

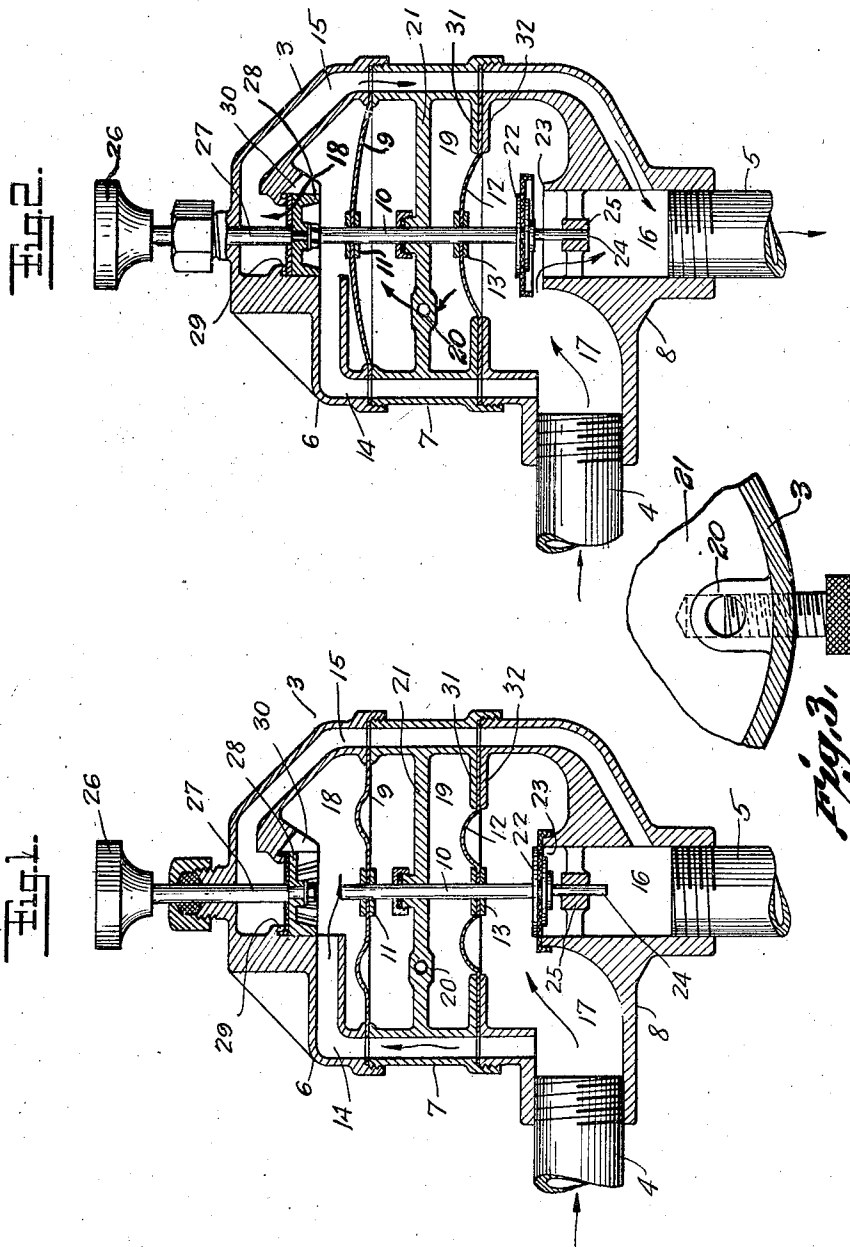
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C. D. MYER

FLUSH VALVE

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UNITED STATES PATENT OFFICE.

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FLUSH VALVE.

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To all whom it may concern:

Be it known that I, CLAUS D. MYER, a citizen of the United States, residing at West Hoboken, in the county of Hudson and State of New Jersey, have invented a new and useful Flush Valve, of which the following is a specification.

This invention relates to flush valves used in flushing urinals; and has for its special object to provide a device of this kind especially adapted for use on board ships where salt water is used for the flushing urinals, toilets, etc.

It may be stated that water is taken up from the sea by the pump, and forced to the several urinals, or other places, on board a ship. Sufficient pressure is kept on this water so it will perform the function of flushing, when desired. Much trouble has been caused by the clogging up of one of the small openings in flush valves now in use on board ships. It is the object of this invention to provide a flush valve that will be regulated in part by a separate fluid thereby leaving the main passageways sufficiently large that salt water may readily pass therethrough without danger of clogging, or getting inoperative.

The invention is illustrated in the accompanying drawing, in which—

Fig. 1, is a central, vertical section of a flush valve constructed in accordance with my invention—the portions of the connecting pipes being shown in full lines; and,

Fig. 2, is a similar view, showing working parts in a different position, and

Fig. 3, is a sectional view, on an enlarged scale, showing how the pilot valve operates to regulate the flow of the regulating fluid, or air.

In the drawing, like numerals of reference refer to the same parts in each of the views.

In practice I provide a casing 3, connected with an inlet pipe 4, and with a flushing pipe 5.

As shown, the casing 3, is made up of three parts: 6, 7, and 8, secured together in any desired manner.

