

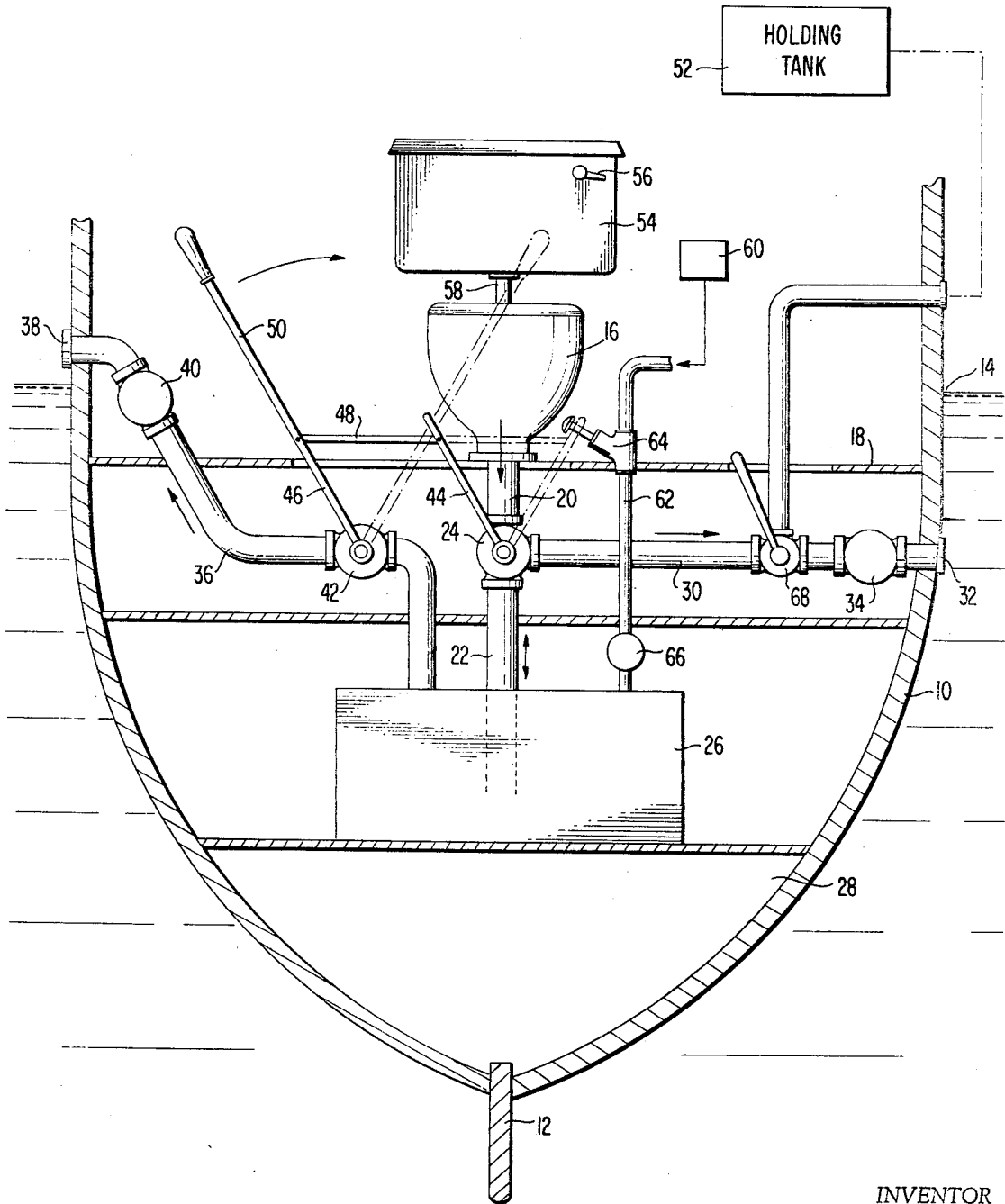
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MARINE TOILET CONSTRUCTION

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**MARINE TOILET CONSTRUCTION**  
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6 Claims

## ABSTRACT OF THE DISCLOSURE

A marine toilet having a receiving tank disposed below the head and compressed air means for blowing the contents of the receiving tank outwardly through the boat hull beneath the water line.

## BACKGROUND OF THE INVENTION

### Field of the invention

This invention relates generally to the field of toilets and more specifically to the field of marine toilets for use on boats below the water line thereof.

