(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 092 283**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **83200536.7**

(22) Date of filing: **15.04.83**

(51) Int. Cl.³: **E 03 D 9/02**

(30) Priority: **20.04.82 CH 2392/82**

(43) Date of publication of application: **26.10.83 Bulletin 83/43**

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI NL SE**

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(84) Designated Contracting States: **BE CH DE FR IT LI NL SE AT**

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(84) Designated Contracting States: **GB**

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(54) Device for cleaning and/or colouring lavatory flush water.

(57) The device (1) for cleaning and/or colouring lavatory flush water has a tub-shaped holder part (3) with a semi-circular cross-section and, placed herein, a basket-shaped holder of circular cross-section intended for inclusion of a block with active ingrendients, both of which are connected to each other by resilient clips (20, 21). On the basket-shaped holder part (2) a securing clip (14) is mounted for securing the device on the rim of the lavatory bowl. A siphonic device (30) made to one side of the tub-shaped holder part (3) forms a closure after the end of the flushing operation. A lid (41) intended for closure of the upper part of the siphonic device (30) is formed integrally with the holder part (3) and, as a consequence of its being manufactured to one side of the riser pipe and fall pipe, is rotatable from this place as starting position into the closed position. Because of the siphonic device being mounted to one side, the device having a good siphoning activity can be manufactured simply, space and material being saved.

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DEVICE FOR CLEANING AND/OR COLOURING LAVATORY FLUSH WATER

The invention relates to a device for cleaning and/or colouring lavatory flush water, consisting of a holder with at least one supply part and one discharge part, with means for holding a water-soluble block containing the materials for cleaning and/or colouring the flush water at a distance from the bottom of the holder, and with means for securing this within a zone above the static level of the liquid in the lavatory bowl, over which the liquid flows during the flushing operation, the discharge part of the holder being provided with a siphonic device integral with the holder, in order to empty the holder as completely as possible after a flushing operation.

A similar device is known from British Patent Specification 379,553. The siphonic device forms an inwardly directed bent pipe closed at the top on the inside of the holder and is thus responsible for a considerable decrease in the cross-section to be used for the holder. It is true that, according to the drawing of this prior patent publication, the holder is integral with the siphonic device, but great difficulties are involved in making the riser pipe and the fall pipe of the siphonic device with the hairpin transition bends if the holder has to be manufactured in a casting mould.

From the French patent publication having publication number 2 424 374 a device of the same kind is known, in which the siphonic device is mounted in the middle of the floor of the holder and is of relatively small height. This construction leads to a greater total height of the holder. Moreover, this siphonic device is constructed in such a way that it does not permit complete emptying of the holder, as the riser pipe has a

considerably larger cross-section than the fall pipe of the siphonic device, although these are of approximately the same length. Furthermore, this siphonic device is not made completely in one piece, a separately manufactured part being attached afterwards.

The problem underlying the present application is to invent a device of the aforementioned kind which, in a simple manner and with little consumption of material, can be manufactured as a mass-produced and disposable article. The solution of this problem is effected, in terms of a device of the aforementioned kind, by the siphonic device being fitted to the outside of the holder. Through this construction of the siphonic device, with respect to the known constructions on the inside of the holder (British Patent Specification 379,553) or in the floor of the holder (French Patent Specification 2 424 375), the inner space of the holder in horizontal or vertical direction is better utilized for arranging the block with active ingredients and can in that way be made smaller, with saving of material. In comparison with a construction of the siphonic device in the floor of the holder, the construction according to the invention also has the advantage that, for a certain height of the holder, it enables a greater volume, as a result of which a longer contact time between the water and the block containing the active ingredients is effected, and the siphonic device can be made long and narrow in vertical direction by mounting its upper end on an upper rim of the holder or a part of the holder, so that a good and reliable siphonic activity arises for the complete emptying of the holder after a flushing operation. Long and narrow siphon channels also cause a strong delay of the emptying of the holder, so that, advantageously, the major part of the water containing the active ingredients and/or colorants only flows out of the holder after

the lavatory bowl flushing operation has already ended.

In order to limit the degree to which the siphonic device extends from the outside wall of the holder, the riser pipe and the fall pipe of the siphonic device are mounted, as an advantageous embodiment of the invention, next to each other parallel to the outside wall.

The means for securing the device to the rim of the lavatory bowl consist, for example, of a one-armed clip and are advantageously made integrally with the holder or a part of the holder manner in such a way that the siphonic device is automatically attached facing the inside of the lavatory bowl. This has the effect that the liquid running out of the siphon flows into the lavatory bowl closer to its centre and flows downwards along a shorter path along the side wall of the lavatory bowl.

The manufacture of the siphonic device integrally with the holder in a casting mould can be considerably simplified by securely closing the transition space at the upper end of the riser pipe and the fall pipe by pressing in a lid. In this arrangement such lid is preferably also formed integrally with the holder, and a joint forms a hinged connection between the lid and the holder, so that the lid, which as a result of its manufacture has been made to one side of the riser pipe and fall pipe, is rotatable from this place as starting position into the closed position.

