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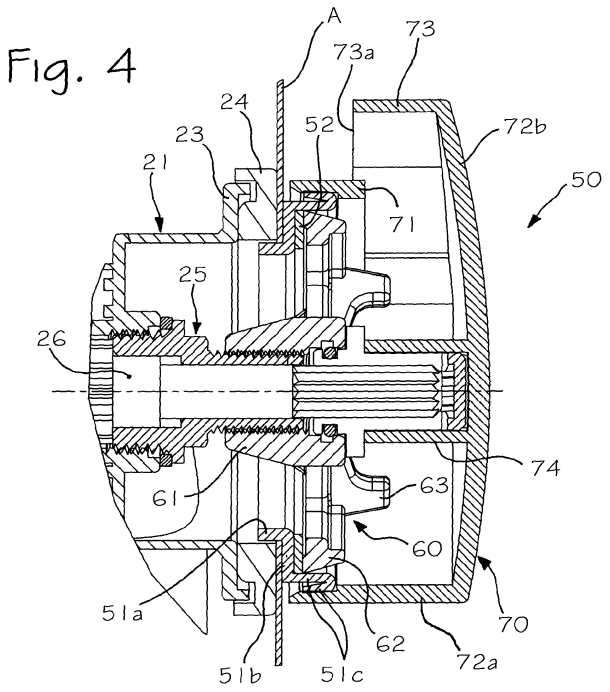
A request for correction of title has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(54) Overflow device for sanitary articles

(57) Described herein is an overflow device for a sanitary apphance having a receptacle (A) for collecting water with an overflow hole (B). The device (50) comprises mounting means (21, 25, 26, 60), designed to be installed at the overflow hole (B), and a body (70) designed to be supported by the mounting means (21, 25, 26, 60). Said body (70) is provided with an opening for passage of the water (73a), and the device (50) is prearranged in such a way as to enable modification of the position in height of the opening (73a) with respect to the overflow hole (B), and thus vary the overflow level of the receptacle (A). The opening (73a) is in fluid communication with the overflow hole (B) in any position of said body (70) on the mounting means (21, 25, 26, 60).

Fig. 4



EP 1 826 324 A1

Description

[0001] The subject of the present invention is an overflow device for sanitary appliances that have a receptacle for collecting water, such as wash-basins, sinks, bathtubs, and the like.

[0002] As is known, receptacles for collecting the water of sanitary appliances of the type referred to above typically comprise both a waste hole and an overflow hole. In a traditional system, the water starts to drain through the overflow hole substantially as soon as the lowest point of the hole itself is reached.

[0003] In some cases provided within the receptacle is a covering element or guard, supported by corresponding mounting members fixed at the overflow hole, wherein the covering element is designed prevalently to hide from view the aforesaid hole and the corresponding mounting members. In certain solutions, the covering element is fixed, having substantially the shape of a mushroom, whilst in other solutions the function of the covering element is performed by a rotatable knob for operation of a device for controlling drainage of the receptacle. In both types of solution the element for covering the overflow hole is physically positioned at a certain distance from the wall of the receptacle, in order to leave an interstice that enables the water to reach the overflow hole, if need be. In currently known solutions, the level of overflow is determined by the position of the corresponding hole made in the receptacle.

[0004] The general task of the present invention is to provide an overflow device that will enable variation of the overflow level in a sanitary appliance. In the framework of this task, an aim of the invention is to provide a device that enables the point for overflow of the water to be raised by a few centimetres with respect to the overflow level originally envisaged for the receptacle of the sanitary appliance. Another aim of the invention is to provide a device of the type referred to above that can be applied to already existing sanitary appliances. A further aim of the invention is to provide a device of the type referred to that is constructionally simple and reliable in use. Yet a further aim is to provide a device of the type referred to that is particularly advantageous in use in combination with a drain device for sanitary appliances.

