(No Model.)

A. CARLSON.

PUMP.

No. 475,536. Patented May 24, 1892.

Fig. 1

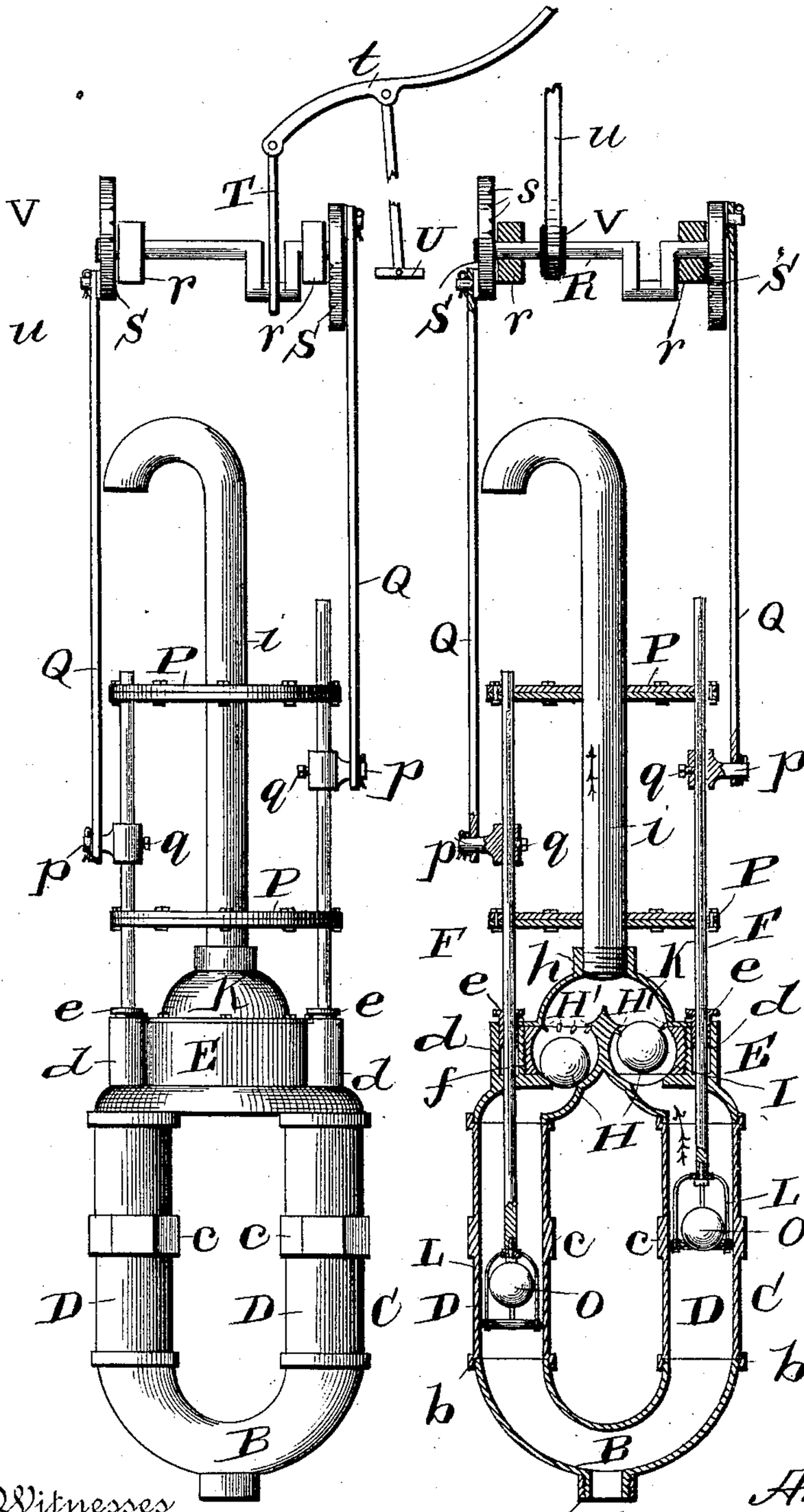


Fig. 2

Fig. 3

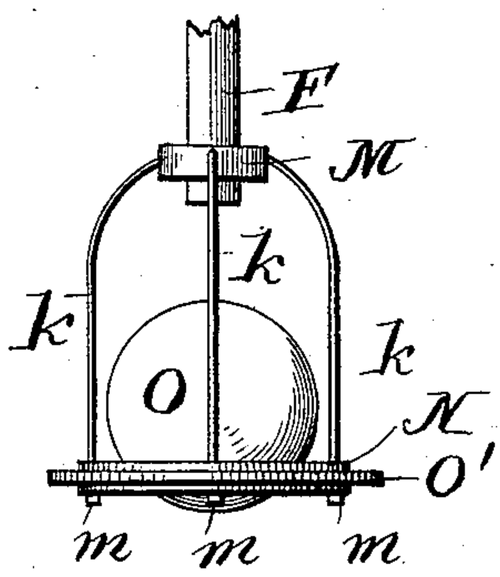
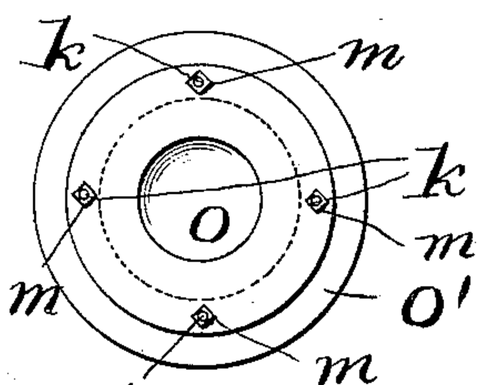


Fig. 4



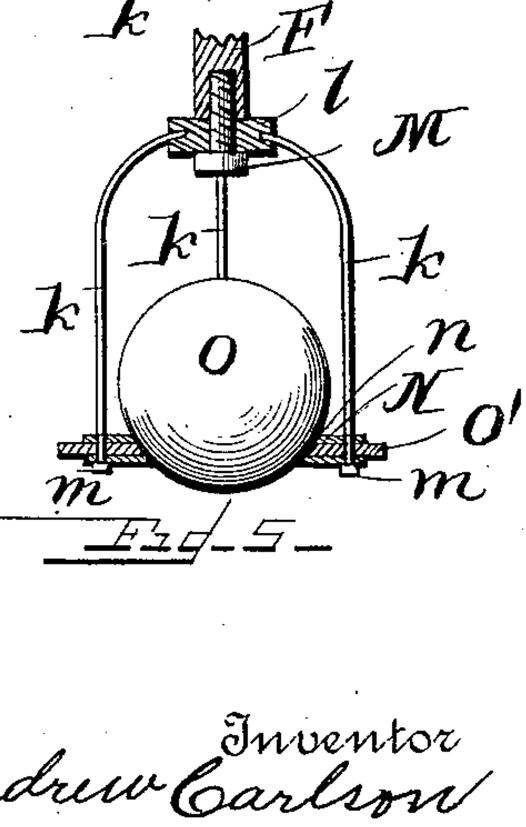


Fig. 5

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UNITED STATES PATENT OFFICE.

ANDREW CARLSON, OF GILBERT, MICHIGAN.

PUMP.

SPECIFICATION forming part of Letters Patent No. 475,536, dated May 24, 1892.

Application filed November 24, 1891. Serial No. 412,937. (No model.)

To all whom it may concern:

Be it known that I, ANDREW CARLSON, a citizen of the United States, residing at Gilbert, in the county of Wexford and State of Michigan, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps, and its novelty will be fully understood from the following description and claims when taken in connection with the annexed drawings; and the object of the invention is to provide an automatic double-acting lift-pump which can be operated as well by hand as by motive power.

A further object of the invention is to provide a pump with double pistons and a series of globe-valves operating independent of each other without forcing the water through the pump, but simply lifting it in a continuous stream.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation showing the pump operated by a hand-lever. Fig. 2 is a vertical section thereof, showing a driving-belt operating the pump, the water being raised in the direction indicated by the arrows. Fig. 3 is a detached side elevation of the piston having a globe-valve. Fig. 4 is bottom view thereof. Fig. 5 is a cross-section thereof.

The same letters of reference denote the same parts throughout the several figures.

