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(54) **Rotable bleeding valve for heating installations**

(57) A rotatable bleeding valve for heating installations, comprising an external body (1), a cover (3), a float (11) with an inclined plane (13) acting on a stem (15) of a shutter (17), a cylindrical spring (25), intended to keep said shutter (17) closed, and a cap (27) on the cover (3), wherein the wall of the external body (1), with a smooth upper end (31), has a threaded toroidal pro-

jection (33), onto which a corresponding threaded projection (35), in the lower end of cover (3) is secured; and wherein said cover (3) has its lower portion (37) shaped with an arc-shaped cavity (39) and a beat (40) which rests against the upper edge (31) of the cylindrical body (1); the gasket (9), pressed between said two walls (31, 39), occupying the space between them and providing anyway a seal.

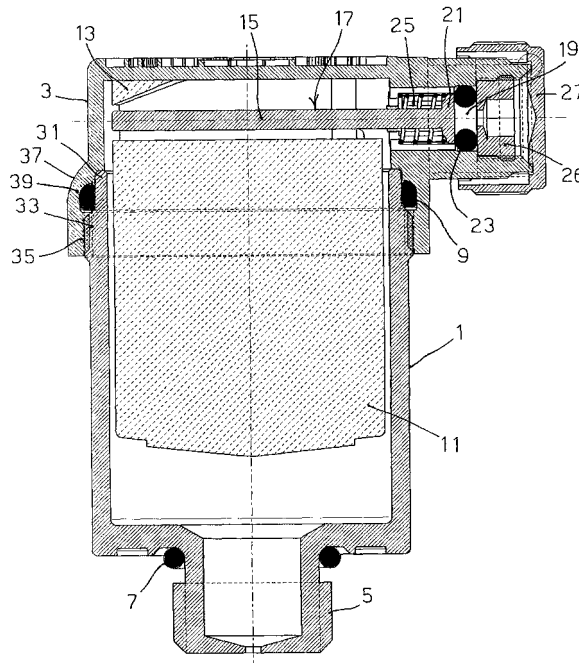


FIG. 1

Description

[0001] The present invention relates to a rotatable bleeding valve for heating installations.

[0002] It is known that in heating installations, such as radiators or the like, where a hot liquid circulates, any air trace is to be eliminated in order to achieve a good installation operation.

[0003] A practical and known system is mounting a manually or automatically operated bleeding valve at the highest circuit point. Such valve substantially exploits the action of a float that, when not in contact with the water, is lowered in its seat and provides for automatic air discharge.

[0004] The applicant is the owner of previous international patent application PCT/EP99/03638 filed on 26.05.1999, concerning an automatic air bleeding valve having several advantages over prior art valves, such as greater manufacturing simplicity, reduced size, limited cost and greater operation safety.

[0005] Sometimes, once said valve has been mounted and tightened, it is not oriented in the most appropriate manner for the user, because either the discharge opening faces a wall (a possible steam exhaust could damage the wall paint or the wallpaper) or it is turned in another uncomfortable position.

[0006] It is an object of the present invention to overcome the above drawback, by providing a valve that is quite similar to the valve discussed above, and yet allows an easy and comfortable orientation of the valve itself while ensuring at the same time a perfect seal, whatever the valve orientation.

[0007] The novel features of the present valve will become apparent from the claims that follow.

[0008] The present invention will now be described in detail with particular reference to the accompanying drawings, given by way of non limiting example, in which:

- Fig. 1 is a side view of a longitudinal cross section of the device of the invention;
- Fig. 2 is a detailed view, in enlarged scale, showing the manner in which the seal between the upper and lower portions of the device has been obtained, in order to provide a seal while the valve is being rotated.

