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54 Method and apparatus for discharging paper towels or the like.

57 The invention relates to a method and apparatus for discharging paper towels or the like. The apparatus comprises a reservoir having at least one inlet connectable with a water supply, at least one opening for throwing in the paper towels, and an outlet connectable with a sewer-pipe, wherein a valve means is provided which is periodically movable between a position, in which the outlet is closed, and a position, in which the outlet is opened. The paper towels can be thrown in the reservoir, in which the supplied water is collected, wherein an amount of the water collected in the reservoir together with a plurality of the towels gathered in the water is periodically discharged through the closable outlet on a sewer-pipe. In this manner an automatical discharge of the used paper towels is obtained, whereby the disorderly and unhygienic impression of over-full refuse boxes is avoided.

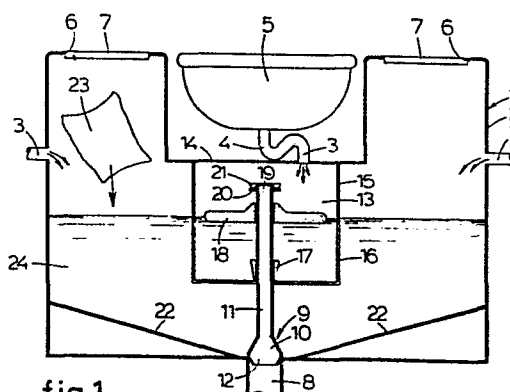


fig.1

Method and apparatus for discharging paper towels or the like

The invention relates to a method for discharging paper towels or the like, and to an apparatus for applying this method.

In the toilet rooms of public buildings, office
5 buildings, catering establishments and the like, paper towels are usually provided for drying ones hands. A problem herewith involved is that the paper towels thrown away after use occupy much room, so that the refuse boxes or the like, in which the paper towels are thrown, are quickly filling up. To timely empty
10 the refuse boxes, much attention of the servants is required. In practice, it often happens thereby that the used towels are thrown next to the refuse box, which gives a very slovenly and unhygienic impression.

The invention aims to provide a method of the above-
15 mentioned kind, by which this problem can be obviated in a simple, but nevertheless effective manner.

To this end, the method according to the invention is characterized in that the towels are thrown in a reservoir connected by an inlet to a water supply and in which the supplied
20 water is collected, wherein an amount of the water collected in the reservoir together with a plurality of the towels gathered in the water is periodically discharged through a closeable outlet on a sewer-pipe.

In this manner, an automatical discharge of the used
25 paper towels is obtained, whereby the disorderly and unhygienic impression of over-full refuse boxes is avoided and the servants do not need to pay any attention to removing the towels.

According to a favourable embodiment of the method, the inlet of the reservoir is connected with the outlet of at
30 least one washing-stand or the like so that the sewage water of the washing-stand(s) is collected in the reservoir. In this manner, the water required for washing ones hands is advantageously used. As for washing ones hands each time one to two liters of water is used and for drying ones hands normally only
35 one or two towels are used, the ratio paper/water is such that practically no stoppage problems will occur.

Further, the invention aims to provide a simple apparatus for applying the method according to the invention, said

apparatus according to the invention being characterized by a reservoir having at least one inlet connectable with a water supply, at least one opening for throwing in the paper towels, and an outlet connectable with a sewer-pipe, wherein
5 a valve means is provided which is periodically movable between a position, in which the outlet is closed, and a position, in which the outlet is opened.

Thereby, a very simple and cheap apparatus for discharging the paper towels is obtained, which apparatus can
10 uncomplicatedly function in practice substantially without any maintenance.

Preferably, the or each inlet of the reservoir is connected with the outlet of a washing-stand or the like.

According to a simple embodiment of the apparatus
15 according to the invention, the valve means consists of a valve body which can sealingly cooperate with the outlet, and of a rod extending upwardly from the valve body in the reservoir, a float being guided on the rod, said rod having a stop for the float at its upper end.

According to the invention the valve means can be
20 maintained in the open position during a predetermined period in a simple manner through the fact that the rod carries a sucking-cup at its upper end, said sucking-cup lying at such a distance below an upper wall portion of the reservoir that,
25 at the movement of the valve means from the closed position to the open position, the sucking-cup engages said upper wall portion and holds the valve means in the open position during a certain time period.

