

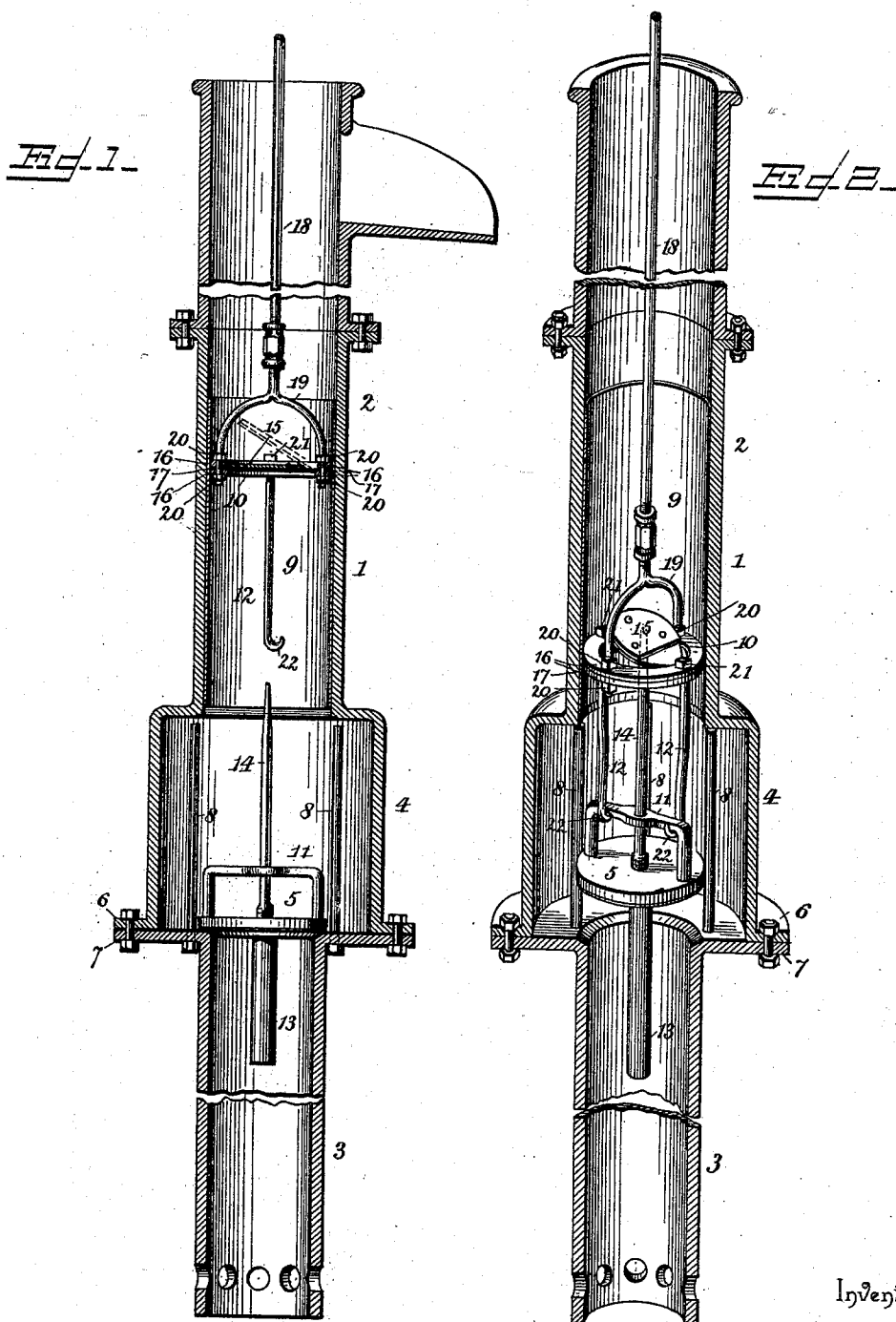
(No Model.)

2 Sheets—Sheet 1.

J. W. AITON.
LIFT PUMP.

No. 554,164.

Patented Feb. 4, 1896.



Witnesses

Chas. H. Curand
V. B. Hillyard.

