Dec. 12, 1933. H. E. QUIMBY 1,938,719

PUMP

Filed Dec. 8, 1931

Fig. 1.

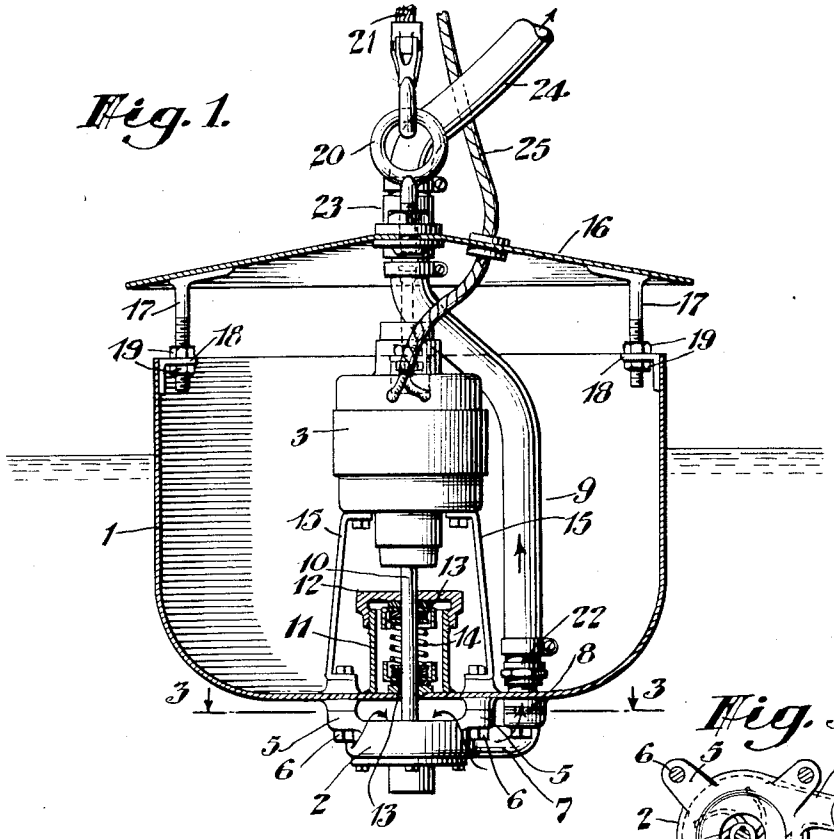


Fig. 3.

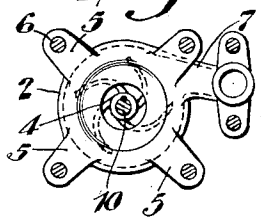
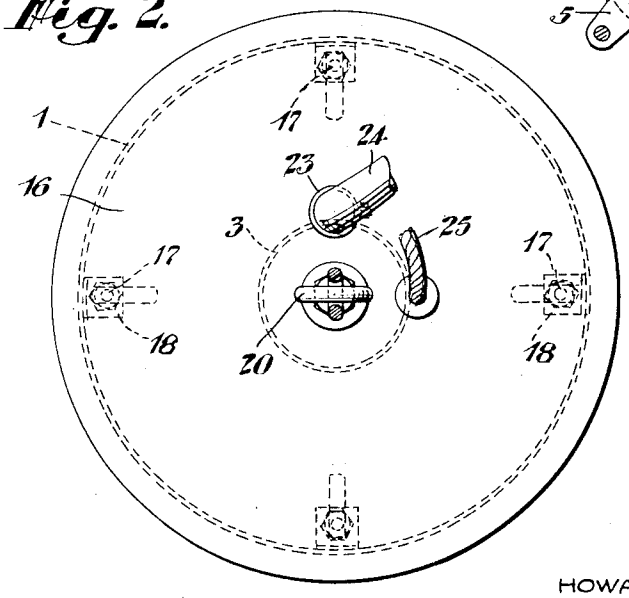


Fig. 2.



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Application December 8, 1931. Serial No. 579,704

8 Claims. (Cl. 103—87)

An important object of the present invention is to provide an improved unitary pumping device designed to float upon the fluid to be pumped. The device includes a pump combined with power means for driving it, and a buoy carrying the pump and its driving means and supporting the pump in a position for efficient pumping action.

Other objects of the invention will appear hereinafter.

In the drawings, Fig. 1 is a vertical sectional view of the pumping device;

Fig. 2 a top plan view of the device; and

Fig. 3 a section taken on the line 3—3 of Fig. 1.

The pumping device is a unit comprising a hollow buoy or float 1, a force pump 2 and an electric motor 3 for driving the pump. The unit is adapted to float upon the water or other fluid to be pumped and it has a connection for suspension means to lower it into pumping position and hoist it out of the fluid.

The buoy is of kettle form and is made of metal or other suitable material. The pump is of a rotary centrifugal type and it is centrally disposed at the under side of the buoy with its impeller axis vertical. In the present instance the inlet 4 of the pump is disposed at the upper side of the pump and the pump is supported with the inlet spaced below the bottom of the buoy to admit the fluid thereto. However, the inlet may be located in any other suitable position below the buoy and exposed to the fluid. For mounting the pump the pump casing has supporting ears 5 which are bolted as at 6, to bosses formed upon the bottom of the buoy. An outlet nozzle 7 leads outward and upward from the pump casing and is bolted to an apertured boss 8 formed upon the bottom of the buoy. A fluid discharge conduit 9 leads from the aperture of said boss upward through the buoy.

