J. S. BAKER.
Lift-Pump.

No. 197,811. Patented Dec. 4, 1877.

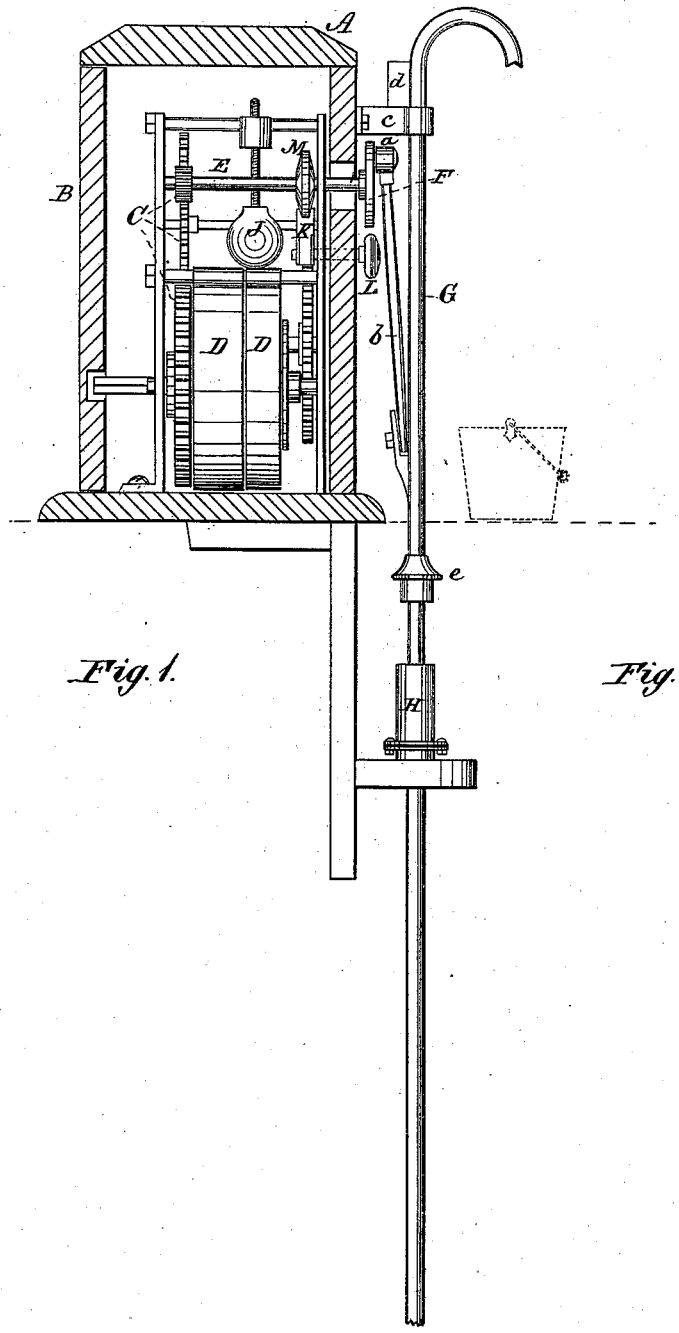

Fig. 1.

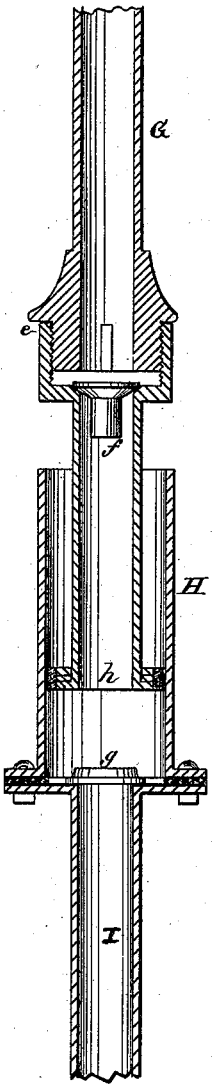

Fig. 2.

WITNESSES:
W. W. Hollingsworth
Edw. W. Byrn

INVENTOR:
Jacob S. Baker
BY
Munn & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JACOB S. BAKER, OF NEW FREEDOM, PENNSYLVANIA.

IMPROVEMENT IN LIFT-PUMPS.

Specification forming part of Letters Patent No. **197,811**, dated December 4, 1877; application filed October 23, 1877.

