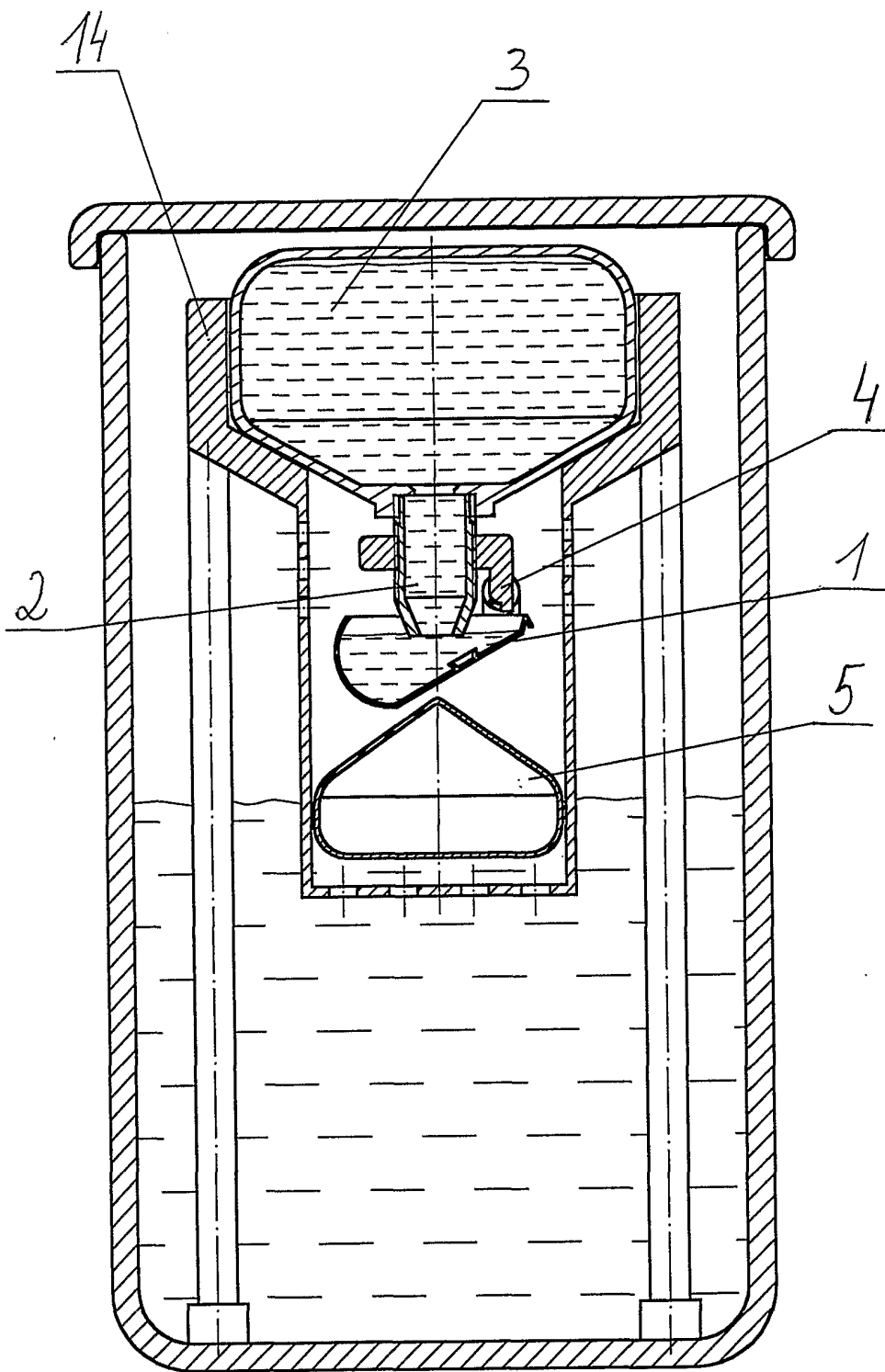


fig. 4

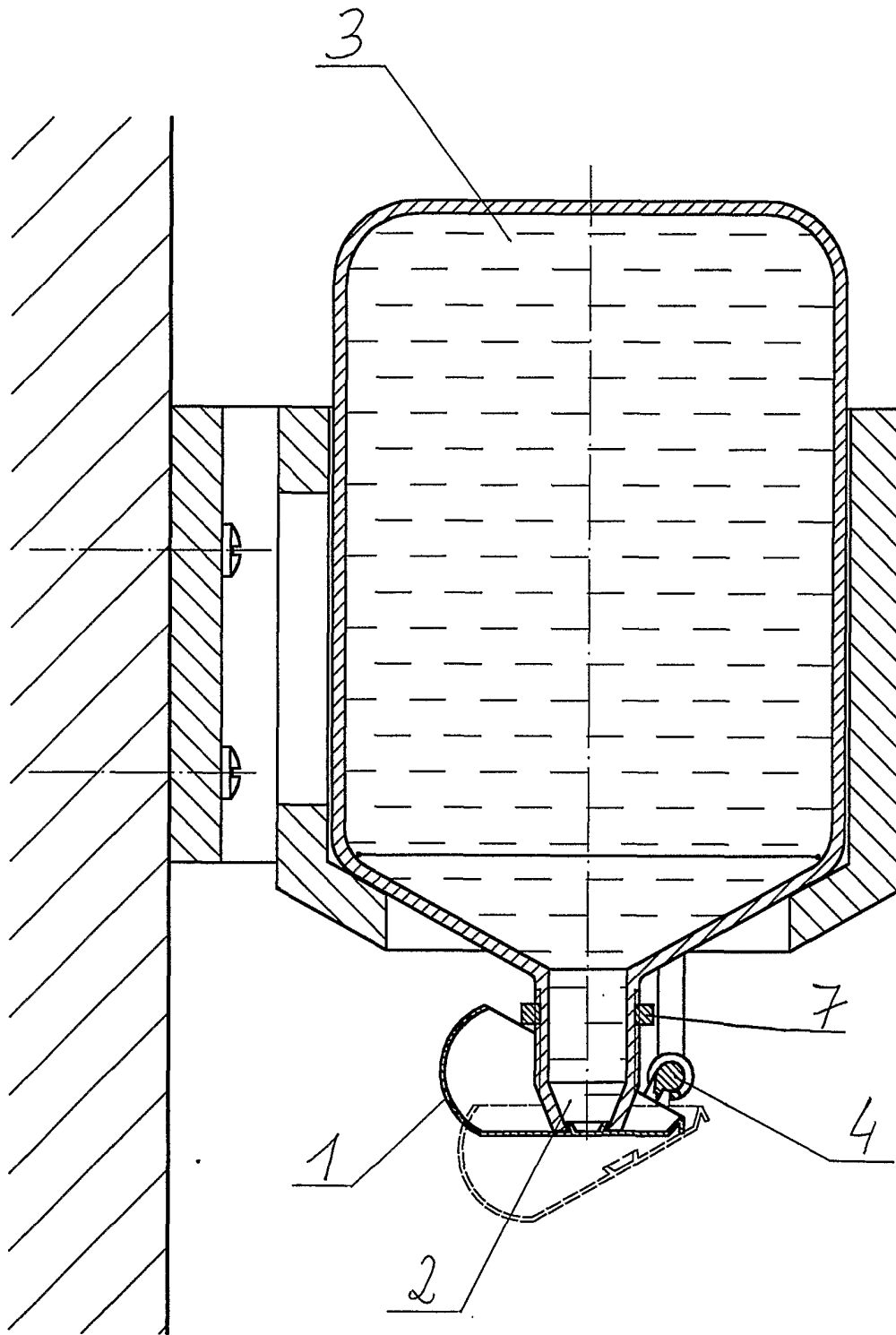


Fig. 5

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 E03D9/03 E03D9/02

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Patent family members are listed in annex.

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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

Isailovski, M

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/PL 01/00041

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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