

Jan. 11, 1938.

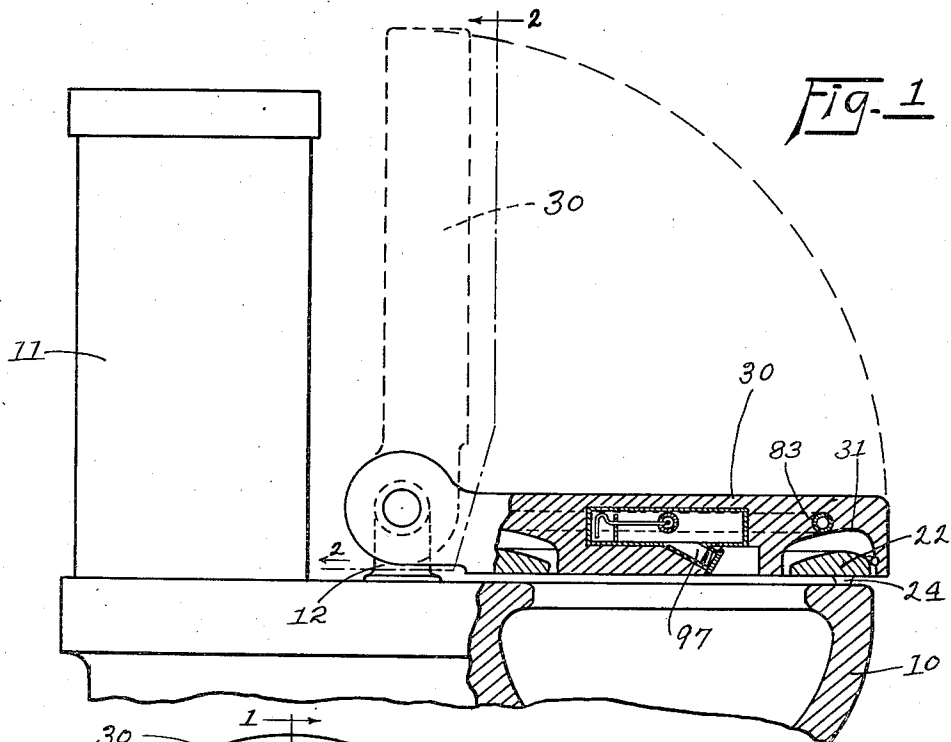
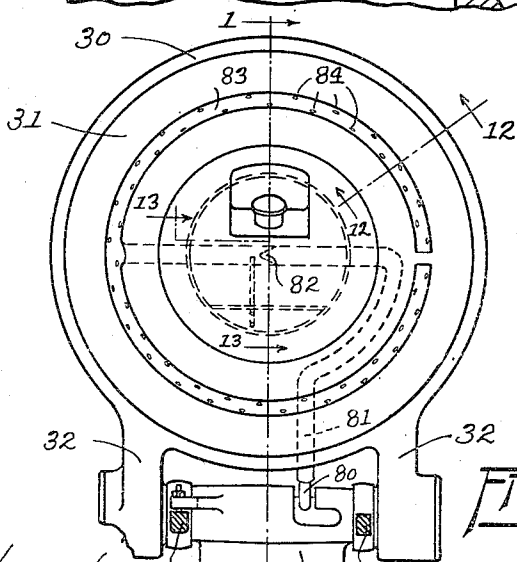
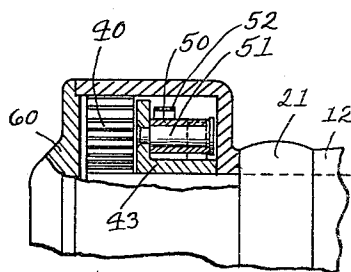
L. B. JOOSTEN

