

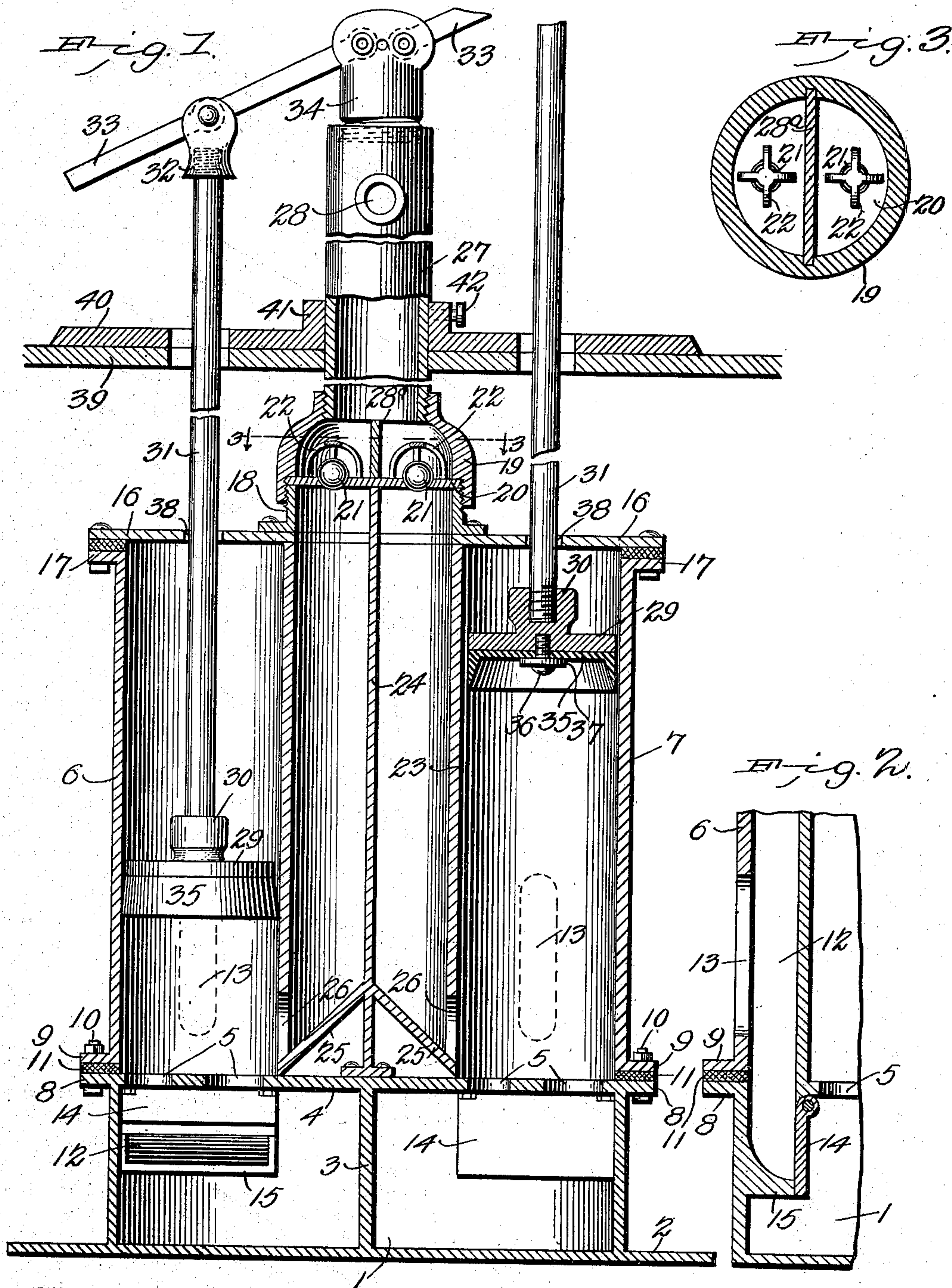
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L. J. RUSSELL.  
PUMP.

