

May 29, 1956

H. J. ATKINSON

2,747,513

BILGE PUMP

Filed Jan. 10, 1955

2 Sheets-Sheet 1

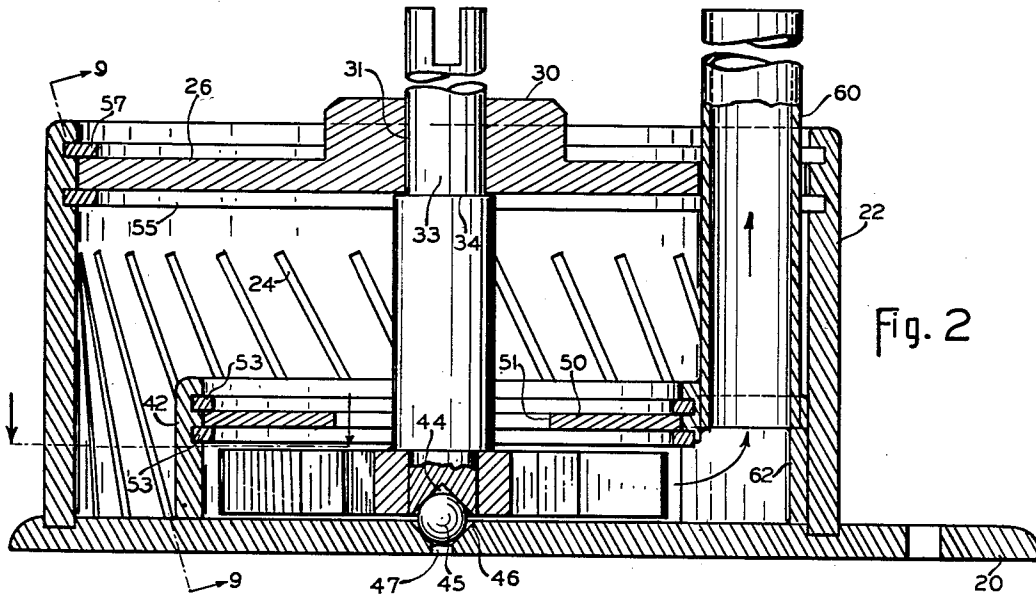


Fig. 2

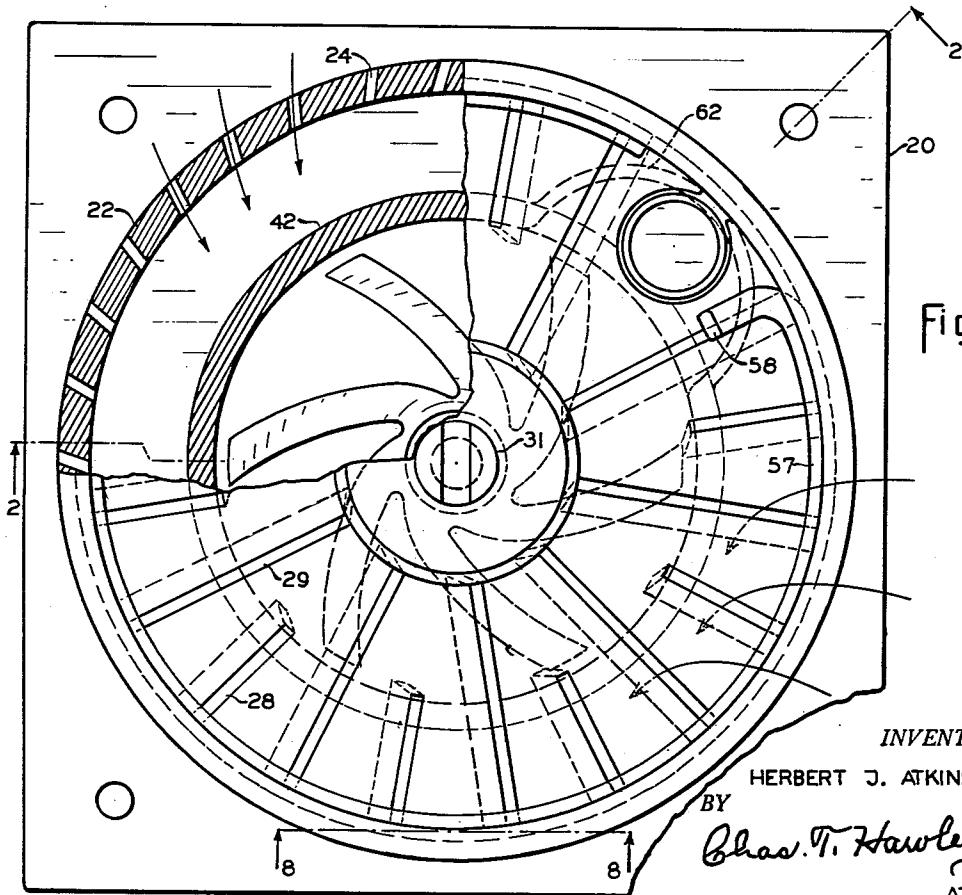


Fig. 1

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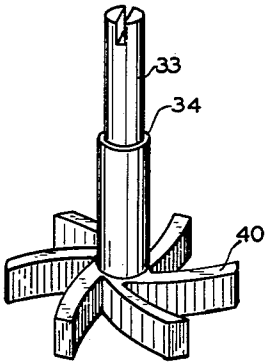