Between the parts 6 and 7 is mounted a diaphragm 9, secured on a shaft 10, by means of clamping nuts 11, so as to move therewith.

Between the parts 7 and 8, is mounted a diaphragm 12, secured on the shaft 10 with

the clamping nuts 13, so as to move with said shaft.

I also provide a passageway 14 through said parts, and through the two diaphragms, and a passageway 15 through said parts, and through the diaphragms to the chamber 16, above the pipe 5. The passageway 14, leads from the chamber 17 to the chamber 18, above the diaphragm 9.

Between the two diaphragms I provide a chamber 19, which may be filled with any suitable fluid, which will pass through the pilot valve 20, in the diaphragm, or partition 21 formed intermediate of the part 7, about equidistant from the diaphragms 9 and 12.

I also provide a valve 22, mounted on the shaft 10, and adapted to form a watertight connection with the part 23, of the part 8. The shaft 10 may be provided with an extension 24, movable in a spider guide 25, in the chamber 16.

A push button 26 is secured on the outer end of a shaft 27, on which is secured a valve 28, adapted to seat on the part 29, to close the passageway 15, from the chamber 18; while guides 30 insure the vertical movement of this valve while providing for the free passage of water from the chamber 18 to the passageway 15.

In operation, when it is desired to flush the urinal, or toilet, the push button 26 is shoved down to close the passageway 14 thereby shutting off the pressure from the main to the chamber 18, and the diaphragm 9. As the pressure still remains in the chamber 17, the diaphragm 12 will be forced upward by the pressure on the main, as will be understood; but the pilot valve 20, in the partition 21, will prevent the rapid emptying of the part of the chamber 19 below the partition, as will be clear. This pilot valve 21 may be regulated so as to gauge the rapidity of flow of the liquid, or air through the partition 21, as will also be understood.

When the passageway 14 is closed, the water contained in the chamber 18 may flow past the valve 28, by reason of the open guides 30, and water can also flow into the chamber 16 by reason of the lifting of the valve 22, from the seat 23, as this valve is carried upward by the rising of the diaphragms 9 and 12; and the water will continue to flow past the valve 22, to the flush

pipe 5 as long as the valve 22 remains unseated, as will be clear.

When pressure is removed from the push button 26, it and the shaft 27 will gradually move up to the position shown in Figure 2. This will permit the pressure from the main to be restored to the chamber 18, as it will open the passageway 14. As shown, the diaphragm 9 is somewhat larger than the diaphragm 12 by reason of the annular parts 31 and 32, on the parts 7 and 8, so that the preponderance of pressure from the main will be on the diaphragm 9 to depress it, as will be understood. The spring action of the diaphragms will also have a tendency to bring them down into the position shown in Figure 1, as will be understood. If these diaphragms are made sufficiently strong, the spring action alone will be sufficient to cause the return of the diaphragms without requiring any preponderance of pressure, as will be clear.

In the return of the diaphragms to a normal position, the pilot valve will again regulate the flow through the partition 21, thereby making the seating of the valve 22 a delayed operation. Thus water will still continue to flow into the flush pipe until the diaphragms have returned to a normal position.

It will thus be seen that I have provided means to pass sea water through the flush valve without requiring it to pass through any small passageway. Thus I can use a liquid, or even air, as the regulating means for the flush valve, thereby avoiding possibility of clogging.

It is evident that any means may be utilized to make the diaphragm 12 smaller than the diaphragm 9 instead of providing the annular parts 31 and 32. It is also evident that many changes can be made in the details of construction without departing from the spirit of my invention.

I claim:

1. A flush valve provided with two flexible diaphragms and an intermediate partition, apparatus to pass water under pressure

around said diaphragms whereby the pressure of the water is brought on both diaphragms, apparatus to relieve the pressure on one diaphragm while retaining the pressure on the other whereby the diaphragms are flexed, and apparatus to regulate the flexing of said diaphragms in combination with said partition.

2. A flush valve provided with two flexible diaphragms and an intermediate partition, apparatus to pass water under pressure around said diaphragms, apparatus to regulate the pressure of the water to flex said diaphragms with the intermediate partition stationary, said partition having a passageway therethrough, and means to regulate the size of said passageway.

3. A flush valve provided with two flexible diaphragms and an intermediate partition, apparatus to pass water under pressure around said diaphragms, apparatus to utilize the pressure of the water to flex said diaphragms, said diaphragms being located on the opposite sides of an intermediate chamber divided by said partition, said partition having a regulated passageway therethrough.

4. A flush valve provided with two flexible diaphragms and an intermediate partition, apparatus to pass water under pressure around said diaphragms, apparatus to utilize the pressure of the water to flex said diaphragms, said diaphragms being located on the opposite sides of a chamber divided by said partition, said partition having a valve-controlled passageway therethrough.

5. A flush valve provided with two diaphragms and an intermediate partition, valves adapted to regulate the pressure of water on said diaphragms, said diaphragms being located on the opposite sides of a chamber divided by said partition, a valve-controlled passageway through said partition, and means to apply pressure to the outer sides of said diaphragms.

Dated this 24th day of June, 1921.

CLAUS D. MYER.