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(54) **Dosing arrangement**

(57) A dosing arrangement (100) for a water closet comprises a dosing tube (70) for a water cistern of the water closet. The dosing tube is arranged for receiving and holding a tablet of deodorizing and/or cleaning chem-

icals, and is supplied with water during a flush of the water cistern. A sled assembly (10, 20) is mounted in a wall arrangement or shelf arrangement at the water cistern for slidably transferring the tablet from outside the wall to the dosing tube (70).

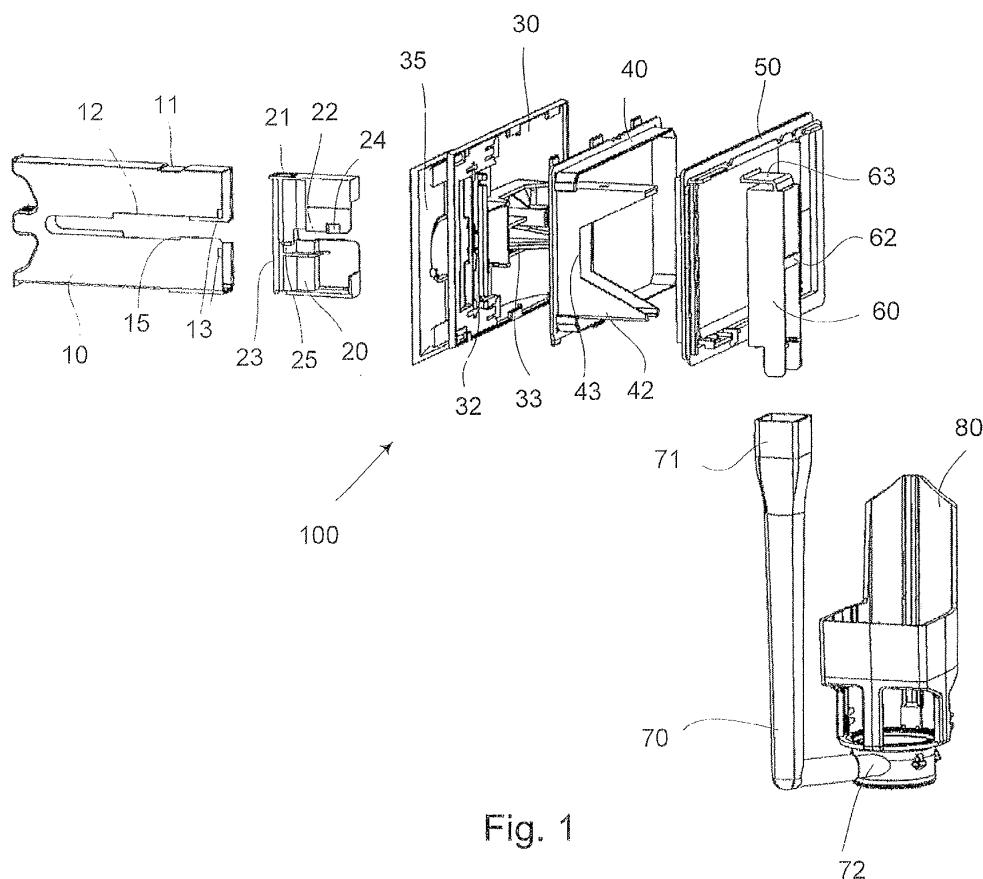


Fig. 1

Description

Field of the Invention

[0001] The present invention relates to a dosing arrangement for introducing a tablet of chemicals into a dosing tube of a water closet.

Background of the Invention

[0002] Sanitary installations, such as public restrooms, toilets etc., are often associated with a bad odor. This problem can be remedied by utilizing deodorizing chemicals that often also assist in cleaning and sanitizing the sanitary installation. Several different kinds of dosing arrangements have been developed for supplying the chemicals to the installations, such as rim-hung holders, or dosing containers inside a cistern of a water closet that are in fluid communication with a flush valve of a water closet. The tablets containing the chemicals are often relatively difficult to dissolve in water, which prolongs their useful life. The first holders can be aesthetically undesirable and can also clog the drain if they are dislodged. The latter containers are refilled by using access doors on the top of the water cistern or by removing a top lid of the water cistern.