[0005] The above and other aims, which will be highlighted hereinafter, are achieved by an overflow device for sanitary appliances having the characteristics of the annexed claims. The claims form an integral part of the technical teaching provided herein in relation to the invention.

[0006] Further purposes, characteristics and advantages of the invention will emerge more clearly from the ensuing description of a preferred, but non-exclusive, embodiment thereof, illustrated by way of indicative and non-limiting example in the attached plate of drawings, in which:

- Figure 1 is a schematic side view that illustrates an example of use of the overflow device according to the invention, in combination with a drain device for a bathtub, the latter being represented just partially in cross section;
- Figure 2 is an exploded perspective view of the device according to the invention;
- Figure 3 is a perspective view of a component of the device of Figure 2; and
- Figure 4 is a lateral cross-sectional view of the device of Figure 2, in an assembled condition.

[0007] In Figure 1, reference number 1 designates as a whole a drain device for a sanitary appliance, particularly of the type known as "drain column".

[0008] The drain column 1 comprises a drain assembly 10 and an overflow assembly 20. In the example illustrated, the assemblies 10 and 20 are installed in a position corresponding to a waste hole and an overflow hole of the bathtub A. The drain column 1 moreover comprises a dedicated pipe 30, which hydraulically connects the two assemblies 10 and 20 together. As in the case of the known art, each assembly 10, 20 of the drain column 1 comprises a drain body, or collecting body, and a mounting body, which are designed to be installed in a position corresponding to the respective opening of the bath A. The drain bodies are installed on the external part of the bath, whilst the mounting bodies are installed on the internal part of the bath, in such a way that gripped between the two components, with the interposition of sealing means, is a portion of wall of the bath that identifies the edge of the waste opening and overflow opening, respectively. The drain assembly 10 comprises a plug 11 which can be controlled in opening and closing by means of a remote-control system, which comprises a first part, designated as a whole by 20a, associated to the assembly 20, and a second part, designated as a whole by 10a, associated to the assembly 10, the parts 20a and 10a being operatively connected together by transmission means.

[0009] The drain columns of the type referred to, with the corresponding remote-control actuation system, are in themselves known and do not call for any detailed description herein. Here it will suffice to point out that the part 20a comprises a controlling mechanism, whilst the part 10a comprises a controlled mechanism, which is prearranged for causing raising and lowering of the plug 11 within the corresponding mounting body, according to a control coming from the mechanism 20a. The transmission means can comprise a flexible cable slidably inserted in a corresponding sheath 40.

[0010] In the non-limiting embodiment exemplified herein, the device according to the invention, designated as a whole by 50 in Figure 1, is associated to the assembly 20 and is hence mounted in a position corresponding to the overflow hole of the bath A. As will emerge clearly from what follows, said device 50 comprises a movable body, designed to hide at least partially the aforesaid overflow hole and/or the corresponding mounting parts.

In the example of use provided herein, said movable body is operatively associated to the controlling part 20a of the system for actuation of the plug 11.

[0011] Visible in Figures 2 and 4 are the components of the device according to the invention. Designated by 21 is a collecting body of the overflow assembly, with the corresponding mechanism 20a of the actuation system of the plug 11. The body 21 has an inlet 22 surrounded by a flange part 23, mounted on which is a gasket 24, for example made of elastomer, designed to operate as a front seal on the external surface of the wall of the bath A, in a position corresponding to the overflow hole, designated by B in Figure 2. The assembly 20 moreover comprises a tubular element 25 having an end fixed, for example via screwing, in a respective seat formed in a bottom of the body 21 (see Figure 4). The opposite end of the tubular element 25 has an external thread. Inserted in the element 25 - so that it passes through - is a rotatable actuation shaft 26, connected with modalities in themselves known to the mechanism 20a.