2,104,947

SANITARY DEVICE

Filed June 27, 1935

3 Sheets-Sheet 1



Witness
Leo L. Chapel

Inventor
Leo B. Joosten

By *Rice and Rice*

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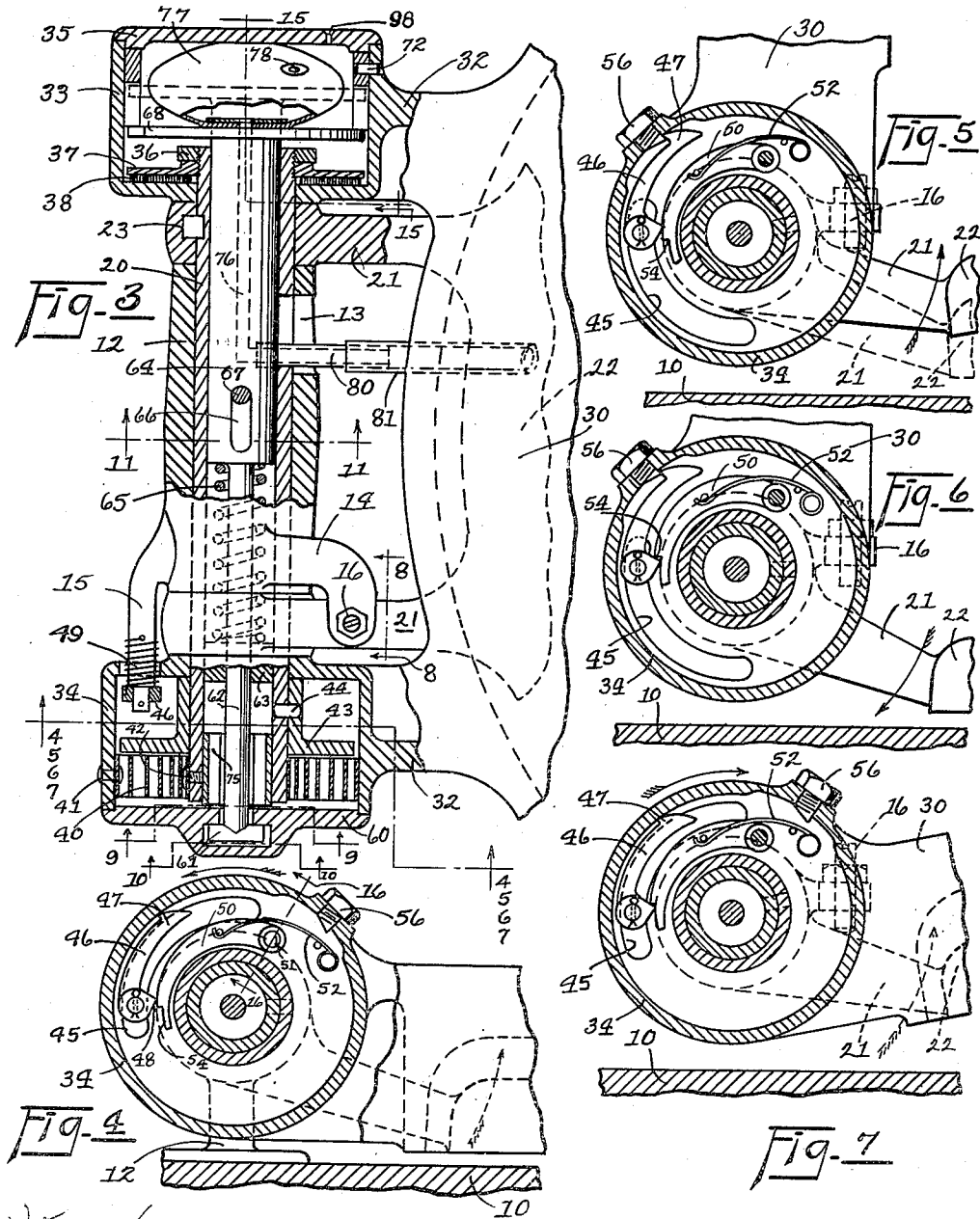
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SANITARY DEVICE