### Prior art constructions

Prior art marine toilets which were positioned below the water line in a boat ordinarily relied upon a pumping system, either manual or power driven, for emptying the contents of a receiving tank outwardly of the boat hull into the surrounding body of water. Such prior art pumping systems were prone to mechanical breakdowns due to the presence of moving parts within the pump. The possibilities of mechanical failure were multiplied if a power operator was used to drive the pump and the use of hand operated pumps proved to be time consuming and fatiguing. The present invention overcomes these drawbacks present in prior art marine toilets by providing a system which is simple, reliable and inexpensive.

## SUMMARY OF THE INVENTION

The present invention is directed to a marine toilet having a head, a receiving tank connected to said head for gravity feed therefrom beneath the water line of the boat in which the toilet is mounted, vent means in said receiving tank, disposal pipe means connected to said receiving tank and adapted to extend through the hull of said boat beneath the water line thereof, compressed air means selectively connected to said receiving tank and valve means adapted to close said vent means and communication between said head and said receiving tank and for placing said receiving tank in communication with said discharge pipe.

The present invention provides a substantial improvement over the prior art pumping systems inasmuch as the number of moving parts are substantially reduced and no external motor drive means are required for operating the toilet system. In accordance with the present construction it is only necessary to operate two simple plug valves and a valve in the compressed air line leading to the receiving tank.

The present invention also provides means for directing the contents of the receiving tank to a separate larger capacity holding tank rather than to the surrounding body of water when the boat is in a harbor or other restricted water area where it might be undesirable or even illegal to dump waste matter from the boat.

Other features of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principles of the invention and the best mode which has been contemplated of applying those principles.

## BRIEF DESCRIPTION OF THE DRAWING

The figure shown in the drawing is a cross sectional schematic view showing the marine toilet of the present invention installed within the hull of a boat.

## DETAILED DESCRIPTION OF THE DRAWING

The drawing shows a boat having a hull 10 with a keel 12 and a water line indicator thereon at 14. The toilet bowl or head 16 is mounted on the floor or deck 18 with the outlet 20 extending through the deck 18 at a point below the water line 14. The pipe 22 is connected to the outlet 20 of the head by means of a three-way plug valve 24. The opposite end of the pipe 22 is disposed within a receiving tank 26 adjacent to but spaced from the bottom thereof. The receiving tank 26 may be mounted within the bilge 28 by any suitable means. A discharge pipe 30 is connected at one end to the three-way plug valve 24 and is disposed with its other end extending through an opening 32 in the hull 10 of the boat. A sea cock 34 may be disposed in the discharge pipe 30 to prevent the entry of water from outside the boat into the pipe 30.

The receiving tank is provided with a vent pipe 36 which extends from the upper surface of the receiving tank to a vent or relief port 38 which extends through the hull 10 of the boat approximately 12 inches above the water line 14. The vent pipe 36 is provided with a sea cock 40 to prevent the entry of water into the receiving tank through the vent pipe. The vent pipe 36 is also provided with a two-way plug valve 42 which is disposed in the pipe intermediate the sea cock 40 and the receiving tank 26.

The three-way plug valve 24 and the two-way plug valve 42 are provided with operating handles 44 and 46 which are interconnected for conjoint operation by means of an interconnecting link 48. An operating lever 50 is connected to and extends upwardly from the operating handle 46 adjacent the side of the head 16. A suitable indicia bearing bracket may be mounted adjacent the path of movement of the operating lever 50. When the operating lever 50 is in the position shown in solid lines the two-way plug valve 42 is in the open position connecting the interior of the receiving tank to atmosphere and the three-way plug valve 24 places the head 16 and receiving tank 26 in communication while closing communication to the discharge pipe 30. When the operating lever 50 is disposed in the dotted line position the two-way plug valve 42 will close the vent pipe 36 and the three-way plug valve 24 will place the discharge 30 in communication with the pressure tank 26 while closing the connection to the head 16.

A flush tank 54 having an operating handle 56 may be mounted above the head 16 and connected thereto by pipe 58. When the valve 56 is operated the water from the tank 54 will flow downwardly through the pipe 58 into the head 16 to flush the contents thereof into the receiving tank 26.

A compressed air source 60 may be connected to the receiving tank 26 by means of conduit 62. A blow valve 64 and a suitable check valve 66 may be disposed in the conduit 62.

