

No. 641,229.

Patented Jan. 9, 1900.

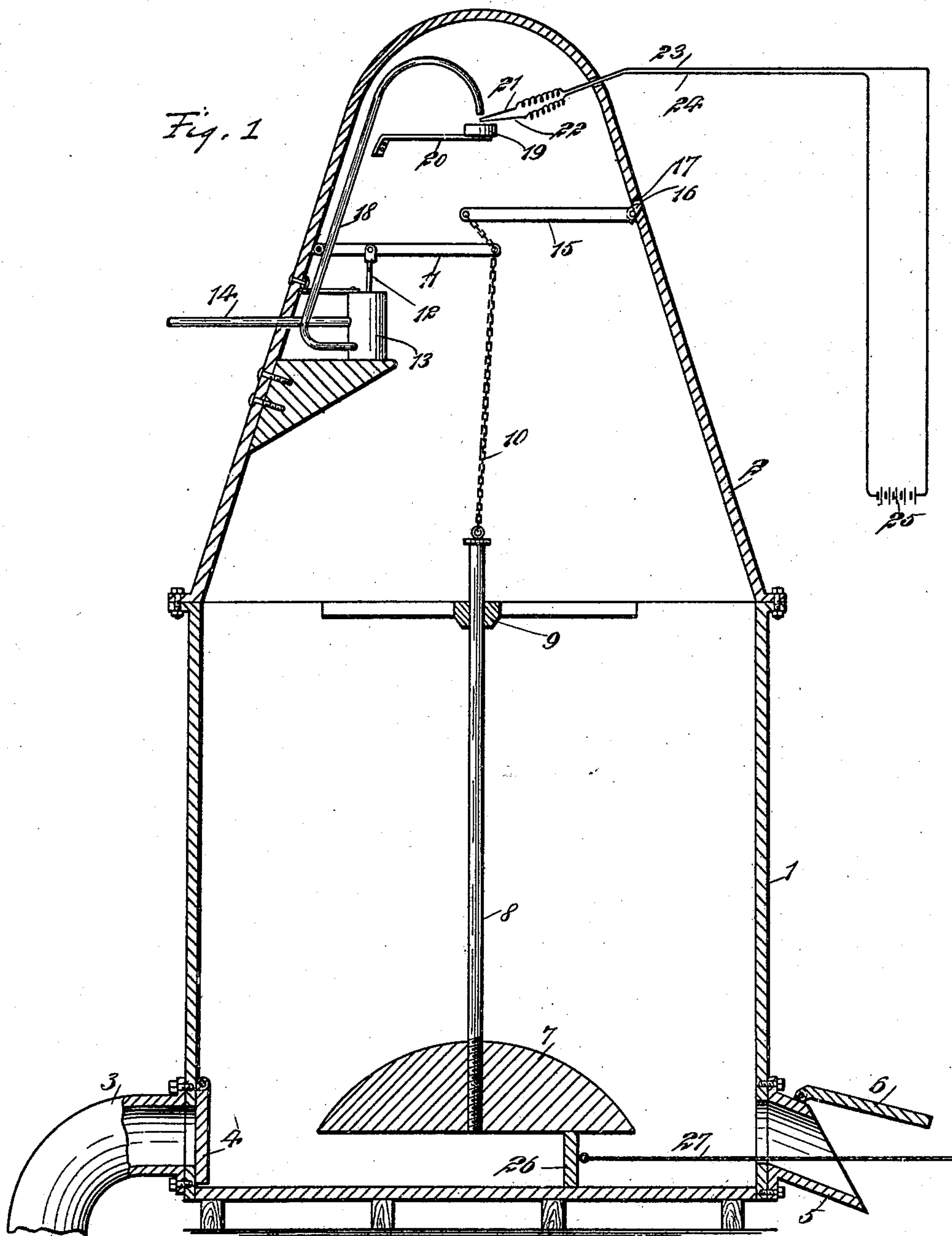
A. L. REYNOLDS.

PUMP.

(Application filed May 17, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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INVENTOR

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ATTORNEYS.