[0012] Designated by 51 is a gasket, for example, made of elastomer, mounted on the internal part of the bath A and provided so as to present different sealing areas. In the example, the gasket 51 comprises a first annular part 51a, substantially cylindrical, designed to be inserted in the overflow hole B, so as to enter also the axial passage of the gasket 24. Said gasket part 51a exerts a sealing action in a substantially radial direction with respect to the edge of the hole B and with respect to the axial passage of the gasket 24. Designated by 51b is an intermediate part of the gasket 51, substantially annular and planar, which extends in a radial direction from the gasket part 51a outwards. The gasket part 51b is designed to rest on the internal surface of the bath A, surrounding the overflow hole B. The gasket part 51b hence operates as a substantially front seal with respect to the internal surface of the bath A. Designated by 51c is a third part of the gasket 51, having a cylindrical tubular shape as a whole, which departs orthogonally from the external edge of the gasket part 51b. The gasket part 51c has an external terminal lip bent to form a U, so as to constitute a sort of bellows (see Figure 4). Said gasket part 51 c is designed to create a seal in the radial direction both with respect to a handle or knob, described in what follows, and with respect to an antifriction ring and to a ring nut, which will also be described hereinafter. The three gasket parts are substantially coaxial to one another.

[0013] Designated by 52 is the aforesaid antifriction ring, having dimensions such as to enable its introduction in the tubular end part 51c of the gasket 51 and resting thereof on the planar intermediate part 51b of the gasket itself. In the case exemplified, the external diameter of the ring is approximately equal to the internal diameter of the gasket part 51 c.

[0014] Designated by 60 is the aforesaid fixing flange, which has an external annular part 61 and a central part 62, which is provided with an axial passage with internal thread (see Figure 4). The two parts 61, 62 are joined to one another by means of two or more radial parts or spokes 63, delimiting between them passages for the water. The flange 60 has dimensions such as to enable its insertion in the tubular end part 51c of the gasket 51 and frontal resting thereof on the antifriction ring 52. Preferably, the external diameter of the peripheral part 61 of the flange is approximately equal to the internal diameter of the gasket part 51 c.

[0015] As may be readily understood, particularly from Figure 4, the internal thread formed in the central part 62 of the flange 60 can be screwed on the thread of the tubular element 25 of the assembly 20. The spokes 63 are conveniently shaped so that they project in an axial direction to enable a convenient tightening of the flange 60 with respect to the tubular element 25. During tightening, the ring 52 is pressed by the peripheral part 61 of the flange 60 on the underlying planar part 51b of the gasket 51. Tightening of the flange 60 hence enables fixing of the flange itself to the body 21 so that the region of the wall of the bath A that identifies the edge of the overflow hole B is set and gripped between the gasket 24 and the planar part 51b of the gasket 51, and with the annular part 51a of the gasket 51 that projects at least in part in the passage of the gasket 24, passing through the overflow hole B.

[0016] Designated by 70 is the aforesaid knob, which, in the case exemplified herein, represents the aforesaid movable body of the device according to the invention and is shaped - see in particular Figure 4 - so as to hide practically completely from view both the overflow hole B and the mounting members described previously. As may be seen, particularly in Figure 3, in the body of the knob 70 it is possible to identify a lower portion and an upper portion, both of which are hollow. The lower portion is defined by a peripheral wall 71, which in the example has a substantially cylindrical tubular shape. The upper portion is defined by a peripheral wall 72a and by an end wall 72b. The wall 72b has a prevalent portion whose external profile coincides with that of a respective portion of the wall 71. The remaining portion of the wall 72a extends in an eccentric way with respect to the underlying wall 71, or it is configured as a portion that projects laterally with respect to the wall 71. Said projecting portion is designated by 73 in Figure 3. In this way, the portion 73 is provided with a cavity open in two substantially orthogonal directions, namely, both on the part opposite to the end wall 72b and in the part facing the inside of the knob 70. Said cavity constitutes in practice a slit, designated by 73a, which functions as section of passage of the water that is to be drained off by the overflow. Rising from the end wall 72b of the knob, in a central position with respect to the circumference of the wall 71, is a connection element 74, defining a coupling seat for the end of the shaft 26. The coupling is separable, for example via a known snap-action and/or splined system (visible in Figure 4, not indicated by any reference number), preferably of the type in which the knob is mounted on the

shaft via simple thrust thereof, and, instead, its removal from the shaft occurs via a simple pulling action.