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NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

LEONARD JOHNSON RUSSELL, OF MANCHESTER, NEW HAMPSHIRE.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 731,623, dated June 23, 1903.

Application filed October 24, 1902. Serial No. 128,567. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD JOHNSON RUSSELL, a citizen of the United States, residing at Manchester, in the county of Hillsboro and State of New Hampshire, have invented a new and useful Pump, of which the following is a specification.

This invention relates to pumps.

The object of the invention is to provide a pump having double pump-cylinders, the piston of either of which is adapted to be operated to the exclusion of the other or in which both may be operated at one time, thereby to permit one cylinder to be operated from a windmill and the other to be operated by hand.

A further object is to provide a novel form of piston-packing adapted upon downward movement of the piston to impinge the walls of the cylinder, thereby to expel the water contained therein, and upon upward movement to move free from the walls thereof, thereby obviating unnecessary wear of the packing.

A further object is to combine with the stock or conduit means to give an initial upward impulse to the water, thereby reducing the power necessary to operate the pump.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a pump, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, there is illustrated a form of embodiment of the invention capable of carrying the same into effect, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in sectional elevation of a pump characterized by this invention. Fig. 2 is a view in sectional elevation, showing certain parts not clearly seen in Fig. 1. Fig. 3 is a view in horizontal section, taken on the line 3-3 of Fig. 1.

Referring to the drawings, 1 designates a water-chamber constituting the base of the pump, the bottom of which is provided with an outstanding peripheral flange 2 to hold the structure from sinking when positioned with-

in the well. The chamber is provided with a central partition 3, extending to and connected with the top 4 of the chamber, the latter being provided with a plurality of ports 5, arranged near each side thereof and opening into the respective pump-cylinders 6 and 7, which latter are bolted at their lower ends to a flange 8, forming a continuation of the top of the water-chamber, the cylinders being each provided with a flange 9, corresponding with that of the water-chamber, for receiving the assembling-bolts 10, a suitable packing 11 interposed between the flanges serving to present a water-tight joint at these points. On one side of each of the cylinders there is provided a chamber 12, having a water-inlet 13, through which water passes to the water-chamber 1, an inward-opening valve 14, hinged to the under side of the top 4 below each cylinder, serving to control the admission of water to the respective water-chambers formed by the partition 3. The valves 14 are free to swing inward, but are limited in their outward movement by a stop or abutment 15, projecting inward from the walls of the water-chamber, as clearly shown in Fig. 2. The tops of the cylinders are closed by a plate 16, bolted to flanges 17 at the upper ends of the cylinders, the center portion of the plate being provided with an opening over which is bolted a collar 18, having its upper portion exteriorly threaded to be engaged by a reducing-coupling 19, and between the collar and coupling is clamped a diaphragm 20, having two valve-seats in which rest ball-valves 21, the same being held in operative relation to the seats by cages 22, the said valve-seats constituting water-outlets. Disposed below the orifice in the plate 16 is the stock 23, which is divided by a vertical partition 24 into two compartments, the escape of water from which is controlled by the valves 21, the lower portion of the partition being bolted or otherwise secured to the top 4 of the water-chamber and being provided with two divergent members 25, constituting deflecting-surfaces, against which the water entering the stock impinges and is thus given an initial projection in an upward direction. The stock is provided with two ports 26, opening into the chambers 6 and 7, as clearly shown in Fig. 1.

The upper terminal of the reducing-coup-



ling 19 is internally threaded for the reception of a conduit or discharge-pipe 27, carrying the usual discharge-spout 28, and is provided internally with vertical grooves to receive a partition 28<sup>a</sup>.

