

(No Model.)

J. P. WINTZ.
PUMP.

No. 579,855.

Patented Mar. 30, 1897.

FIG. 1.

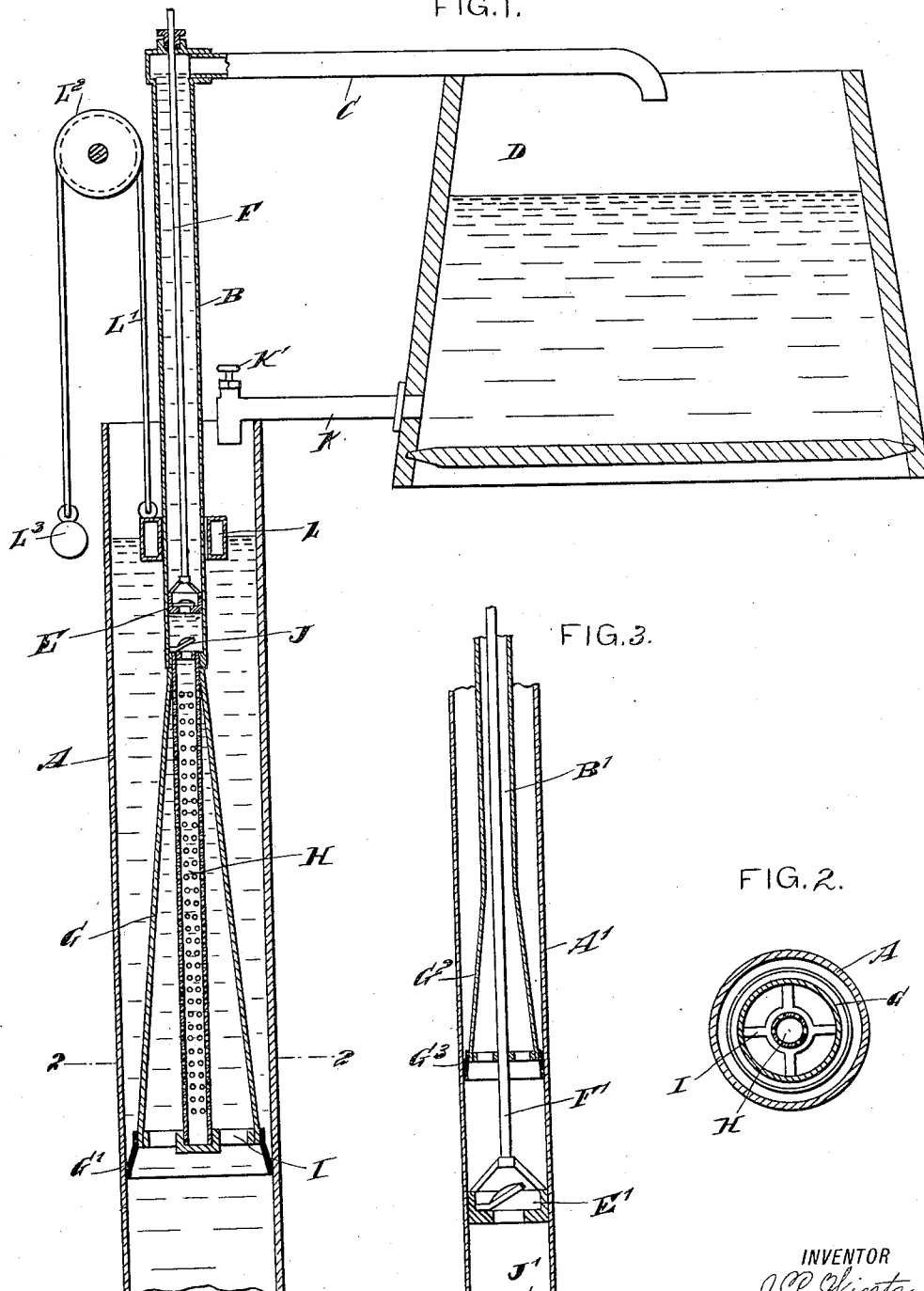


FIG. 3.