[0003] Water closets are increasingly being wall-hung, as opposed to being placed on the floor, and the water cistern is then often hidden inside an installation wall. This makes it more difficult to refill the dosing containers with chemicals. One solution is shown in US-A-6,279,174, where a hidden cistern is supplied with an access door. The door is opened and a new supply of chemicals can be added to the container behind the access door. One drawback of this solution is that small children easily can get access to the chemicals by simply opening the door. This can be very hazardous, since the chemicals often are highly toxic and erosive.

Summary of the Invention

[0004] It is an object of the present invention to mitigate, alleviate or eliminate one or more of the above-identified deficiencies and disadvantages singly or in any combination. This in one aspect solved by providing a dosing arrangement for a water closet with a hidden cistern. The dosing arrangement comprises a dosing tube for a water cistern of the water closet, for receiving and holding a tablet of deodorizing and/or cleaning chemicals, said dosing tube being supplied with water during a flush of the water closet. The dosing arrangement further has a sled assembly mounted in a wall at the water closet for slidably transferring the tablet from outside the wall to the dosing tube inside the wall. Further embodiments are given by the dependent claims.

Brief Description of the Drawings

[0005] The dosing arrangement of the present invention will become clear from the following detailed description of the invention when taken in conjunction with the accompanying drawing, in which

Fig. 1 is an exploded side view of an embodiment of a dosing arrangement according to the invention, Fig. 2 is a side view of a sled assembly, comprising a sled and a tablet carrier, where the tablet carrier is at an inner, rightmost position inside the sled, and Fig. 3 is a view of the sled assembly of Fig. 2, where the tablet carrier is at an outer position.

Detailed Description of the Invention

[0006] Below, several embodiments of the invention will be described with references to the drawings. These embodiments are described for illustrative purposes only, in order to enable a skilled person to carry out the invention and to disclose the best mode. However, such embodiments do not limit the invention. Moreover, other combinations of the different features are possible within the scope of the invention.

[0007] The dosing arrangement 100 of the present invention is mainly intended for a sanitary installation having a water cistern inside a wall, such as an installation wall. The dosing arrangement 100, for replenishing tablets containing cleaning and/or deodorizing chemicals, is shown in Fig. 1. This arrangement is shown integrated with a front panel 30, in which a tilting lever 33 for flushing a toilet may be mounted. This front panel is normally located on the wall or shelf above the toilet bowl.

[0008] The dosing arrangement 100 in one embodiment comprises a sled assembly comprising a sled 10 and a tablet carrier 20, which is designed to fit inside the sled 10. The sled 10 with the therein-fitted tablet carrier 20 can be inserted into the front panel 30 through a slot 32. This slot 32 is normally covered by a cover 35, which can be moved for operating the sled 10. The front panel 30 may be provided with the tilting lever 33 for operating a flush valve (not shown) of an associated water closet. The front panel 30 is connected to an inner panel 40, which is mounted on an outside surface of a wall (not shown). This panel 40 can be formed with a guide 42 for guiding the sled 10 after insertion in the slot 32.

[0009] A service tunnel 50 can be mounted on an inside surface of the wall or shelf and span the thickness of a wallboard of the wall or shelf. The length of the service tunnel 50 should match the thickness of the wallboard (such as one or more layers of plaster or gypsum board, chip board, sheet of plywood, tiles etc.). A control member 60 can be mounted on the service tunnel 50, for controlling the tablet carrier 20 inside the sled 10. The control member 60 may be snapped to the service tunnel 50 by way of a suitably formed snap coupling 63. A dosing tube 70 can at an upper end 71 be mounted at a position for

receiving and holding a tablet of chemicals from the tablet carrier 20, in Fig. 1 just below the control member 60, and can at a lower end 72 be attached to a flushing stand 80. This stand 80 can hold the flush valve of the water closet.