Within each cylinder works a piston consisting of a plate of metal 29 of a diameter less than that of the cylinders and provided on its upper side with a boss 30, having a threaded socket to be engaged by the lower threaded end of the piston-rod 31, the upper end of which has a threaded engagement with a casting 32, pivotally connected at the pump-levers 33, the inner end of each of the said levers being independently pivoted to a casting 34, threaded in the upper end of the conduit or pipe 27.

The packing 35, which constitutes one of the essential features of this invention, is constructed of a piece of heavy leather or of any other yielding material suited to the purpose, cup-shaped, as shown, and of less diameter than that of the cylinder, the packing being held associated with the piston in this instance by a screw 36, which passes through a washer 37, the latter serving to hold the parts properly assembled. The packing is designed to contact with the walls of the cylinder only on the downstroke of the piston, being expanded by the resistance presented by the water, so that a water-tight juncture is effected between the packing and the cylinder on the said downstroke; but on the upstroke the walls of the packing will resume their normal position, and thereby be free from contact with the cylinder, and by this arrangement wear of the packing is obviated in a very decided manner, and, further, the power required to operate the pump will be lessened. The plate 16 is provided with two elongated slots 38, in which the piston-rods work, these rods also passing through a platform 39 and through a plate 40, bolted to the platform, the latter plate being provided with a collar 41, carrying a jam-nut 42, the latter being designed to be turned into engagement with the conduit-pipe, and thereby securely hold it against movement and also support the cylinders against sinking.

While not herein shown, it is to be understood that either one of the piston-rods may be disconnected from the lever or pump-handle with which it coacts and may be connected with the pitman-rod of a windmill, and under this arrangement and without necessitating disconnecting the piston-rod from the pitman the remaining piston-rod may be operated by hand to pump water from the well.

It is to be understood that the cylinders are to be submerged beneath the surface of the water of the well, so that no air will be admitted thereto through the openings provided in the plate 16 for the piston-rods nor around the pistons.

The operation of the pump is as follows: Upon upward movement of the piston water

will be drawn into one of the water-inlets 13, the valve 14 being swung, of course, by the suction caused by the movement of the piston, and enters one of the water-chambers and passes up into the cylinder, it being understood that the water-chambers are always filled to the top 4 thereof, so that the water drawn into the cylinders at each reciprocation of the pistons is drawn from the water-chambers, and the volume thus withdrawn is compensated for by the inflow through the water-inlets 13. As soon as the downstroke commences the pressure of the water will close the valve, upon which the water will pass into the stock through one of the ports 26, and thus upward, lifting one of the valves 21, and escaping out through the discharge-spout, the packing 35 being expanded in the manner described on the downstroke of the piston.

Having thus fully described the invention, what I claim is—

1. In a pump, a divided water-chamber, a pair of cylinders supported thereby and in communication therewith, a water-intake chamber carried by the outer side of each of the cylinders and communicating with each of the water-chambers at a point near its top, valves disposed at the lower ends of the intake-chambers for controlling the passage of water between the same and the water-chambers, a divided stock in communication with each cylinder and provided with water-deflecting means, a diaphragm disposed at the top of the stock, and valves carried by the diaphragm for controlling the escape of water from the respective chambers of the stock.

2. A pump comprising a water-receiving chamber divided into two compartments, a pair of pump-cylinders supported thereon and communicating therewith, valve-controlled inlets for supplying water to the chambers, a divided stock communicating with the cylinders and provided at its lower portion with water-deflecting means, a plate closing the upper ends of the cylinders, a collar secured to the plate and disposed over the stock, a diaphragm disposed upon the upper edge of the collar and carrying valves for controlling the passage of water from the respective chambers of the stock, a coupling screwed upon the collar and clamping the diaphragm in place, a partition arranged within the coupling, a discharge-conduit connected with the coupling and provided with a discharge-spout, means for supporting the conduit, independently-operable pump-levers supported by the conduit, and piston-carrying rods connected with the handles.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LEONARD JOHNSON RUSSELL.

Witnesses:

WIRT WILSON,  
JOHN D. CHRISLEE.