According to an advantageous embodiment of the invention, a securing device, e.g. in the form of a one-armed clip, can be made on and integral with this rotatable lid formed on the holder, which, upon rotation of the lid into its closed position, takes up the position required for securing the holder to the rim of the

lavatory bowl. In this arrangement, for reasons of effectiveness, special means can be provided which secure the lid with the securing device made on it in the position into which it has been rotated.

Another simplified method of manufacturing the device, coupled with saving of material, can be accomplished by the lower part of the holder being tub-shaped and having placed herein a basket-shaped holder part containing the block with active ingredients. The tub-shaped holder part then only has to be placed against the bottom of the basket-shaped holder part and can be of correspondingly small dimensions, as its task mainly consists only in preventing coloured liquid or liquid provided with active ingredients from continuing to flow or from dripping after the end of the flushing operation, so that no unaesthetic staining traces, clearly visible because of the colouring, remain on the wall of the bowl. For this purpose only a comparatively small volume capacity is required of the tub-shaped holder part. The basket-shaped holder part, which on one hand serves as protection against contact with the block with active ingredients and on the other hand automatically creates a distance between the block with active ingredients and the inner wall of the tub-shaped holder part, may extend quite some way above the tub-shaped holder part.

The basket-shaped holder part is, in a general sense, a holder having numerous openings. The openings serve to enable the contact between the block with active ingredients and the flush water and the egress of the water containing the dissolved active ingredients. The delayed egress of the water from the tub-shaped holder part, caused by the siphonic device, leads to a duration of contact between water and the block with active ingredients sufficiently long for enough of the active

ingredients to dissolve in the water. This embodiment of the holder in two parts has the advantage that the basket-shaped holder part can, as desired, also be used without the tub-shaped holder part being placed against it underneath, e.g. when a block with active ingredients is used that has no colorant with considerable colouring activity. In this case the problem of preventing the development of unaesthetic staining traces is absent. For this reason it is necessary that the means for securing the device inside the area of the lavatory bowl, e.g. in the form of a one-armed clip, is fitted to the basket-shaped holder part.

The tub-shaped holder part is effectively secured to the basket-shaped holder part by a snap linkage which, for example, has at least one resilient clip made on the inner wall of the tub-shaped holder part, which clips into an opening in the wall of the basket-shaped holder part and grips the wall from behind.

Preferably, on the inside of the tub-shaped holder part, at least one stop can be made on which a part of the wall of the basket-shaped holder part is supported. This stop thus causes an extra distance between the inner wall of the tub-shaped holder part and the block with active ingredients in addition to that which is already there just because of the thickness of the wall of the basket-shaped holder part.

The basket-shaped holder part preferably has a semi-circular cross-section and is longer than its diameter, and accordingly the tub-shaped holder part has the shape of a segment of a circle or a semi-circle. The siphonic device and its riser and fall channels are arranged on the outside tangentially with respect to the shape of this cross-section. The connection with the bottom end of the riser channel is there formed by

a wall part running transversely outwards tangentially from the floor line or perpendicular line of the tub-shaped holder part, which wall is limited to one side by two connecting walls running from the bypass wall of the tub-shaped holder part to the siphonic device.

In another embodiment of the invention, the tub-shaped holder part in particular gets narrower from the middle in the direction of its both ends, so that the middle part forms a flat sump which is connected with the riser pipe of the siphonic device.

According to another embodiment of the invention, a separate basket-shaped holder part is avoided and instead of it a lid part is made integrally on a tub-shaped holder part with the siphonic device, which lid part is provided with flow-through openings. The connection between the tub-shaped holder part and the lid part can in this case take place via one or more short bars which, because of their resilience, form a hinged connection. In this arrangement the bar or bars are advantageously situated on the side of the tub-shaped holder part lying opposite the siphonic device, and the lid part is provided with securing means which serve to keep this in the closed position. Advantageously, these securing means can serve simultaneously to hold a securing device made on the lid of the siphonic device in its operating position.

Below, the invention will be further explained by reference to the example of an embodiment illustrated in the drawings.

Fig. 1 shows a plan view of the tub-shaped holder part with the basket-shaped holder part indicated by dot-and-dash lines.

Fig. 1A shows a preferred feature of an embodiment as drawn in Fig. 1.

Fig. 2 shows a radial view through the device with basket-shaped holder part placed therein, intersecting the riser pipe.

Fig. 3 shows a longitudinal section along the line III-III of Fig. 1 with the basket-shaped holder part placed therein indicated with dot-and-dash lines.

Fig. 3A shows a preferred feature of an embodiment as drawn in Fig. 3.

Fig. 4 shows a sectional view along the line IV of Fig. 5 of another embodiment of the device in a starting position after its manufacture in a casting mould.

Fig. 5 shows a plan view of the device in its position according to Fig. 4.

Fig. 6 shows the device according to Figures 4 and 5 in operational position.

