



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**17.10.2007 Bulletin 2007/42**

(51) Int Cl.:  
**D06F 39/02 (2006.01)**

(21) Application number: **06380073.4**

(22) Date of filing: **10.04.2006**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

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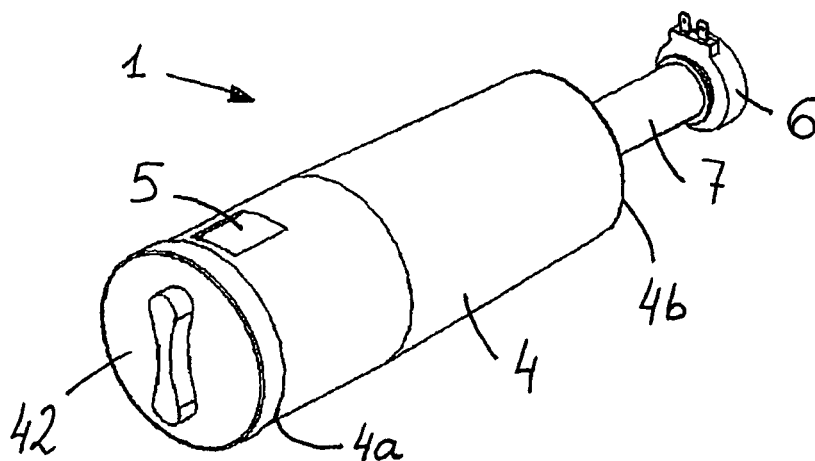
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(54) **Device for supplying detergent**

(57) Device for supplying detergent in a home appliance, said appliance comprising a reception chamber (2) where the device is disposed (1) and a washing chamber. Said device (1) comprises a container (4) disposed on the washing chamber, a window (5) through which said detergent is supplied to said washing chamber, and operating means (6,7). The window (5) is disposed in the container (4), said container (4) comprising a wall (40)

that delimits an area of supply (50) around said window (5), with the detergent disposed in said area of supply (50) being supplied through said window (5). Said operating means (6,7) cause the rotation of said container (4), with said container (4) being able to move to an active position (Pa) and with the window (5) facing the washing chamber in said active position (Pa), thereby supplying the detergent.



**FIG. 1**

## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to devices for supplying detergent in a home appliance and, more specifically, to devices that dose said supply.

### PRIOR ART

**[0002]** There exist known devices for supplying detergent in home appliances, said devices being disposed in a reception chamber disposed in said appliances. Detergent is stored in said devices, and said detergent is supplied to a washing chamber in said appliance, with said supply being dosed.

**[0003]** US 2004/0000177 A1 discloses a device of this type, which comprises a container in which the detergent is stored, a window through which said detergent is supplied, and a first motor that causes said window to open. Said device also comprises a axis disposed beneath said container and in series with said window, and coiled means in said axis acting as a worm gear. A second motor causes the rotation of said axis, rotating said means connected to said axis so that as said means rotate a certain amount of detergent is supplied through said window. To achieve this it is necessary that the first motor opens said window, both motors having to control.

### DISCLOSURE OF THE INVENTION

**[0004]** It is an object of this invention to provide a device for supplying detergent in a home appliance, in order to dose the quantity of detergent supplied.

**[0005]** The inventive device for supplying detergent is used in a home appliance. Said appliance comprises a reception chamber where the device is disposed, and a washing chamber that is connected to said reception chamber and where the detergent is supplied. Said device comprises a container disposed on the washing chamber where the detergent used in said appliance is stored, a window through which said detergent is supplied to said washing chamber, and operating means connected to said container by means of which said supply is made possible.

**[0006]** The window is disposed in the container, said container comprising a wall in its interior that delimits an area of supply around said window connected to the rest of said container, with the detergent disposed in said area of supply being supplied through said window. The operating means cause the rotation of said container, said container being able to move from a rest position to an active position so that in said position it activates the window when it is facing the washing chamber, thereby supplying detergent to said washing chamber by gravity.