In order to prevent that the operation of the float
30 would possibly be impeded by the towels in the water, it is preferred according to the invention that the rod extends in a case closed at its upper end, the upper part of said case being imperforate, while the lower part being in the water. is perforated, wherein said case carries a guiding means
35 for the rod at its lower end, the float being provided within the case.

According to the invention, the rod can be formed as a tube debouching on the outlet of the reservoir through the hollow valve body so that an overflow protection is
40 obtained.

According to an alternative embodiment of the invention the valve means consists of a cover sealingly engaging the bottom of the reservoir in the closed position, said cover being operable by a motor.

5 In this case a paper cutter can be mounted in the reservoir under the cover and above the outlet, said paper cutter being driveable by the motor. Thereby, possible stoppage problems are completely precluded.

The invention will be further explained by reference
10 to the drawings, in which two embodiments of the apparatus according to the invention are shown.

Fig. 1 shows schematically a cross-section of a first embodiment of the apparatus according to the invention, wherein the valve means is in the closed position.

15 Fig. 2 shows a cross-section corresponding to fig. 1, wherein the valve means is in the open position.

Fig. 3 shows a schematic cross-section of a second embodiment of the apparatus according to the invention.

Referring to fig. 1 and 2 an apparatus 1, is shown
20 adapted for discharging paper towels in a simple manner. The apparatus 1 comprises a reservoir 2 having three inlets 3 at the embodiment shown in the drawings, said inlets 3 each being connected to an outlet 4 of a washing-stand 5 or the like. In fig. 1 only one washing-stand 5 is shown. The reservoir 2 further
25 comprises two openings 6 for throwing used paper towels into the reservoir 2. The throw-in openings 6 are closed by means of a cover 7. The reservoir 2 has also an outlet 8 connected to a sewer-pipe in a manner not further shown.

A valve means 9 is provided in the reservoir 2,
30 said valve means consisting of a hollow valve body 10 and a tube 11 joined to the valve body 10 and extending upwardly in the reservoir 2. A conical end 12 of the valve body 10 sealingly cooperates with the outlet 8 in the closed position shown in fig. 1.

35 The tube 11 extends into a case 13 closed at its upper side because the case 13 is fixed to an upper wall portion 14 of the reservoir 2. The upper part 15 of the case 13 is imperforated, while the lower part 16 of the case 13 is perforated. At its lower end the case 13 carries a guiding means 17 for the
40 tube 11. A float guided on the tube 11 is provided within the

case 13. The guiding means 17 limits the lower position of the float 18.

The tube 11 has a stop ring 20 for the float 18 adjacent its upper end 19, an annular sucking-cup 21 being
5 further provided at this upper end 19. The function of said sucking-cup will herein after be explained.

As appears from fig. 1, the reservoir 2 comprises a bottom wall 22 obliquely extending in the direction of the outlet 8, whereby the discharge of the paper towels in the
10 direction of the outlet 8 is advanced.

The operation of the apparatus 1 described will now be further explained.

The water used for washing ones hands is collected in the reservoir 2. The towel 23 used for drying ones hands
15 is thrown into the reservoir 2 through the throw-in opening 6 and will be gathered in the sewage water 24 collected in the reservoir 2 and will slowly move in the direction of the outlet 8. As at washing ones hands normally one to two liters of water is used, while one or two paper towels are used for
20 drying ones hands, the ratio paper/water in the reservoir will be such that at an appropriate diameter of the outlet 8 a stoppage will not occur. With the water level in the reservoir 2 rising, the float 19 will strike on the stop ring 20 of the tube 11, wherein, however, the valve body 10 will not be lifted from the
25 outlet 8 directly, because the valve body 10 is slightly clamped in the outlet 8 with its conical end 12. With the water level in the reservoir 2 further rising, at a certain moment the upward force will become so high that the valve body 10 comes loose from the outlet 8, wherein the distance between the sucking-cup 21
30 at the upper end 19 of the tube 11 and the upper wall portion 14 of the reservoir 2 is such that the sucking-cup 21 is pressed on the upper wall portion 14. The sucking-cup 21 is made in such a manner that the valve means 9 is hold in the open position only during a short time period, whereafter the valve means 9
35 falls back into the closed position under the influence of the gravity.