[0017] Visible in Figure 4 is the assembled condition of the device according to the invention, in which the or knob 70 is fitted on the shaft 26 via the connection element 74, with the gasket part 51c that performs the necessary seal on the internal surface of the wall 71 of the handle or knob itself, preventing passage of the water. The lower end of the wall 71 is preferably flared to facilitate proper introduction therein of the gasket part 51c during installation.

[0018] In Figure 4, the knob is in an angular position such that the portion 73 faces upwards. With said position of the knob 70 the maximum height for draining off from the overflow hole of the bath A is obtained. The water can in fact flow off only when its level reaches the height designated by U in Figure 1, corresponding to the lowest point of the slit 73a. With the knob 70 in an angular position opposite with respect to that of Figure 3, i.e., with the portion 73 facing downwards, instead, the minimum height for draining off from the overflow hole is obtained. Draining of the water can in fact occur only when its level reaches the height designated by L in Figure 1, substantially corresponding to the lowest point of the overflow hole (or, more precisely, corresponding to the lowest point of the part 51a of the gasket 51). It is to be noted that the gasket 51, in a fixed position, constantly performs its sealing action in regard to the knob 70, also during rotations of the latter.

[0019] In the example provided herein, the knob 70 enables, through its rotation, also actuation of the mechanism 20a that controls opening and closing of the plug 11 of the drain assembly 10. The knob can preferably be rotated manually by a user through at least 180°, even though angular movements of a different range may be allowed. In general, the knob 70 may be mounted on the shaft 26 in such a way that, in condition of the plug 11 being closed, the knob itself is found in the position of Figure 3, whilst, with the plug open, the knob is in the opposite angular position. The knob 70 can in any case be mounted in the desired way with respect to the shaft 26, for example to reach the maximum safety level with the plug 11 open, and instead the minimum safety level with the plug 11 closed. There is nothing to rule out moreover the possibility of mounting the knob 70 in such a way that the minimum and maximum levels are in positions different from the ones exemplified above. In this connection, it is to be emphasized that the user is free to mount the knob 70 in the position deemed most appropriate for his own requirements. In any position, the body of the knob completely hides from view the overflow hole B and the corresponding mounting parts, as well as the inlet of the slit 73a, as may be seen in the example of Figure 4.

[0020] From the forgoing description, the characteristics and advantages of the invention emerge clearly. The device described enables variation by a few centimetres of the point from which overflowing of the water starts, with respect to the level originally envisaged for the receptacle of the sanitary appliance, all this with means that are simple to produce, inexpensive and reliable. The device described can be applied to already existing sanitary appliances, and also to receptacles provided with just the overflow hole.

[0021] A substantial advantage of the invention is represented by the fact that, in any position of the rotatable body 70, the overflow function is in any case always guaranteed, via the section of passage represented by the slit 73a. Consequently, for example, even in the case of accidental occlusion of the drain, with the plug 11 open and during a supply of the water in the receptacle of the sanitary appliance, the overflow safety function is ensured. The aforesaid section of passage is moreover constant; i.e., it is never partialized following upon rotation of the body 70. As has already been emphasized, in any position of the rotatable body 70, moreover, the overflow hole and the corresponding supporting members are hidden from view, as likewise the corresponding slit for passage of the water.

[0022] In the example of application described above, the handle 70 is used for controlling the drain plug 11. In other uses, however, the rotatable body represented by the handle 70 can have the sole function of enabling adjustment of the overflow level, which constitutes the main subject of the invention (of course the rotatable body will also have the aesthetic function of hiding from view the overflow hole, the mounting members and the overflow slit). In a case of this sort, the device forming the subject of the invention may comprise - for example - the elements described above with reference to Figures 2-4, but with a collecting body 21 without the mechanism 20a and with the shaft 26 rotatably constrained to the body 21, with the sole function of supporting the handle 70, enabling rotation thereof.