**[0007]** Thus, by means of the rotation of the container, detergent is supplied to the washing chamber of the home appliance, said supply being dosed by regulating said

rotation.

**[0008]** These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

### DESCRIPTION OF THE DRAWINGS

#### [0009]

10 Fig. 1 shows an embodiment of the inventive device for supplying detergent.

Fig. 2 shows a home appliance where the device of Fig. 1 is disposed.

15 Fig. 3 shows a container with grooves that extend longitudinally, of the device of Fig. 1.

20 Fig. 4 shows a first configuration of the wall of the container of the device of Fig. 1, said container being in the rest position.

25 Fig. 5 shows the first configuration of the wall of the container of the device of Fig. 1, said container being in the active position.

Fig. 6 shows a second configuration of the wall of the container of the device of Fig. 1, said container being in the rest position.

30 Fig. 7 shows the second configuration of the wall of the container of the device of Fig. 1, said container being in the active position.

35 Fig. 8 is a first embodiment of the axis of the device of Fig. 1.

40 Fig. 9 is a view in section of a second embodiment of the axis of the device of Fig. 1.

### DETAILED DISCLOSURE OF THE INVENTION

45 **[0010]** In Figure 1 is shown an embodiment of a device 1 for supplying detergent, said detergent being any type of gel or powder detergent, for example. Said device 1 is used in a home appliance 10 that can be, for example, a washing machine or dishwasher, said device 1 being disposed in a reception chamber 2 of said appliance 10, shown in figure 2. Said appliance 10 also comprises a washing chamber (not shown in the figures) connected to said reception chamber 2 by a connecting conduit not shown in the figures, said washing chamber receiving the detergent supplied by said device 1.

50 **[0011]** The device 1 comprises a container 4 where the detergent supplied by said device 1 is stored, said container 4 being disposed in the reception chamber 2 of the appliance 10. Said device 1 also comprises a window 5 disposed on the perimeter surface of said container

4, preferably close to the front end 4a of said container 4, with the detergent stored in said container 4 being supplied to the washing chamber through said window 5, when said window 5 is facing said washing chamber.

**[0012]** The device 1 also comprises operating means 6 and 7 connected to the container 4, by means of which the supply of detergent is made possible, with said operating means 6 and 7 comprising an axis 7 and a motor 6 that causes the rotation of said axis 7. Said axis 7 is connected or can be connected to the container 4, with the rotation of said axis 7 causing the rotation of said container 4, thereby causing the window 5 to face the washing chamber of the home appliance 10.

**[0013]** As the window 5 is preferably next to the front end 4a of the container 4, in order to facilitate the supply of detergent stored next to the rear end 4b of said container 4, said container 4 can be conical, being disposed horizontally in the reception chamber 2 of the home appliance 10, with the diameter of said front end 4a being greater than the diameter of said rear end 4b. The container 4 can also be cylindrical, being disposed in the reception chamber 2 either at an angle or horizontally, comprising in the latter case a plurality of channels 45 that extend longitudinally as a worm gear in said container 4, as shown in figure 3. When disposed at an angle, said container 4 is inclined in such a way that the detergent disposed next to the rear end 4b can fall towards the front end 4a, and therefore towards the window 5, by gravity.

**[0014]** The container 4 comprises at least one wall 40 in its interior that delimits an area of supply 50 around the window 5, said area of supply 50 being connected to the rest of said container 4. Initially, said container 4 is in a rest position Pr, passing through an active position Pa when it rotates, with said window 5 facing the washing chamber in said active position Pa. Thus, when the container 4 passes through said active position Pa, the detergent disposed in the area of supply 50 is supplied by gravity to said washing chamber through said window 5. When the detergent used is a type of gel, preferably said window 5 is oval-shaped, with the smaller diameter of said window 5 being longitudinal to said container 4, thereby preventing the accumulation of gel in said window 5 when said container 4 moves to said rest position Pr.

