Dec. 29, 1936. O. H. DORER 2,065,666

PUMP

Filed Sept. 27, 1934 2 Sheets-Sheet 1

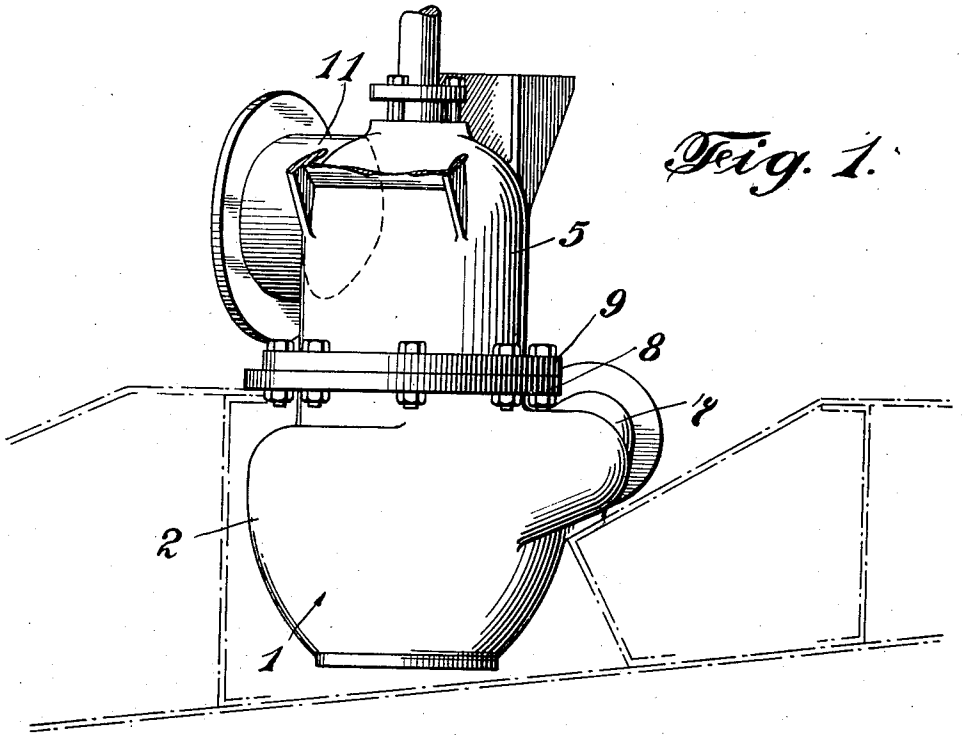


Fig. 1.

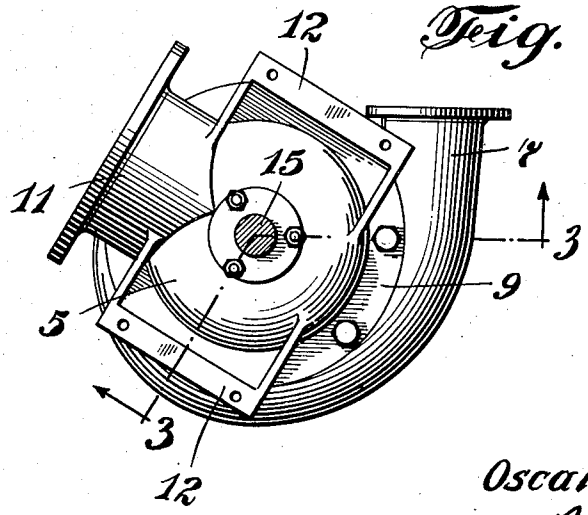


Fig. 2.