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3 Sheets-Sheet 2



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SANITARY DEVICE

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3 Sheets-Sheet 3

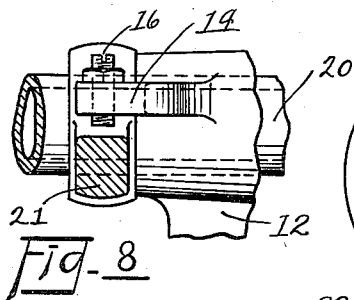


Fig. 8

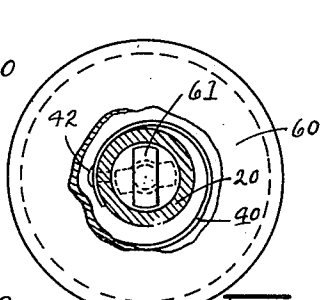


Fig. 9

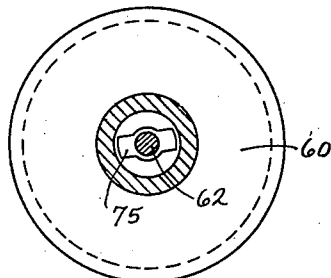


Fig. 10

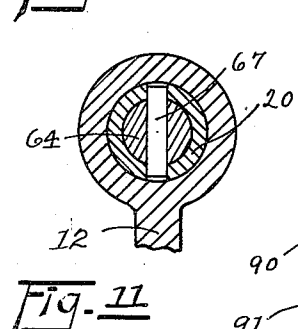


Fig. 11

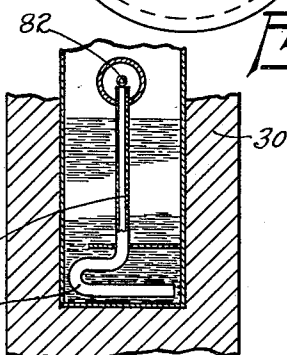


Fig. 13

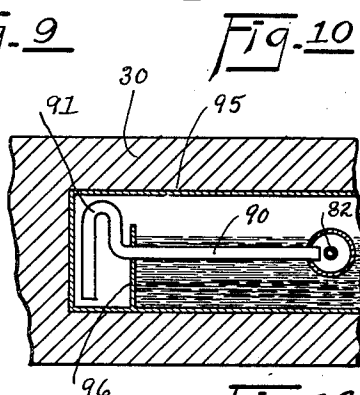


Fig. 14

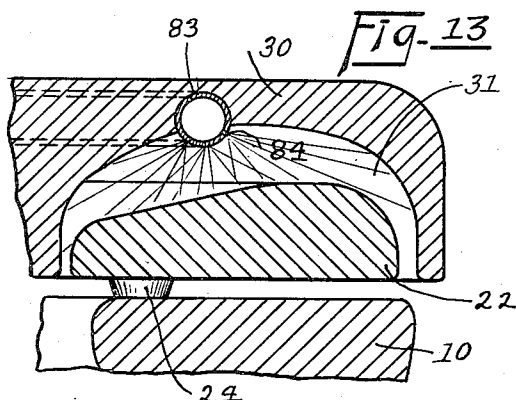


Fig. 12

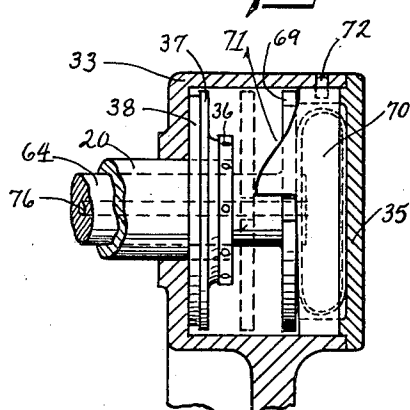


Fig. 15

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UNITED STATES PATENT OFFICE

2,104,947

SANITARY DEVICE

Leo B. Joosten, Grand Rapids, Mich.

Application June 27, 1935, Serial No. 28,693

3 Claims. (Cl. 4—236)

My invention relates generally to a sanitary device and more particularly to a disinfecting mechanism automatically operated and controlled by movement of a seat construction to which it is applied.

Briefly described, my invention contemplates the provision of both spring and friction means, together with certain automatic mechanism, between a seat proper and its cover. Manual raising of the cover to its upright position will automatically lock it in position and will also cause a slight upward movement of the seat proper. The next manipulation is the downward movement of the seat proper due to pressure thereon and this moves or sets the releasing mechanism but does not unlock the cover. Therefore, the cover is still held upright. Next, the seat proper is released for a slight upward movement and this occurs due to the spring means and releases the mechanism which holds the seat cover upright and the cover gravitates towards its closed position. The friction means acts to retard abrupt downward movement of the seat cover and it gradually moves downwardly to an easy and silent closing.

The seat cover contains a reservoir for a disinfectant or the like and the several movements of the seat and its cover cause this disinfectant or the like to be expelled at the proper time so as to thoroughly disinfect and fumigate the seat proper and its associated parts.

One of the main advantages and features of my invention resides in the means for automatically disinfecting all parts of the seat proper as well as the underside of the cover.

Another feature of my invention resides in my locking means whereby the seat cover is automatically locked in its upper position and thereby is prevented from being inadvertently knocked down as often occurs under present conditions and which accident often cracks the seat proper or its cover.

Another advantage obtained is that the bowl is automatically kept closed under normal conditions.