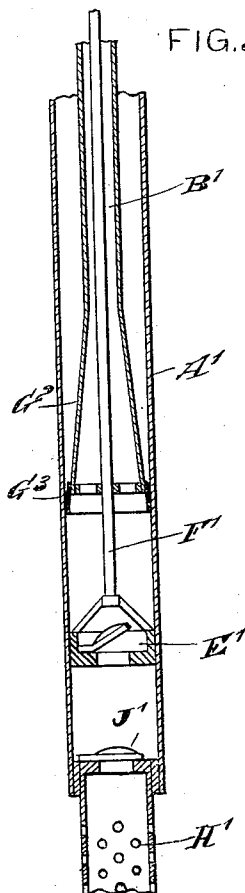
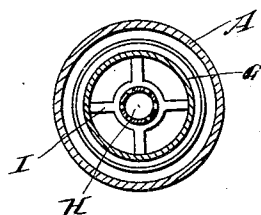


FIG. 2.



WITNESSES:

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JAMES PHILIP WINTZ, OF SOUR LAKE, TEXAS.

PUMP.

SPECIFICATION forming part of Letters Patent No. 579,855, dated March 30, 1897.

Application filed October 3, 1896. Serial No. 607,739. (No model.)

To all whom it may concern:

Be it known that I, JAMES PHILIP WINTZ, of Sour Lake, in the county of Hardin and State of Texas, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved pump for effectively pumping oil or quicksand from wells troubled with quicksand.

The invention consists principally of a pipe extending into the well-casing and provided at its lower end with a funnel the base of which engages the wall of the casing to divide the upper end of the latter from the lower end thereof.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement as arranged for pumping oil. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1, and Fig. 3 is a sectional side elevation of the improvement as arranged for pumping quicksand.

Into the well-casing A extends a pipe B, connected at its upper closed end with a discharge-pipe C for discharging the oil and water into a tank D, as indicated in Fig. 1. The lower end of the pipe B forms a pump-barrel, in which operates a valved plunger E, held on a plunger-rod F, extending upwardly through the pipe B and through the stuffing-box thereof to the outside, the plunger-rod being connected with a suitable mechanism for imparting a reciprocating motion to the plunger E in the pipe B.

From the lower end of the pipe B extends downwardly a funnel G, provided at its base with a valve G', of leather, rubber, or other suitable material, and engaging the inner surface of the casing A, as indicated in Fig. 1, to divide the said casing into an upper and lower compartment.

The valve G' extends downwardly and outwardly from the base of the funnel G, and as it is made of a flexible material it can open

sufficiently on the inner surface of the casing A to permit a downflow of the water from the upper compartment into the lower compartment. The valve when closed prevents an upflow of oil, sand, and water from the lower compartment into the upper compartment, as the valve G' by an upward pressure of the oil, sand, and water expands to the inner surface of the casing, and in so doing completely disconnects the two compartments while the pressure lasts. From the lower end of the pipe B also extends a perforated suction-pipe H, having its lower end placed in a spider I, secured to the lower end of the funnel G. The spider I has a central cap for closing the lower end of the pipe H, so that the oil and water can only pass into the pipe H through the perforations thereof.

On the extreme upper end of the pipe H and within the lower end of the pipe B is arranged an upwardly-opening suction-valve J, through which the oil and water can pass on the upstroke of the plunger E. When the latter is on the downstroke, the valve J closes, and the previously-drawn-in water and oil passes through the valve in the plunger E to the upper end of the pipe B to be finally discharged through the pipe B into the tank D.

From near the bottom of the tank D extends a pipe K for discharging the water contained in the said tank into the upper compartment of the casing A, and the amount of water contained in the latter is indicated by a float L, fitted to slide on the pipe B and rising and falling with the water contained in the upper end of the casing A. The float is connected with a rope L', extending upwardly and passing over a pulley L², with a weight or other indicating device L³ on the outer end of the rope for indicating the height of the water in the upper compartment of the casing A.