Oscar H. Dorer
INVENTOR

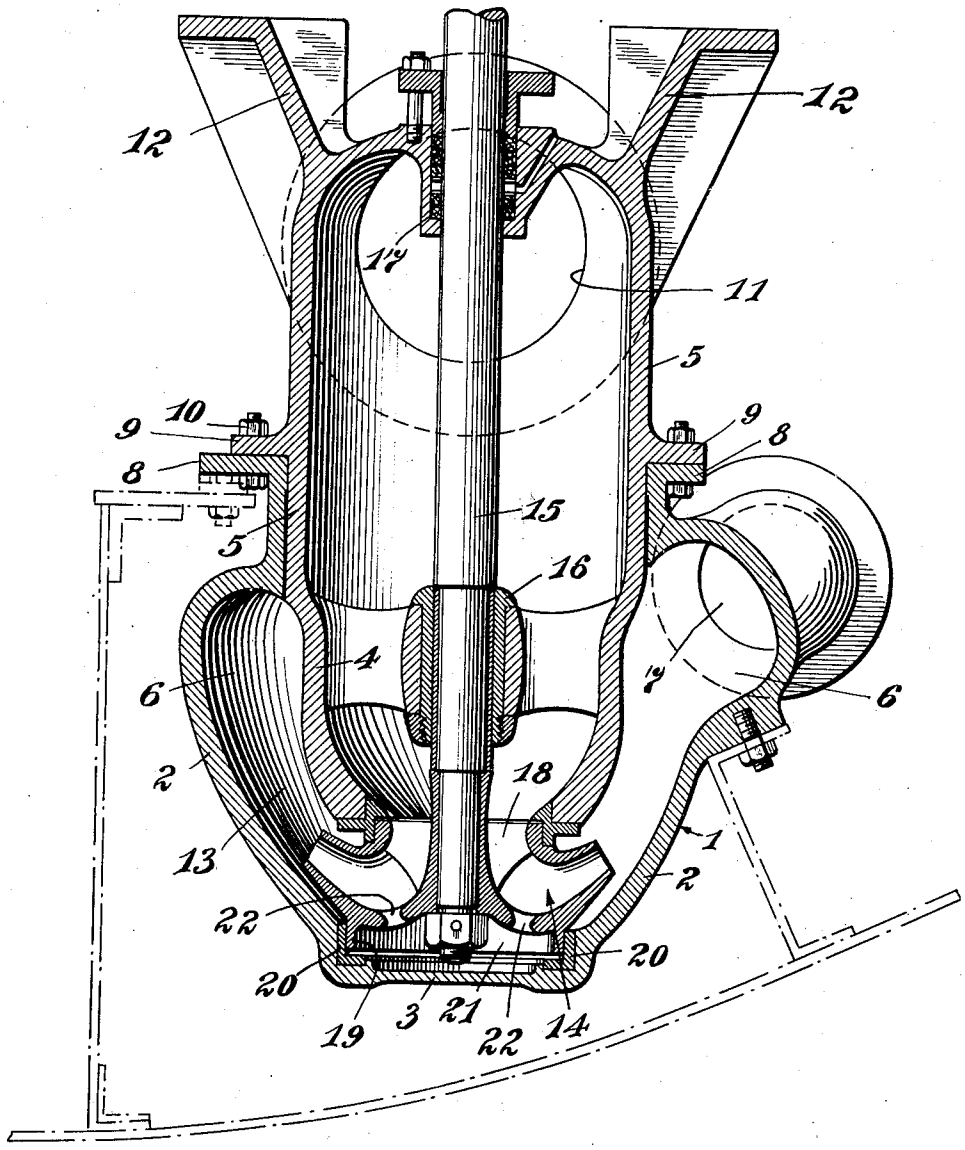
BY Robert Dreyer
ATTORNEY

Dec. 29, 1936. O. H. DORER 2,065,666

PUMP

Filed Sept. 27, 1934 2 Sheets-Sheet 2

Fig. 3.



Oscar H. Dorer
INVENTOR

BY Robert Mayer
ATTORNEY

Patented Dec. 29, 1936 2,065,666

UNITED STATES PATENT OFFICE

2,065,666

PUMP

Oscar H. Dorer, East Orange, N. J., assignor to Worthington Pump and Machinery Corporation, New York, N. Y., a corporation of Virginia

Application September 27, 1934, Serial No. 745,667

5 Claims. (Cl. 103—103)

This invention relates to pumps and more particularly to centrifugal pumps adapted for marine work.

An object of the present invention is to provide a centrifugal pump for use on ships which pump is relatively small and requires a relatively small amount of space in proportion to its pumping capacity and is designed to meet particular conditions found on shipboard where special consideration must be given to space required by and weight of the various equipment.

With these and other objects in view as may appear from the accompanying specification, the invention consists of various features of construction and combination of parts, which will be first described in connection with the accompanying drawings, showing a centrifugal pump of the preferred form, and the features forming the invention will be specifically pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation of the improved pump showing it in position in a fragment of a ship hull.

Fig. 2 is a top plan of the improved pump.

Fig. 3 is a vertical section through the pump taken on the line 3—3 of Fig. 2.

Referring more particularly to the drawings, the imposed centrifugal pump comprises a bowl-like casing 1, the side 2 of which curves upwardly and outwardly from the base 3 as clearly shown in Fig. 3 of the drawings, and near its upper edge it is curved inwardly and downwardly for co-operation with the lower end or projection 4 of the inlet extension 5 to form the annular volute 6. The volute 6 opens at its uppermost portion into the discharge outlet 7. The uppermost edge of the side 2 of the bowl-like casing 3 has an annular flange 8 thereon against which the flange 9 formed on the inlet extension 5 rests. The flanges 8 and 9 are securely connected by suitable bolts as shown at 10. The inlet extension 5 projects above or beyond the upper edge of the bowl-like casing 1 and has an inlet opening 11 opening thereinto at its uppermost portion. Supporting legs 12 are shown formed upon the uppermost portion of the inlet extension 5.

