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**DEVICE TO DISPENSE ACTIVE SUBSTANCES INTO
THE RINSE WATER OF A TOILET BOWL OR THE LIKE**

The invention concerns a device to dispense active substances into the rinse water of a toilet bowl or the like.

A prior-art device of the cited type is known from DE 195 20 145 and has a container for a gelatinous substance whose bottom is permeable to aqueous liquids but not to the gelatinous substance. This device prevents the gelatinous substance from dripping through between rinses. In addition, the partial permeability of the bottom area prevents a "softening effect", i.e., the uncontrolled release of the active substance in a subsequent flush due to the dissolving of the active substance is prevented by the partial permeability of the bottom of the container.

A disadvantage of the prior-art device is the design of the container holding the active substance to make the bottom permeable to liquids but not the gelatinous substance; a substantial effort goes into the construction which makes such a device complicated and expensive to manufacture. Since such devices are mass-produced, they should not be costly and complicated.

The invention is therefore based on the problem of creating a device of the kind cited at the onset that allows controlled dispensing of active substance, especially a gelatinous substance, has a very simple design and is inexpensive to manufacture.

This problem is solved according to the invention by the features of patent claim 1.

Other embodiments of the device according to the invention are found in the subclaims.

The invention provides a device to dispense active substances into the rinse water of a toilet bowl or a similar device that essentially consists of two adjacent chambers. One chamber serves to receive a gelatinous substance, and the other lets the rinse water pass through and dissolve the gelatinous substance. The two chambers are separated by an essentially vertical dividing wall. In the dividing wall is at least one opening at the foot of the two chambers through which the gelatinous substance can be dosed into the second chamber and dissolved by the rinse water running through the second chamber to be released to the toilet bowl.

There is a device at the floor of the second chamber that serves to set a given rinse water level in the second chamber after the flush and prevents the second chamber from being completely emptied.

According to the invention, the gelatinous substance is not rinsed out of the housing to a greater or lesser degree depending on the rinse water. The gelatinous substance is transferred into the second chamber in uniform doses, activated there by the rinse water and released into the toilet bowl. This prevents there being too much active substance in comparison to the rinse water.

The second chamber serves as an activating chamber for a concentrated gelatinous substance, i.e., the gelatinous substance is transferred into the second chamber by the inflowing or passing rinse water and dissolved, and then dosed diluted into the toilet bowl with the aid of a siphon or a similar device. The second chamber also ensures that, after flushing, the same amount of gelatinous substance always remains within it to be rinsed out already diluted by the next flush.

The device according to the invention also prevents permanent drainage and subsequent dripping of gel mixed with water and hence also keeps traces of gel out of the toilet bowl.

The device according to the invention will be further explained in the following with reference to

the drawing to clarify additional features and advantages, in which:

Fig. 1 shows a perspective, exploded view of a first embodiment of the device according to the invention,

Fig. 2 shows a side section of the device from Fig. 1, and

Fig. 3 shows an altered embodiment of the device according to the invention.

Fig 1 shows an exploded perspective view of a preferred first embodiment of the device according to the invention. In Fig. 1, the device has a housing 1 (preferably made of plastic or translucent plastic) that contains two essentially parallel chambers 2, 3. The chambers 2, 3 are essentially adjacent and have a preferable semicircular cross-section in Fig. 1 and 2, i.e., a floor that approximately follows a circle. The shape of the housing 1 can be changed as desired, e.g. it can be rectangular or square without impairing the functioning of the invention.

A dividing wall 4 is between the chambers in the housing 1 to delimit the first and second chamber 2, 3. The wall is essentially vertical and hence divides the housing 1 into two chambers e.g. of equal volume. As needed, the chambers 2, 3 can also have different widths so that they contain different volumes.

In the invention, the first chamber 2 serves to receive a gelatinous substance as the active agent, while the second chamber 3 is provided to disintegrate or dissolve the active substance from chamber 2, dose it, and transfer it in the dosed amount to the toilet bowl (not shown in the figures).