Yet another advantage resides in my mechanism utilizing the manual effort expended in raising the seat cover as stored energy for spraying the disinfectant over the several parts.

Also, I claim the feature of housing certain of my mechanism within the axis of the device and certain other parts of my mechanism within the seat cover.

Other advantages reside in the particular arrangement of the several parts and these ad-

vantages will become apparent as the description proceeds.

In the drawings:

Figure 1 is a side view of my invention as applied to a bowl, the dotted line showing the cover in its upper position. This view is taken along the plane of the line 1—1 of Figure 2.

Figure 2 is a view taken in part along the line 2—2 of Figure 1.

Figure 3 is a horizontal section taken through the hinge construction of the device.

Figures 4, 5, 6 and 7 are sectional views taken along the respective lines as indicated in Figure 3, the illustrated parts being in different relative positions.

Figures 8, 9, 10 and 11 are likewise sectional views taken along the respective lines of Figure 3.

Figure 12 is a sectional view taken along the line 12—12 as indicated in Figure 2.

Figure 13 is a sectional view taken along the line 13—13 of Figure 2.

Figure 14 is a view similar to Figure 13 but showing the several parts in horizontal position.

Figure 15 is a sectional view taken along the line 15—15 of Figure 3.

Figure 16 is a sectional view taken along the line 16—16 of Figure 4.

Like reference characters refer to like parts throughout the several views.

Referring to the drawings, numeral 10 indicates a bowl having a flush tank 11 attached thereto as clearly shown in Figure 1 of the drawings. A single bearing 12, see Figures 1, 2, 3 and 8 especially, is permanently attached to the bowl 10. A sleeve 20 is mounted within the bearing 12. This bearing 12 and the sleeve have an opening 13, the purpose of which will be described later, and also has oppositely disposed arms 14 and 15 extending therefrom as clearly shown in Figure 3.

The arm 14 has an adjustable screw 16 therethrough, see Figure 8.

The bearing 12 revolvably supports a sleeve member 20. This sleeve member 20 receives the spaced arms 21 of the seat proper 22 and is keyed thereto as indicated at 23. Thus movement of the seat proper will cause similar movement of the sleeve 20. As shown in Figures 3 and 8, one of the arms 21 lies directly underneath the stop bolt 16 and consequently the upward movement of the seat proper is limited by this bolt 16. Figure 5 shows the seat proper in its maximum upward position, that is, in abutting relationship against this stop bolt 16. The downward movement of the seat 22 is limited by the bowl 10.

The seat 22 has a rubber bumper 24 located there-
under as shown in Figures 1 and 12.

Reference numeral 30 designates generally the
cover member. The cover member 30 is annularly
recessed as indicated at 31 to receive the seat
22 therein. The seat cover has spaced arms 32,
revolvably mounted on the sleeve member 20 out-
side of the arms 21 of the seat proper as shown
in Figure 3. These arms terminate in hollow
bearings 33 and 34.

The bearing 33 has a cap 35, with an air vent
98. The sleeve 20 extends into the bearing and
is threaded as shown and receives a locking ele-
ment 36, a disc element 37 adjacent thereto and
suitable friction means 38 between the disc 37 and
the radially extending side of the housing 33.
This provides means for adjusting the friction be-
tween the seat cover and the sleeve 20, the sleeve
20 carrying the seat proper. Thus the degree of
friction between these two members is prede-
termined.

The other housing or hollow bearing member
34 has one end of a coiled spring 40 attached
thereto at 41. The other end of the coiled spring
40 is attached at 42 onto the sleeve 20. A disc
member 43 is located adjacent the coiled spring
40 and is keyed to the sleeve 20 as indicated at 44.

The housing 34 has an arcuate opening 45, see
Figure 4 especially, and a pawl 46 is pivoted upon
the stationary arm 15, previously referred to,
within the housing 34.

This pawl 46 has a tooth 47 at one end and
has a cam 48 near its pivot. A spring 49, attached
at one end to the pawl 46 and at the other end
to the stationary arm 15, see Figure 3, urges the
pawl in engaged position. The disc member 43,
previously referred to, carries a curved follower
50 which is pivoted at 51 onto the disc 43, see
Figure 16. A spring 52, see Figure 4, urges this
follower into engagement with the cam shaped
portion 48 of the pawl 46. The follower 50 is
offset at its end to form a shoulder 54 whereby
engagement will be had between this shoulder
and the portion 48 under certain conditions.

