

J. H. OWEN.

PUMP.

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Fig 3

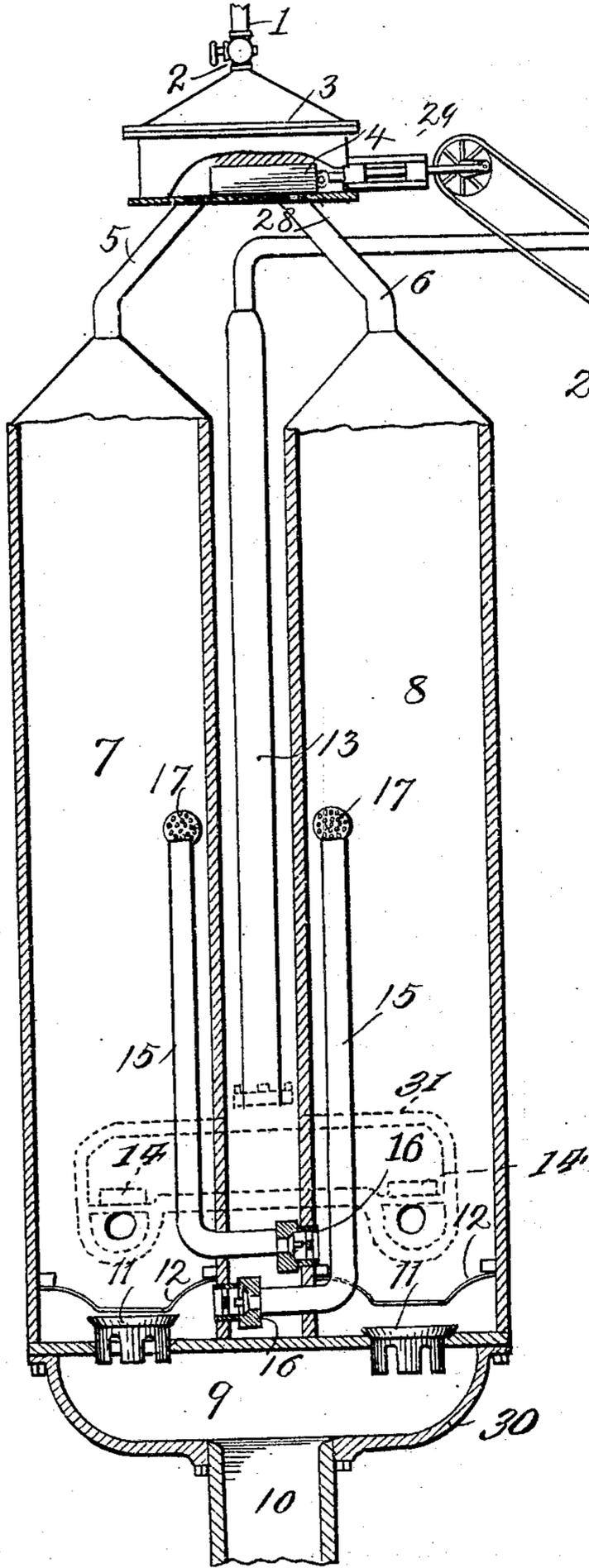


Fig. 1.

