

UNITED STATES PATENT OFFICE

JOSEPH H. CURTISS, OF NEW ROCHELLE, NEW YORK

MARINE AND OTHER TYPE FLUSHING TOILET

Application filed May 31, 1929. Serial No. 367,275.

My present invention relates to an improvement in flushing toilets, and particularly to marine toilets which are usually required to operate below the water level of the sea.

5 One of the objects of my invention is to provide a toilet of this type with a hydrostatically actuated dump valve so that the contents of the bowl may be flushed away from said bowl by an aspiration of running
10 water, thus positively withdrawing the waste matter therefrom and expelling it from the system.

Another object of my invention is to utilize water under pressure, from any source, for
15 the above noted purposes, whether the water is supplied from a tank under compression or whether the water under pressure is obtained from the surrounding sea by motion of the vessel, water currents, tides and the like.

20 Another object of my invention is to provide simple mechanical expedients, for the above purposes, which may be adapted for use in close association with the toilet bowl itself or at a distance therefrom with little change
25 in the principles involved.

Another object of my invention is to provide an automatic positive flushing in toilets of the marine class so that the initiation of the cleansing of the bowl is done by a jet action of
30 the water, under pressure, which jet action accomplishes a sequence of steps which result in the desired operation.

Other objects and advantages of my invention will be apparent from the following
35 specification and accompanying drawings wherein:

Fig. 1 is a sectional view of a toilet bowl with my apparatus attached thereto, this view being taken on the line 1—1, Fig. 2, looking
40 in the direction of the arrows.

Fig. 2 is a plan view thereof.

Fig. 3 is a full view of the jet nozzle.

Fig. 4 is a sectional view, taken on the line 4—4, Fig. 3, looking in the direction of the
45 arrow.

It is to be understood that the present device is to operate with water from a pressure source, as previously noted, and as this is understood it is thought not necessary to indicate such source, as such water may be sup-
50

plied by pumping water into a tank under air compression in the customary way, or it may be taken from hydrostatic pressure developed by movement of the vessel in the sea, or by water currents around the marine vessel while the latter is anchored or stationary.

I have provided a characteristic toilet bowl 1, made of vitreous material, which has an annulus 2 at its top, and a circumferential port 3 having jet openings 4 therein to permit
60 water to flow therethrough and downwardly, with a scouring action, during operation of the bowl. This port 3 may be connected to a water supply and water pressure initiating means in any well known manner.

The bowl itself is provided with a surrounding apron 5, in the hollow interior of which depends, at an angle, a duct 6, which is flanged thereabout with an outstanding flange 7 which flange acts as a means whereby
70 the flushing connections, hereinafter to be described, may be attached thereto.

The rear end of the apron 5 is provided with an open port 8 through which the mechanism about to be described may be introduced,
75 and the front end of the apron is provided with another open port 9 whereby the jet nozzle may be suitably mounted in desired alinement. The apron 5 is mounted upon the base flange 9^a, being integrally joined thereto,
80 as indicated. Thus, the bowl is adapted, in its present construction, to be connected to my improved type of flushing apparatus, which will now be described.

In the preferred form, as shown in section,
85 my device consists of a metallic connection 10, preferably a casting, which comprises a single ported member having a threaded nipple extension 11 at one end, whereby it may be connected to an outgoing flush main,
90 not shown, the nipple merging forwardly into a larger diameter, as at 12, and having cast therefrom, a flanged angular extension 13, said extension having a flange 14 thereon which joins to flange 7 of the vitreous ware
95 with a gasket 15 therebetween to make a watertight joint. The flanges 7 and 14 may be joined together by bolts, not shown, in order to effectively secure the two flanges together in a suitable manner.
100

The forward end of the ported member 10 is interiorly threaded for a part of its length, as at 16, and is arranged to receive therein a hydrostatic jet member 17, the rear end of which tapers as at 18 and is open at its end, as at 19, with a reduced high velocity opening. The forward shoulder of the cylindrical jet member 17 is threaded, as at 20, and is spaced from the cap or plug portion 21 by a pair of opposed bridge connections 22, these connections tying the jet nozzle 18 to the plug portion 21 and at the same time permitting water to flow through to the interior of the said jet and pass out in the direction of the arrows 23, in Fig. 1. Fig. 4 shows the cross sectional structure of the bridge members 22.

The rear or plug portion of the nozzle portion 21 is provided with a threaded shoulder 24 and a stepped annular cap 25 at the exterior of which is mounted a hexed or squared nut extension 26 whereby a wrench may be applied to seat the said nozzle into operative relation into the ported member 10, as shown in Fig. 1.

Between the points of contact of the apron 5 as at 27 and the point of contact with the ported member 10 as at 28 are provided gaskets for closing this end of the ported member and the apron in a watertight manner. The flange cap 25 of the ejector member 17 also tends to hold the entire assembly, as disclosed, in operative contact at the flanges 7 and 14.