Thereby, an amount of the sewage water collected in the reservoir 2 together with a plurality of the towels gathered in the water is periodically discharged through the outlet 8
40 in a simple manner. The problems existing in the toilet rooms of

public buildings, office buildings, catering establishments and the like with respect to removing the used paper towels are thereby a thing of the past. The disorderly and unhygienic sight of over-full refuse boxes or the like is avoided.

5 As appears from fig. 1, the tube 11 debouches directly on the outlet 8 through the hollow valve body 10 so that the tube 11 also functions as overflow protection. The case 13 functions as stench-trap, while the case 13 further prevents that the operation of the float could be impeded by the paper
10 towels in the water.

Fig. 3 shows a second embodiment of the apparatus 1, in which the valve means 9 is made as a cover 25 sealingly engaging the bottom wall 22 of the reservoir 2 in the closed position. The cover 25 is movable between a closed position
15 shown in fig. 3 and an open position not shown by means of a motor 26 because a thread (not shown) is formed on a shaft 27 driven by the motor 26, the cover 25 being guided on the shaft 27. By rotation of the motor 26 in the first or the second direction, the cover 25 is moved upwards and downwards, respectively.

20 The shaft 27 is coupled with a paper cutter 28 mounted in the reservoir 2 below the cover 25 and above the outlet 8. The paper cutter 28 comprises a plate 29 with a plurality of upwardly extending cutting teeth 30, said plate 29 being fixed on the bottom wall 22 of the reservoir 2, and a plate 31 connected to the shaft 27, which plate 31 has a plurality of down-
25 wardly extending teeth 32 cooperating with the teeth 30.

When the motor 26 is energized with the cover 25 closed so that the cover 25 moves upwardly, an amount of water will flow through the teeth 30, 32 out of the reservoir 2 and
30 will be discharged through the outlet 8, wherein the towels are carried with the water and are cut between the teeth. Thereby, the risk of a stoppage is completely precluded so that the outlet could possibly be connected to a sewer-pipe with a small diameter. After a predetermined time period, in which a desired
35 amount of water is discharged, the motor 26 can be energized for rotation in the opposite direction, whereby the cover 25 is moved from the open to the closed position.

The operation of the motor 26 can be controlled by means of a detector in response to the water level in the reservoir 2,
40 for example.

An overflow pipe 33 is mounted in the reservoir 2, said overflow pipe 33 debouching on the outlet 8 as a bypass of the cover 25 so that a protection against a malfunction of the motor 8 is obtained.

5 An other embodiment of the apparatus according to the invention can be provided with a pump for discharging the sewage water mixed with paper towels on a sewer-pipe. Such a pump could for example be operated by means of a level detector.

10 It is noted that the apparatus 1 of fig. 1 and 2 can of course be provided with a means for manually moving the valve means 9 from the closed to the open position in order to empty the reservoir for maintenance activities. Such a means could also be provided at the apparatus of fig. 3.

15 The invention is not restricted to the above-described embodiments which can be varied in a number of ways within the scope of the invention.

For example, it is possible to connect the reservoir with an inlet 3 to a water conduit of the water works,
20 wherein a valve means is provided for filling the reservoir with water after the discharge of an amount of water with towels.

1. Method for discharging paper towels or the like, characterized in that the towels are thrown in a reservoir connected by an inlet to a water supply and in which the supplied water is collected, wherein an amount of the water collected
5 in the reservoir together with a plurality of the towels gathered in the water is periodically discharged through a closeable outlet on a sewer-pipe.

2. Method according to claim 1, characterized in that the inlet of the reservoir is connected with the outlet of at
10 least one washing-stand or the like so that the sewage water of the washing-stand(s) is collected in the reservoir.

3. Apparatus for applying the method of claim 1 or 2, characterized by a reservoir having at least one inlet connectable with a water supply, at least one opening for throwing in
15 the paper towels, and an outlet connectable with a sewer-pipe, wherein a valve means is provided which is periodically movable between a position, in which the outlet is closed, and a position, in which the outlet is opened.