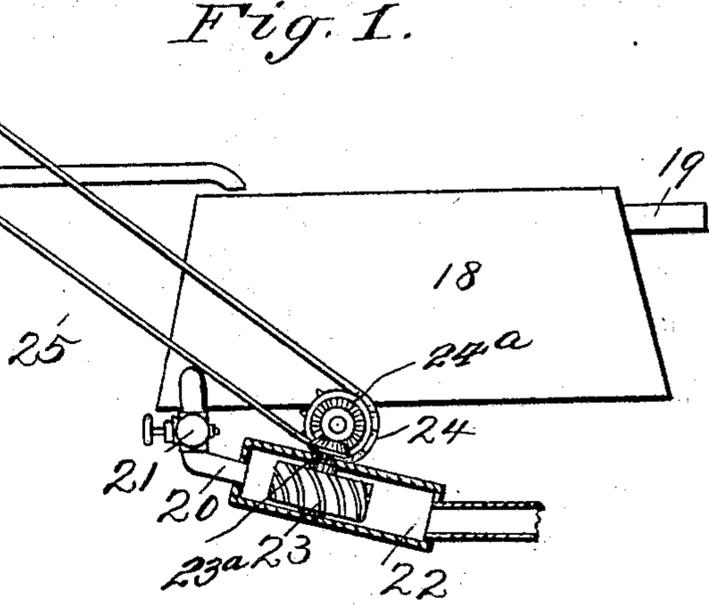
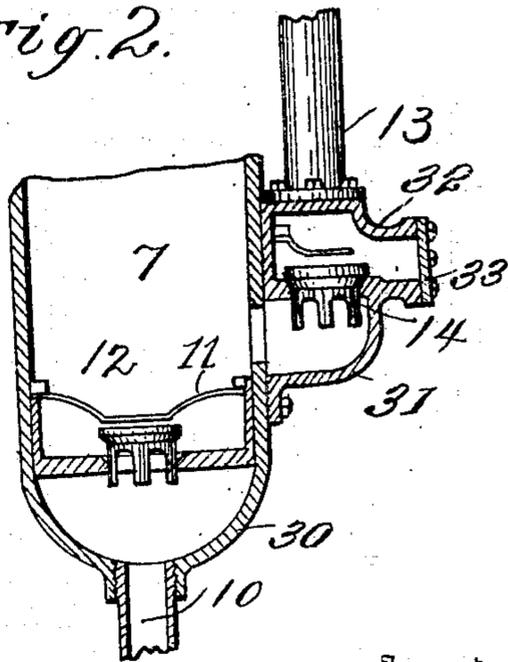


Fig. 2.



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Witnesses

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PUMP.

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To all whom it may concern:

Be it known that I, JOHN HENRY OWEN, citizen of the United States, residing at Stuttgart, in the county of Arkansas and State of Arkansas, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention has for its object a simple, durable and efficient construction of pump embodying a pair of alternately acting water chambers connected to a common discharge pipe which is designed to convey water into operative relation with a water-wheel or similar motor, the latter being in turn operatively connected to a slide valve controlling the admission of live steam to the two water chambers alternately, a spray pipe being arranged in each cylinder in such a manner that as the steam enters the chamber that is full of water, water is sprayed in the other chamber, thereby suddenly condensing the steam and forming a partial vacuum so as to fill such chamber with water as the other chamber is discharging.

The invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and then point out the novel features in the appended claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a sectional side elevation of my improved pumping apparatus; Fig. 2 is a detail sectional view thereof through one of the cylinders at right angles to Fig. 1, illustrating only the foot portion of the pump. Fig. 3 is an enlarged detail view of a portion of the valve operating mechanism.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawing, the numeral 1 designates a steam pipe leading from any boiler or other suitable source of supply (not shown) and provided with a globe or other controlling valve 2. The pipe 1 leads into a steam chest 3 in which a slide valve 4 is mounted to reciprocate in order to alternately open and close the two ports leading from said valve chest to the pipes 5 and 6.

The pipes 5 and 6 lead into the two water chambers 7 and 8 that are connected at their lower ends to the foot 9 of the pump to which the suction pipe 10 is also connected.