As can be seen from the illustration of Fig. 2 in particular, the basket-shaped holder part 2 of the device 1, enclosing the block with active ingredients (not shown), has a circular cross-section, while the cross-section of the tub-shaped holder part 3 underneath is semi-circular. In the illustration, the holder part 2 enclosed by the tub-shaped holder part 3 is only indicated by its line of circumference with dots and dashes, and it is clear that the circumference 4 of the basket-shaped holder part 2, because of a stop 5, is situated at a distance from the inner wall of the tub-

shaped holder part 3, which stop is made at the floor line of this holder part.

The basket-shaped holder part 2 has on both of its ends a closed circular wall 7, 8 with a middle wall part 9, 10 positioned slightly inwards. In the middle, the holder part 2 has a two-part sealing ring 12 in the direction of its circumference along the line 11. Both sealing ring parts clamp into each other after the block with active ingredients (not shown) has been placed in this basket-shaped holder part 2. On one ring part of the sealing ring 12 a one-armed securing clip 14 is made for securing the device on the rim of a lavatory bowl. From both parts of the sealing ring 12, bars 15, arranged equally spaced from each other, run outwards to the end walls 7, 8 which are shown in Fig. 2.

In this arrangement the bars 15 have an outwardly bent course, as can best be seen in the drawing of Fig. 3, so that the basket-shaped holder part 2 has the form of two truncated cones joined to each other at their fat end. The tub-shaped holder part 3 is adapted to this form. For supporting the basket-shaped holder part 2 in the tub-shaped holder part 3, there are, beside stop 5, a further two stops 18, 19, made in the middle of the floor 17 to one side of the holder ends.

The snap linkage between the basket-shaped holder part 2 and the tub-shaped holder part 3 is effected by two resilient clips 20, 21, made on the floor 17, which enclose a bar indicated with a dashed line, as well as an abutment 23 made on the end wall 22, which abutment fittingly catches the inwardly placed wall part 9 of the basket-shaped holder part 2.

In a preferred embodiment, additional means for securing the two holder parts 2, 3 in their snap engagement

are provided by way of wings 74 which are integrally attached to the upper rims of the end walls 22 of the tub-shaped holder part 3 by hinging joints 75, 76.

The snap engagement between the holder parts 2, 3 can now be secured by placing the wings 74 in between the end walls 22 of the tub-shaped holder part 3 and the middle wall parts 9, 10 of the basket-shaped holder part 2, the wings having slots 77 co-operating with abutments 23.

The tub-shaped holder part 3 has in the middle a narrow cylindrical zone 25 from which two half baskets 26, 27, in the form of a truncated cone, project outwards to both sides. This semi-cylindrical zone 25 in the middle is lightly recessed over a dip 28 opposite the half baskets 26, 27 and thus forms a sump for collecting liquid which keeps on dripping after the end of the flushing operation of the block with active ingredients.

To one side of the recessed zone 25 in the middle, a side chamber 29 adjoins, which forms the transition to the siphonic device 30. This side chamber 29 has a flat bottom 31 tangentially adjoining the deepest place of the middle zone 25 of the tub-shaped holder part 3, and two side walls 33, 34 parallel to each other. The siphonic device 30 forms the radially outermost limitation of this side chamber 29 and consists of an integrally formed unit of two vertical channels, arranged in the longitudinal direction of the holder, one of which forms the riser pipe 36 and the other the fall pipe 37 of the siphonic device. The fall pipe 37 has a short length of tubing extending under the bottom 31 of the side chamber 29, which guarantees that the holder part 3 will be almost completely emptied. In this arrangement the water coming into contact with the

block with active ingredients flows over the bottom 31 of the side chamber 29, comes through a slot-shaped opening 39 into the riser pipe 36 and rises therein because of the sucking action of the water flowing downwards in the fall pipe 37.

This sucking or siphoning action arises as a result of the transition space 40 at the upper end of both pipes 36, 37 being well closed, as the drawing of Fig. 3 shows. A lid 41, formed integrally with the tub-shaped holder part 3 and the siphonic device 30, ensures a good closure. The Figures 1 and 2 show the position of the lid 41 immediately after manufacture in a casting mould. For using the device, the lid is rotated 180°, via the bar 42 acting as hinged connection, over the transition space 40 and in that arrangement firmly pressed inwards. So that the siphonic device can be arranged as close as possible to the circumference of the tub-shaped holder part 3, there is a recess 44 made in the upper rim 50 of this holder part 3 for the rim 45 of the lid. In this manner the result is obtained that, through the construction of the siphonic device to one side of the holder, the device only increases in width in the same degree as the axis of one of the pipes 36, 37 plus the adjoining wall thickness of the siphonic device.

The closure lid 41 of the siphonic device has a hollow plug 46 which in cross-section is flat and which has bevelled sides, so that it can be pressed elastically, and forming a seal, into the opening at the upper end of both pipes 36, 37. The pipes 36, 37 of the siphonic device, running parallel to each other, can, as a consequence of the hollow space 47 in the plug 46, run up to the plug, as in this case this hollow space 47 can form the transition space of the riser pipe 36 to the fall pipe 37 of the siphonic device.

