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BILGE PUMP

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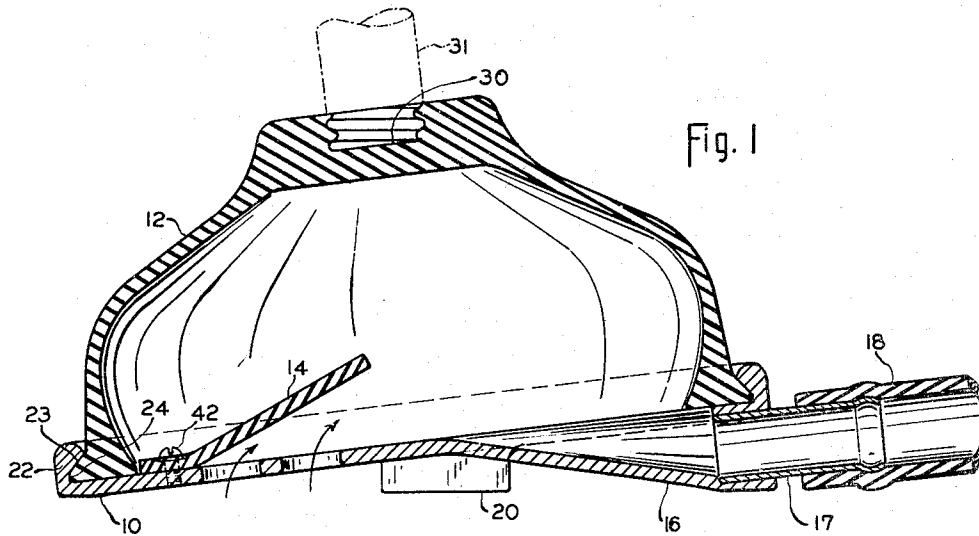


Fig. 1

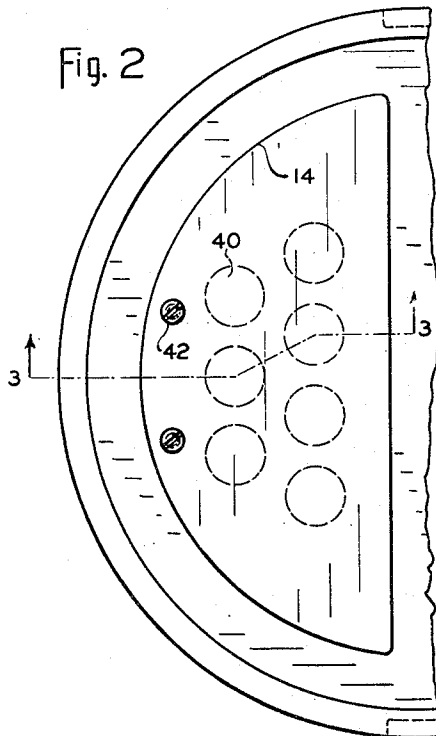


Fig. 2

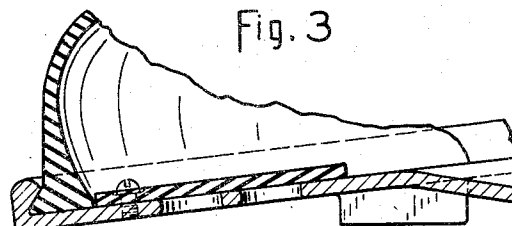


Fig. 3

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BILGE PUMP

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1 Claim. (Cl. 103—148)

This invention relates to a manually-operated pump to be used for ejecting bilge water from a boat, or for other similar purposes. Such pumps are generally operated under unfavorable conditions and are required to handle water containing substantial amounts of dirt or other waste material.

It is the general object of my invention to provide a bilge pump of extremely simple and economical construction, and a pump which will give continuous and satisfactory performance under adverse conditions.

To the attainment of this object, I provide a pump having a single valve only, which valve acts as an inlet valve and comprises a simple flap of flotation rubber or rubber having a specific gravity less than 1.

I also provide a pump in which the exit passage is at all times entirely open, and in which said passage is well adapted to remove and carry off substantial amounts of dirt or other waste material found in the bilge water.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawings, in which—

Fig. 1 is a sectional side elevation of my improved pump;

Fig. 2 is a partial plan view of the base plate and flap valve; and

Fig. 3 is a partial sectional elevation, taken along the irregular line 3—3 in Fig. 2.

