

Feb. 1, 1927.

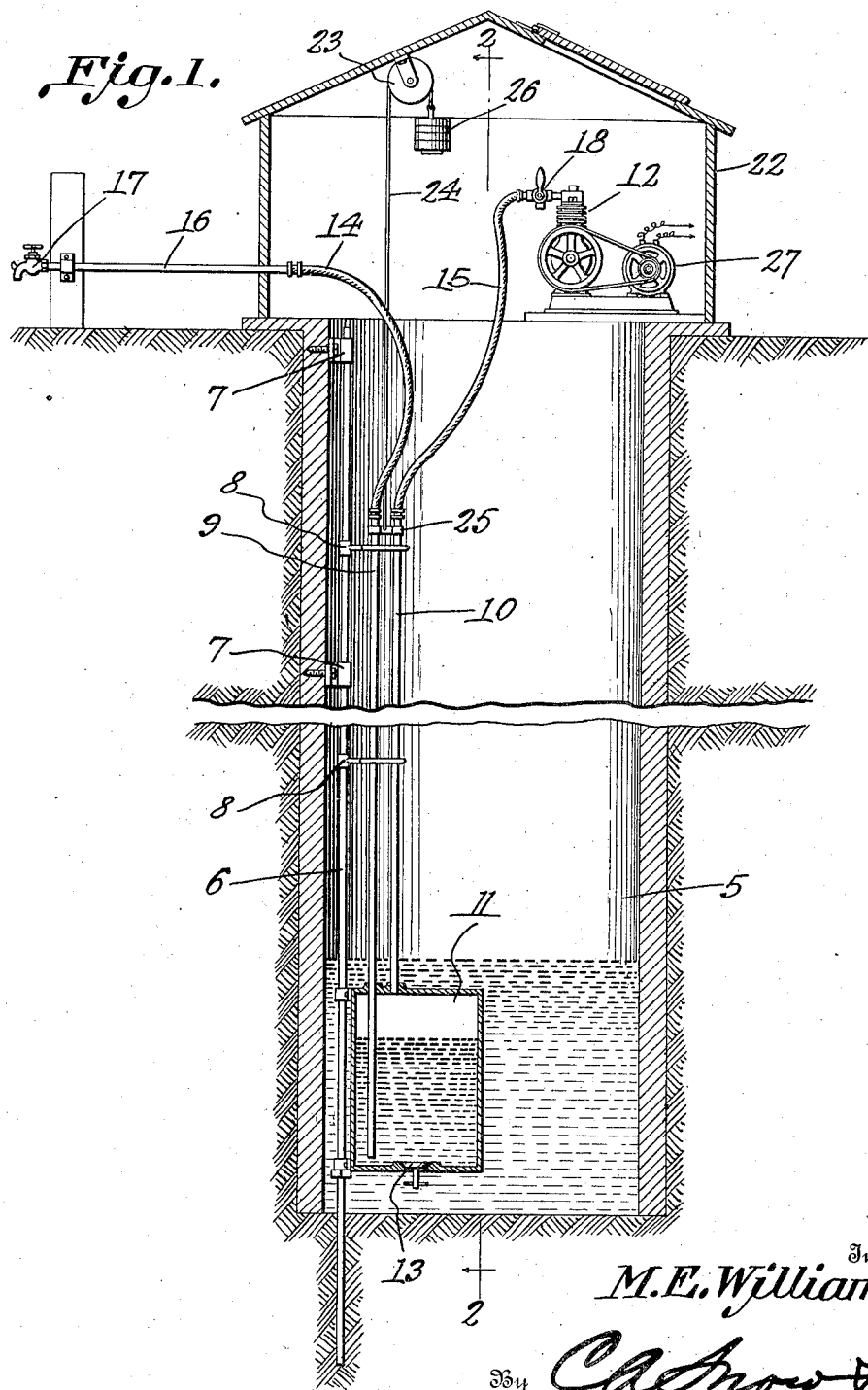
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1,616,017