**[0015]** As shown in figures 4 and 5, the wall 40 can comprise a first configuration in which it comprises a cross section with a substantially L-shaped form facing the window 5 along its entire length. When said container 4 passes through the active position Pa, the detergent disposed in the area of supply 50 is supplied through the window 5. Due to the dimensions of said wall 40 and to the fact that said area of supply 50 is connected to the rest of the container 4, when said container 4 is in said active position Pa, at least part of the detergent stored in said rest of the container 4 moves to said area of supply 50, with the amount of detergent supplied dependent upon the time for which said container 4 remains in said

active position Pa, dosing the supply of detergent.

**[0016]** With reference to figures 6 and 7, the wall 40 can comprise a second configuration in which it also comprises a section 40' next to the cross section with the substantially L-shaped form of the first configuration, said section 40' being substantially parallel to the surface of the container 4. When said container 4 passes through the active position Pa, the detergent disposed in the area of supply 50 is supplied through the window 5, and due to the dimensions of said wall 40, when said container 4 is in said active position Pa no more detergent is disposed in said area of supply 50. When it moves to the rest position Pr and as said area of supply 50 is connected to the rest of said container 4, part of the detergent stored in said rest of the container 4 moves to said area of supply 50, with more detergent being supplied through said window 5 when said container 4 moves to said active position Pa. In this way, every time the container 4 passes through said active position Pa the detergent disposed in the area of supply 50 is supplied, with the total amount of detergent supplied depending on the number of times (number of turns) that said container 4 passes through said active position Pa.

**[0017]** In the second configuration of the wall 40, depending, for example, on the concentration of detergent used, it is useful that a greater or smaller amount of detergent be disposed in the area of supply 50. To achieve this, the container 4 may comprise a gate 46 that can tilt in relation to an end 41 of said wall 40 and which delimits an opening 47 of connection between said area of supply 50 and the rest of said container 4. The size of said opening 47 can be modified by tilting said gate 46 in relation to said end 41, thereby regulating the amount of detergent that moves to said area of supply 50, and therefore, dosing the supply of detergent. Preferably said gate 46 is accessible from the exterior of the home appliance 10, allowing said gate 46 to be operated manually in a simple way. In place of the gate 46, said container 4 may comprise a movable cover (not shown in the figures) accessible from the exterior in order to cover the window 5, with the regulation of the supply of detergent being dependent upon the opening of said cover. The detergent is supplied through the area of said window 5 that does not cover said cover, the size of said area being open to modification by means of moving said cover.

**[0018]** In a normal situation, when the home appliance 10 is not running, the container 4 is in the rest position Pr. To ensure that the detergent disposed in said container 4 is not affected by external factors such as dampness, the device 1 comprises a seal 8 connected to said container 4 and which covers the window 5 of said container 4 in said rest position Pr. Said seal 8 can tilt by gravity in relation to an axis of rotation 80 next to said window 5 so that when said container 4 rotates and moves to the active position Pa, said seal 8 tilts to uncover said window 5, thereby enabling the supply of detergent through said window 5.

**[0019]** With reference to figure 8, the device 1 com-

prises a semi-circular piece 9 fixed to the axis 7 and which rotates in conjunction with the container 4, with said semi-circular piece 9 comprising a substantially straight perimeter section 9'. Detection means (not shown in the figures) disposed in said dosing device 1 detect whether said perimeter section 9' is in a certain position, thereby determining if said container 4 is in the rest position Pr or in the active position Pa, or not.

**[0020]** In a first embodiment shown in figure 7, the axis 7 comprises an end 7' with a substantially polygonal form, with said end 7' being housed in the rear end 4b of the container 4, and with the rotation of said axis 7 causing, therefore, the rotation of said container 4. Said container 4 can comprise a cover 42 on the front end 4a, with said container 4 able to be released from said axis 7 by said cover 42, with said container 4 able to be removed from the reception chamber 2, with detergent being introduced in said container 4 by the opening of said cover 42, although it can also comprise a closed body with detergent in its interior, being replaced by a new container 4 that comprises a closed body with detergent in its interior, after being released from said axis 7 and removed from said reception chamber 2.