[0010] The dosing arrangement according to Fig. 1 can be mounted by first fixing the service tunnel 50 to the cistern and the inner panel 40 to the service tunnel by a fastening means, such as screws. The outer panel 30 can then be snapped onto the inner panel 40, by way of suitably formed hooks. The control member 60 can be fixed on the service tunnel 50, such as through the snap coupling 63. The dosing tube 70 should now be located at a suitable position below the control member 60, or be mounted to an underside of said control member 60, such that the dosing tube 70 will receive a released tablet.

[0011] The tablet carrier 20 can then be placed inside the sled 10, by gently forcing it in from the right end of the sled 10, as seen in Fig. 1. The sidewalls of the sled 10 can flex outwards slightly in order to allow a protruding heel 25 of the tablet carrier 20 to enter.

[0012] The sled 10 with the tablet carrier 20 (i.e. the sled assembly) can then be pushed through the slot 32 and the guide 42. In one embodiment, the sidewalls of the sled 10 can now flex inwards slightly, in order to allow hooks 13 on the sled 10 to pass the slot 32 and the guide 42. Once the sled has been inserted past the slot 32 and an edge 43 of the guide 42, the hooks 13 will prevent the sled 10 from easily being removed from the dosing arrangement 100.

[0013] The tablet carrier 20 can be slidably arranged inside the sled 10, and is arranged at a rightmost, inner position, as seen in Fig. 2, so that an upper hole 11 of the sled and an upper hole 21 of the tablet carrier 20 are aligned. This position is defined by the heel 25 on the tablet carrier 20 that is stopped on the mating shoulder 15 on the sled 10. A tablet (not shown) can be inserted through the holes 11, 21, into a compartment 23 of the tablet carrier 20. The tablet is in one embodiment kept from falling down by a lower surface 14 of the sled 10, the location of which is indicated by a dashed line in Fig. 3. The sled 10 is then pushed through the slot 32. The sled 10 is in one embodiment guided by the guide 42 towards the control member 60, where a crossbar 62 rides in a channel 22 in the tablet carrier 20 and a channel 12 in the sled 10.

[0014] Continued travel of the sled 10 will in one embodiment bring the crossbar 62 into contact with an abutment 26 on an outside surface of the compartment 23 of the tablet carrier 20, see Fig. 3, which will prevent further travel inward, to the right, for said tablet carrier 20, without hindering the sled 10. Still further travel of the sled 10 will lead to relative movement between the sled 10 and the tablet carrier 20, until a relatively outer position, such as shown in Fig. 3, is reached depending on the wall thickness. The tablet carrier 20 is in this embodiment stationary during this step and the sled 10 moves around it to the inside of the wall, to the right in Fig. 1. This will

make a lower opening in the compartment 23 communicate with a lower opening 16 in the lower part of the sled 10. These openings are indicated by dashed lines in Fig. 3, together with dashed lines for the compartment 23 for holding the tablet of chemicals.

[0015] The inserted tablet will then be released into the dosing tube 70, which is located below the control member 60. The dosing tube 70 may be connected to the flushing stand 80, where the flush valve is arranged, so that water from a flush enters the dosing tube 70 and soaks the inserted tablet. Chemicals are released from the tablet and are carried with the flushing water to a connected toilet bowl, where the effect of the chemicals is achieved.

[0016] When the tablet is depleted, it should be replenished as stated above. The cover 35 can then be moved and the sled 10, with the tablet carrier 20, can be pulled outwards from the dosing arrangement 100. The protrusion 24 on the tablet carrier 20 will then be caught by the edge 43 of the guide 42. The tablet carrier 20 will again perform a relative movement with respect to the sled 10, but in fact be stationary, so that it will end up at the inner end position inside the sled 10 as mentioned above. The sled 10 will then be stopped by the at least one hook 13 on an outer sidewall of the sled 10, which engages the edge 43 of the guide 42. This will in the shown embodiment be at a suitable position where the holes 11, 21 are aligned outside the wall and allow for a new tablet to be inserted into the compartment 23. The procedure will then be repeated as above. At the outer position of the sled 10, the heel 25 of the tablet carrier 20 is close to the shoulder 15 on the sled 10, while the protrusion 24 abuts the edge 43, so that a well-defined position is obtained for the hole 21 relative to hole 11.