A second three-way plug valve 68 may be disposed in the discharge pipe 30 intermediate the sea cock and the first three-way plug valve 24. The branch of the valve 68 may be connected to a holding tank 52 which has a much larger capacity than the receiving tank 26. The showing of the holding tank is only schematic and such a tank may be placed in any convenient location on the boat.

## OPERATION

In the operation of the marine toilet described above and shown in the drawings, when it is desired to use the toilet the operating lever 50 will be placed in the extreme left or solid line position. With the lever 50 in this position

the receiving tank will be vented to atmosphere through the valve 42 and vent pipe 36. Also the head 16 will be in communication with the receiving tank and upon operation of the handle 56 the water from the flush tank 54 will flush the contents of the head through the valve 24 and the pipe 22 into the receiving tank 26. The receiving tank may vary in capacity so that it may be possible to flush the head more than once before it is necessary to dispose of the contents in the receiving tank.

When it is desired to dispose of the contents of the receiving tank into the body of water upon which the boat is operating it is only necessary to shift the operating lever 50 from the full line position to the dotted line position thereby closing valve 42 to prevent communication of the receiving tank to the atmosphere and shifting the valve 24 to close off communication between the receiving tank 26 and the head 16 while providing communication between the receiving tank 26 and the discharge pipe 30. For discharge externally of the boat the valve 68 will be placed in the position allowing communication between the valve 24 and the discharge port 32. The blow valve 64 in the conduit 62 will then be opened to allow a charge of compressed air from the source 60 to enter the receiving tank above the contents thereof thereby forcing the contents upwardly through the pipe 22, through the valve 24, through discharge pipe 30, through valve 68, through the sea cock 34 and outwardly through the port 32. The blow valve 64 may be of the type whereby the valve is held open as long as is necessary to evacuate the tank 26 or may be of the type whereby a predetermined charge of air will be discharged into the tank 26. As shown in the drawing the handle 44 is adjacent the plunger for valve 64 and it is contemplated that by proper location of these parts the end of the handle 44 could automatically operate the plunger for valve 64.

If the boat is tied up at dock or is operating in restricted waters where it is undesirable or illegal to discharge waste matter from the boat into the body of water the valve 68 may be operated to close off the port 32 and place the discharge pipe 30 in communication with a large capacity holding tank or a suitable treatment tank. The holding tank or treatment tank may then be emptied by any suitable means at some time in the future when it is both desirable and permissible.

Upon completion of the evacuation of the receiving tank 26 the valve 64 may be closed and the operating lever 50 returned from the dotted line position to the full line position thereby placing the valves 24 and 42 in the proper position for further use of the head 16.

To reduce the cost involved in the present construction the vent pipe 36 could be directly connected into pipe 20 between the valve 24 and the toilet 16. In this way the tank 26 would be vented to the atmosphere when the handle 44 is in the solid line position and the tank 26 would not be in communication with the vent pipe 36 when the handle 44 is in the dotted line position. Thus, the valve 42, the handle 46 and link 48 could be eliminated.

Another possible arrangement would be to have the valves 24 and 42 open in the dotted line position and closed in the full line position. An interlock could then be provided between the handle 44 and the plunger for valve 64 to prevent operation of valve 64 when the receiving tank 26 is connected to atmosphere and to the toilet 16.

What is claimed is:

1. In a vessel of the type having a hull with a predetermined water line, a flush toilet mounted in said hull below said water line, said flush toilet comprising:

(a) receiving tank means mounted in said hull below said toilet,

(b) discharge means extending through said hull,

(c) first valve means for selectively connecting said receiving tank to said toilet or said discharge means,

(d) vent means connecting said receiving tank to atmosphere when said valve means connects said receiving tank to said toilet,

(e) compressed air means mounted in said hull, and

(f) means for selectively connecting said compressed air means to said receiving tank.

2. In a vessel as set forth in claim 1 further comprising second valve means connected directly between said receiving tank and said vent means.

3. In a vessel as set forth in claim 2 further comprising means connecting said first and second valve means for conjoint operation whereby said vent means is opened when said receiving tank means is in communication with said toilet means and whereby said vent means is closed when said receiving tank means is in communication with said discharge means.

4. In a vessel as set forth in claim 1 wherein said discharge means extends through said hull below said water line and said vent means extends through said hull above said water line.

5. In a vessel as set forth in claim 4 further comprising sea cock means disposed in said vent means and said discharge means.

6. In a vessel as set forth in claim 1 further comprising holding tank means in said hull and additional valve means mounted in said discharge means for diverting the contents being discharged from said receiving tank means to said holding tank means.

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