By his Attorneys,

John W. Aiton

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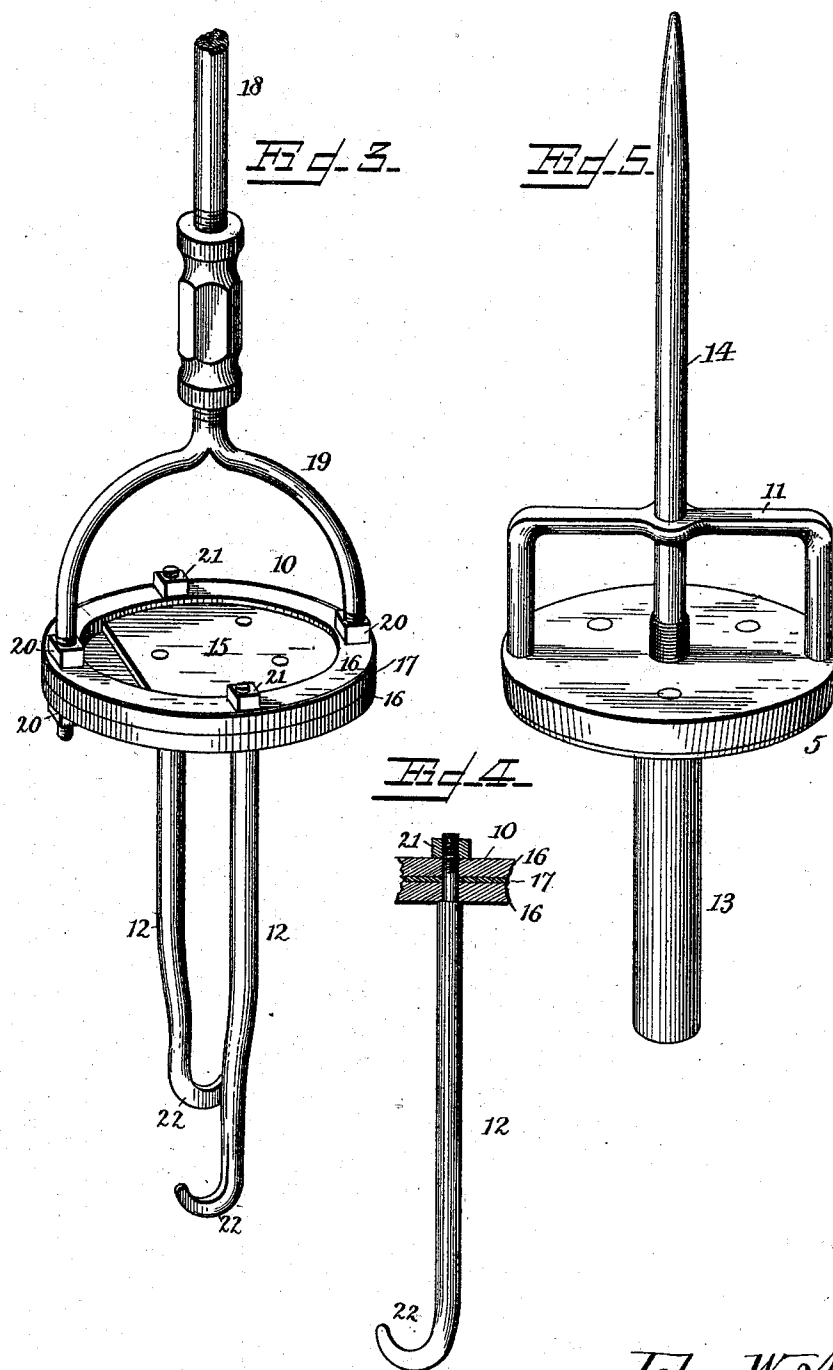
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Inventor

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UNITED STATES PATENT OFFICE.

JOHN W. AITON, OF KINGMAN, KANSAS, ASSIGNOR OF TWO-THIRDS TO
JACOB WILLHOUR AND T. A. RUSSELL, OF SAME PLACE.

LIFT-PUMP.

SPECIFICATION forming part of Letters Patent No. 554,164, dated February 4, 1896.

Application filed March 23, 1895. Serial No. 542,968. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. AITON, a citizen of the United States, residing at Kingman, in the county of Kingman and State of Kansas, have invented a new and useful Lift-Pump, of which the following is a specification.

The purpose of the present invention is to improve that class of suction or lift pumps in which the check-valve is located a considerable distance from the surface of the ground or the delivery end of the pump stock or barrel; and the object is to provide a simple and efficient mechanism combined with the valved piston whereby the check-valve can be readily removed for repairs or any desired purpose.

Other objects, such as simplicity and compactness of construction, will be manifest from the subjoined description, taken in connection with the drawings hereto attached, in which—

Figure 1 is a central vertical section of a pump-stock showing the relative disposition of the suction and check valves embodying the essence of the invention. Fig. 2 is a detail perspective view of the check-valve and valved piston, showing the manner of removing the check-valve from the pump-stock. Fig. 3 is a detail view of the valved piston. Fig. 4 is a detail view of a hooked rod, showing the provisions for clamping the parts of the valved piston together. Fig. 5 is a detail view of the check-valve.

The pump-stock 1, which may be of desired length and size to suit the nature of the work for which the pump is designed, comprises the discharge-pipe 2 and the suction-pipe 3, a swelled or enlarged portion 4 being comprised between the opposing ends of the parts 2 and 3, so as to form a water-way around the check-valve 5 when the latter is lifted from its seat prior to being removed through the discharge-pipe 2. The enlarged or swelled portion 4 may be provided in any desired manner, and is preferably formed as an integral part of the discharge-pipe 2, being cast or otherwise formed therewith. An outwardly-extending flange 6 is adapted to be bolted to a corresponding flange 7 at the upper end of the suction-pipe 3, and rods 8 project vertically from the flange 7 and enter the part 4 to form

guides for the check-valve 5 in the movements of the latter to permit the passage of the fluid from the suction-pipe 3 into the part 4 and the discharge-pipe 2. That portion of the discharge-pipe immediately above the enlarged or swelled part 4 is lined with a non-corrosive metal, preferably brass, so as to preserve a close fit between the valved piston 10 and its barrel. This lining 9 forms the walls of the barrel in which the suction-valve 10 operates.