Within the buoy and protected thereby is the motor 3 supported with its axis vertical and in alinement with the axis of the pump impeller. The motor has a shaft 10 extending downward through an aperture in the bottom of the buoy, fixed to the impeller for driving it and having a bearing in the pump casing. A stuffing box structure surrounds said bottom aperture to prevent leakage into the buoy and includes a tubular casing 11 fixed to, or formed with, the bottom of the buoy, and having a cap 12 screwed upon its upper end and apertured to receive the motor shaft. The shaft-receiving apertures in said cap and the bottom of the buoy are sealed around the shaft by compressible gaskets 13 held pressed to the apertures by an interposed spring 14. Legs 15 support the motor over the stuffing box and have feet bolted to bosses formed upon the bottom of the buoy.

The buoy has a slightly conical cover 16 spaced above it and provided with depending threaded studs 17. Said studs extend through apertured brackets 18 fixed to the buoy and are held to the brackets by nuts 19. A suspension eye 20 is fixed to the center of the cover and affords an anchorage for a hoisting cable 21 for lowering and raising the pumping unit.

The fluid discharge conduit 9 leading from the pump outlet comprises a hose section joined to the outlet by a suitable union 22 and extending upward to the buoy cover. Here, through a union 23, carried by the cover, it is joined to a line hose 24 leading to a discharge point. The motor is supplied with current through a conduit cable 25 which may lead upward along the suspension cable.

It will be seen that the device is a compact unit balanced in design for straight suspension and adapted to float in the liquid to be pumped. The floating buoy supports the pump constantly submerged, with its inlet under a head of fluid, and thereby constantly fed. A force pump so disposed will operate very efficiently. The buoy will automatically support the pump at the proper intake position. As the level of the liquid lowers, the buoy will lower the pump. Furthermore, the pump occupies a protected position beneath the buoy and its inlet is spaced and shielded from flotsam upon the liquid, which might clog and stall the pump. The unit can be employed to advantage in a great variety of services.

What I claim is:

1. A pumping device comprising a hollow kettle-like supporting buoy; a rotary pump carried by the buoy, disposed at the under side thereof with its axis vertical and having an inlet exposed at the under side of the buoy, a discharge conduit leading upward from the pump outlet and through the buoy; a motor carried by the buoy and disposed within it and having a vertical drive shaft operatively connected to the pump; and means for suspending the buoy.

2. A pumping device comprising a hollow kettle-like supporting buoy; a centrifugal pump carried by the buoy, disposed at the under side thereof with its axis vertical and having a direct inlet at its upper side and directly exposed between the pump and the bottom of the buoy; a

discharge conduit leading upward from the pump outlet and through the buoy; a motor carried by the buoy and disposed within it and having a vertical drive shaft directly and operatively connected to the pump impeller; a cover for the buoy; and means for suspending the buoy.

3. A pumping device comprising a hollow buoy forming a floatable receptacle; a force pump carried by the receptacle and arranged with its inlet below the upper edge of the receptacle and below the water level when the receptacle is supported in water; a discharge conduit from said pump extending upwardly through the receptacle; a motor within the receptacle and operatively connected to the pump; a cover over the top of the receptacle; and a suspension means connection carried by the receptacle.

4. A pumping device comprising a hollow buoy forming a deep floatable receptacle; a force pump carried by the receptacle at the center of the bottom thereof and arranged with its inlet below the upper edge of the receptacle and below the water level when the receptacle is supported in water; a discharge conduit from said pump extending upwardly through the receptacle; a motor within the receptacle supported at the center of the bottom thereof and operatively connected to the pump; a cover over the top of the receptacle; and a suspension means connection carried by the receptacle.

5. A floatable pumping device comprising a hollow supporting buoy; a pump carried by the buoy at the under side thereof and having an upwardly facing exposed inlet disposed entirely beneath the bottom of the buoy and spaced slightly below it; a motor mounted within the buoy and having a driving connection with the pump; and a discharge conduit leading from the pump upwardly through the interior of the buoy.

6. A floatable pumping device comprising a hollow supporting buoy; a pump carried by the buoy and having its inlet below the upper edge of the buoy and below the water level when the buoy is supported in water; a discharge conduit leading from the outlet of said pump upwardly through the interior of the buoy and having a hose connection mounted on the buoy at a fixed point above the water level; and a motor carried by the buoy and having a driving connection with the pump.

7. A floatable pumping device comprising a hollow kettle-like supporting buoy; a pump carried by the buoy and mounted at the under side thereof and having its inlet opening at the under side of the buoy; a motor mounted within the buoy and having a driving connection with the pump; a rigid cover for the buoy mounted thereon in a position spaced above the buoy; and a discharge conduit leading from the outlet of the pump upwardly through the interior of the buoy and having a hose connection mounted on said cover at a fixed point.

8. A floatable pumping device comprising a hollow supporting buoy; a rotary pump carried by the buoy and bolted to the underside thereof and having an inlet beneath the buoy; a discharge conduit leading from the pump outlet upward through the interior of the buoy; and a motor mounted within the buoy and having a driving connection with the pump.

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