WELL PUMP

Filed April 8, 1925

2 Sheets-Sheet 1



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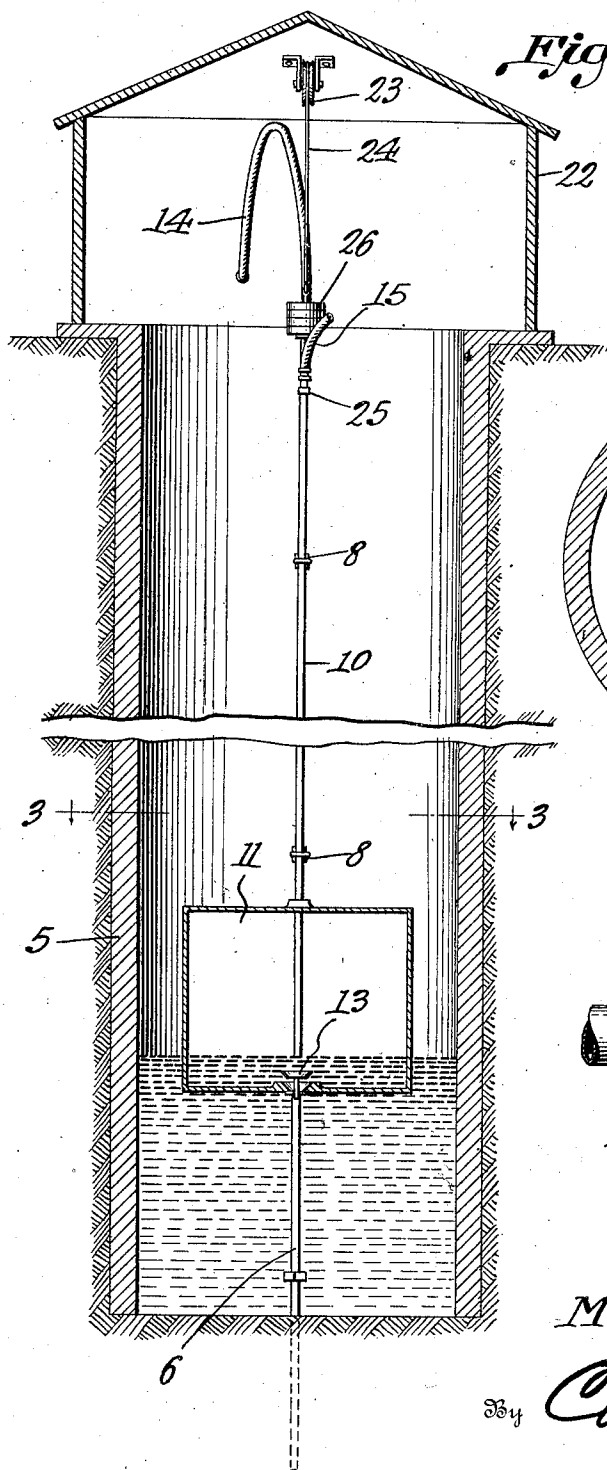
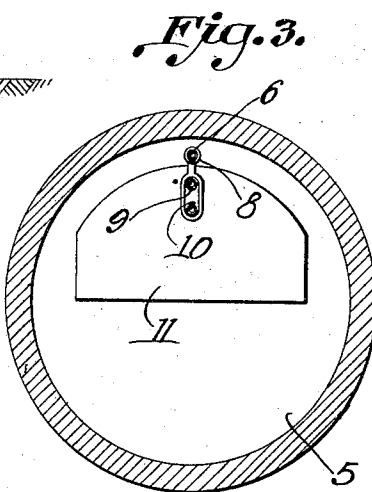
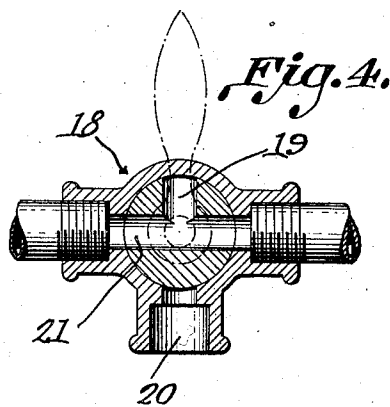
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WELL PUMP

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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WELL PUMP.