In the embodiment of the device according to Figures 4 to 6, a tub-shaped holder part 51 is made in the same manner as holder part 3 of the above-described example of an embodiment and also has a mainly semi-circular cross-section and, mounted on its longitudinal side, a siphonic device 53 with a lid 55 formed integrally therewith and rotatable. This holder part 51 serves for the immediate inclusion of a water-soluble block (not shown). In order to keep this at a distance from the bottom 56 of this holder part 51, the latter has several, e.g. rib-shaped, spacers 58. On a side of the tub-shaped holder part 51 lying opposite the siphonic device 53 a lid part 62, allowing passage of water, is made, connected via a flexible connecting rib 60, so that the connecting rib 60 forms a hinge-like connection and the lid part 62 is rotatable, via the tub-shaped holder part 51, from the starting position shown in Fig. 4 to the closed position shown in Fig. 6. The shape of the cross-section of the lid part 62 is similarly semi-circular, so that, together with this holder part 51, it can enclose a block having a semi-circular cross-section placed in the holder part 51. In order to make the supply of the water possible during the flushing operation of the lavatory, the holder part 62 is built up of several bars which end in the, for example, closed narrow-sided side walls 65, 66 of the lid and are connected in the middle by a rib 67.

Naturally, the holder part 62, as also the other holder part 51, can be made differently for adaptation to blocks of another shape. Also the flow of water through the holder formed by both holder parts 51, 62 can be guaranteed by differently shaped openings in the wall of the lid part 62.

Further, on the side of the holder part 51 lying opposite the connecting rib between the holder part 51

and the lid part 62, or near the siphonic device 53, a clip-shaped securing member 68 is formed integrally on the device, so that, during the manufacture in a casting mould, the lid part 62, the holder part 51 and the securing member 68 are in a row next to each other, as Figures 4 and 5 show. In this arrangement the securing member 68 advantageously adjoins the outside of the closure lid 55 of the siphonic device 53, so that, upon rotation of the closure lid 55 into the closed position, the securing member occupies the operational position shown in Fig. 6. The clip shape of the securing member 68 is adapted to the shape of the rim of usual lavatory bowls. The hinged connection between the unit consisting of the closure lid 55 and the securing organ 68 and the siphonic device 53 is formed, as in the example of an embodiment according to the Figures 1 to 3, by a short, flexible rib 70. In order to protect the clip-shaped securing member 68 together with the closure lid 55 of the siphonic device in the position shown in Fig. 6, a stop claw 72 is made on the side of the lid part 62 lying opposite the connecting rib 60. When the lid part 62 is snapped onto the tub-shaped holder part 51, both legs of the stop claw 72 clamp firmly onto the vertically standing leg 73 of the securing member 68 by embracing it on both sides. For this purpose both legs of the stop claw are made resilient and hook-shaped, as can be seen in the drawing of Fig. 5.

The device according to the example of the embodiment of Figures 4 to 6 can therefore be manufactured integrally in a casting mould and, in a manner that is simple and time-saving, can be brought into the operational position after a block with active ingredients has been placed therein.

PATENT CLAIMS

1. A device for cleaning and/or colouring the flush water of a lavatory, consisting of a holder (2, 3) with means (5, 15, 18, 19) for holding a water-soluble block containing the substances for the purifying and/or colouring of the flush water at a distance from the bottom (17) of the holder and with means (14) for securing it inside a zone above the static level of the liquid in the lavatory bowl, over which the liquid flows during the flushing operation, the discharge of the holder (29, 39) being provided with a siphonic device (30) integral with the holder (3), in order to empty the holder as completely as possible after a flushing operation, the siphonic device being positioned on the outside of the holder.

2. A device according to claim 1, whereby the upper end of the siphonic device is situated in the over-flow rim (50) of the holder or of a holder part.

3. A device according to claim 1 or 2, whereby the riser pipe and fall pipe (36, 37) of the siphonic device (30) are mounted next to each other in a direction parallel to the holder circumference.

4. A device according to any one of the claims 1 to 3, whereby the means (14) for securing the device on the lavatory bowl are made integrally with the holder or a holder part and define the position of the siphonic device in such a way that this faces the inside of the lavatory bowl.

5. A device according to any one of the claims 1 to 4, whereby the transition space (40) at the upper end of the riser pipe and fall pipe of the siphonic device (30) is securely closed by an inwardly pressed

lid (41).

6. A device according to claim 5, whereby the lid (4) is formed integrally with the holder (3) and a joint (42) forms a hinged connection between the lid and the holder, so that the lid, which as a result of its manufacture has been mounted to one side of the riser pipe and fall pipe, is rotatable from this place as starting position into the closed position.

7. A device according to claim 6, whereby a securing member is made on the lid (55) intended for closing the siphonic device (53), so that, upon rotation of the lid into the closed position, this member is rotated into its operational position, there being means for fixing the securing member in its operational position.