**[0021]** In a second embodiment shown in figure 9, the axis 7 passes through the container 4 and is fixed to said container 4 all the way along the length of said container 4, with the rotation of said axis 7 causing the rotation of said container 4, and preventing the possible rolling movement of said container 4 when it rotates. Said container 4 cannot be released from said axis 7, detergent being introduced in said container through an access hatch not shown in the figures.

## Claims

1. Device for supplying detergent in a home appliance, said appliance comprising a reception chamber (2) where the device is disposed (1) and a washing chamber that is connected to said reception chamber (2), detergent being supplied to said washing chamber, with said device (1) comprising a container (4) disposed on the washing chamber, a window (5) through which said detergent is supplied to said washing chamber, and operating means (6,7) that can be connected to said container (4) by means of which said supply is made possible, **characterised in that** the window (5) is disposed in the container (4), with said container (4) comprising a wall (40) in its interior that delimits an area of supply (50) around said window (5) connected to the rest of said container (4), with the detergent disposed in said area of supply (50) being supplied through said window (5), with said operating means (6,7) causing the rotation of said container (4), with said container (4) being able to move from a rest position (Pr) to an active position (Pa) where said detergent is supplied so that in said active position (Pa) the window (5) is

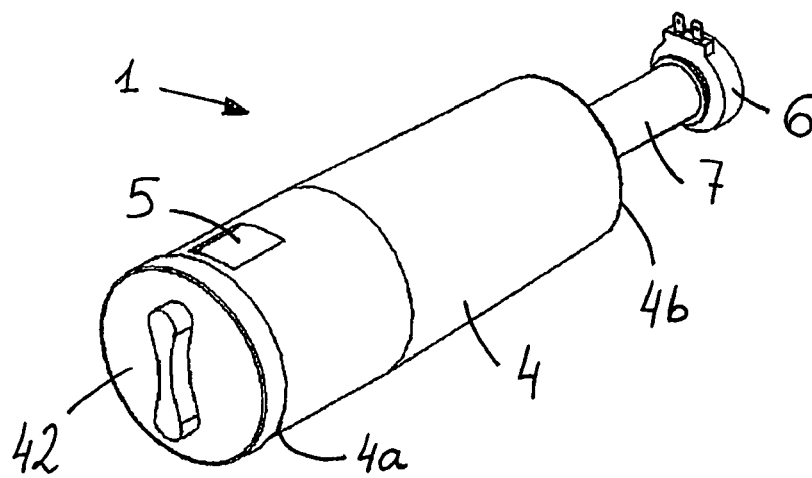
facing the washing chamber, the detergent being supplied to said washing chamber by gravity.

2. Device according to the preceding claim wherein the container (4) is substantially cylindrical and is disposed horizontally in the reception chamber (2), with the window (5) extending on the perimeter surface of said container (4).
3. Device according to the preceding claim wherein the container (4) comprises a surface with a plurality of channels (45) that extend longitudinally as a worm gear.
4. Device according to claim 1 wherein the container (4) is substantially conical and is disposed horizontally in the reception chamber (2), with the window (5) extending on the perimeter surface of said container (4).
5. Device according to claim 1 wherein the container (4) is substantially cylindrical and is disposed at an angle in the reception chamber (2), with the window (5) extending on the perimeter surface of said container (4).
6. Device according to any of the preceding claims wherein the wall (40) comprises a cross section with a substantially L-shaped form facing the window (5) along its entire length.
7. Device according to the preceding claim wherein the wall (40) comprises a section (40') next to the cross section with a substantially L-shaped form, said section (40') being substantially parallel to the surface of the container (4).
8. Device according to the preceding claim wherein the container (4) comprises a gate (46) that can tilt in relation to an end (41) of the wall (40) and which delimits an opening (47) of connection between the area of supply (50) and the rest of said container (4), with the size of said opening (47) able to be modified by tilting said gate (46) in relation to said end (41).
9. Device according to claim 7 wherein the container (4) comprises a movable cover to cover the window (5), detergent being supplied through the uncovered area of said window (5), with the size of said area being modified by moving said cover.
10. Device according to any of the preceding claims wherein the device (1) comprises a semi-circular piece (9) with a substantially straight perimeter section (9') and which rotates in conjunction with the container (4), and detection means to detect whether said perimeter section (9') is or is not in at least one certain position, thereby determining if said contain-