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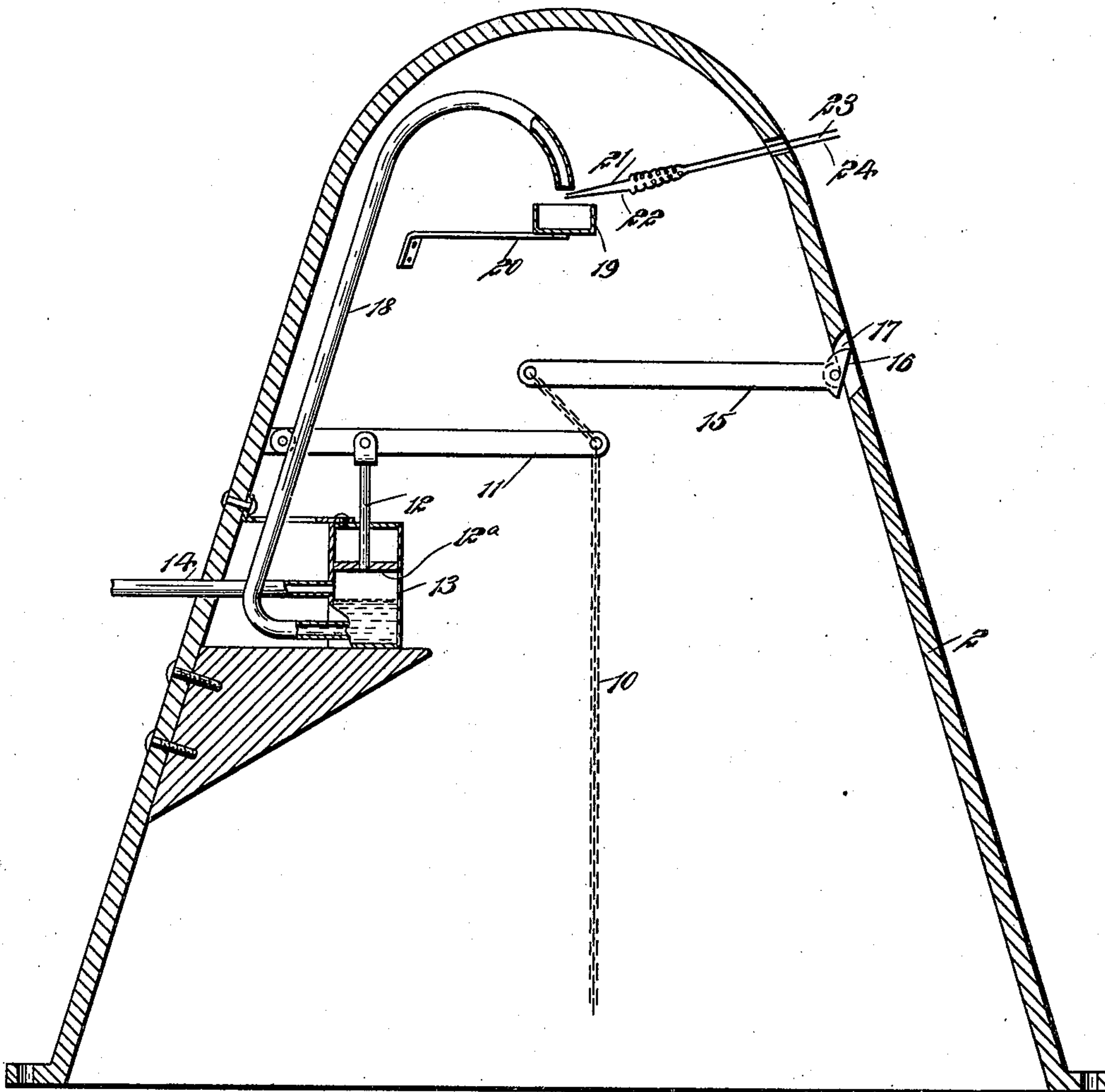
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(Application filed May 17, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ALVA LEEMAN REYNOLDS, OF SANTA ANA, CALIFORNIA.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 641,229, dated January 9, 1900.

Application filed May 17, 1899. Serial No. 717,178. (No model.)

*To all whom it may concern:*

Be it known that I, ALVA LEEMAN REYNOLDS, of Santa Ana, in the county of Orange and State of California, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

This invention relates to improvements in pumps for drawing water from wells or the like; and the object is to provide a pump acting on the vacuum principle and which after once being started will continue in operation without further attention.

I will describe a pump embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section of a pump embodying my invention, and Fig. 2 is a section of the upper portion thereof.