[0017] The shape of the tablet is not crucial, but it must be suitable for being inserted through the holes 11, 21 into the compartment 23. The tablet can have the shape of the compartment 23, as shown with dashed lines in Figs. 2 and 3, or be formed as a ball. In the latter case, several ball-shaped tablets can be entered at the same time.

[0018] In the above description, the tablet is inserted through a hole on the upper side of the sled/tablet carrier. This is not necessary, since the tablet may equally well be inserted from a side or from the front of the sled 10. The tablet carrier 20 is not essential either, since a movable lid, controlled by a control member (similar to control member 60), can expose the lower opening at a suitable position for obtaining the same effect.

[0019] The lower opening can be provided in the bottom of the sled/tablet carrier, but can also be arranged in a sidewall thereof as long as the tablet easily can be released from the compartment 23 towards the dosing tube 70.

[0020] Alternatively, a holder (not shown) is arranged on the sled for holding the tablet, which holder is deactivated at a suitable position inside the wall, such that the tablet can be released to the dosing tube.

[0021] The gist of the invention is, hence, the provision of a reciprocable sled that has a compartment or holder, for transferring a tablet of chemicals from outside the wall to a dosing tube (of a water closet) inside the wall.

[0022] Even though the term sled has been used for describing the object that holds and transfers the tablet of chemicals from outside the wall to the dosing tube 70, it should be noted that this refers to the general movement of the sled 10, rather than the actual physical contact with the dosing arrangement. It is neither intended to solely specify a rectilinear movement of the sled, since a sled, mounted about a pivot, would slide along a circular path.

[0023] The dosing arrangement is shown integrated with a front panel for holding the flush lever. This is not necessary, since the dosing arrangement easily can be mounted at a separate location, remote from the toilet seat.

[0024] References to right and left should not be taken literally, since they refer to the specific orientation of the drawings. References to inner and outer are related to the wall, where outer is in the direction towards the outer surface of the wall and inner is in the direction towards the inside of the wall.

[0025] In the claims, the term "comprises/comprising" does not exclude the presence of other elements or steps. Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented. Additionally, although individual features may be included in different claims, the individual features may be combined separately in other combinations, and the inclusion of the features in different claims does not imply that another combination of features is not feasible and/or advantageous. In addition, singular references do not exclude a plurality. The terms "a", "an", "first", "second" etc do not preclude a plurality. Reference signs in the claims are provided merely as a clarifying example and shall not be construed as limiting the scope of the claims in any way.