Referring to the drawings, my improved bilge pump comprises a base plate 10, a relatively heavy depressible dome-like bulb member 12, and a flap valve 14.

The base plate 10 has a depressed outlet portion 16 adapted to receive and firmly retain an outlet tube or nipple 17 to which a discharge hose 18 is connected. The base plate 10 is also provided with supports 20 at its opposite sides and which are disposed on a transverse diameter.

The base plate 10 is preferably made in the form of a casting of bronze or other non-corrosive metal, and has a peripheral flange 22 provided with an undercut groove or recess 23 adapted to receive an external bead or flange 24 at the lower edge of the bulb 12.

The bulb 12 is preferably of relatively heavy rubber and strongly maintains itself normally in the raised position shown in Fig. 1.

When pressure is applied to the bulb 12, the top portion thereof may be depressed to eject the contents of the bulb or a major portion thereof through the outlet tube 17 and hose 18. The bulb 12 is commonly depressed by the foot of the operator but may be provided with a threaded recess 30 to receive the lower end of a handle 31, if hand operation is preferred.

The base plate 10 is provided with a plurality of inlet ports 40 (Fig. 2), all of which are positioned for coverage by the flap valve 14, one edge of which is secured to the base plate by screws 42. The other edge of the valve is left free, and the valve is preferably formed of flotation rubber or rubber having a specific gravity less than 1, so that it will open or lift easily and quickly as soon as pressure on the bulb 12 is relieved and with the pump immersed.

The device is enabled to operate as a pump by reason

of the lag or inertia of the water column in the outlet hose 18, and also by reason of the preponderance of the multiple inlet cross section over the cross section of the single outlet connection.

It will be noted that the cross section of the outlet tube or nipple 17 is approximately the same as the cross section of the inlet openings 40, so that any bits of waste material which may enter through an opening 40 will be ejected through the nipple 17 and hose 18, thus avoiding the possibility of clogging the outlet with waste material.

The base plate 10 is so designed that when placed on a flat surface, it is maintained in an inclined and partially raised position, as shown in Fig. 1 so that the water to be pumped has free access to the inlet ports 40. The supports 20 act to reinforce the base plate 10 and also to prevent the tendency of the base plate to rock about the point of contact with the depressed outlet member 10.

If the pump is immersed in bilge water or other liquid to be pumped, the flap valve 14 will lift and the bulb 12 will become more or less completely filled with liquid. If the bulb 12 is then depressed, the valve 14 moves downward to close the inlet ports 40, and the water in the bulb 12 will be forced out through the outlet tube 17 and the discharge hose 18.

When pressure is thereafter relieved on the bulb 12, the bulb will spring upward and return to its original position, due to its inherent resilience, and the bulb 12 will be immediately refilled with water, the major portion of which will come in through the inlet ports 40. A very small additional amount of water may return through the tube 17 but, due to the much greater total area of the inlet ports 40 and also to the inertia in the discharge hose 18, the bulb 12 will almost exclusively receive water entering through the inlet ports 40.

In this way, substantially continuous and entirely satisfactory operation is attained with the use of the single flap valve 14 only, and the pump is well adapted to handle water or other liquids containing substantial amounts of dirt or other waste material.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:

A bilge pump comprising a metal base plate having a continuous undercut peripheral flange, a heavy dome-like rubber bulb having its outer and lower edge portion seated within said undercut flange, a flap valve of sheet material having a specific gravity of less than 1 secured to the upper face of said base plate but with a major and unsecured portion thereof free to swing upward on inflow of liquid, said base plate having a plurality of inlet ports under said flap valve, and said base plate having a depressed portion with a single outlet passage therein which is freely open to the interior of said bulb at a point substantially removed from said inlet ports and valve, said depressed portion holding the base plate in an inclined position with respect to a flat supporting surface, so that free access to said inlet ports is provided, and said base plate having depending flanges disposed at opposite ends of a transverse diameter of said base plate and at the opposite side edges of said base plate and engaging said flat supporting surface to prevent rocking of the base plate on said surface when one edge thereof is elevated by said depressed portion.

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