The housing or bearing member 34 has a stud
56 extending therethrough which serves as a
tooth under which the portion 47 of the pawl 46
engages.

The housing 34 has a suitable cover 60. This
cover is recessed as is shown in Figures 3 and 10
whereby the T-shaped head 61 of the element 62
may be received. The element 62 extends through
the sleeve 20, riding in the fixed collar 63 and
having an enlarged portion 64. A coiled spring
65 is provided between the enlarged portion 64
and the collar 63. The enlarged portion 64 is
slotted at 66 and a pin 67, see Figure 11, limits
the movement of this element. The enlarged por-
tion 64 has a disc 68 at its end. This disc is slightly
smaller than the housing 33 in which it seats and
has radial teeth or extensions 69, see Figure 15.
These extensions 69 are adapted to engage axial
cams 71 located on the cam sleeve 70. This cam
sleeve is attached to the housing 33 as indicated
at 72. Thus movement of the seat cover causes
identical movement of the cam sleeve and this,
in turn, moves the disc 68 and the element 62
axially, the enlarged portion 64 compressing the
coiled spring 65 against the collar 63.

The sleeve 20 has a second collar 75 located
therein in spaced relationship to the collar 63.
This collar 75 is adapted to slidably receive the
head 61 of the element 62.

The enlarged portion 64 has a passageway 76
extending therethrough as shown in dotted lines

in Figure 3. An expandible bag 77, having a one-
way entering valve 78 for air, is provided at the
end of the extension 64 and has an opening lead-
ing into passageway 76. The other end of the
passageway 76 has a short nipple 80 extending
therefrom, see Figure 2, and a flexible conduit 81
or the like leads into the seat proper. This hose
81 terminates in a nozzle 82 which is directly over
a duct 90 having a curved lower end as indicated
at 91. See Figures 13 and 14. The flow of air
through the nozzle 82 draws up liquid through
the duct and carries it into the pipe 83 which is
branched and curved as shown. Outlets or per-
forations 84 are provided as shown to provide
egress for the treated air or spray.

The reservoir 95, having a partition 96 therein,
is located within the cover and is filled through
the spout 97.

The operation

In Figures 3 and 4 both the seat proper and
the seat cover are in their lower or closed position.
The first manipulation is, of course, to raise the
cover upwardly through substantially 90 degrees.
This upward movement of the cover tends to coil
the spring 40 and also tends to turn the sleeve 20
through the friction disc 38. Thus there is a
force acting upon each arm 21 of the seat 22
tending to turn it upwardly. And the seat 22 is
turned upwardly from its dotted line position as
shown in Figures 4 and 5 until it reaches the full
line position shown in Figure 5. The direction of
movement is as indicated by the arrows shown
in these two figures. The upward movement of
the seat proper is limited by the bolt 16, see Figure
5, this forming a definite and predetermined stop.
This stop is rigid with the bearing 12, the bearing
12 supporting the entire mechanism.

When the seat cover reaches its upright posi-
tion, the tooth 47 on the pawl 46 snaps behind
the bolt 56 due to the arcuate following member
50 which is in engagement with the cam portion
48 of the pawl 46.

The next movement of the seat is in a down-
ward direction, as indicated by the arrow in Figure
6, and this causes the said arm to move away from
the stop 16 and also causes similar movement of
the pivot 51 because both the seat and the pivot
are mounted upon the sleeve 20. As shown in
Figure 16, this pivot 51 is mounted upon the disc
member 43 and this moves with the sleeve 20 and
the seat 22. Thus the downward movement of
the seat 22, see Figure 6, causes the shoulder 54
on the arcuate member 50 to snap behind the
cam portion 48 and be in a position to release the
same when upward movement of the seat 22 is
had.

This upward movement of the seat 22 is indi-
cated in Figure 7 and the upward movement
is caused by the uncoiling of the spring 40. The
upward movement moves the follower 50 and
the shoulder 54 turns the locking pawl 46 so that
it releases the bolt 56 and consequently the seat
cover can now gravitate downwardly to a closed
position. The friction disc 38 and its associated
parts prevent an abrupt closing of the seat cover.

The upward movement of the cover 30 is also
utilized to compress spring means whereby spray-
ing means may be energized during the downward
movement of the seat cover or else may be utilized
during the later portion of the downward
movement of the seat cover. The cover member
is manually lifted upwardly to the position shown
in Figure 5 and this causes the concentric or
axial cam 70 to rotate and cam against the ex-

tensions 69 on the disc 68 which is a part of the elongated element 62. This causes an axial movement of the element 62 and thrusts the head 61 into the recess shown in the cover plate 60.