A denotes the suction-pipe, screw-threaded at *a*, so as to connect it with the lower semicircular portion B of the cylinder C. This portion B is screw-threaded at *b* to connect it with the straight or upright portion D of the cylinder, and is provided with lugs *c* for the purpose of operating it with a suitable wrench. The top of the straight portion D is provided with a right and left screw-thread, by means of which the top E of the cylinder C is attached to the straight portions at the same time. This top E is cast, as shown, with packing-boxes *d* upon opposite sides, having glands *e*, through which the piston-rods F pass, and the ball or globe bearings *f* for the balls H. It is also provided with a detachable screw-threaded plug I, which is made of softer metal than either the balls H or the pump-castings, having the same curvature as the balls H, for the purpose of filling up the space necessarily made in the top E to insert the balls, to save and protect the balls from the usual wear by being operated directly against the pump-castings and to confine them closer to their bearings, and also to allow them sufficient room to be put into their position before the plug I is screwed down into its proper position. H′ denotes a series of stop prongs or projections formed upon the inside of the cylinder-cap K for the purpose of stopping the upward movement of the balls H. The cap K of the cylinder C is provided with an opening *h*, screw-threaded to receive the discharge-pipe *i*, and the said cap is bolted onto the cylinder in the usual manner.

The piston-rods F are provided with a piston L, constructed in the form of a cage by four rods *k*, curved downward from a hanger-plate *l*, through which a bolt M passes into the ends of the piston-rods. The lower portion of the rods *k* are made smaller, are screw-threaded and provided with suitable nuts *m*, and upon such smaller portions is first placed a circular plate N, having a central hole *n*, smaller than the diameter of the globe or ball O, contained in the cage or inside the rods *k*. A heavy gasket O′, made of leather or rubber of the same form as the plate N, but extending out beyond the edges of the said plate, so as to bear hard against the portion D of the cylinder, is then put on. Finally a similar plate to the plate N is forced upon the smaller portions of the rods *k* by screwing the nuts *m* up into position. The gasket O′ being of the same diameter as the portion D of the cylinder a perfect water-tight bearing is formed, and when the piston thereof is on its upward stroke the ball O falls upon its bearing in the opening or hole *n* in the plates N and the gasket and closes said opening, thus preventing any water from passing downward.

P denotes two pair of circular guide-plates clamped to the discharge-pipe *i*, one near the cap of the cylinder and the other farther up the pipe, for the purpose of guiding and keeping the piston-rods in a perpendicular position, and thus preventing the usual wear and tear upon the stuffing-boxes and glands.

The piston-rods F are driven by the eccentric-rods Q, connected thereto by the eccentric-head *p*, provided with the set-screw *q*. These heads can be moved up and down upon the piston-rods so as to give any desired stroke to the said rods.

R represents the crank-shaft, journaled in suitable bearings *r* and provided with eccentrics S, having upon their inner face notches *s*, which are placed at given distances apart, and from each of the said notches an aperture is made through the eccentrics, into which are inserted the ends of the crank-shaft, having a shoulder adapted to fit in the notches. By this arrangement the eccentrics may be moved from one notch to another to change the stroke of the eccentric-rods according to the amount of water to be raised.

T refers to a pitman, to which is connected the hand-lever *t*, pivoted upon a post U, extending from the floor or ground. V denotes a pulley, and *u* a driving-belt, which may be connected to an engine or other motive power.

Although I have shown and described my cylinder cast in several parts, I do not wish to be understood as limiting myself to this particular construction, as it may be found advisable to cast it in fewer parts. Neither do I wish to be understood as limiting myself to the specific construction of the piston containing the globe, as I reserve to myself the right to make such changes in the construction of said parts as will produce the best results.

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

1. The combination, with a lift-pump, of the cylinders having their top portions curved toward each other to form valve-seats, of the plug inserted at the juncture of the cylinders above the said valve-seats, and the globe-valves surrounded by the plug to protect them when raised from the seats, substantially as set forth.

2. The combination, with a lift-pump, of the cylinders having their top portions curved toward each other to form valve-seats, of the plug I, inserted at the juncture of the cylinders above said seats, the globes H, and the pump-cap K, having prongs projecting below the plane of the top of the plug, whereby the globes are confined in the said plug, substantially as and for the purpose set forth.

3. In a lift-pump, the combination, with the cylinders having their top portions curved toward each other to form valve-seats, of the plug I, inserted at the juncture of the cylinders above the said seats, with the cap K, the discharge-pipe *i*, and the guide-plates P, clamped to the said pipe, substantially as shown and described, and for the purpose set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ANDREW CARLSON.

Witnesses:
HENRY HANSEN,
SAML. J. WALL.