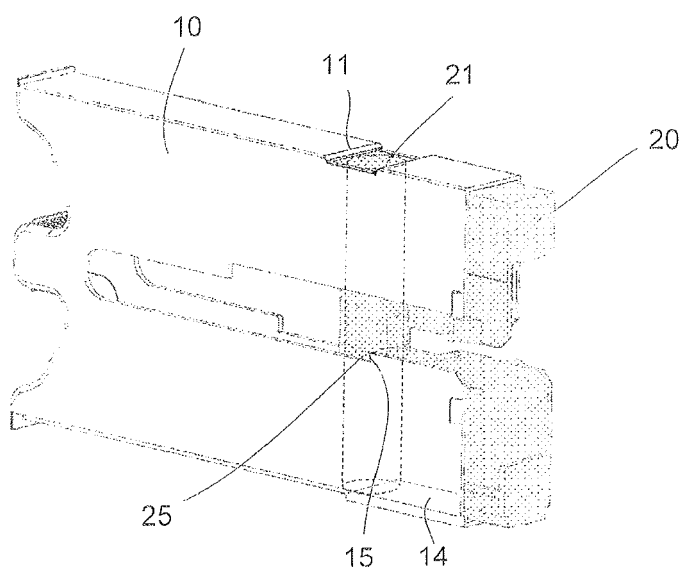
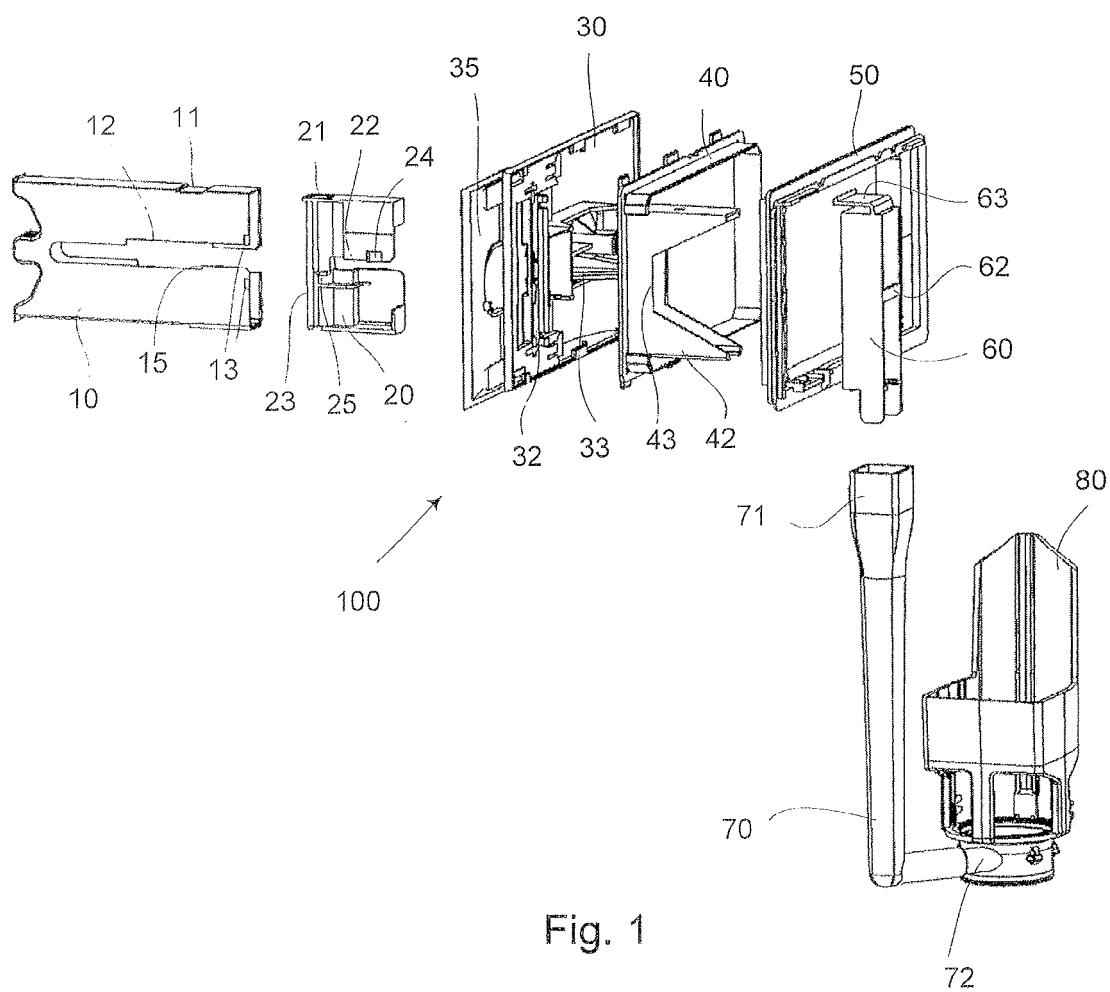
[0026] Although the present invention has been described above with reference to specific embodiment, it is not intended to be limited to the specific form set forth herein. Rather, the invention is limited only by the accompanying claims and other embodiments than those described above are equally possible within the scope of the appended claims.