5 After the seat cover is in its upright position, the next manipulation is the downward movement of the seat and this causes the sleeve 20 and its associated parts, to turn, including the pin 67, see Figure 11, and thus the elongated member 62 and its head is slightly turned. This causes the head 61 to lap over that part of the cap 60 which is adjacent to the slot therethrough. Thus axial movement of the element 62 is prevented. The spring 65 tends to move the element 15 62 and the enlarged portion 64 axially whereby the air contained in the bellows 77 would be forced through the passageway 76 and into the seat proper where it would accomplish its spraying function.

20 The movement of the seat proper downwardly, as just described, locks the head 61 upon the cap 60 and then when the seat proper moves upwardly, due to the coiled spring 40, the head 61 is turned counterclockwise and becomes unlocked from the elongated cap member 60. Thus the spring 65 functions and brings the element 62 and the disc 68, having its extension 69, back against the extreme ends of the cam ring and this abrupt contact causes the extension 69 to slide downwardly along the axial surfaces of the cam ring 70 and thus the air is expelled from the bellows 77.

During this expulsion of the air the seat is gravitated downwardly, controlled by the friction means 38, and the spraying thus occurs at the proper time.

Thus the bellows 77 are deflated by the action of the spring 65 during the descent of the seat cover or when it is near its bottom position and the flow of air passes through the nozzle 84 and picks up the fluid from the reservoir 95. This fluid is sprayed upon the seat 22. See Figure 12.

At this point I wish to explain that I do not desire to have my invention limited to the particular details shown but my invention is broad in its scope and is limited only by the claims attached hereto. For instance, I describe specific mechanism for causing the expulsion of the air from the bellows 77 but the construction for this purpose may be made in different ways and I deem these ways to be within the purview of my invention.

For instance the seat cover might have an axial cam attached thereto so that during its upward movement it would move a disc member, such as the disc member 68, longitudinally against a spring and also draw air into a bellows construction. Then, upon descent of the cover 30 the spring would exert its pressure upon the disc 68 or its equivalent and cause a corresponding deflation of the bellows 77. The bellows 77 would have a one-way air valve and thus entry of air would be obtained upon upward movement of the cover and a corresponding expulsion of

air would be obtained upon downward movement of the cover. The contour of the cam could be varied so that the amounts of air expelled at certain positions of the cover would be varied as desired.

The reservoir 95, see Figure 13, is vertically located when the seat cover is up and the disinfecting fluid shown therein passes to the bottom thereof, that is, in the lower smaller compartment of the reservoir. Now, when the seat cover is turned downwardly the depth of the fluid within this smaller compartment is of substantial dimension regardless of the depth of the fluid in the remaining part of the reservoir and thus the action of the air through the nozzle 84 causes the fluid to be drawn through the tube 90 and sprayed outwardly through the coiled pipe 82. See Figure 12. Thus a full spraying effect is assured at all times even when the amount of disinfectant within the reservoir is very low.

From the above description, it will be appreciated that I have inventively created a self-contained unit which is conveniently located in the hinge of the construction and thus my assembly is compact and conveniently installed. Also, the reservoir and its connections are located in the seat cover whereby they are concealed and out of the way and require little additional room and furthermore the manipulation of the seat cover provides the power for producing the spraying effect.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a construction of the class described, a bowl, a seat hinged thereto, a cover also hinged thereto, means for retaining said cover in a raised position, a stop for limiting the upward movement of said seat, a spring for urging said seat upwardly against said stop, and means actuated by a second upward movement of said seat for releasing said cover from its raised position.

2. In a construction of the class described, a bowl, a seat hinged thereto, a cover also hinged thereto, means for retaining said cover in a raised position, a stop for limiting the upward movement of said seat, a spring tensioned by the raising of the cover to urge said seat upwardly against said stop, and means actuated by a second upward movement of said seat for releasing said cover from its raised position.

3. In a construction of the class described, a bowl, a seat hinged thereto, a cover also hinged thereto, means for retaining said cover in a raised position, a stop for limiting the upward movement of said seat, a spring tensioned by the raising of the cover to urge said seat upwardly against said stop, means actuated by a second upward movement of said seat for releasing said cover from its raised position, and variable friction means acting upon the seat cover to retard its downward movement.

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