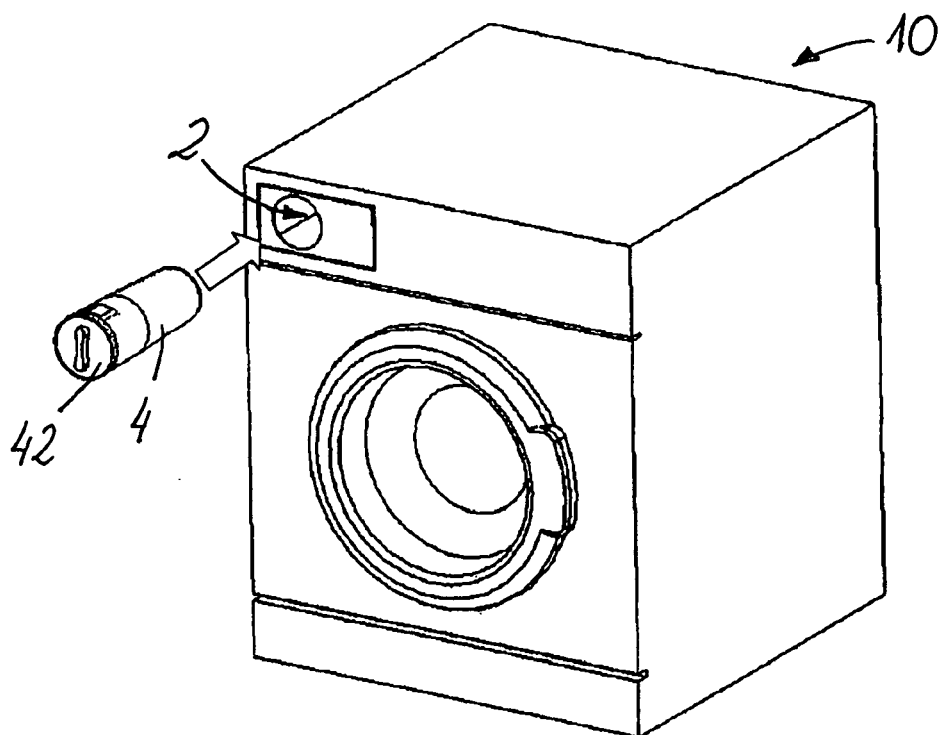
er is in any of the rest positions (Pr) or active positions (Pa).

11. Device according to any of the preceding claims wherein it comprises a seal (8) connected to the container (4) and which tilts in relation to an axis of rotation (80) fixed to said container (4) and next to the window (5), in order to cover said window (5) by gravity when said container (4) is in the rest position (Pr), and in order to cover said window (5) by gravity when said container (4) is in the active position (Pa). 5 10
12. Device according to any of the preceding claims wherein the window (5) is substantially oval-shaped. 15
13. Device according to any of the preceding claims wherein the operating means (6,7) comprise an axis (7) with an end with a substantially polygonal form, said end being housed in an end of the container (4), and with the rotation of said axis (7) causing the rotation of said container (4). 20
14. Device according to the preceding claim wherein the container (4) comprises a cover (42) on the end opposite where the axis is housed (7), with said container (4) able to be released from said axis (7) by means of said cover (42), with said container (4) able to be removed from said reception chamber (2), and with detergent being introduced in said container (4) when said cover (42) is opened. 25 30
15. Device according to claim 13 wherein the container (4) comprises a closed body with detergent in its interior, with said container (4) being released from the axis (7) so that it can be removed from the reception chamber (2), with said container (4) able to be replaced by a new container (4) that comprises a closed body with detergent in its interior. 35
16. Device according to any of claims 1 to 13 wherein the operating means (6) comprise an axis (7) that passes through the container (4), said axis (7) being fixed to said container (4) all the way along the length of said container (4), with the rotation of said axis (7) causing the rotation of said container (4). 40 45
17. Washing machine that comprises a device for supplying detergent according to any of the preceding claims. 50