8. A device according to any one of the claims 1 to 6, whereby, underneath, the holder has a tub-shaped holder part (3) and, placed herein, a basket-shaped holder part (2) enclosing the block with active ingredients, the siphonic device (30) being made to one side of the tub-shaped holder part (3).

9. A device according to any one of the claims 1 to 6, whereby the holder consists of a tub-shaped holder part (51) situated underneath and a lid part (62), rotatably connected herewith, provided with flow-through openings.

10. A device according to claim 9, whereby the lid part (62) is connected herewith via at least one flexible connecting rib (60) to a side of the tub-shaped holder part (51) lying opposite the siphonic device (53).

11. A device according to claim 9 or 10, whereby the

lid part (62) has means (72) for fixing it in its closed position, these means (72) simultaneously being suitable for fixing a rotatable securing member (68) situated on the tub-shaped holder part (51).

12. A device according to claim 11, whereby the fixing means (72) consists of a stop claw intended for embracing a leg (73) of the securing member (68).

13. A device according to claim 8, having a snap linkage (15, 20, 21; 9, 23) between both holder parts (2, 3) with at least one resilient clip (29, 21) gripping into an opening in the wall of the basket-shaped holder part (2) and catching this wall.

14. A device according to claim 13, whereby securing wings (74) are integrally attached to the end walls (22) of the holder part (3), joints (75, 76) forming a hinging connection between the wings and the end walls.

15. A device according to claim 8, whereby the securing means (14) is made in the form of a one-armed clip on the basket-shaped holder part (2) and integrally herewith.

16. A device according to any one of the claims 1 to 15, whereby the holder (2, 3, 51, 62) is rectangular and gets narrower from its middle zone outwards, the siphonic device (30) being mounted on this middle zone.

17. A device according to claim 8 or 9, whereby, on the inside of the tub-shaped holder part (3), at least one stop (5, 18, 19, 58) is provided on which a wall part (15) of the basket-shaped holder part (2) or of the block with active ingredients placed in the

holder is supported.

18. A device according to claim 8 or 9, whereby the tub-shaped holder part (3, 51) and the holder part or lid part (2, 62) placed therein or thereon have semi-circular or circular cross-sections.

19. A device according to any one of the claims 1 to 18, having a side chamber (29) adjoining the holder or a tub-shaped holder part (3, 51) to one side, which chamber forms the transition to the siphonic device (30), this side having a bottom wall (31) outwardly projecting tangentially from the deepest place of the holder or a holder part (3, 51), and two side walls (33, 34) transverse to the axis of the holder.

20. A device according to any one of the claims 1 to 19, whereby a lid (4) of the siphonic device has a hollow plug (46) of rectangular cross-section, the hollow space (47) of the plug forming at least a part of a transition space (40) from the riser pipe channel piece (36) to the fall pipe channel piece (37).

21. A device according to claim 20, whereby the lid (41) has a rim (45) projecting to one side of the plug (46) and in the rim (50) adjoining the siphonic device (30) a recess (44) is made for this lid rim (45).

Fig.1.