[0009] As it is clearly apparent in the drawings, the valve of the invention substantially comprises:

- a substantially cylindrical external body 1, on which a cover 3 is secured by means of a thread, and which is provided at its lower end with a threaded portion 5 allowing the device to be mounted in the installation with the interposition of a suitable O-ring or other gasket 7;
- a cover 3, secured to said external body 1 with the interposition of a suitable sealing gasket 9;

- a float 11, arranged inside external body 1 and provided with an inclined or horizontal abutting plane 13 acting on a stem 15 of a shutter 17, in order to automatically open and close opening 19 in said shutter 17 when said float 11 is lowered or lifted;
- a shutter 17, having a stem 15 and a head 21, the latter being arranged to sealingly engage a toroidal or differently shaped gasket 23, e. g. a lobed O-ring;
- a cylindrical closing spring 25, intended to keep said shutter 17 closed against said lobed toroidal gasket 23, in turn resting against a blocking ring 26;
- a cap 27 on cover 3, which cap, when loosened, allows automatic valve operation, whereas, when tightened, it closes the chamber of opening 19.

[0010] As to other constructional details, reference is made to the specification of the above-mentioned PCT application in the name of the same Applicant.

[0011] Attention is drawn on the manner in which the seal between cover 3 and external body 1 is obtained with the interposition of sealing gasket 9.

[0012] As it is apparent from Figs. 1 and 2, the wall of external body 1 is not completely cylindrical but it has, before its upper end 31, a toroidal or differently shaped threaded projection 33, onto which a corresponding projection 35, also threaded, in the lower end of cover 3 will be secured. Said cover 3 has a shaped lower portion 37, namely with an arc-shaped cavity 39 upstream of threaded portion 35 and a beat 40 which rests against upper edge 31 of cylindrical body 1.

[0013] Gasket 9, pressed between said two walls, namely cylindrical external wall 31 of hollow body 1 and internal wall 39 of lower end 37 of cover 3, becomes deformed and occupies the space between said two walls: thus it provides anyway a seal between said walls, both when cover 3 is tightly screwed onto body 1, and when it is even partly unscrewed to direct the valve bleeding flow in the desired direction.

[0014] The chamber outside spring 25 in the cover in the prior art embodiment had a cavity allowing air flow around the shutter.

[0015] Said cavity is now dispensed with and is replaced by a set of teeth guiding the shutter along the whole chamber length and allows air flow between the teeth.

Claims

1. A rotatable bleeding valve for heating installations, substantially comprising:
 - a substantially cylindrical external body (1), onto which a cover (3) is secured by means of a thread engagement, and which is provided at its lower end with a threaded portion (5) allowing the valve to be mounted in the installation with the interposition of a suitable O-ring or oth-

- er gasket (7);
- a cover (3), secured to said external body (1) with the interposition of a suitable sealing gasket (9);
- a float (11), arranged inside the external body (1) and provided with an inclined plane (13) acting on a stem (15) of a shutter (17), in order to automatically open and close the opening (19) in said shutter (17) when said float (11) is lowered or lifted;
- a shutter (17), having a stem (15) and a head (21), the latter being arranged to sealingly engage a toroidal gasket (23);
- a closing spring (25), intended to keep said shutter (17) closed against said toroidal gasket (23), in turn abutting against a blocking ring (26);
- a cap (27) on the cover (3), which cap, when loosened, allows automatic valve operation, whereas, when tightened, it closes a chamber of the opening (19);

characterised in that the wall of the external body (1) has a smooth upper end (31) and has, before said end (31), a toroidal projection (33), onto which a corresponding projection (35), also threaded, in the lower end of cover (3) will be secured; **in that** said cover (3) has a shaped lower portion (37), having an arc-shaped cavity (39) upstream of the threaded portion (35) and a beat (40) which abuts against the upper edge (31) of the cylindrical body (1); **in that** the gasket (9), pressed between said two walls, namely the cylindrical external wall (31) of the hollow body (1) and the arc-shaped internal wall (39) of the lower end (37) of the cover (3), occupies the space between said two walls (31, 39), thereby providing anyway a seal between the walls, both when the cover (3) is tightly screwed onto the body (1), and when the cover is even partly unscrewed to direct the valve bleeding flow in the desired direction.

2. A rotatable bleeding valve for heating installations according to claim 1, **characterised in that** the closing spring (25), downstream the shutter (17) in the bleeding direction, is cylindrical and is housed in an internally grooved duct seat, having suitably spaced straight grooves.
3. A rotatable bleeding valve for heating installations according to claim 1, **characterised in that** the shutter (17) is guided by a set of teeth provided along the whole chamber length and allowing air flow between the teeth.