4. Apparatus according to claim 3, characterized in
20 that the or each inlet of the reservoir is connected with the outlet of a washing-stand or the like.

5. Apparatus according to claim 3 or 4, characterized in that the valve means consists of a valve body which can sealingly cooperate with the outlet, and of a rod extending
25 upwardly from the valve body in the reservoir, a float being guided on the rod, said rod having a stop for the float at its upper end.

6. Apparatus according to claim 5, characterized in that the rod carries a sucking-cup at its upper end, said
30 sucking-cup lying at such a distance below an upper wall portion of the reservoir that, at the movement of the valve means from the closed position to the open position, the sucking-cup engages said upper wall portion and holds the valve means in the open position during a certain time period.

7. Apparatus according to claim 5, characterized in
35 that the rod is formed as a tube debouching on the outlet of the reservoir through the hollow valve body.

8. Apparatus according to claim 7, characterized in that the rod extends in a case closed at its upper end, the upper part of said case being imperforate, while the lower part being in the water is perforated, wherein said case carries
5 a guiding means for the rod at its lower end, the float being provided within the case.

9. Apparatus according to claim 3 or 4, characterized in that the valve means consists of a cover sealingly engaging the bottom of the reservoir in the closed position, said cover
10 being operable by a motor.

10. Apparatus according to claim 9, characterized in that a paper cutter is mounted in the reservoir under the cover and above the outlet, said paper cutter being driveable by the motor.

15 11. Apparatus according to claim 10, characterized in that the motor is controlled by a detector for detecting the water level in the reservoir.

12. Apparatus according to claim 9, 10, 11, characterized in that an overflow pipe debouching on the outlet is
20 provided in the reservoir.

13. Apparatus according to anyone of the claims 3-12, characterized in that the reservoir comprises a bottom wall obliquely extending in the direction of the outlet.

14. Apparatus according to anyone of the claim 3-13,
25 characterized in that the opening for throwing in the paper towels is closed by a cover.