Claims

1. A dosing arrangement (100) for a water closet, the dosing arrangement comprising a dosing tube (70) for a water cistern of the water closet, for receiving and holding a tablet of deodorizing and/or cleaning chemicals, said dosing tube (70) being supplied with water during a flush of the water cistern, **characterized by** a sled assembly (10, 20) mounted in a wall arrangement or shelf arrangement at the

water cistern for slidably transferring the tablet from outside the wall to the dosing tube (70).

2. A dosing arrangement (100) according to claim 1, wherein the sled assembly (10, 20) is guided by a guide (42).
3. A dosing arrangement (100) according to claim 1, wherein the sled assembly (10, 20) comprises a tablet carrier (20) that slides inside a sled (10) of the sled assembly (10, 20).
4. A dosing arrangement (100) according to claim 1, wherein the sled assembly (10, 20) has a compartment (23) for accommodating the tablet of chemicals.
5. A dosing arrangement (100) according to claim 1, wherein the sled assembly (10, 20) has a holder for at least temporarily fixing the tablet of chemicals to the sled assembly (10, 20).
6. A dosing arrangement (100) according to claim 1, wherein a control member (60) is arranged for controlling the location where the tablet of chemicals will be transferred to the dosing tube (70).
7. A dosing arrangement (100) according to claim 1, wherein the sled assembly (10, 20) has a lower opening that is exposed at a transfer location inside the wall.
8. A dosing arrangement (100) according to claim 3 and 8, wherein the tablet carrier (20) has a lower opening that is aligned with the lower opening of the sled (10), at the location where the tablet is transferred to the dosing tube (70).
9. A dosing arrangement (100) according to claim 6, wherein the control member (60) has a crossbar (62) that enters a channel (22) of the tablet carrier (20) and a channel (12) of a sled of the sled assembly (10, 20), without affecting the sled (10), until the tablet of chemicals can be transferred from the sled assembly (10, 20) to the dosing tube (70), during insertion of the sled (10).
10. A dosing arrangement (100) according to claim 1, wherein the dosing tube (70) is an overflow pipe of the water cistern.
11. A wall arrangement or shelf arrangement for flushing a water cistern, comprising a dosing arrangement according to claims 1 to 10.
12. A water cistern comprising a dosing arrangement according to claims 1 to 10.



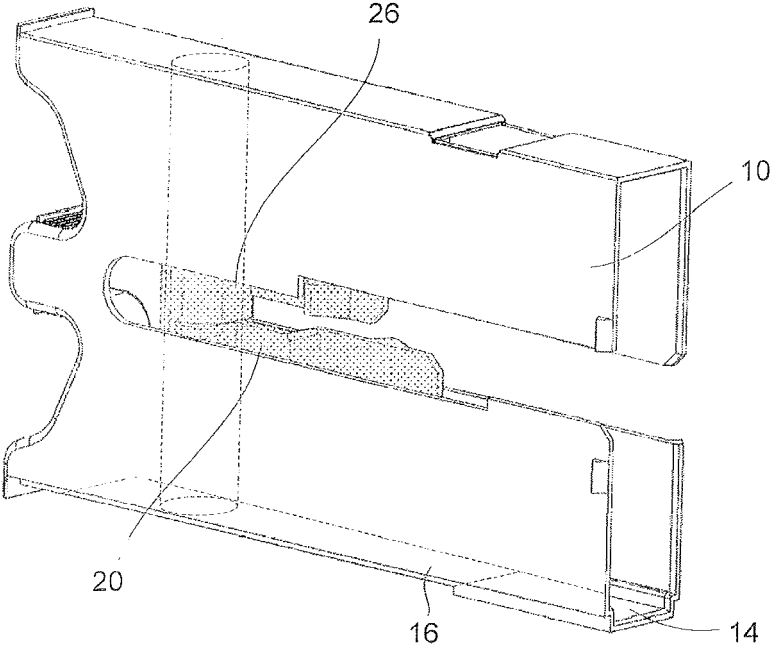


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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