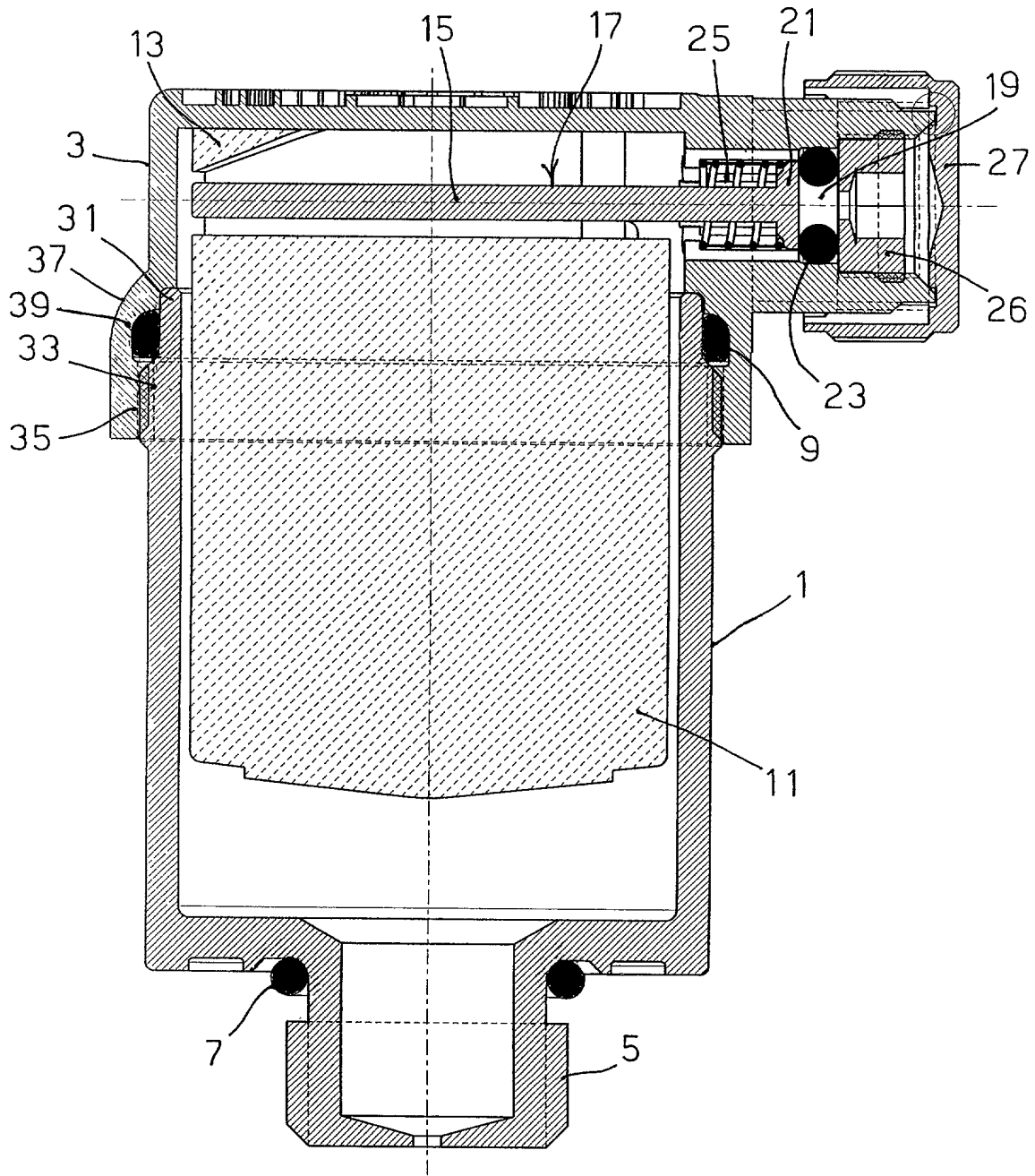


FIG. 1

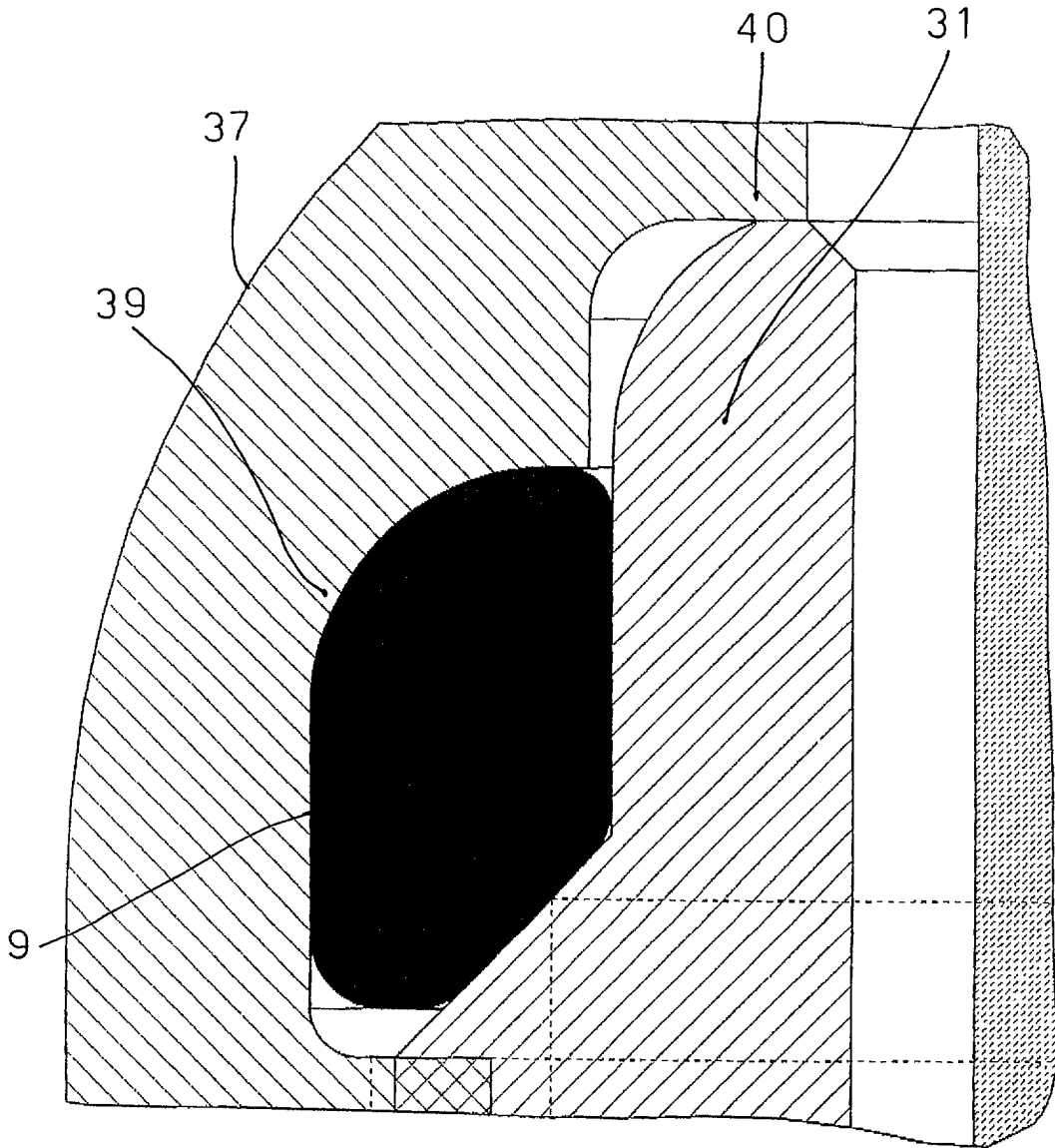


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0055

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.7)
A	DE 297 15 018 U (VOGT KLEMENS) 30 October 1997 (1997-10-30) * the whole document *	1	F24D19/08
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F24D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 July 2001	Examiner Van Gestel, H
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/02 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 83 0055

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-07-2001

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