[0023] The collecting body 21, when it is not required by the use, can be replaced by a simple counter-flange, with a central part that rotationally supports the shaft 26, mounted on which is the handle 70.

[0024] Of course, the materials used, the shapes and the dimensions may be any whatsoever, according to the requirements and the state of the art.

Claims

1. An overflow device for a sanitary appliance having a receptacle for collecting water (A) with an overflow hole (B), the device (50) comprising mounting means (21, 25, 26, 60), designed to be installed in a position corresponding to the overflow hole (B), and a body (70) designed to be supported by the mounting means (21, 25, 26, 60), said device being **characterized in that** said body (70) is provided with an opening for passage of the water (73a) and the device (50) is prearranged in such a way as to enable modification of the position in height of the opening

(73a) with respect to the overflow hole (B), and thus vary the overflow level of the receptacle (A), the opening (73a) being in fluid communication with the overflow hole (B) in any position of said body (70) on the mounting means (21, 25, 26, 60).

2. The device according to Claim 1, wherein the mounting means (21, 25, 26, 60) are pre-arranged for supporting said body (70) towards the inside of the receptacle (A) and said body (70) is configured so as to hide in a prevalent way - preferably completely - both the overflow hole (B) and the mounting means (21, 25, 26, 60), in said any position.

3. The device according to Claim 2, wherein said body (70) is configured in such a way that, in said any position, the opening (73a) is hidden, the opening having preferably a respective inlet designed to face just towards the wall of the receptacle (A) in which the overflow hole (B) is formed.

4. The device according to Claim 2 or 3, wherein said body is constituted by a rotatable knob (70) provided with a slit (73a) that constitutes said opening, the cross section for passage of the water determined by the slit (73a) preferably being the same in any angular position of the knob (70).

5. The device according to at least one of the preceding claims, further comprising a gasket (50).

6. The device according to Claim 5, wherein the gasket (50) is provided for operating a seal:

- between a portion of wall of the receptacle (A) that surrounds the overflow hole (B) and a surface of said body or knob (70), particularly an internal surface of a wall thereof (71); and/or
- on the edge of the overflow hole (B), i.e., on the circumferential surface that delimits it.

7. The device according to Claims 5 and 6, wherein the gasket (50) comprises a first tubular part (51 a), an annular and planar intermediate part (51b) and a second tubular part (51 c).

8. The device according to Claim 3 and/or Claim 4, wherein said body (70) has a lower part (71) and an upper part (72a, 72b), the upper part (72a, 72b) having a respective portion (73) projecting in a substantially radial direction with respect to the lower portion (71), said opening or slit (73b) being defined in the projecting portion (73).

9. The device according to Claim 4, wherein the mounting means (21, 24,25, 26, 60) comprise a rotatable shaft (26), on which the knob (70) is fitted, particularly in a separable way by means of a snap-action and/or splined coupling system.

10. The device according to Claim 9, wherein the shaft forms part of an actuation system (10a, 20a, 30) for opening and closing a plug (11) of a drain (10) of the receptacle (A).

11. The device according to one or more of the preceding claims, wherein the mounting means (21, 24, 25, 26, 60) comprise one or more of the following components:

- a ring-nut element (60), having an axially hollow central part (62), designed to be installed on the internal part of the receptacle (A);
- a mounting body (21), designed to be installed on the external part of the receptacle (A);
- a tubular member (25), inserted in which, so that it passes through, is a rotatable shaft (26) that supports said body or knob (70);
- one or more gaskets (24, 51);
- an antifriction ring (52).