To all whom it may concern:

Be it known that I, JACOB S. BAKER, of New Freedom, in the county of York and State of Pennsylvania, have invented a new and Improved Combined Pump and Motor; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side view of the devices, with the case in vertical section; and Fig. 2 is an enlarged sectional view of the pumping devices.

The object of my invention is to so combine a pump with a motor for operating the same as to permit of the storage of power in said motor, and afterward allow it to be expended for the operation of the pump from time to time, as occasion requires. In attaining this end a set of spur-wheels is arranged in a suitable case, and geared so as to be driven either by a heavy coil-spring or weight. To one of the rotating shafts of the gear-wheels is attached, outside of the case, a disk and wrist-pin, which latter, through a connecting-rod, reciprocates the pump-piston, the latter being made hollow and bent around into a spout at the top, so as to form a conduit for the water from the cylinder of the pump-tube, which is located below in the wall. To compensate for the increased work of the motor on the upward stroke in lifting the hollow piston full of water, a counter-balance is employed upon one of the shafts to render the action of the motor uniform; and to start and stop the action of the same a detent is employed, as hereinafter more fully described.

In the drawing, A represents the upright motor-case, which rests upon the surface of the ground, and is provided with a door, B, for access to the mechanism within, either for winding up, oiling, or repairing the same. C is a set of spur-wheels arranged in a suitable frame within the case, and driven by one or more strong coil-springs, D. Instead of using these springs, however, a weight may be employed having a supporting-cord wound about a drum upon the same shaft which carries the springs. E is a shaft attached to the last spur-wheel of the train, and extended at one end through the case. Upon this end of said shaft is fixed a disk, F, having a wrist-pin, *a*, which latter is connected with the hollow piston-rod G by the pitman *b*. Said hollow piston-rod is bent around at the top to form a spout, and is held also at its upper end in a guide, *c*, a flange, *d*, being formed upon the rear side of said piston-rod to keep it from turning. The lower portion of this hollow rod is provided with a valve-chamber, *e*, containing an upwardly-opening valve, *f*, and terminates at its end in a piston, *h*, which fits the pump-cylinder H and reciprocates therein. In the bottom portion of this pump-cylinder is arranged an upwardly-opening valve, *g*, which controls the flow of water through the communicating well-tube I below.

Now, as the driving mechanism causes the piston-rod to reciprocate on the upward stroke, the valve *f* in the hollow piston closes, while the piston below draws the water up through the valve *g* in the cylinder, filling the latter. Now, as the piston descends, the valve *g* closes, and the water above it in the cylinder is forced up through the valve in the hollow piston-rod, and out at the top of the same through the curved spout.

In the operation of the pump, it will be seen that during the upward movement of the piston-rod the motor lifts the weight of the same and the column of water contained therein, while for the downward movement of the piston-rod the weight of the same and the column of water is added to and co-operates with the energy of the motor, which would cause the action of the device to be irregular. To obviate this I place upon an arm on the shaft E a counter-weight, J, which is so arranged as to be descending when the pump-piston is rising, and thus assists the motor in elevating the same, and which, in rising as the piston descends, detracts from the combined effect of the motor and the gravity of the piston-rod to render the action of the motor upon the pump perfectly uniform. To adapt the counter-balance to the different tensions of the spring when just wound up or nearly run down, it is made adjustable upon its arm, and a second adjustable section is placed upon an arm upon the opposite side.

The device as thus described is intended to

be wound up either by hand or power to charge the motor, which is held charged or prevented from expending itself by brake or stop K, which may be turned by its thumb-piece L, so as to bind against the roughened periphery of a disk, M, fixed upon the shaft E. Now, as occasion requires it, the thumb-piece L is turned, and the pump set in motion, until a sufficient amount of water has been drawn, after which the brake or stop K is turned against the disk to stop the action.

Having thus described my invention, what I claim as new is—

1. The hollow piston-rod G, having upwardly-opening valve *f* and piston *h*, and bent around at its upper end to form a spout, in combination with the pump-cylinder H, having upwardly-opening valve *g*, the connecting-rod *b*, and the driving mechanism C, substantially as described.

2. The counter-balance J, combined with the driving mechanism and the hollow reciprocating piston-rod, substantially as and for the purpose described.

The above specification of my invention signed by me this 17th day of October, 1877.

JACOB S. BAKER.

Witnesses:

SOLON C. KEMON,

CHAS. A. PETTIT.