The angular extension 13 is provided with an open cylindrically internally threaded port 28', this being in turn closed by a threaded flanged dome-like cap 29, said member 28' and its appurtenant cap 29 being sufficiently large in diameter to form a considerable chamber therein, into which chamber is pivoted, as at 30, a weight actuated valve, the valve face of which 31 rests against a seat 32 which is provided in the interior of the angular extension 13 and which seat 32 is rendered normally watertight by a gasket 33a therein. Thus, as shown in Fig. 1, the pivoted valve member 31 is in closed position and held therein by the weight of the ball or weight member 34 affixed to the rear end thereof, and this maintains a constant water level W, Fig. 1, at all periods during non-use of the device. As the port of the duct 6 is in direct communication with the jet chamber 35 of the port member 10 except for the closure thereby of the valve 31, it is obvious that any actuation of the jet, by permitting water to pass in the direction of the arrows 23, will cause an immediate suction to influence the valve 31 and to cause it to move about its pivoted seat, moving the weight 34 to the dotted position 36, Fig. 1, and at the same time aspirating the contents of the bowl downwardly in the direction of the arrow A and outwardly in the direction of the arrows 23 with a considerable driving

force, thereby causing the contents of the bowl to join the ejected stream and forced outwardly therefrom in a positive and efficient manner.

The reported member 10 is provided with a water inlet pipe 37 in which water is introduced, in the direction of the arrow B, and this pipe 37 is connected to an elbow 38, Fig. 2, as a side connection thereon, and the water enters into the jet member 17 over the bridge members and into the interior of the jet member 17, as indicated by the arrows C.

Thus, it will be noted that I have provided a device for flushing which operates by reason of water under pressure, and the dumping action of the bowl is influenced by a hydrostatic or pressure jet, thereby causing a positive suction and pressure ejection of the contents of the bowl.

I have shown no means for initiating the flow of pressure fluid into the pipe 37, as it is obvious that any standard means may be utilized for this purpose and may be in the form of any type of starting valve, as may be desired.

It will further be noted that, according to the location of a toilet of this kind, water under pressures of from fifty to one hundred pounds will be sufficient to overcome the difference of location of this type of flushing bowl below the water level of a ship or other marine vessel.

Also, it will further be noted, owing to the type of valve herein adopted, which is automatically opened by operation of the jet, that in the event of the installation being below the water line of a vessel, the valve 13 effectively prevents back leakage of water from the outside, but is particularly sensitive to any jet action from the member 17 when so actuated.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. In a marine and other type flushing toilet a bowl, a rearwardly and downwardly extending inclined duct integral therewith thereunder in communication therewith, a substantially horizontally disposed ported member, positioned under said bowl in the plane of said duct, an angular extension on said ported member in line with said duct and communicating with said member for establishing communication between said duct and said member, a means for connecting said ducts to said extension, a high velocity jet nozzle in said member, disposed to discharge rearwardly with relations to said bowl, a stream of water past said communication, to induce a flow of liquid through said extension and said duct thereby flushing out the contents of said bowl through said duct and said member, and a means for supplying water under pressure to said nozzle.

2. In a marine and other type flushing toilet

a bowl, a rearwardly and downwardly extending inclined duct integral therewith thereunder, in communication therewith, a substantially horizontally disposed ported member, positioned under said bowl in the
5 plane of said duct, an angular extension on said ported member in line with said duct and communicating with said member for establishing communication between said
10 duct and said member, a means for connecting said duct to said extension, a chamber at said extension, a weighted check valve, pivotally supported in said chamber, for normally closing said communication, to prevent backflow
15 through said member into said bowl, a high velocity jet nozzle in said member, disposed to discharge rearwardly with relation to said bowl, a stream of water past said communication to induce a flow of liquid through said extension and said duct, thereby causing said
20 valve to be opened and thereby flushing out the contents of said bowl through said duct and said member, and a means for supplying water under pressure to said nozzle.

25 3. In a marine and other type flushing toilet a bowl, a rearwardly extending inclined duct thereunder, in communication therewith, a substantially horizontally disposed ported member, positioned under said
30 bowl in the plane of said duct, a means for establishing communication between said duct and said member, a plug, adjustably positioned at the forward end of said member, a high velocity jet nozzle in said member,
35 connected to said plug, to be adjusted thereby in position in said member, openings at said connection, enclosed by said member, and a pipe, for supplying water under pressure, connected to said member at the side thereof
40 adjacent said openings, to communicate with said nozzle, whereby the latter may discharge a stream of water past said communication, thereby flushing out the contents of said bowl through said duct and said member.

45 Signed at New York, in the county of New York and State of New York, this 20th day of May, A. D. 1929.

JOSEPH H. CURTISS.

50

55

60

65