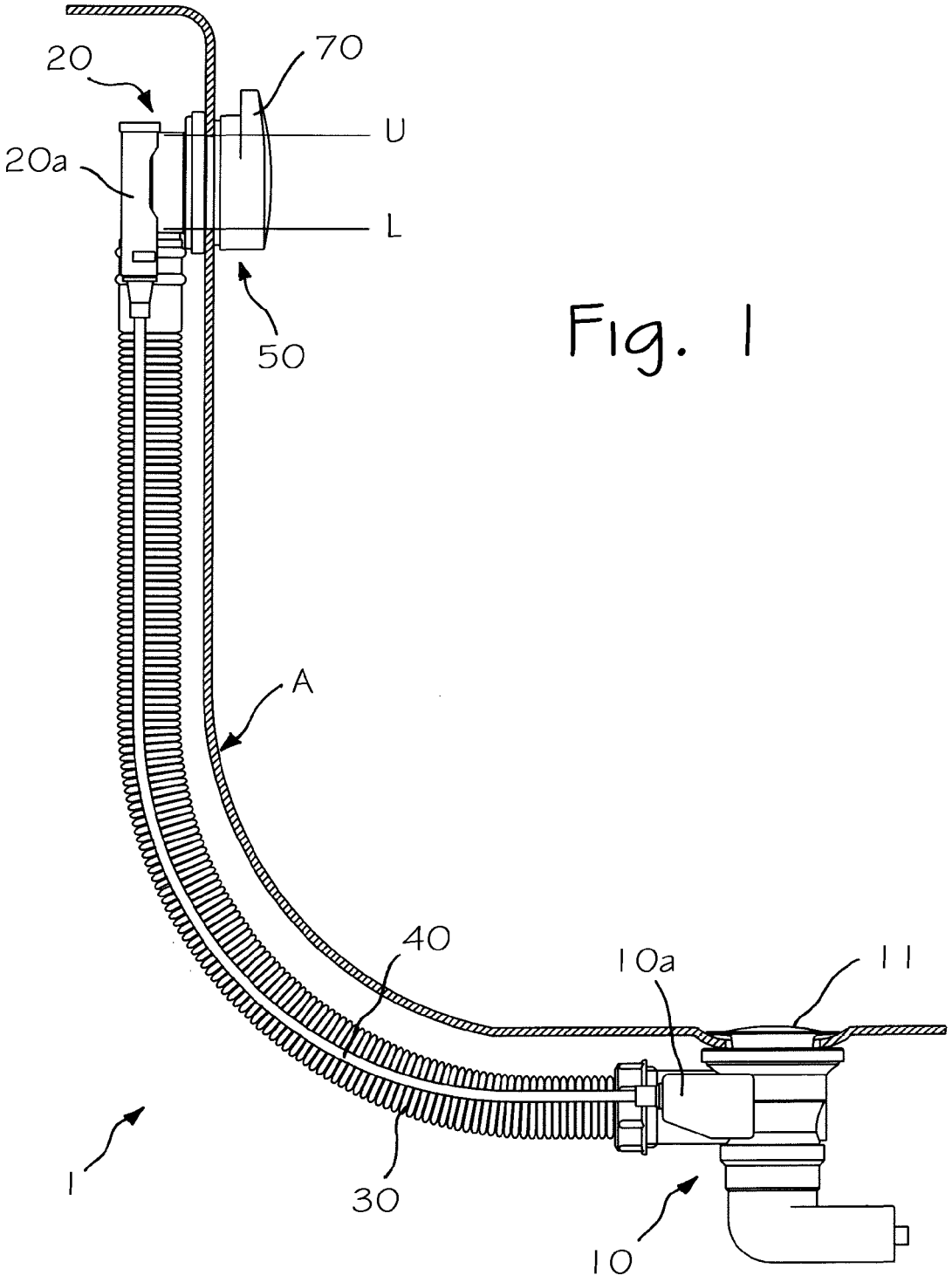
