

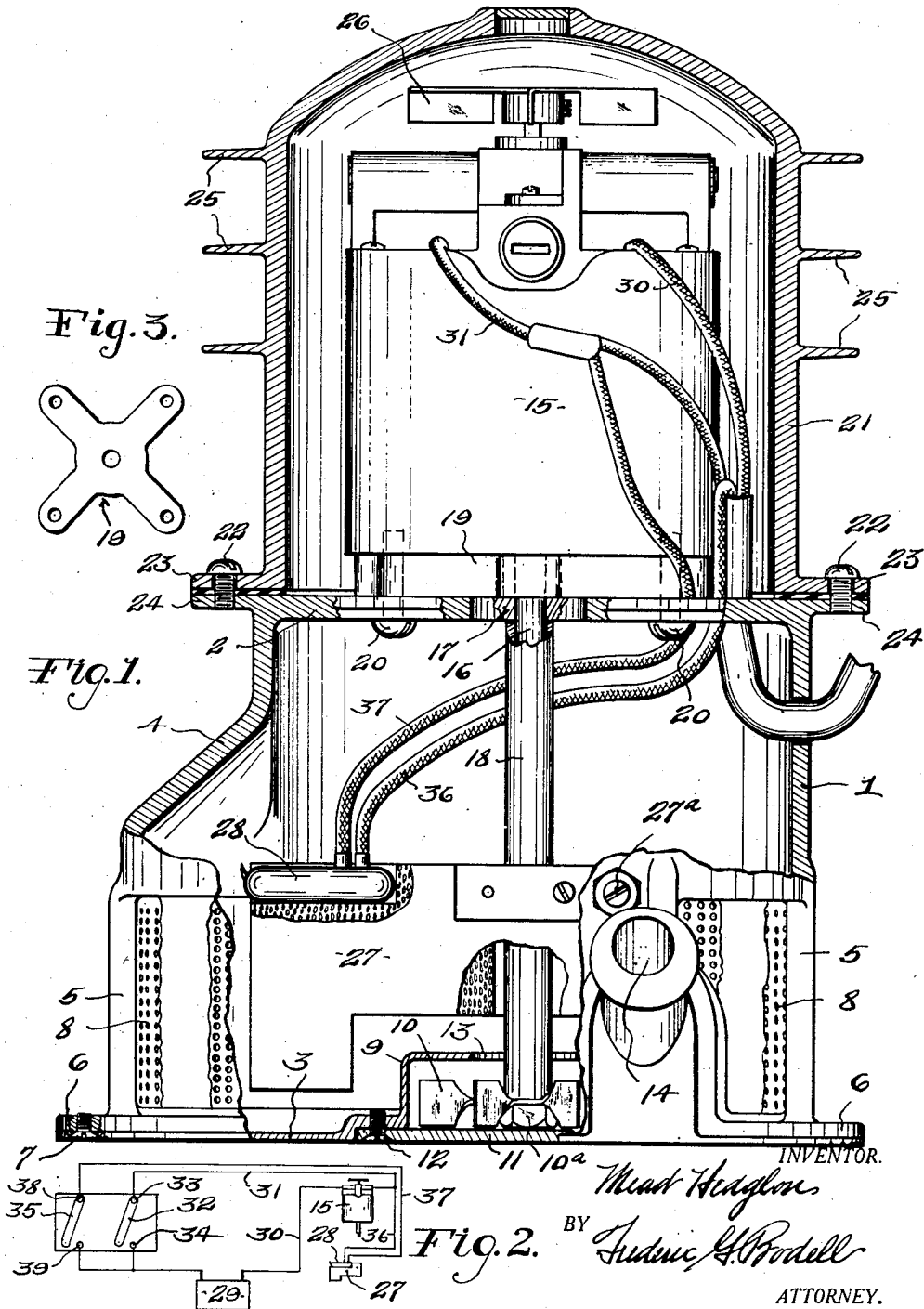
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SUMP PUMP

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UNITED STATES PATENT OFFICE

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SUMP PUMP

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This invention relates to sump pumps, particularly pumps for pumping bilge water out of motor boats and the like, and has for its object a pump which is particularly simple, rigid and economical in construction and highly efficient and durable in use.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a vertical sectional view, partly in elevation, of this pump.

Figure 2 is a diagrammatic view of the electric wiring.

Figure 3 is a plan view of the support for the electric motor.

This bilge pump comprises, generally, a body, the upper portion of which is shaped to act as a diving bell and the lower portion of which is open to provide an inlet for the water, a pump casing and a pump rotor mounted at the bottom of the body, an electric motor mounted on the top of the body with its axis vertical and having its shaft extending through the top of the body and connected to the rotor of the pump, a float operated electric switch for controlling the flow of current to the motor, said float operated switch being located in the lower portion of the body and movable into the diving bell portion thereof and a water tight casing for the motor mounted on the top of the body.

1 designates the body formed with a closed top wall 2, a bottom wall 3, side walls, the upper portions 4 of which are closed or are air and water tight and the lower portions of which are open for the inlet of water. The lower portion, as here shown, comprises posts 5 spaced apart at intervals and carrying a ring or flange 6 at their lower ends to which is secured the bottom 3 as by screws 7.

The top wall 2, impervious wall 4, pillars or posts 5 and flanges 6 are preferably formed integral while the bottom plate 3 is separable. Preferably, the lower portion of the body is also provided with a perforated screen 8.

The bottom plate 3 is provided with a

pump casing 9 on its upper side which is preferably formed integral with the bottom plate, the lower side of the pump casing being open to permit the rotor 10 of the pump to be located therein. The lower side is closed by a removable plate 11 secured to the bottom plate 3 in any suitable manner as by screws 12.

