United States Patent

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[54] HOLDING TANK FOR MARINE TOILET

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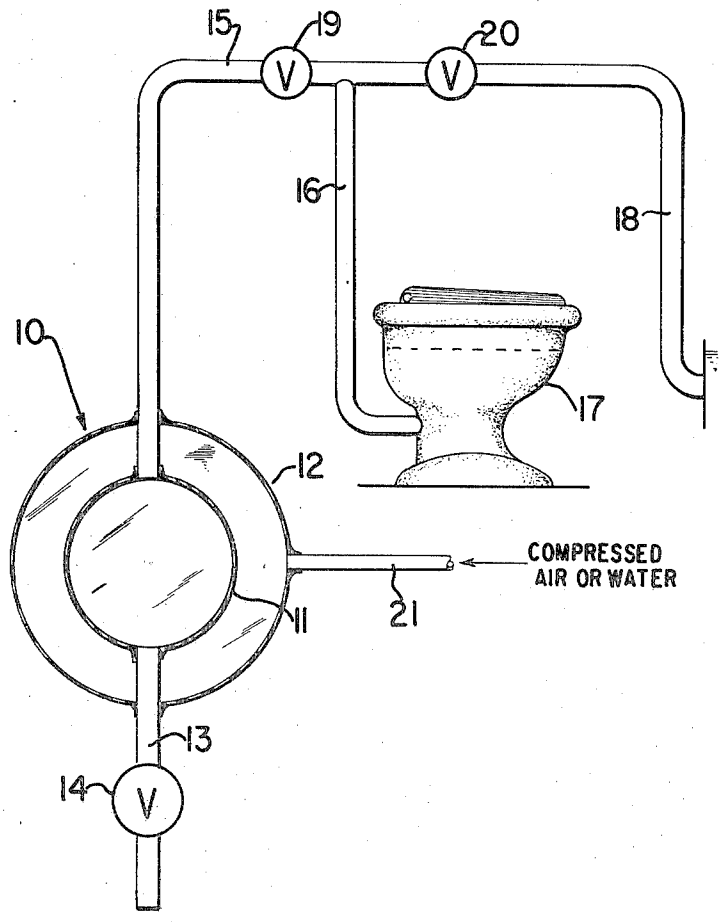
Primary Examiner—Henry K. Artis

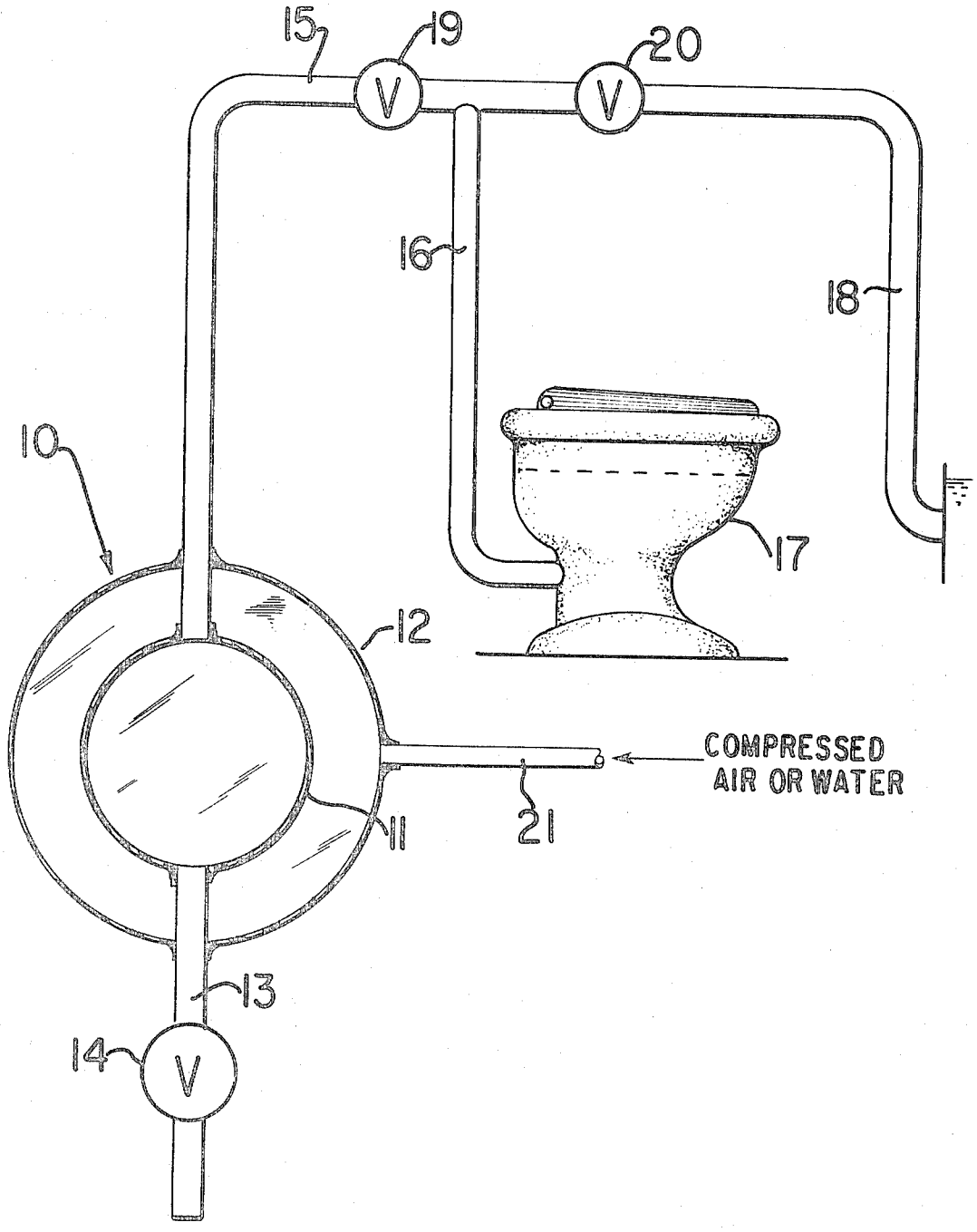
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[57] ABSTRACT

A holding tank for a marine toilet comprises a pair of flexible bags, one inside the other and separate from each other. The inner bag is connected to a high point of a siphon line between the exhaust of a marine toilet and the overflow discharge. A separate discharge line also extends from the inner bag. The outer bag is connected to a source of fluid pressure so that pressure can be applied against the inner bag to force the contents thereof through the discharge line.