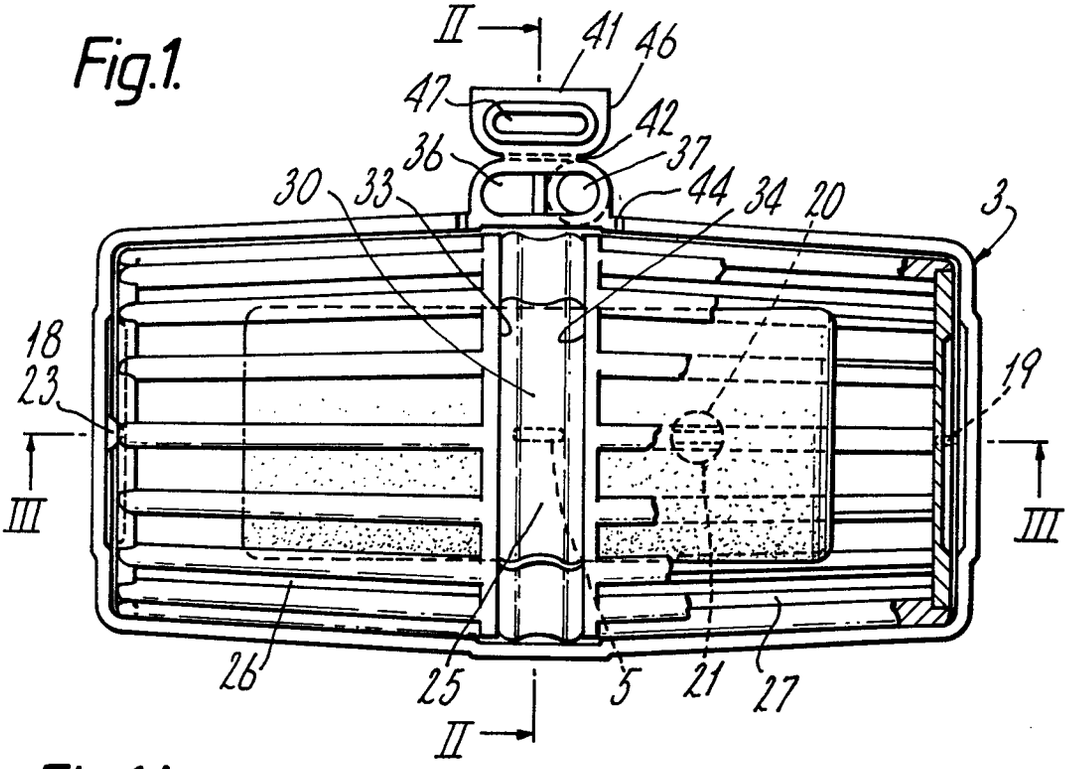


Fig.1A.

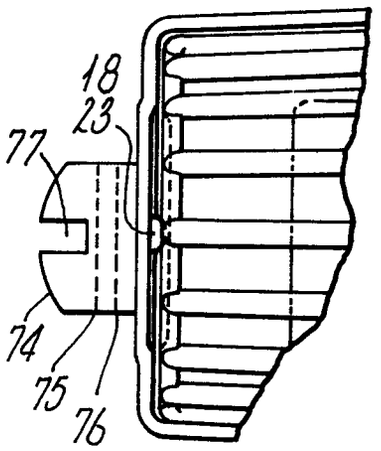


Fig.2.

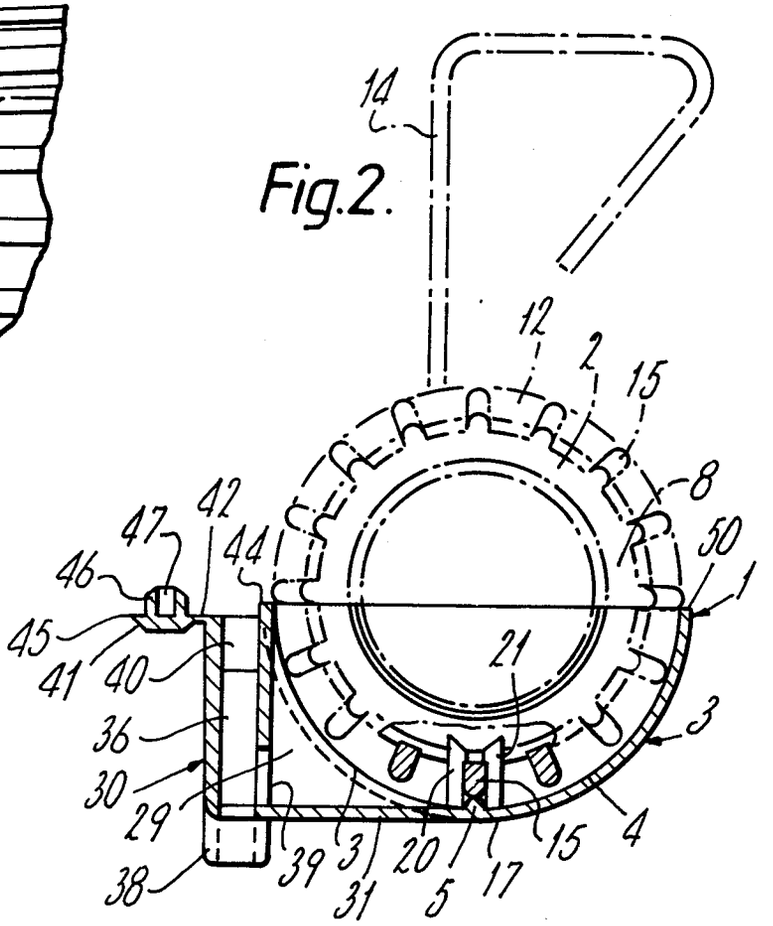


Fig.3.