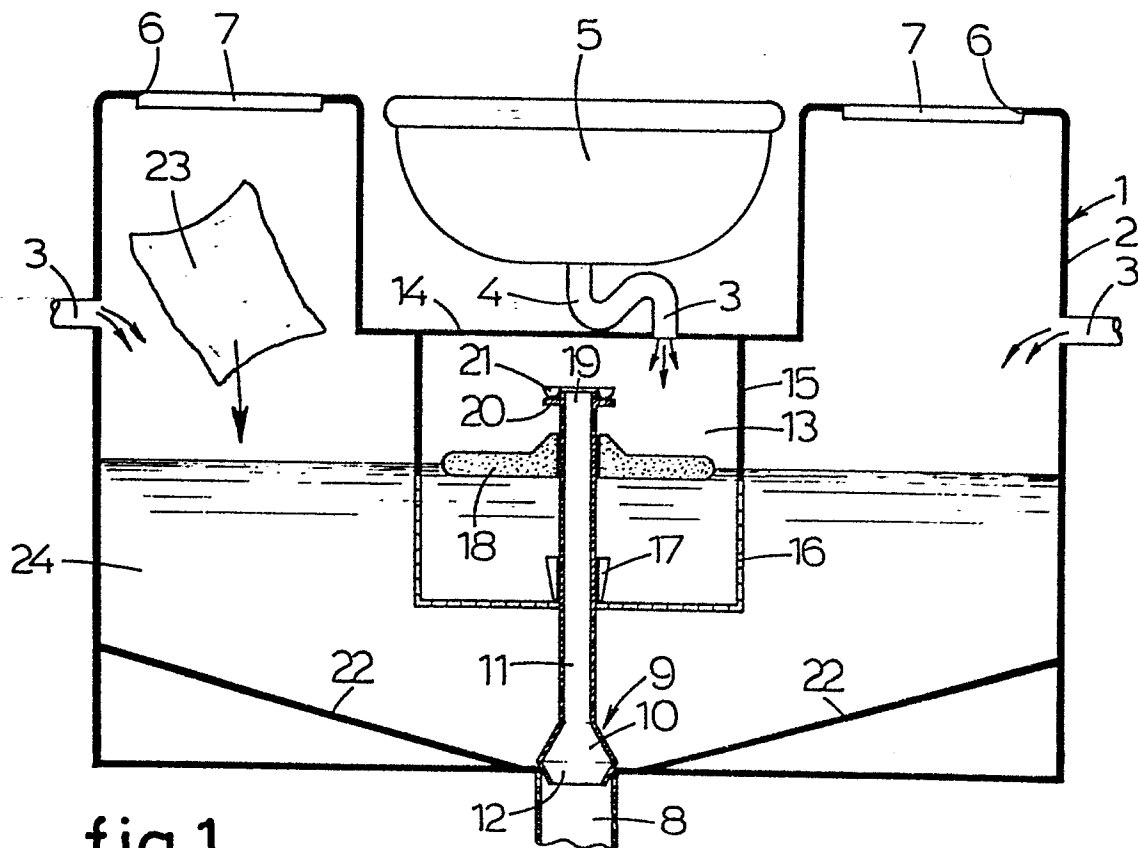


fig.1

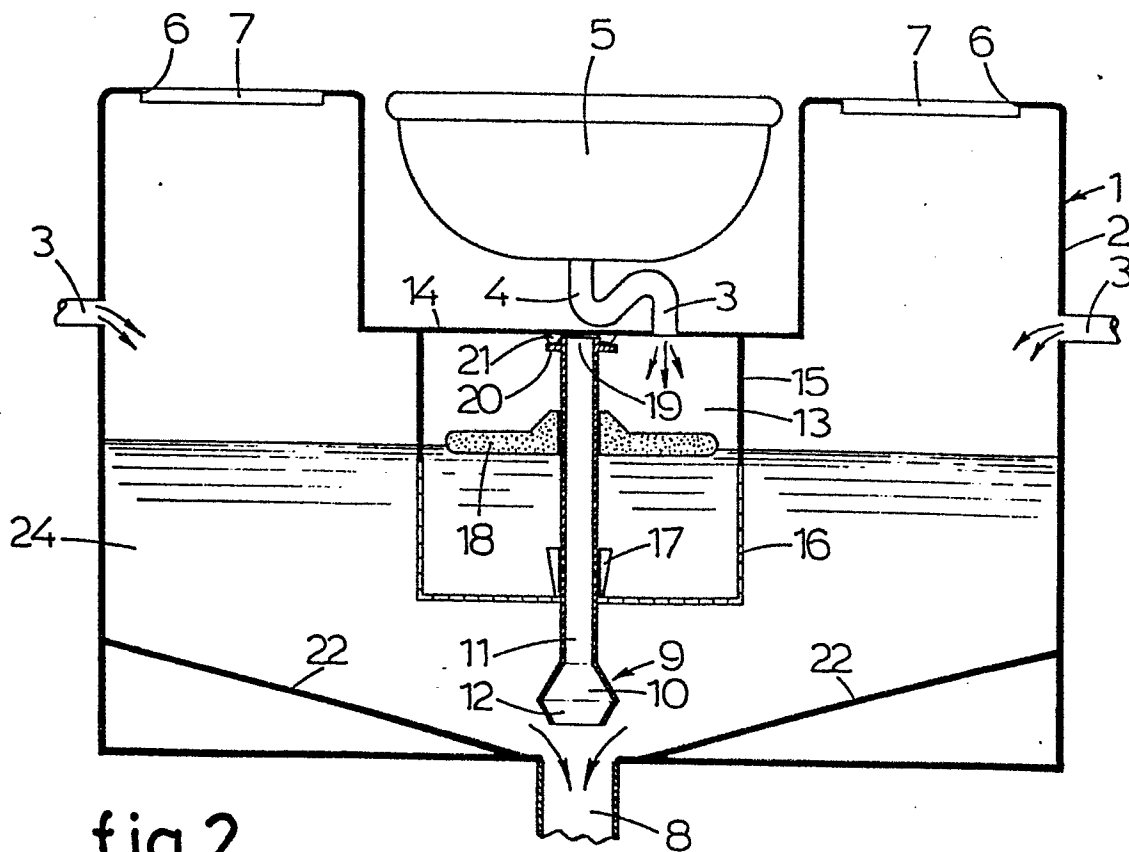
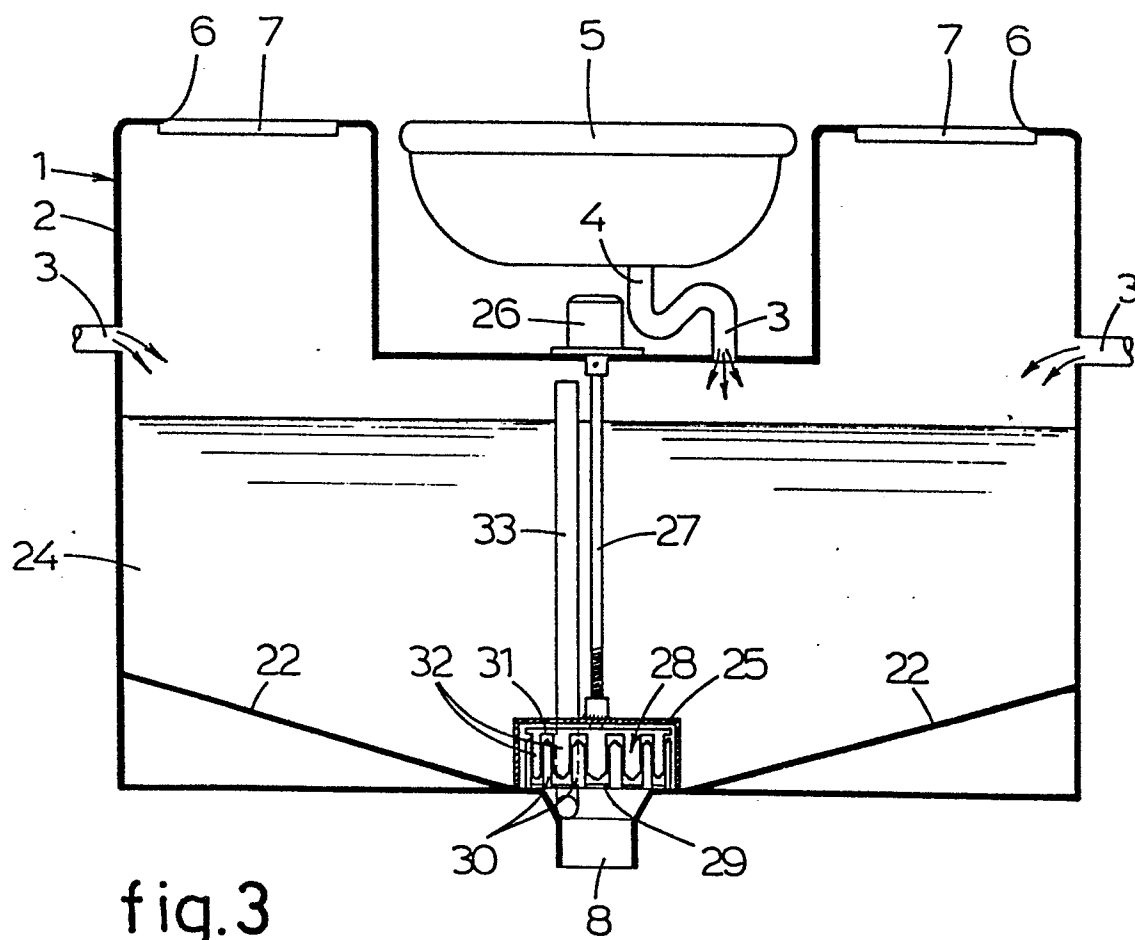


fig.2





European Patent
Office

EUROPEAN SEARCH REPORT

0087188
Application number

EP 83 20 0213

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. *)
A	DE-A-1 434 847 (E. TALAJ) * Whole document *	1	B 65 F 5/00
A	US-A-1 953 301 (HUNKELE)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. *)
			A 47 K E 03 C B 65 F E 03 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07-06-1983	Examiner HANNAART J.P.
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