Fig. 3

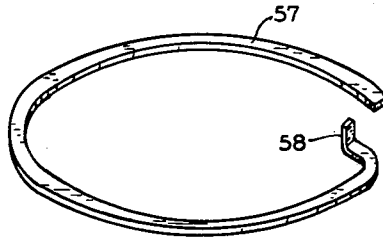


Fig. 4

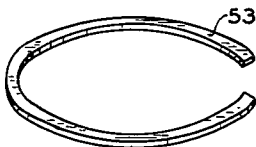


Fig. 6

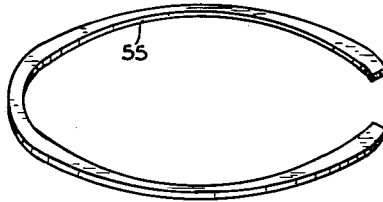


Fig. 5

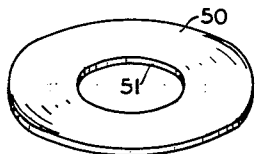


Fig. 7

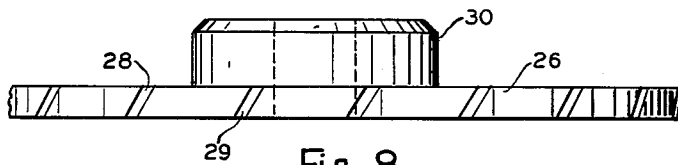


Fig. 8

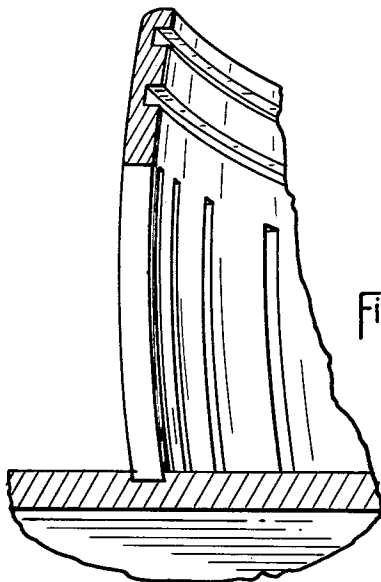


Fig. 9



Fig. 10

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BILGE PUMP

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Application January 10, 1955, Serial No. 480,881

1 Claim. (Cl. 103—103)

This invention relates to a pump especially adapted for the removal of bilge water from boats, but also useful for other general purposes.

It is the general object of this invention to provide a pump which is particularly adapted for handling water or other liquids which contain substantial amounts of sand, dirt or other waste material.

To the attainment of this general object, I provide a pump having a supplemental enclosing casing which is slotted to admit water or other liquid but to exclude the coarser waste materials.

I also provide a pump in which all parts of the pump and casing are of a plastic material which is non-corrosive and impervious to water and also to all acids usually found in bilge water or in other similar waste liquids.

In the preferred form of the invention, the plastic material is transparent, so that the operating condition of the pump may be readily observed. My improved pump is also so constructed that it may be entirely assembled or dismantled without the use of tools.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claims.

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

Fig. 1 is a plan view of my improved pump, partly in section;

Fig. 2 is a cross sectional elevation, taken along the irregular line 2—2 in Fig. 1;

Fig. 3 is a perspective view of the impeller;

Figs. 4, 5 and 6 are perspective views of lock rings;

Fig. 7 is a perspective view of a cover plate in the pump;

Fig. 8 is a side elevation of the top plate of the outer pump casing;

Fig. 9 is a partial sectional elevation, taken along the line 9—9 in Fig. 2; and

Fig. 10 is a plan view of a ball which provides the foot bearing of the impeller.

Referring to the drawings, my improved pump is assembled on a rectangular base plate 20 having a cylindrical outer casing or wall 22 permanently mounted thereon. The casing 22 acts as a coarse strainer for the pump and is provided with a plurality of relatively narrow slots 24 which will admit water or other liquid but which will exclude coarser waste material. Relatively fine sand or dirt will, however, pass through the slots 24.

A top plate 26 is provided for the casing 22 and this top plate is also slotted as indicated at 28 and 29, and

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has a hub portion 30 having a bearing opening 31 for the impeller shaft 33 (Fig. 3). A shoulder 34 on the shaft 33 prevents upward displacement of the impeller.

Impeller blades 40 are firmly secured to the lower end of the shaft 33, and the impeller rotates freely inside of an inner pump casing 42 which is entirely open at its upper face.

The lower end of the shaft 33 has a conical bearing opening 44 (Fig. 2), and the shaft 33 is supported by a ball 45 centered in a recess 46 in the bottom plate 20. An axial opening 47 in the bottom of the recess 46 prevents accumulation of dirt under the ball 45.

A top plate 50 (Fig. 7) has an axial opening 51 and is mounted in the inner casing 42. The plate 50 is held in vertical position by a pair of spring rings 53 (Fig. 6) seated in annular grooves in the inner face of the casing 42. A similar spring ring 55 (Fig. 5) establishes the vertical position of the top plate 26, and an additional spring ring 57 (Fig. 4) prevents upward displacement. The ring 57 has an up-turned end portion 58 for more convenient removal.

A discharge tube 60 is mounted on a lateral extension 62 of the inner casing and the space within this extension is freely open to the impeller pump chamber as shown in Fig. 2.

The inclined position of the slots 24 and the angular position of the slots 28 and 29 in the cover plate 26 tend to retard the entrance of coarse waste material or to cause it to work down to the bottom of the outer casing.

It will be noted that ample clearance is provided outside of the impeller blades 40 and also above and below the impeller blades, so that the pump is well adapted to the handling of sand, dirt, or other waste material without clogging.

The plastic construction prevents corrosion or acid action, and the use of transparent material facilitates inspection as previously described.

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 an outer casing, an inner casing in the lower part only of said outer casing and substantially spaced therefrom and having an inner annular intake opening from the interior of said outer casing, an impeller rotatable in said inner casing, and an exhaust connection from said inner casing, said outer casing having a slotted cylindrical side wall and having a manually-removable slotted top plate which also provides a top bearing for the impeller.

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