The plate 11 is located in a suitable countersink in the bottom plate 3. The pump casing 9 is provided with a central water inlet 13 and with a tangential outlet 14, this outlet also being formed integral with the bottom plate 3.

15 is an electric motor mounted on the upper side of the top plate 2 and having its axis vertical, the armature shaft 16 thereof extending through a bearing 17 in the top 2 and through the body 1 and the pump casing 9 and having mounted on its lower end, the rotor 10 as by a nut 10^a.

The armature shaft 16, as here shown, comprises a tube 18 snugly fitting on the armature shaft proper, the upper end of the tube 18 being located adjacent or abutting against the lower face of the top wall 2. The casing of the motor is mounted on a support as a spider 19 through the hub of which the shaft 16 extends. This spider is secured as by screws 20 to the top wall, the heads of the screws being located on the lower side of the top wall.

21 is a substantially water tight casing enclosing the motor 15 and mounted on the top wall 2 of the body and secured thereto as by screws 22 extending through holes in an external flange 23 on the casing 21 and threading into an external flange 24 on the body 1.

The casing 21 is provided with external heat radiating flanges 25, and also a fan 26 is mounted on the upper end of the armature shaft to circulate the air within the casing 21 against the walls thereof.

27 is a float mounted in the lower portion of the body 1 and pivoted at 27^a to the body and 28 is an electric switch as a mercury switch carried by the float. The float and motor construction form no part of this invention.

In operation, the pump can be set to start and stop automatically or to run only when

a manually operated switch is in "on" position.

As seen in Figure 2, 29 designates the battery and 30, 31 feed wires leading to the motor from the battery through a switch 32. When this switch is thrown manually to connect terminals 33, 34, the motor will be energized and will run until the switch 32 is thrown "off" manually.

For the automatic starting and stopping of the motor, the control is through the mercury switch 28.

By throwing switch 35 into "on" position with the switch 32 in "off" position, the current passes from the battery 29 through the wire 30, wire 36 through the mercury switch 28, wire 37 contact 38 through the switch 35 to contact 39 thence back to the battery.

When the level of the water is low, the switch will be in the position shown in the drawings, and the contacts connected to the wires 36 and 37 out of contact with the mercury switch.

When the water rises causing the float 27 to tilt upwardly on its pivot 27^a and hence to cause mercury to submerge the contacts connected to the wires 36, 37, the current will pass through the mercury of the switch 28 to the motor and the motor will be energized until the level of the water is lowered by the action of the pump sufficiently, so that the float 27 returns to its normal position, and hence causes the mercury to break contact with the terminals to which the wires 36, 37 are connected.

The action of the mercury switch forms no part of this invention.

This sump pump is particularly rigid in construction and owing to the diving bell effect, the motor is protected against water and furthermore all the working parts are mounted in a particularly simple and rigid body.

What I claim is:

1. A sump pump comprising a body having top and bottom walls and side walls closed at their upper portion adjacent the top wall and open at their lower portions whereby the upper portion acts as a diving bell, the lower open portion of the body above the bottom forming an inlet for water, a pump casing mounted on the upper side of the bottom wall, a pump rotor therein, an electric motor mounted on the top wall and having its shaft extending vertically through the body and connected to the rotor, a casing mounted on the top wall and enclosing the motor and a float operated electric switch located in the lower portion of the body for controlling the flow of current to the motor.

2. A sump pump comprising a body having top, bottom and side walls, the top wall and the upper portion of the side walls being closed and forming a diving bell, the lower portion of the body being open for the inlet

of water, a pump rotor mounted adjacent the upper side of the bottom wall, an electric motor mounted on the top wall with its axis vertical and having the shaft of its rotor extending through the casing and connected to the pump rotor, the bottom wall having a pump casing around the pump rotor, said casing having an outlet, and a float operated switch connected in the electric circuit of the motor and located in the lower portion of the body.

3. A sump pump comprising a body having top and bottom walls and having openings in its side walls near the bottom wall for the inlet of water, the bottom wall being provided with an inwardly extending offset portion forming a pump casing open at its lower side, a pump rotor within said casing, a removable plate closing the lower side of the pump casing, an electric motor mounted on the body and having its shaft connected to the pump rotor, and a float operated switch for controlling the flow of current to the motor located in the lower portion of the body.

4. A sump pump comprising a body having a closed top wall and side walls which are closed at their upper portions and forming with the top wall a diving bell, the side walls being open at their lower ends forming an inlet for water, the body having a removable bottom plate at its lower end formed with a pump casing open at its lower side, a removable plate for closing the pump casing, the pump casing having a central inlet at its top and a tangential outlet, an electric motor mounted on the top of the body with its rotor in vertical position, the rotor shaft extending through the top wall and through the body and the top of the pump casing, a pump rotor mounted on the shaft within the pump casing and a float operated switch for controlling the flow of current to the motor, said float operated switch being located in the lower portion of the body.

5. A sump pump comprising a body having a closed top wall and side walls which are closed at their upper portions and forming with the top wall a diving bell, the lower portions of the side walls being open forming an inlet for water, the body having a removable bottom plate at its lower end, formed with a pump casing open at its lower side, a removable plate for closing the pump casing, the pump casing having a central inlet at its top and a tangential outlet, an electric motor mounted on the top of the body with its rotor in vertical position, and its rotor shaft extending through the top wall and through the body and the top of the pump casing, a pump rotor mounted on the shaft within the pump casing, a float operated switch for controlling the flow of current to the motor, said float operated switch being located in the lower portion of the

body, and a water tight casing for the motor mounted on the top of the body and having heat radiating flanges on its outer side.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga and State of New York, this 11th day of January, 1929.

MEAD HEDGLON.

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