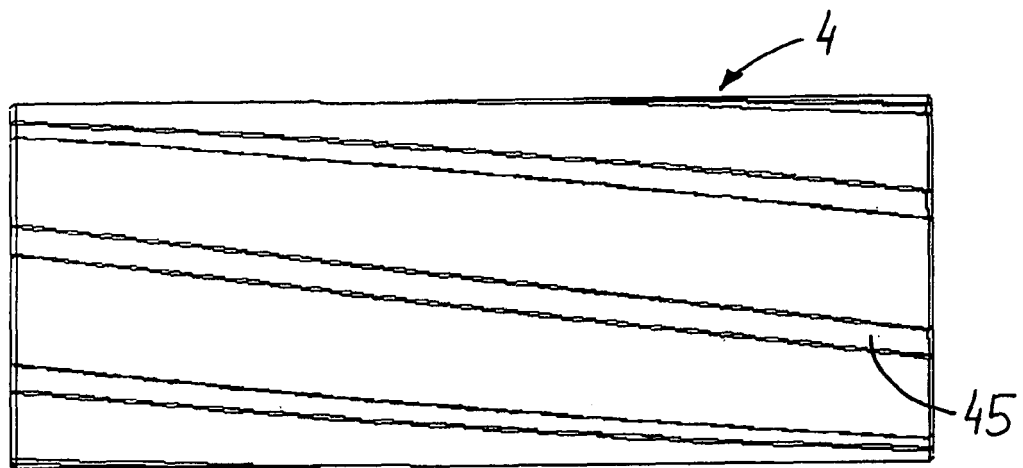
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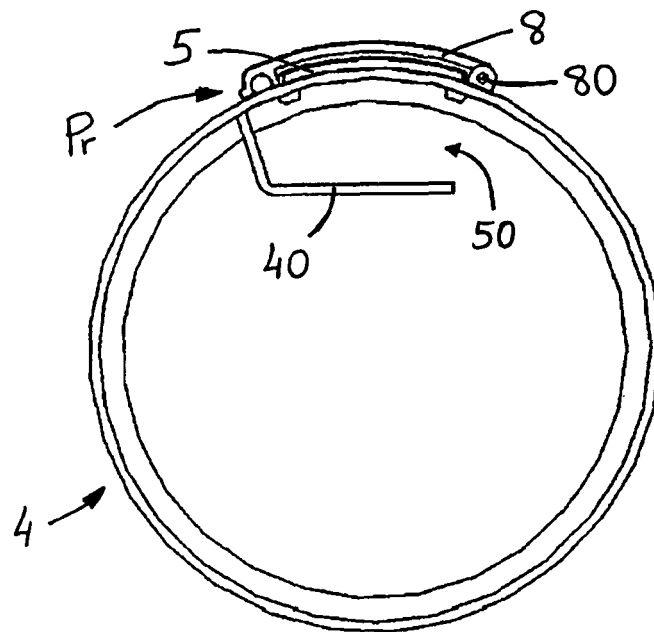
**FIG. 1**