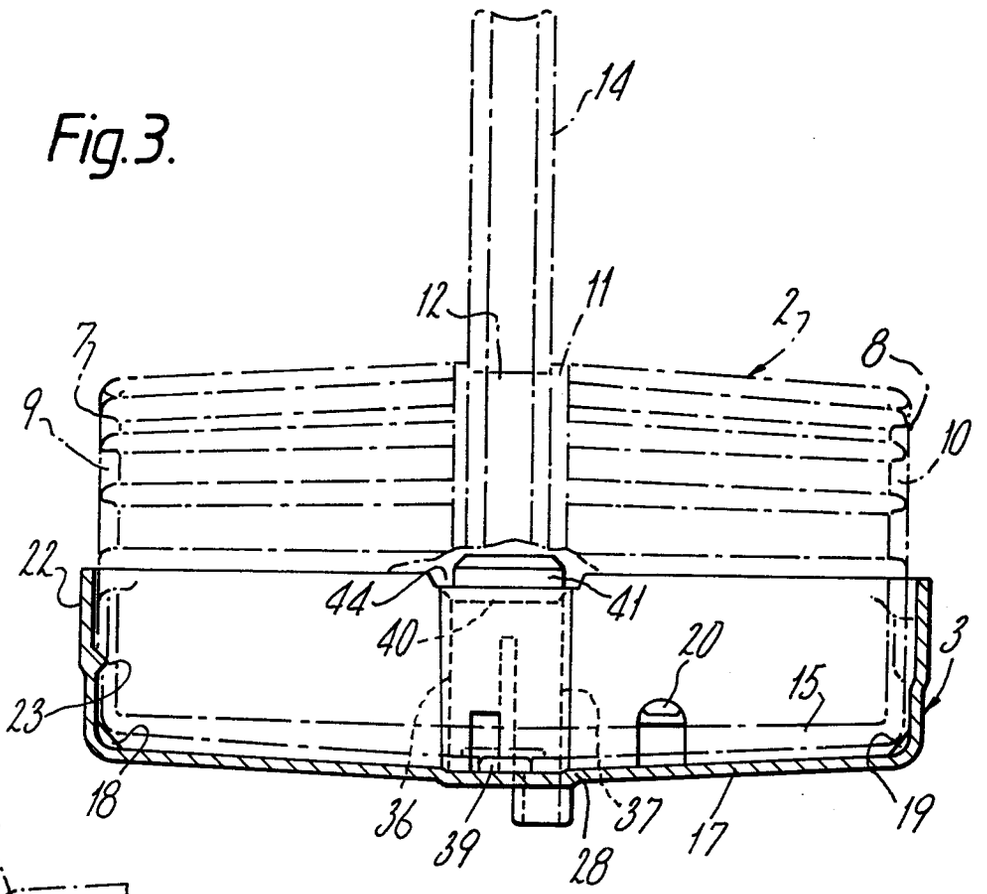


Fig.3A.

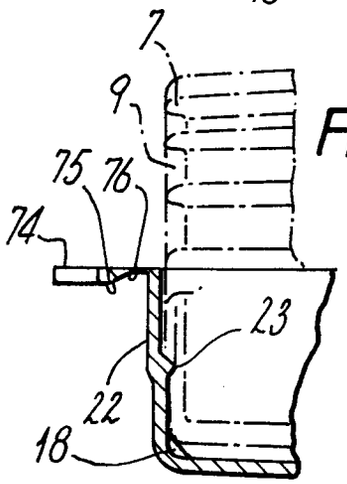


Fig.4.

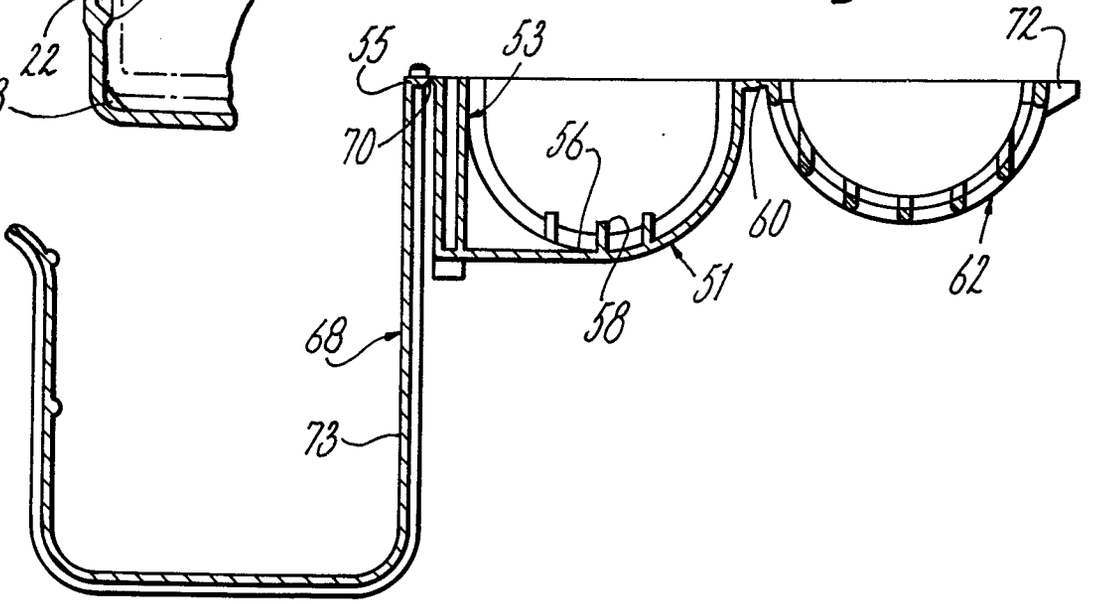


Fig.5.

