

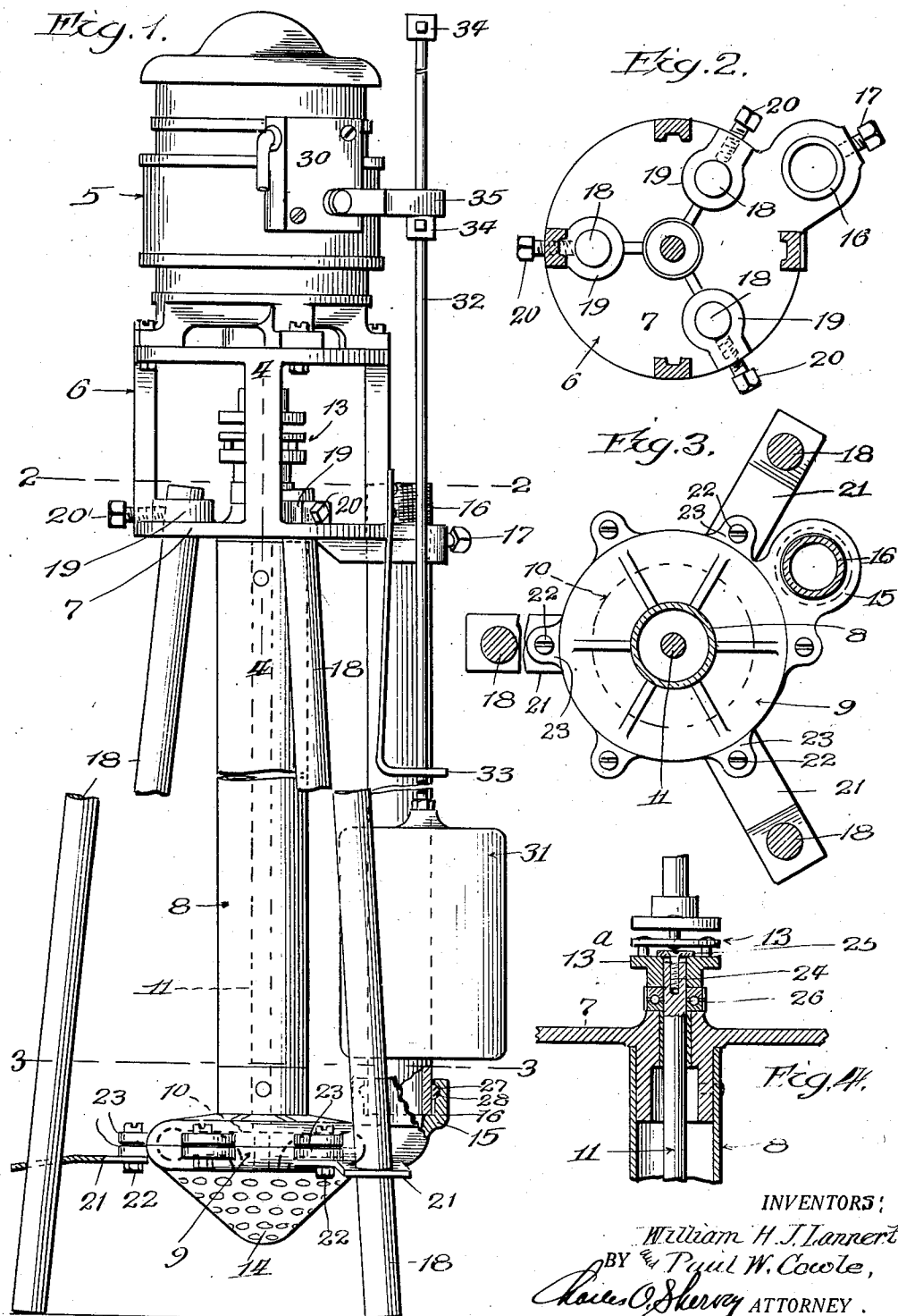
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PUMP

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## UNITED STATES PATENT OFFICE

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## PUMP

Application filed April 30, 1928. Serial No. 273,811.

This invention relates to pumps, and more particularly to motor driven water pumps of the vertical type, such as are used for pumping water out of wells, flooded basements, and the like, although it is to be understood that its use is not limited thereto.

One of the objects of this invention is to provide a pump unit which shall be readily portable, and having adjustable legs for adjustably supporting the pump structure, whereby the latter may be raised or lowered so as to locate the pump inlet at any desired height with respect to the floor upon which the pump structure is placed. Another object is to provide simple and improved means for adjusting the impeller shaft so as to properly locate the impeller within the pump casing.

Another object is to provide a novel connection between the pump casing and discharge pipe. Another object is to provide an electric motor operated pump having a float operated switch mounted directly on the motor casing.

Other objects and advantages will appear in the course of this specification, and with said objects and advantages in view, this invention consists in the several novel features of construction, arrangement and combination of parts hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawing accompanying this specification in which—

Figure 1 is a side elevation, partly broken away, of a pump embodying a simple form of the present invention;

Fig. 2 is a detail horizontal section taken on the line 2—2 of Fig. 1;

Fig. 3 is a detail horizontal section taken on the line 3—3 of Fig. 1; and

Fig. 4 is a detail vertical cross section taken on the line 4—4 of Fig. 1.