There is at least one connecting opening 5 in the dividing wall 4 through which the gelatinous substance in the first chamber 2 is dosed into the second chamber 3. This means that the cross-section of the connecting openings is selected to prevent an unspecified amount of gelatinous

substance from entering the chamber 3 and ensure that a dosed amount of gelatinous substance is transferred into the chamber 3.

There is a siphon 8 at the bottom of the chamber 3, i.e., the area of the floor identified by 6. In Fig. 2, this siphon consists of an inner tube 9 and an outer tube 10. The outer tube 10 has a greater cross-section or diameter than the inner tube 9 and is slightly taller than the inner tube 9. The inner tube 9 passes down through the floor 6 of the chamber 3. The outer tube 10 stands vertically on the floor 6.

The outer tube 10 is also provided with a seal 10a, i.e., with a cover that closes the outer tube 10 at the top to the chamber 3.

To allow liquid to pass through the siphon 9,10, the bottom end of the outer tube 10 is at a slight distance from the floor 6. In this case, the outer tube 10 is held against the inner tube 9 by bars 11 in Fig. 2. The outer tube 10 can also stand directly on the floor 6, and individual holes are in the perimeter of the outer tube 10 near the floor 6 to allow the passage of liquid from the chamber 3 into the outer tube 10 and then to the inner tube 9.

The outer tube 10 therefore has a pot-like shape and largely encloses or covers the inner tube 9.

The tube 10 with the lid 10a accordingly has a peripheral slot or opening close to the floor 6, or there are peripheral (preferably spaced) openings in the tube wall 10 close to the floor that are indicated in Fig. 2 by reference number 10b.

The top of the two chambers 2, 3 is covered by a lid 12 or a similar seal. The lid 12 can be provided with openings 13, 14 through which rinse water can enter the chamber 2 and/or 3. Near the lid 12 are preferably overflow openings 16, 17 in the side of the chambers 2, 3 preferably at the same height. The overflow openings 16, 17 allow the rinse water out of chamber 2 and chamber 3 during a flush as soon as the level of the chambers 2, 3 defined by the overflow

openings 16, 17 is exceeded by the rinse water. The overflow openings 16, 17 also serve to dose rinse water at a ratio to the gelatinous substance that is in the chamber 2.

There is a holder 19 on the lid 12 or another site of the housing 1 to affix the device to the edge of a toilet bowl. The holder 19 is preferably designed so that the container 2 holding the gelatinous substance is at a distance from the vertical edge of the bowl while the chamber 3 that receives the rinse water is as close as possible to the approximately vertical bowl wall to make sure that the second chamber 3 is sufficiently rinsed of with rinse water.

As shown in Fig. 1 and 2, the connecting opening 5, that can also be a slot or be formed by several such openings, is at the bottom of the chamber 2.

The design of the holder 19 is prior-art and therefore does not require any further explanation.

The device according to the invention as described with reference to Fig. 1 and 2 functions as follows:

The first chamber 2 serves to receive the gelatinous active substance that is dosed through the connecting opening 5 into the chamber 3. After a flush, the rinse water remains in the second chamber 3 in the area defined by the floor 6 and the tube section 10 and the floor 6. Gelatinous active substance from the chamber 2 may get into the rinse water via the connecting opening 5 and is hence disintegrated after the flush, i.e., the rinse water remaining in the chamber 3 is enriched with the active substance. In the next flush, fresh rinse water passes through the opening 13 into the second chamber 3 and mixes with the present rinse water containing the active substance and is drained via the siphon 8 consisting of the tube sections 9, 10, 10a into the toilet bowl. During the flush, gelatinous substance is dosed via the connecting opening 6 into the rinse water in the chamber 3 and leaves the chamber 3 with the outflowing rinse water. After the flush, the rinse water flows out of the chamber 3 until the area above the end of the tube 10 is

free. The remaining rinse water whose level is defined by the top end of the tube 9 is again enriched with gelatinous substance that is supplied via the connecting opening 5 at a set amount.