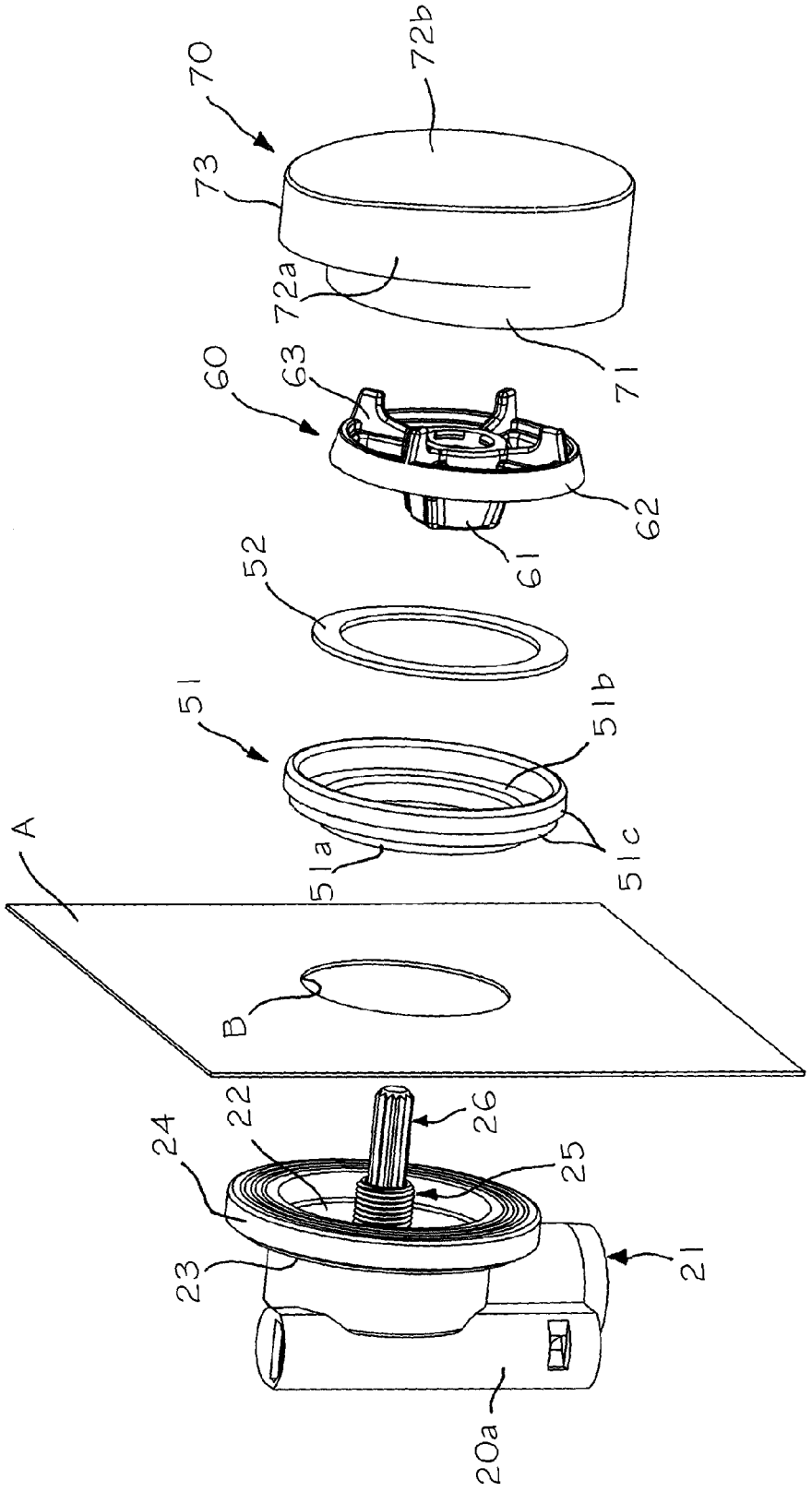