Referring to said drawing, which illustrates a simple embodiment of the present invention, the reference character 5 designates an electric motor of conventional form mounted upon and secured to a tripod 6. The tripod is preferably formed with a bottom plate 7, to the lower side of which is se-

cured a tubular housing 8 of suitable length and having secured to its lower end the pump casing 9 of a centrifugal pump, in which is contained an impeller 10 mounted upon an impeller shaft 11 which extends up through the housing and is connected to the motor shaft 12 by a shaft coupling 13.

On the lower side of the pump casing 8 is a screen or perforated hood 14 which covers the inlet to the pump. The pump casing 9 is formed with a discharge outlet member 15 in which is contained the lower end of a discharge pipe 16 that extends parallel with the housing 8 and is secured in the bottom plate 7 of the tripod by a set screw 17.

The pump unit is supported by legs 18, here shown in the form of rods, the upper ends of which extend through bosses 19, formed on the bottom plate 7 and are held therein by screws 20 which are threaded in the bosses and impinge against the upper end portions of the legs 18. Said legs diverge towards the bottom of the structure and the lower ends are spaced apart and held in fixed position by braces 21 which are bolted to the pump casing 8 by bolts or screws 22 that pass through ears 23 formed on the pump casing.

Each brace has a flat horizontal part through which the bolt or screw 22 passes, and the outer or end portion is bent downwardly at a slight angle (see Fig. 1), and formed with a hole to receive one of the legs of the pump structure. The diameter of the hole is substantially the same as the diameter of the leg, whereby when the brace is fastened in place by the bolt, the opposite edges of the hole are caused to impinge against the leg, and thereby securely hold it in place. In case it is desired to raise or lower the pump proper, the set screws 20 and the bolts 22 are loosened which permits the legs to be adjusted lengthwise of themselves, and after the adjustment has been made, the set screws 20 and bolts 22 are tightened, thereby rigidly fastening the legs in their adjusted position.

In order to afford a close adjustment for the impeller with respect to the pump casing

9, an adjustment screw 24 is provided at the upper end of the impeller shaft, which adjustment screw is supported by the lower coupling member 13<sup>a</sup> of the shaft coupling 13, and is threadedly connected with the impeller shaft. As shown, a washer or disk 25 is interposed between the head of the adjustment screw 24 and the coupling member 13<sup>a</sup>. A ball bearing assembly 26 is interposed between the bottom plate 7 of the tripod, and lower coupling member 13<sup>a</sup> and forms the supporting connection between the tripod and impeller shaft. To obtain the proper adjustment of the impeller, the adjustment screw 24 is turned to the right or left, as the case may be, thereby moving the impeller shaft in an endwise direction.

A novel leak proof joint is provided between the lower end of the discharge pipe 16 and the discharge outlet member 15 of the pump casing, and, as shown, said joint is provided by forming an annular groove 27 in the inner face of the upright wall of the part 15 and inserting a compressible packing ring 28 therein whose internal diameter is less than the external diameter of the discharge pipe. In assembling the parts, the discharge pipe is forced down through the hole in the ring 28, and the body of the ring is thereby compressed in the groove, making a water tight joint between the pump casing and discharge pipe.

The pump structure being readily portable, and with a view toward simplifying the electric connections for the pump motor, the electric switch 30 for the motor is mounted upon the side of the housing or casing of the motor, as shown in Fig. 1. In order to automatically control the operation of the pump, a float 31 is provided which is carried by a float rod 32 guided in a bracket 33 mounted on the tripod 6, said float rod having buttons 34 secured at its upper end and arranged to engage with and actuate the switch lever 35 of the electric switch 30.

Instead of supporting the pump structure by the legs 18, said legs and braces may be dispensed with and a floor plate, such as is shown and described in a co-pending application, Serial No. 273,784, filed on even date herewith, may be used whenever it is desired to support the pump at a considerable distance above the bottom of a well or other reservoir, as is more fully set forth in said application.

In use, the legs are adjusted so as to locate the pump proper as close to the floor upon which the pump structure is standing as is desired. When the water rises and raises the float sufficiently, the lower button 34 engages with the switch lever 35 and closes the circuit to the motor, thereby starting the same, whereupon the impeller is rotated and the water discharged through the discharge pipe 16. As soon as the level of the water

falls sufficiently, the float lowers and opens the switch when the upper button 34 encounters the switch lever 35, thereby stopping the motor.

We claim as new, and desire to secure by Letters Patent:

1. In an electric motor driven pump unit, the combination of a tripod, an electric motor supported and secured thereon, a housing for an impeller shaft secured to said tripod and extending down therefrom, a pump secured to the lower end of said housing, and supporting legs adjustably and removably secured to said tripod and forming the support for the entire unit.

2. In an electric motor driven pump unit, the combination of a tripod, an electric motor supported and secured thereon, a vertical housing for an impeller shaft secured to the tripod and extending down therefrom, a pump casing on the lower end of said housing, an impeller shaft in said housing and coupled to the motor, supporting legs adjustably secured in said tripod and extending down beyond the bottom of said pump casing, and apertured braces secured to said pump casing and surrounding and frictionally engaging said legs.

3. In an electric motor driven pump unit, the combination of a tripod formed with leg receiving bosses, an electric motor supported by and secured on said tripod, a housing for an impeller shaft secured to said tripod and extending down therefrom, a pump secured to the lower end of the housing and driven by said motor, and supporting legs secured in said bosses and extending down therefrom beyond the pump and forming the support for the entire unit.

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