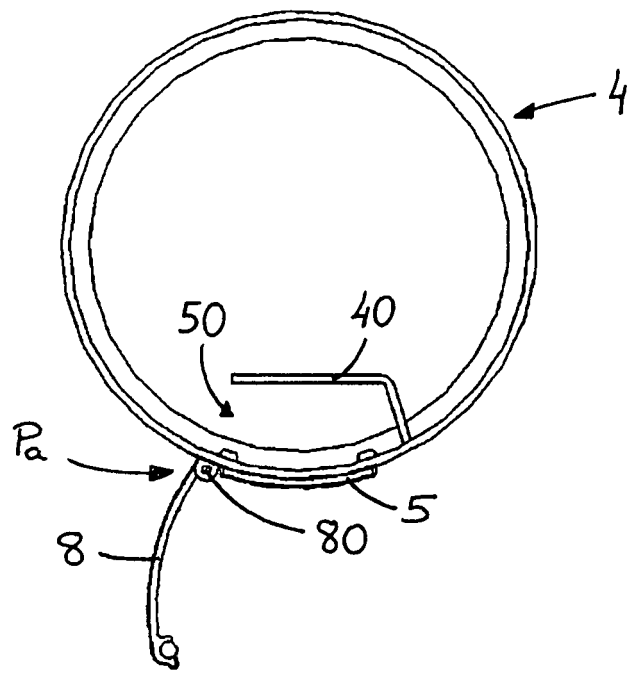
**FIG. 2**



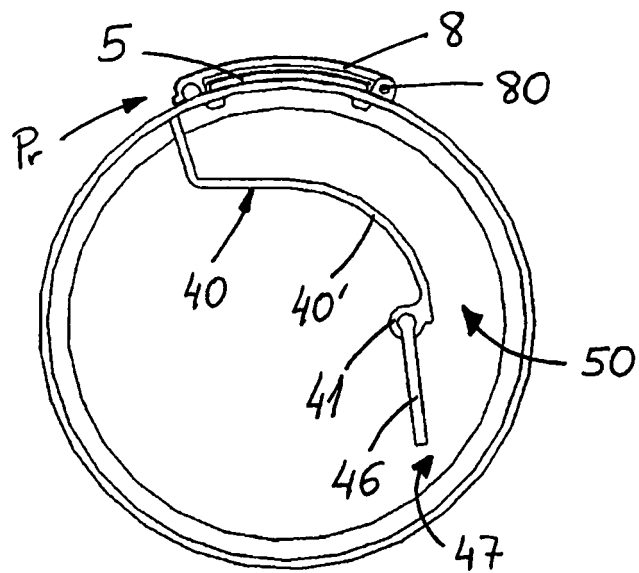
**FIG. 3**



**FIG. 4**

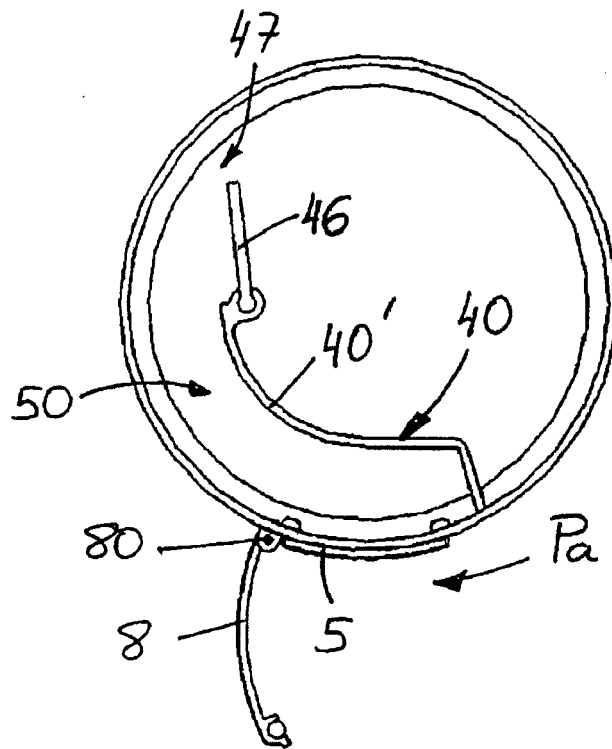


**FIG. 5**

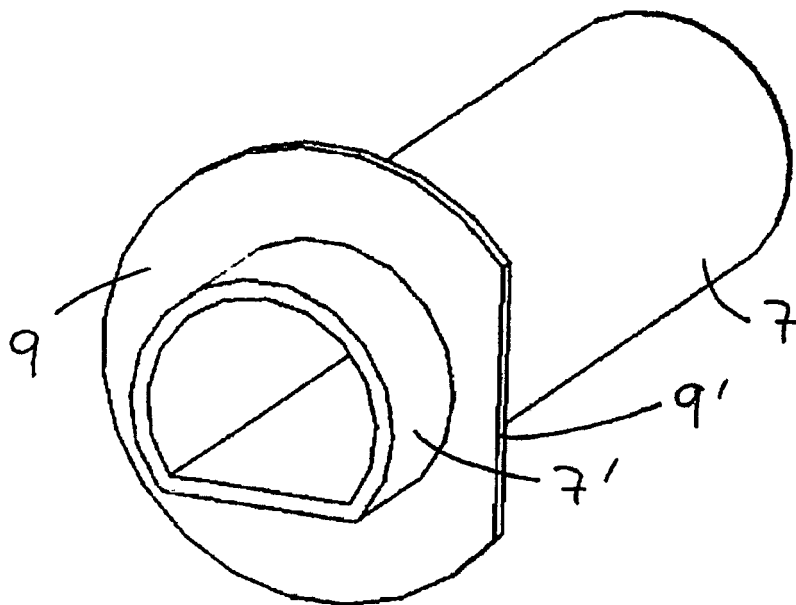


**FIG. 6**

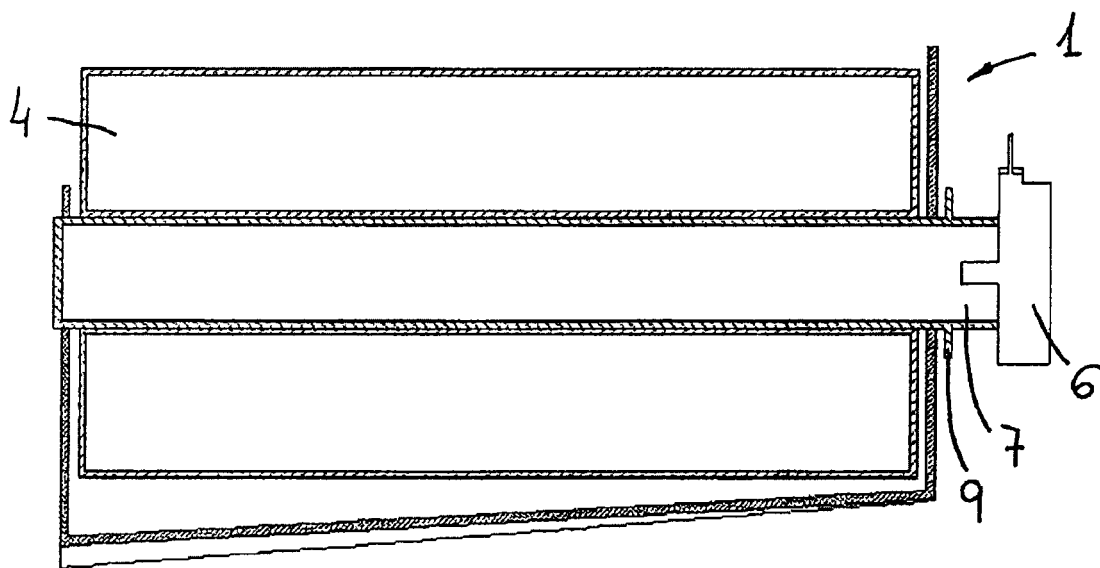




**FIG. 7**



**FIG. 8**



**FIG. 9**



DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 31 August 2006	Examiner Spitzer, B
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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