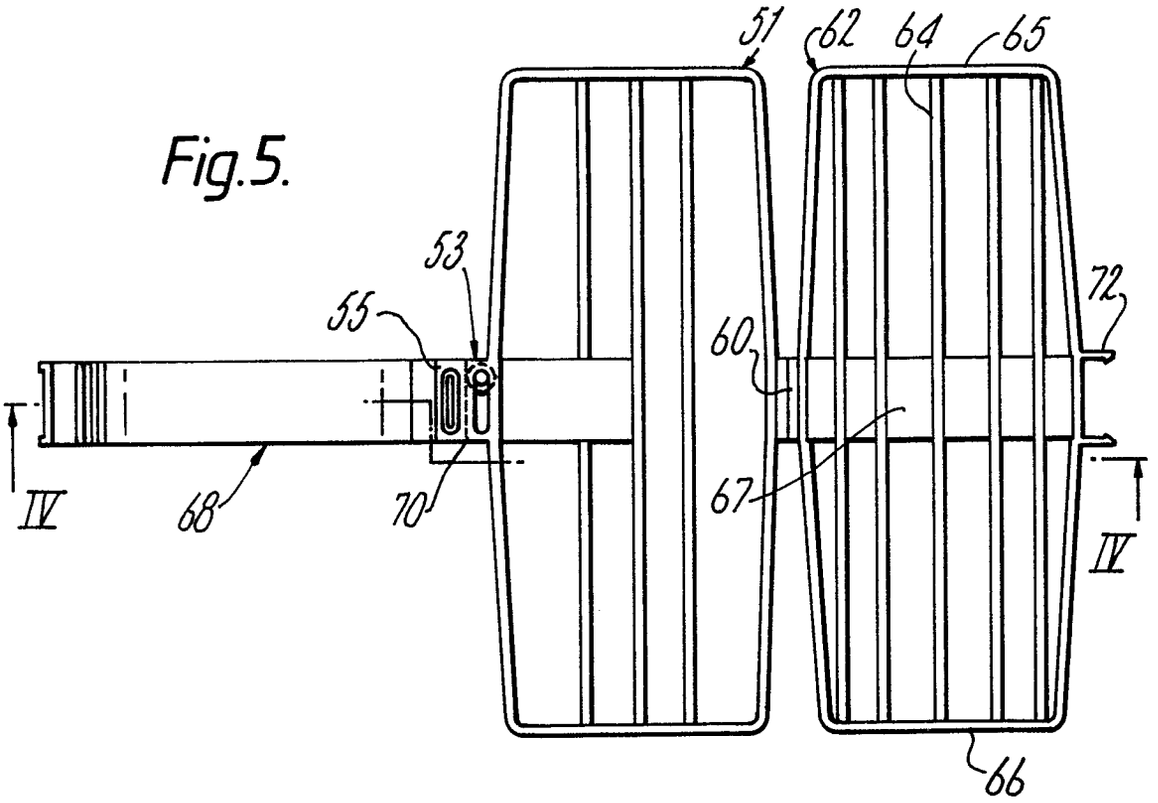
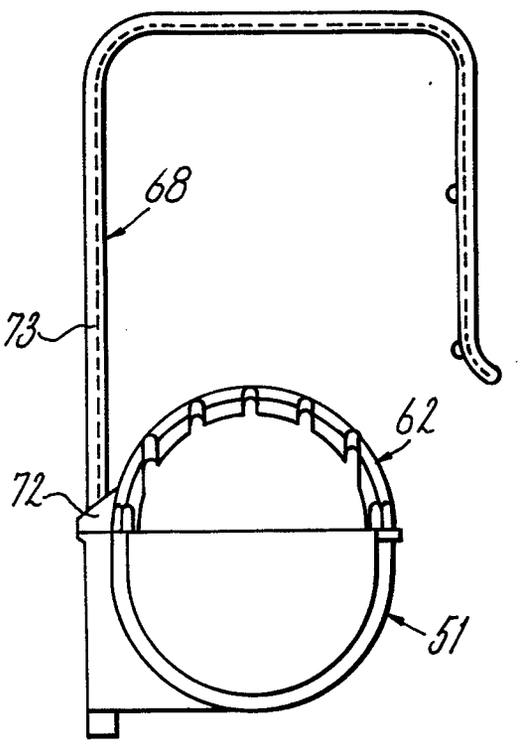


Fig.6.



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Application number

EP 83 20 0536

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EUROPEAN SEARCH REPORT

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. ³)
Y	DE-A-2 916 385 (GLOBOL-WERK GMBH) * Figures 1-7 *	1	E 03 D 9/02
A		4	

Y	DE-U-7 919 664 (GLOBOL-WERK GMBH) * Figures 1-7 *	1	
A		3,5,6, 21	

A	DE-A-1 814 397 (CHEMIEZELL GESELLSCHAFT FÜR CHEMISCHE UND ZELLULOSE PRODUKTE MBH) * Figure 1 *	16	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A	AT-B- 323 662 (HENKEL & CIE GMBH) * Figure 4 *	10,18	A 47 K 13/00 A 47 K 17/00 E 03 D 9/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	25-07-1983	PAETZEL H-J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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