The pump comprises a cylinder 1, having a dome-shaped top 2 and closed at the bottom. An inlet-pipe 3, designed to extend into a well or the like, communicates with the interior of the cylinder near the bottom, and the inlet is controlled by an inwardly-opening valve 4. At the opposite side is an outlet-pipe 5, controlled by an outwardly-opening flap-valve 6. Arranged in the cylinder is a float 7, from which a stem 8 extends up and is guided through a spider 9, arranged in the cylinder. This stem 8 has a flexible or chain connection 10 with a lever 11, arranged in the dome-shaped top 2 of the cylinder and having connection with a piston-rod 12, the piston 12<sup>a</sup> being arranged in an oil-pump cylinder 13, into which a feed-pipe 14 leads, the said feed-pipe being extended from a tank for containing gasoline, but which it is not deemed necessary to show herein. The stem 8 also has connection through the chain 10 with a lever 15, pivoted to the inner side of the dome-shaped top 2, and having a valve 16 at its outer end for controlling an air-inlet opening 17 through the wall of said dome-shaped top.

From the lower portion of the pump 13 a discharge-pipe 18 leads upward and is intended to discharge oil into a fire-pan 19, supported on a bracket 20, secured to the inner side of the dome-shaped top 2. Arranged over the fire-pan 19 are electrodes 21 22, which

have connections 23 24 with a battery 25, these electrodes 21 and 22 being designed to produce a spark to ignite the gasoline. Any suitable device may be employed in the circuit to make and break the current to produce the spark. In the drawings a prop 26 is shown as supporting the float 7, and from this prop 26 a rope or cord 27 extends out through the outlet 5. When it is desired to start the pump, the prop 26 is to be drawn outward and through the outlet 5, allowing the float 7 to drop to the bottom of the cylinder. This downward movement of the float will draw downward on the lever 11 and also draw the lever 15 downward to close the valve 16. As the lever 11 moves downward the piston in the pump-cylinder 13 will force a charge of gasoline through the pipe 18 into the pan 19, where it will be ignited by a spark between the electrodes 21 and 22. The explosion of the gasoline will force the air contained in the pump out through the outlet 5, and when the air shall have been expelled and a vacuum is created in the pump the valve 6 will be drawn tightly to its closed position and the valve 4 will be opened, so that the suction will draw the water up through the pipe 3 and into the pump. The rising water will, of course, move the float 7 upward until the upper end of the stem 8 engages with the lever 11, moving it to its normal or upward position, and also by engaging the lever 15 will move it to open the valve 16, permitting the entrance of air to the upper side of the water. The air entering will let the water outward through the outlet 5, of course opening the valve 6 and closing the valve 4. Then after discharging the water the float 7 by moving down to the bottom of the pump will operate the parts 11 and 15, as before described, and another explosion of gasoline will take place to form a vacuum in the pump to be again filled with water, as first described, and this operation will continue without attention, excepting as the battery requires attention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A pump, comprising a vacuum-cylinder, having a valve-controlled inlet and a valve-controlled outlet, a float arranged in the cylinder, an oil-pump arranged in the cylinder



and having operative connection with the float, an oil-receiver in the cylinder, means for igniting the oil therein, and an air-inlet, controlling valve having connection with the float, substantially as specified.

2. A pump, comprising a vacuum-cylinder, having a valve-controlled inlet and a valve-controlled outlet, a float movable vertically in the cylinder, a stem extended from the float, a spider in the cylinder and through which the stem is movable, an oil-pump in the cylinder and having operative connection with the float-stem, a firing-pan in the cylinder and adapted to receive oil from the oil-pump, electrodes arranged adjacent to the pan, a source of electricity with which the electrodes are connected, and an air-inlet-controlling valve adapted to be operated by the float, substantially as specified.

3. A vacuum-pump, comprising a cylinder having a valve-controlled inlet and a valve-controlled outlet, a float in the cylinder, an oil-pump in the cylinder, a firing-pan in the cylinder, a pipe leading from the pump to the firing-pan, electrodes arranged over the firing-pan and having connection with a source of electricity, a lever to which the oil-pump piston is connected, a flexible connection between said lever and the stem of a float, and another lever having a valve at its end for controlling an air-inlet, the said other lever also having connection with the float-stem, substantially as specified.

ALVA LEEMAN REYNOLDS.

Witnesses:

FRANK STOUT,  
E. SMITH.