The projection 4 of the inlet extension extends downwardly into the bowl-like casing 1 and co-operating with the side 2 thereof forms an annular upwardly and outwardly inclining passage 13 which merges into the volute 6. The liquid or water being pumped is discharged into the annular space 13 by the impeller 14. The impeller 14 is located at the bottom of the bowl-like casing 1 and is carried by the shaft 15 which extends axially through the inlet extension 5 and may be driven by any suitable type of prime mover (not shown). A bearing 16 for the shaft 15 is carried by the projection 4 and a suitable stuffing box structure 17 is provided where the shaft 15 extends through the inlet extension 5.

The impeller 14 has an axial inlet 18 opening into the interior of the inlet or suction extension 5 and the water passages of the impeller 14 are arcuate in planes radially of the axis of the impeller as well as being arcuate in the usual circumferential direction so that the water discharged by the impeller 14 will be thrown into the space 13 in an outwardly and upwardly inclining direction for passage through the space 13 into the volute 6.

A wearing ring 19 is formed on the impeller 14 and engages the wearing ring 20 carried by the casing 1. A leakage pocket 21 is formed at the inside of the base 3 of the bowl-like casing beneath the impeller 14 for receiving leakage which leaks past the rings 19 and 20. The impeller 14 is provided with openings 22 therein at the lowermost portions of its liquid passages which openings open into the leakage pocket 21 thereby permitting the leakage water, which serves as thrust absorbing means for absorbing end thrust of the impeller, to pass into the impeller for discharge in the usual manner.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown but that they may be widely modified within the invention defined by the claims.

What is claimed is:

1. In a centrifugal pump, a casing composed of a bowl-like member having its open end terminating in a cylindrical portion, and an inlet extension fitting in said cylindrical portion and having its upper end closed, an inlet connection at the upper end of said inlet extension, a projection formed on said inlet extension and extending into the bowl-like member, the outer surface of said projection cooperating with the inner surface of the bowl-like member to form an upwardly and outwardly inclining annular passage terminating in a discharge volute, an impeller in said bowl-like member adjacent the bottom thereof and having its inlet communicating with the interior of said inlet extension and its discharge opening into said passage.

2. In a centrifugal pump, a casing composed of a bowl-like member having its open end ter-

minating in a cylindrical portion, and an inlet extension fitting in said cylindrical portion and having its upper end closed, an inlet connection at the upper end of said inlet extension, a projection formed on said inlet extension and extending into the bowl-like member, the outer surface of said projection cooperating with the inner surface of the bowl-like member to form an upwardly and outwardly inclining annular passage terminating in a discharge volute, an impeller in said bowl-like member adjacent the bottom thereof and having its inlet communicating with the interior of said inlet extension and its discharge opening into said passage, and means sealing the interior of said inlet extension from communication with said passage except through said impeller.

3. In a centrifugal pump, a casing composed of a bowl-like member having its upper end open, an inlet extension fitting in said upper open end and having its upper end closed, an inlet connection at the upper end of said inlet extension, a projection formed on said inlet extension and extending into the bowl-like member, the outer surface of said projection co-operating with the inner surface of the bowl-like member to form an upwardly and outwardly inclining annular passage terminating in a discharge volute, an impeller in said casing below the lower jacent to the bottom thereof and having its inlet communicating with the interior of said inlet extension and its discharge opening into said passage, said impeller having its liquid passage curving in a radial plane from its inlet to its outlet.

4. In a centrifugal pump, a casing having a bowl-like outer wall, an inlet extension substantially cylindrical in shape and extending upwardly from the upper edge of the bowl-like outer wall, said inlet extension also projecting downwardly into the outer casing and having its portion within the casing curved to cooperate with the curvature of the bowl-like outer casing to form a discharge passage and a discharge volute, an impellor in said casing below the lower end of the downwardly projecting portion of said inlet extension and having its inlet communicating with the interior of said inlet extension and its discharge opening into said discharge passage, said impeller having its liquid passage curving in a radial plane from its inlet to its outlet.

5. In a centrifugal pump, a casing having a bowl-like outer wall, an inlet extension substantially cylindrical in shape and extending upwardly from the upper edge of the bowl-like outer wall, said inlet extension also projecting downwardly into the outer casing and having its portion within the casing curved to cooperate with the curvature of the bowl-like outer casing to form a discharge passage and a discharge volute, an impeller in said casing below the lower end of the downwardly projecting portion of said inlet extension and having its inlet communicating with the interior of said inlet extension and its discharge opening into said discharge passage, said impeller having its liquid passage curving in a radial plane from its inlet to its outlet, said discharge volute lying wholly above and outwardly of the perimeter of said impeller.

OSCAR H. DORER.