The water chambers 7 and 8 are each provided with an upwardly opening water inlet valve 11 limited in its opening movement by a cross bar 12 secured in the lower end of the chamber and a discharge pipe 13 is operatively connected to both of the chambers 7 and 8 by branches in which are outlet valves 14. Each chamber contains a spray pipe which is vertically disposed therein as shown and which is turned laterally at its lower end and extended through the wall of the chamber with its extremity secured to a check valve casing 16, the valve of which governs a port in the lower end of the other chamber. The upper end of each spray pipe 15 has a rose 17 or other form of spray nozzle, so as to finely distribute the water issuing therefrom to secure the proper spraying effect. The pipe 13 is arranged to discharge into a tank or reservoir 18 which may be provided with a draw-off pipe 19 leading to any desired point. In addition to the draw-off pipe 19, the tank 18 is provided with a pipe, the passage therethrough being controlled by a globe or other valve 21, and said pipe 20 leads into a preferably inclined trough 22 in which a water-wheel 23 is mounted, the water flowing from the tank 18 operating said wheel.

On one end of the shaft of the water-wheel 23 is a bevel pinion 23^a meshing with a corresponding pinion 24^a on the same shaft with a sprocket-wheel 24. A sprocket chain 25 connects the wheel 24 with a similar wheel 26 on a crank shaft 27. This shaft is journaled in the outer ends of guides 28 secured to and projecting horizontally from the valve chest 3. A cross head 29 connects the slide valve 4 with the crank of the shaft 27 through the instrumentality of a pitman as shown.

In the practical operation of my improved water elevating or pumping apparatus, the pump is run by moving the sprocket chain 25 manually until there is water in the tank 18 flowing therefrom to the trough 22. The water flowing through the trough will manifestly actuate the water-wheel 23, the speed thereof being controlled by the valve 21, and

as the water-wheel operates, it will turn the crank shaft 27 and reciprocate the slide valve 4 so as to admit steam from the pipe 1 into the water chambers 7 and 8 alternately. The parts are so arranged that the pump will make two pulsations to one revolution of the crank shaft. The valve 4 therefore will admit steam to and from each of the chambers, and as the steam enters the chamber that is full of water, it will spray the water into the other chamber so as to effect a sudden condensation of the steam in such chamber and thereby form a suction while the other chamber is discharging.

My improved water elevator or pumping apparatus is designed particularly for irrigating land, and the pump may be installed in a pit with the steam chest on the top of the ground, but it is to be understood that the invention is not limited to this application, as the invention is equally applicable to a variety of uses in elevating water.

A suction chamber 30 is common to both water chambers 7 and 8 and is attached to the lower ends thereof in any substantial way. The valved controlled inlets 11 are formed in the top of the suction chamber 30, said top also constituting the bottom of the water chambers, and upon removal of the suction chamber from the water chambers, access is readily had to the check valve controlling the inlet openings thereof. An outflow compartment 31 is secured to the lower portions of the water chambers and is arranged at one side thereof, said compartment being provided with an end 32 opposite each check valve 14. Said end closes by means of a plate 33 which when removed admits of ready access to the interior of the outflow compartment either for repairing the check valves 14, removing obstructing matter, or for any other purpose.

Having thus described the invention, what is claimed as new is:

The herein described means for raising water, the same consisting of a pair of vertically arranged water chambers 7 and 8, a suction chamber 30 common to both water chambers and fitted to the lower ends thereof, and provided in its top with valve-controlled inlets opening into said water chambers, a suction pipe leading from the suction chamber, an outflow compartment common to both water chambers and connected to the lower portions thereof and having communication with each, a discharge pipe leading from the outflow compartment, upwardly opening check valves arranged in the outflow compartment to control communication between the discharge pipe and the water chambers, spray pipes, one having valved connection with the water chamber 7 near its lower end and extended upward into the water chamber 8 and terminating in a spray nozzle, and the other spray pipe having valved connection with the lower portion of the water chamber 8 and extended upward into the water chamber 7 and terminating in a spray nozzle, a steam chest having a pipe connection with the upper portion of each water chamber, a valve arranged to operate in the steam chest for alternately controlling admission of steam into the water chambers, a waterwheel controlled by the outflow from the aforesaid discharge pipe, and a crank shaft operated by means of said waterwheel and adapted to actuate the said valve.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HENRY OWEN. [L. S.]

Witnesses:

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R. B. FANTZ.