The siphon 8 also prevents continuous subsequent dripping through the inner tube 9 when the rinse water is drained since the top end of the inner tube 9 is lower than the outer tube 10. This prevents undesirable traces of active substance that arise with these devices from being in the toilet bowl after a flush.

The use of the siphon is particularly advantageous since it prevents the active substance from being overdosed in the toilet bowl while simultaneously ensuring that the active substance already dissolved in the second chamber 3 is available at the beginning of the flush and does not have to be transferred from the chamber 2 just during the flush.

From the above description, it can be seen that the dosing of active substance by the device according to the invention is essentially independent of the design or shape of the chambers 2 and 3. If subsequent dripping of rinse water with added active substance does not have to be prevented, the outer tube 10 with the lid 10a does not have to be in the chamber 3 according to the invention since in this case the remaining water level is ensured by the height of the tube 9 extending into the chamber 3.

The lid 12 is articulated to the housing 1 with a film hinge 21 in the device according to the invention.

Fig. 3 shows an embodiment altered from the embodiment in Fig. 1 and 2. The device in Fig. 3 also consists of a first chamber 2 and a second chamber 3. The two chambers 2, 3 are essentially parallel. Chamber 2 serves to receive the gelatinous active substance while chamber 3 primarily serves for the passage of rinse water. In its floor 6, it has at least one tubular device 9 that projects upward at a predetermined height from the floor and extends down through the floor 6 to specifically drain the rinse water from the floor 6 through the floor 6 as shown by reference

number 9a. The rinse water is hence drained from the chamber 3 through the tube 9, and a residual amount of rinse water is retained whose level is defined by the top opening of the tube 9 in the second chamber 3.

In particular, the different heights of the chambers 2, 3 contrast with the embodiment in Fig. 1 and 2. Chamber 3 extends down further than chamber 2, while the chambers 2, 3 in this embodiment share a common top horizontal plane and can be covered by a lid (not shown).

The dividing wall 4 between the first and second chambers 2, 3 is provided with at least one opening or slot or the like, indicated by reference number 5, close to the floor 2a of the first chamber 2 that serves the same function as the connecting opening 6 in the embodiment in Fig. 1 and 2. The cross-section of the connecting opening or each connecting opening 6 ensures a dosed supply of gel from the first chamber 2 to the second chamber 3.

On the top of the chambers 2, 3 are corresponding inlets 13, 14, and overflow openings 16, 17 run along the side of the chamber 2, 3 as described in connection with the embodiment in Fig. 1 and 2. The parts that are the same in Fig. 1 and 2 have the same reference numbers.

In the device in Fig. 3, the gel chamber 2 is also preferably at a distance from the toilet bowl wall while the second chamber 3 is as close as possible to the toilet bowl wall to ensure that the second chamber 3 is rinsed forcefully with water. The holder that holds the device in the toilet bowl is also not shown in Fig. 3.

Corresponding to the embodiment in Fig. 1 and 2, residual rinse water already in the chamber 3 that has been supplied with the gelatinous substance is drained downward via the tubular device 9 during a flush, and additional rinse water with active substance from the connecting opening 6 is provided during the flush and released to the toilet bowl after the rinse water that is already enriched with active substance. The rinse water supplied via the openings 14 remains after the flush up to a level in the second chamber 3 defined by the tube end 9 and is dosed after the flush

with the active substance via the connecting opening(s) 6 so that the active substance is released in doses to the rinse water remaining in the second chamber 3.

The first chamber 2 that receives the gelatinous substance is preferably provided with a filling opening 23 to allow active substance to be poured in. The filling opening 23 is preferably in the top of the first chamber 2 and is portrayed in Fig. 2 in reference to the first embodiment.