Application filed April 8, 1925. Serial No. 21,634.

This invention relates to pumps, and more particularly pumps operated by air pressure.

The primary object of the invention is to provide a vertically movable tank constructed to automatically fill as it becomes empty, and one wherein the valves will automatically close when the tank is filled, to allow the air pressure to act directly on the water within the tank.

Another object of the invention is to provide means for directing the tank vertically to insure against lateral movement of the tank while filling or discharging the contents thereof.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a diagrammatic view disclosing a pump constructed in accordance with the invention as positioned in a well.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a sectional view through a three-way valve forming a part of the pump construction.

Referring to the drawings in detail, the reference character 5 indicates a well in which the device forming the subject matter of the present invention is positioned.

Secured within the well and spaced from the well casing is a guide rod indicated at 6, bracket members 7 being provided and secured to the casing for supporting the guide rods 6.

Secured to the guide rod 6 are bearing members 8 which are provided with eyes to accommodate the pipes 9 and 10 respectively, the pipe 9 being relatively long extends into the tank 11 terminating at a point adjacent to the bottom thereof so that water in the

tank may pass outwardly through the pipe 9.

The pipe 10 constitutes the inlet pipe through which air from the pump 12 may pass to the tank 11, the air pressure being relied upon for forcing the liquid from the tank 11.

A valve member 13 controls the passage of water into the tank 11 and as shown, is disposed in the bottom wall of the tank 11 so that the tank 11 when it has moved to the surface of the water in the well will fill, by reason of the valve 13 opening automatically under the pressure of the incoming water. Positioned on the upper ends of the pipes 9 and 10 are flexible tubes 14 and 15 respectively, the tube 14 establishing communication between the pipe 9 and the pipe 16 which has a spigot 17 at the outer end thereof so that water may be drawn therefrom. The tube 15 establishes communication between the pump 12 and pipe 10, there being provided a three-way valve 18 for controlling the passage of air to and from the tank, it being understood that when the valve member 18 is moved to bring the outlet port 19 thereof in communication with the opening 20, the central opening 21 of the plug will establish communication between the port 19 and pipe 15 to the end that air displaced by water entering tank 11 will be exhausted through the opening 20.

Within the housing 22 which is positioned at the mouth of the well, is a pulley 23 over which the cable 24 operates, and as shown, the cable has connection with the arm 25 that is secured to the pipes 9 and 10. A weight 26 is carried at the free end of the cable 24 and is designed to counter-balance the tank 11 and contents thereof, so that the tank will rise to the surface of the water in the well when it has been emptied.

A suitable mechanism such as an electric motor 27 may be provided for operating the pump 12 for compressing air in the tank 11 for forcing the fluid contained therein through the pipes 9 and 16 to the spigot 17.

I claim:—

In a pump of the class described, a guide rod adapted to be secured within a well, and adapted to extend throughout the length of

the well, a tank, bearing members on the tank and engaging the guide rod to support the tank, said tank having a one-way valve in the bottom thereof for admitting fluid
5 to the tank, an inlet pipe extending into the tank, an outlet pipe extending into the tank, bearing members secured to the pipes above the tank, said bearing members adapted to operate over the guide rod, means for coun-

terbalancing the weight of the tank, means 10 for forcing air into the tank, and a pipe in communication with the outlet pipe for discharging liquid from the tank.

In testimony that I claim the foregoing as my own, I have hereto affixed my sig- 15 nature.

MARTIN E. WILLIAMS.