5 Claims, 1 Drawing Figure





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It has been the practice for boats operating in fresh and tidal, inland and ocean waters to flush their marine toilets directly into the water. The increasing number of boats using these waterways and the concentration of boats in particular bodies of water have possibly brought about a pollution of those waters. To assist in the pollution control of such waters, various arrangements have been proposed to eliminate or at least to minimize the effect of flushing of marine toilets directly into the water. Various forms of holding tanks have been proposed wherein the waste materials from the toilet are stored until the boat reaches facilities into which such waste material may be discharged. Such holding tanks are generally installed under the floorboards of an existing boat, and this installation results in considerable expense in rebuilding the boat in order to mount a holding tank therein. In addition, rigid holding tanks must be made in a wide variety of shapes and sizes in view of the varying space requirements on different sizes and types of boats.

It is one of the objects of the present invention to provide an improved holding tank system for marine toilets.

It is another object of the present invention to provide a marine toilet system including a flexible holding tank.

According to one aspect of the present invention, a marine toilet holding tank arrangement comprises a pair of flexible bags, one inside the other, with both bags separate from each other. The inner bag may be connected through a flexible hose to the high point of a siphon line between the exhaust of a marine toilet and its overflow discharge. A discharge line with a control valve may also be connected to the inner bag. A control valve is provided in the flexible hose at the siphon line connection and a shutoff valve is provided in the overflow discharge. The outer bag is connected to a source of fluid pressure so that pressure may be applied against the inner bag to force the contents thereof out through the discharge line.

Other objects, advantages and features of the present invention will become apparent from the accompanying description and drawings, which are merely exemplary, and which schematically show the flexible holding tank according to the present invention and its connections in a marine toilet system.

In the drawings, the Figure shows schematically one form of the invention.

In the drawing, a holding tank for a marine toilet is indicated generally at **10** and comprises an inner bag **11** within and completely separate from an outer bag **12**. These bags may be of rubberized fabric and form a flexible container so that the tank container can be installed under the floorboards of an existing boat without the costly rebuilding necessary to put in a rigid holding tank.

The inner bag **11** is provided with a discharge line **13** and a shufoff valve **14**. The discharge line **13** may comprise a hose having suitable connections to a dockside holding tank. The inner bag **11** is connected by a flexible hose **15** to the high point of a siphon line **16** leading from a toilet **17** to an overflow discharge **18**. The high point in the siphon line is located between the toilet and overflow discharge, and the line **15** is provided with a control valve **19** at this connection. Another control valve **20** is provided in the overboard or overflow discharge line.

When the unit according to the present invention is to be used, the overboard discharge sea cock **20** is closed, and the valve **19** leading from the high point of the siphon discharge line is opened. As a result, when the toilet **17** is flushed, the waste material will go directly from the toilet up through the siphon line **16**, through the flexible hose **15**, and into the inner bag **11** of the flexible holding tank **10**. The waste material is then stored in the inner bag **11** until such time as the boat is adjacent to a dock where facilities for receiving waste material is available for ultimate disposal. At that time, the discharge line **13** is connected to the dockside holding tank, and the valve **19** is closed.

Compressed air, or water, is introduced through line **21** into the outer bag **12** so as to collapse the inner bag **11** and thus force the waste material out through the discharge hose **13**. Once the inner bag **11** has been emptied, the discharge hose **13** is capped and stored, and the air pressure is released from the outer bag so that the inner bag is then able to receive additional waste material as described above.

Thus, it can be seen that the present invention discloses an improved form of marine toilet holding tank which is inexpensive in construction and entails a relatively small cost in installation since the holding tank is flexible and can be accommodated in the irregular spaces normally found aboard a boat.

It will be understood that various details of construction and arrangement of parts may be made without departing from the spirit of the invention except as defined in the appended claims.

What is claimed is:

1. A marine toilet holding tank comprising a pair of flexible bags one inside the other and separate from each other, the inner bag being connectable to the high point of a siphon line between the exhaust of a marine toilet and its overflow discharge and also being connectable to a discharge line, the outer bag being connectable to a source of fluid pressure, whereby the inner bag will be emptyed through said discharge line when connected thereto and when fluid pressure is applied to said outer bag.

2. A marine toilet holding tank as claimed in claim 1 wherein said flexible bags are of rubberized fabric.

3. In a marine toilet system, the combination of a siphon line having a high point between the exhaust of a marine toilet and the overflow discharge, a pair of flexible bags one inside the other and separate from each other, first means connecting the inner bag to said high point of the siphon line, a first valve in said first means at the siphon line connection, a second valve in said overflow discharge, a discharge line having a third valve therein connected to said inner bag, and means connected to said outer bag for applying fluid pressure against the inner bag to force the contents thereof out through said discharge line.

4. In a marine toilet system as claimed in claim 3 wherein said first means comprises a flexible hose.

5. In a marine toilet system as claimed in claim 3 wherein said pressure-applying means comprises a source of compressed air.

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