Instead of the siphon made of concentric tubular sections 9, 10 and the lid 10a as in the embodiments in Fig. 1 and 2 or instead of the tubular section 9, 9a in the embodiment in Fig. 3, a typical essentially U-shaped siphon tube can be provided that extends up inside the chamber 3 from the floor 6 above a predetermined height corresponding to the embodiments in Fig. 1-3; the U-shaped siphon section is approximately at the height of or below the floor 6. After a flush, such a siphon drains the rinse water enriched with active substance remaining in the chamber 3 down to a level that corresponds to the bottom end of the siphon tube until the siphon tube stops drawing water and draws just air. Then a slight amount of rinse water enriched with active substance remains in the U-shaped siphon tube section to prevent water from subsequently dripping from the chamber 3 into the siphon tube section and passing into the toilet bowl. The siphon hence drains the rinse water from the chamber 3 down to the level that is defined by the top end of the siphon tube; when there is a slight amount of subsequently draining rinse water, the siphon also captures it in the siphon tube section to prevent it from passing into the bowl. The tubular section extending into the chamber 3 also ensures that a set quantity of rinse water enriched with active substance remains in the chamber 3 and is rinsed out or released into the toilet bowl immediately upon the next flush.

A common feature of all the embodiments is that a mixture of rinse water with active substance is available at the start of the flush, and the mixture is not released to the toilet bowl only toward the end of the flush.

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PATENT CLAIMS

1. A device to dispense active substances into the rinse water of a toilet bowl or the like with a holder to affix it to the edge of a toilet bowl or the like with a first chamber (2) to receive an active agent and a second chamber (3) for the passage of rinse water, wherein between the two chambers (2,3) there is at least one connecting opening or slot (5) or the like to introduce the active substance into the second chamber (3), and with a device (8,9,10) to maintain a predetermined water level in the second chamber (3).
2. A device according to claim 1, characterized in that the first and second chambers (2,3) are essentially parallel.
3. A device according to claims 1 or 2, characterized in that the first and second chambers (2,3) are essentially adjacent.
4. A device according to one of the prior claims, characterized in that the connecting opening (5) is in the bottom area of the first chamber (2).
5. A device according to one of the prior claims, characterized in that the second chamber (3) extends downward beyond the floor (6) of the first chamber (1).
6. A device according to one of the prior claims, characterized in that the first and/or second chamber (2,3) have inlets (13,14) for the rinse water.



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7. A device according to at least one of the prior claims,
characterized in that
the two chambers (2,3) are separated by an essentially vertical wall (4).
8. A device according to one of the prior claims,
characterized in that
the cross-section of the connecting opening(s) (5) between the two chambers (2,3) is such
that the active substance can be dosed from the first chamber (2) into the second chamber
(3).
9. A device according to at least one of the prior claims,
characterized in that
the first and/or second chamber (2,3) are provided with overflow openings (16,17).
10. A device according to at least one of the prior claims,
characterized in that
the device (8,9,10) to maintain a predetermined water level in the second chamber (3) is a
siphon.
11. A device according to at least one of the prior claims,
characterized in that
the two chambers (2,3) are in a common housing (1).
12. A device according to at least one of the prior claims,
characterized in that
the two chambers (2,3) are closed by a lid (12).
13. A device according to claim 12,



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characterized in that
the lid (12) is articulated to the housing (1).

14. A device according to at least one of the prior claims,
characterized in that
the lid (12) has inlet openings (13,14).
15. A device according to at least one of the prior claims,
characterized in that
the holder (19) is on the lid (12).
16. A device according to at least one of the prior claims,
characterized in that
a gelatinous substance can be placed in the first chamber (2) as the active substance.
17. A device according to at least one of the prior claims,
characterized in that
the siphon (8) consists of at least two essentially concentric tube sections (9,10) of which
the outer tube section (10) is provided with a seal (10a), and the outer tube section (10)
has openings (10b) close to the floor (6) of the chamber (3).
18. A device according to one of the prior claims,
characterized in that
the outer tube section (10,10a) is at a distance from the floor (6) of one chamber (3).

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