When the pump is working, the water flowing from the tank D by way of pipe K into the upper compartment of the casing A can pass the valve G' into the lower compartment to mix with the heavy oil and cause the latter to rise to the funnel and to pass into the pipe H to be drawn up by the plunger E. Thus by returning the water from the tank to the casing the latter can be kept full during the pumping and to bring up the oil within pump-

ing range, the funnel directing the oil and water to the perforated pipe H. In case a well has no water it is necessary to first fill it with water from above to bring the water back into pipe H for the plunger to lift it and to force it up to the separating-tank.

Now it will be seen that by the arrangement described the oil and water contained in the lower compartment of the casing A is pumped through the perforated pipe H, the pipe B, and pipe C into the tank D, in which the water and oil separate, the water being discharged back into the upper compartment of the casing A by the pipe K. The latter is preferably provided with a valve K' for regulating the flow of water from the tank to the casing. The inverted funnel G serves the double purpose of keeping back the sand by the aid of the valve G' and as a medium of protection to the perforated suction-pipe H.

As illustrated in Fig. 3, the casing A' is provided at its lower end with a perforated suction-pipe H', having a suction-valve J' at its upper end. The pipe B' extends into the casing A' and is formed at its lower end with a funnel G², having a flexible connection G³ for the interior surface of the casing A. A plunger E' operates between the connection G³ and the valve J', and the said plunger is provided with a plunger-rod F' for imparting a reciprocating motion to the said plunger. Now in this case the sand passes through the perforated suction-pipe H' and plunger E' to the funnel G² and up through the same to the pipe B', from which the sand is discharged to a suitable place.

The flexible connection G³ has the same function as the valve G, previously mentioned, that is, it permits a downflow of the water for filling the lower compartment of the casing to insure a proper working of the plunger and to cause the oil to rise to the lifting range of the plunger E, the funnel G², with its connection G³, directing the pumped oil and sand to the pipe B', and discharging the pumped-up matter at its upper end. For pumping sand the apertures in pipe H' are made sufficiently large to permit the sand to pass into the pipe, but to keep out gravel and coarser material liable to clog the pump.

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

1. A pump provided with a casing, a discharge-pipe extending into the said casing, and a valved separating device for dividing the said casing into an upper and a lower compartment, the said device being arranged to direct the rising liquid to the said pipe and

to permit of filling the lower compartment from the upper one, substantially as shown and described.

2. A pump provided with a casing, a discharge-pipe extending into the said casing, a funnel held in the lower end of the said pipe and provided at its base with an annular flexible valve adapted to engage the inner surface of the said casing to form an upper and a lower compartment in the said casing, the said funnel and its valve being arranged to direct the liquid rising in the lower compartment to the said pipe and to permit of filling the lower compartment from the upper one, substantially as shown and described.

3. A pump comprising a casing having an upper and a lower compartment, a discharge-pipe for the pumped matter, and extending into the said casing, a funnel held on the said pipe and provided at its base with a valve arranged to permit water to flow from the upper compartment to the lower compartment, a plunger for pumping the liquid from the lower compartment up through the said pipe, and a separating-tank into which discharges the said discharge-pipe and which has connection with the said upper compartment, substantially as shown and described.

4. A pump, comprising a casing, a pipe for discharging the water and sand and extending into the said casing, a funnel held in the lower end of said pipe and having its base engaging the wall of the casing, to separate the latter into an upper and lower compartment, a plunger operating in the said pipe, a perforated suction-pipe extending in the said funnel and opening into the pipe, the lower end of the said suction-pipe being closed, and a valve of flexible material forming the connection between the said casing and the base of the said funnel, substantially as shown and described.

5. A pump, comprising a casing, a pipe for discharging the water and sand and extending into the said casing, a funnel held on the lower end of the said pipe, a valve forming a flexible connection between the base of the said funnel and the inner surface of the casing, to separate the latter into an upper and lower compartment, a water-supply pipe for the upper compartment of the said casing, and an indicator having a float operating in the said compartment, for indicating the height of the water in the latter, substantially as shown and described.

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Witnesses:

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