The check-valve 5 is a metal disk faced on its under side with rubber, leather, or any of the materials usually employed for pump-packing, and has a yoke 11 on its upper side to be engaged by hooked rods 12 depending from the valved piston 10. A weight 13 is pendent from the check-valve and is centrally disposed, so as to insure a uniform bearing of the valve upon its seat. A rod 14 rises vertically from the check-valve and passes through the yoke 11, and is adapted to engage with the flap 15 of the valve 10 and hold the same open when the hooked rods 12 are engaged with the yoke 11 when it is required to withdraw the valve 5 from the pump-stock. The inner edge portion of the flange 7 forms a seat for the check-valve 5, and the latter is guided squarely upon its seat by means of the guide-rods 8.

The valved piston 10 may be of any well-known construction, and as shown comprises two metal rings 16, between which are clamped the packing 17 and the flap 15. The pump-rod 18 is bifurcated at its lower end, as shown at 19, and these bifurcations are engaged with the valved piston 10 at diametrically-opposite points, having clamp-nuts 20 upon their threaded ends, between which the rings 16 are compressed. The hooked rods 12 are disposed at diametrically-opposite points and have their upper ends reduced and threaded and passed through openings in the rings 16 at points midway of the bifurcations 19, and receive nuts 21 on the projected threaded portions between which and the enlarged portions at the base of said threaded ends the rings 16 are clamped. Thus it will be seen that the means employed for attaching the pump-rod and hooked rods to the valved piston 10 also serve to clamp the parts 16 of the

latter upon the packing 17 and hold said parts in co-operative relation. The hooks 22 at the lower ends of the rods 12 face in opposite directions, so as to be engaged with the yoke 11 from opposite sides. Thus when it is required to remove the valve-check the valved piston 10 is lowered sufficiently far until the hooks 22 pass below the cross-bar of the yoke, one upon each side thereof, when by giving the pump-rod a turn in the proper direction the rods 12 will be brought in engagement with the cross-bar of the yoke, so that an upward movement of the pump-rod will bring the check-valve along with it. The rods 12 and 14 are of such relative lengths that when the hooks 22 are in engagement with the yoke 11 the rod 14 will tilt the flap 15 and maintain the valved piston 10 in open relation, thereby permitting the upward movement of the valved piston 10 without lifting the column of water above the same. After the check-valve 5 is unseated by an upward movement of the pump-rod the water above it will pass down through the open valved piston 10 and around the edges of the valve 5 and down through the suction-pipe 3 into the well or cistern, thereby leaving the parts 10 and 5 free to be removed from the pump-stock without having to lift the column of water usually standing above the check-valve 5.

By equipping the suction-valves of lift-pumps with grappling-hooks, as herein set forth, and providing the check-valves with yokes, ready means is provided at all times for a quick removal of the check-valve for repairs or any other desired purposes.

In equipping pumps of various makes with the invention it is obvious that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In combination, a pump-stock comprising two parts, one part having an outwardly-extending flange and a valve-seat at the inner

end of the said flange, the other part having its adjacent end portion enlarged or swelled and terminating in an outwardly-extending flange which is firmly attached to the flange of the first-mentioned part, a series of rods extending in parallelism and attached at one end to the flange having the valve-seat, a check-valve guided in its movements by the said rods and having a yoke and a vertical extension, a valved piston and rods pendent from the valved piston and having their lower ends constructed to engage with the yoke on opposite sides of the said vertical extension, and the latter engaging with and holding the valved piston open, substantially as set forth for the purpose described.

2. In a suction or lift pump, the combination with the check-valve, having a yoke, and provided with a centrally-disposed rod extending through and projecting beyond the said yoke, of a valved piston and rods pendent therefrom, and having oppositely-disposed hooks at their lower ends to engage with the yoke of the check-valve upon opposite sides of the vertically-extending rod, substantially as set forth for the purpose described.

3. In combination, a pump-stock having an enlarged portion, a check-valve provided with a yoke and a vertically-disposed rod, a valved piston comprising metal rings between which is located a packing, hooked rods having their upper ends reduced and threaded and provided with nuts, and serving as means to clamp the said rings upon the packing, and a pump-rod having its lower end bifurcated and threaded, the threaded portions of the bifurcated ends passing through the said rings and receiving clamp-nuts by means of which the latter are held together, substantially as set forth.

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

JOHN W. AITON.

Witnesses:

T. A. RUSSELL,
GEO. A. OSGOOD.