Fig. 1

Fig. 2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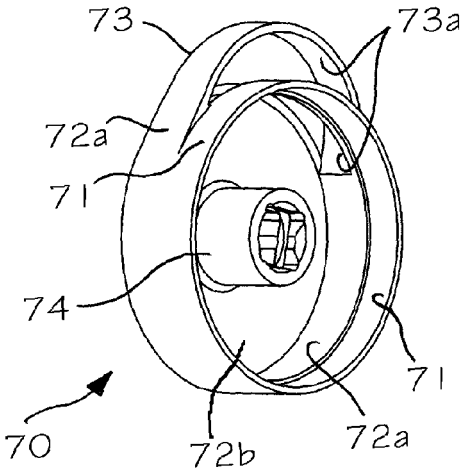
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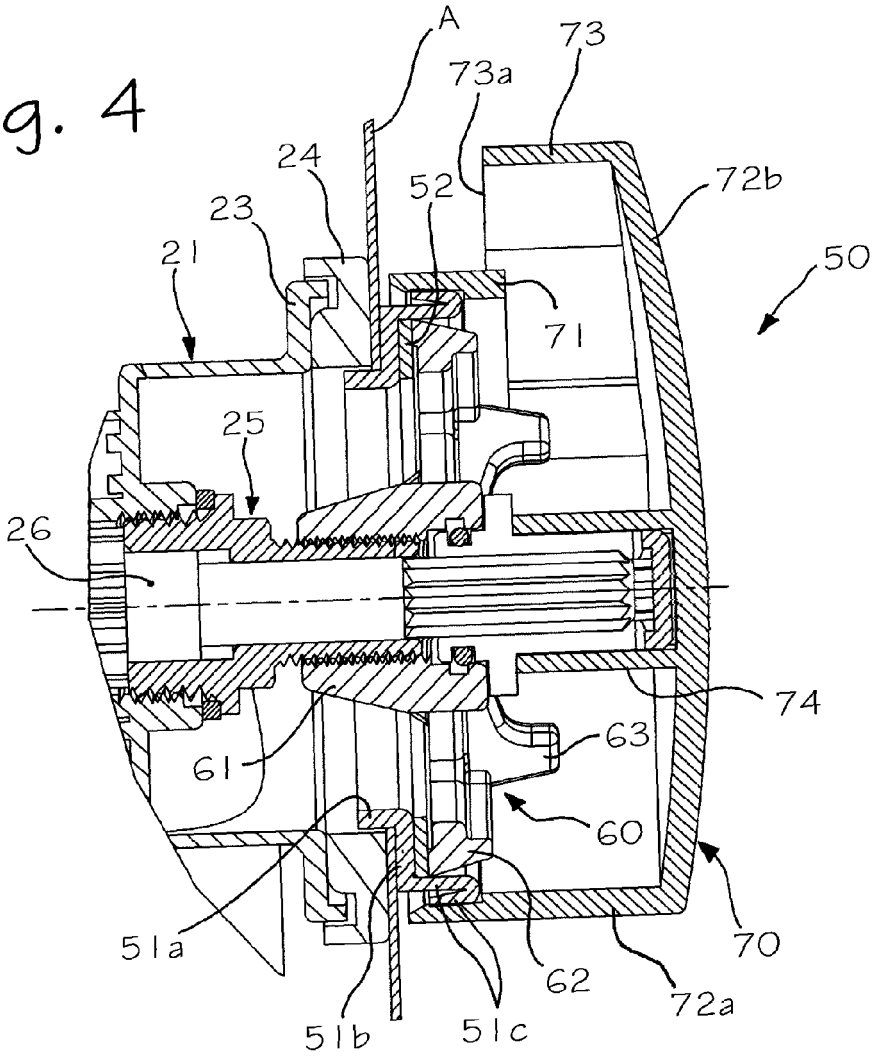
Fig. 3

Fig. 4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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 3083

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

E03C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 June 2007	Flygare, Esa

CATEGORY OF CITED DOCUMENTS

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