

No. 767,092.

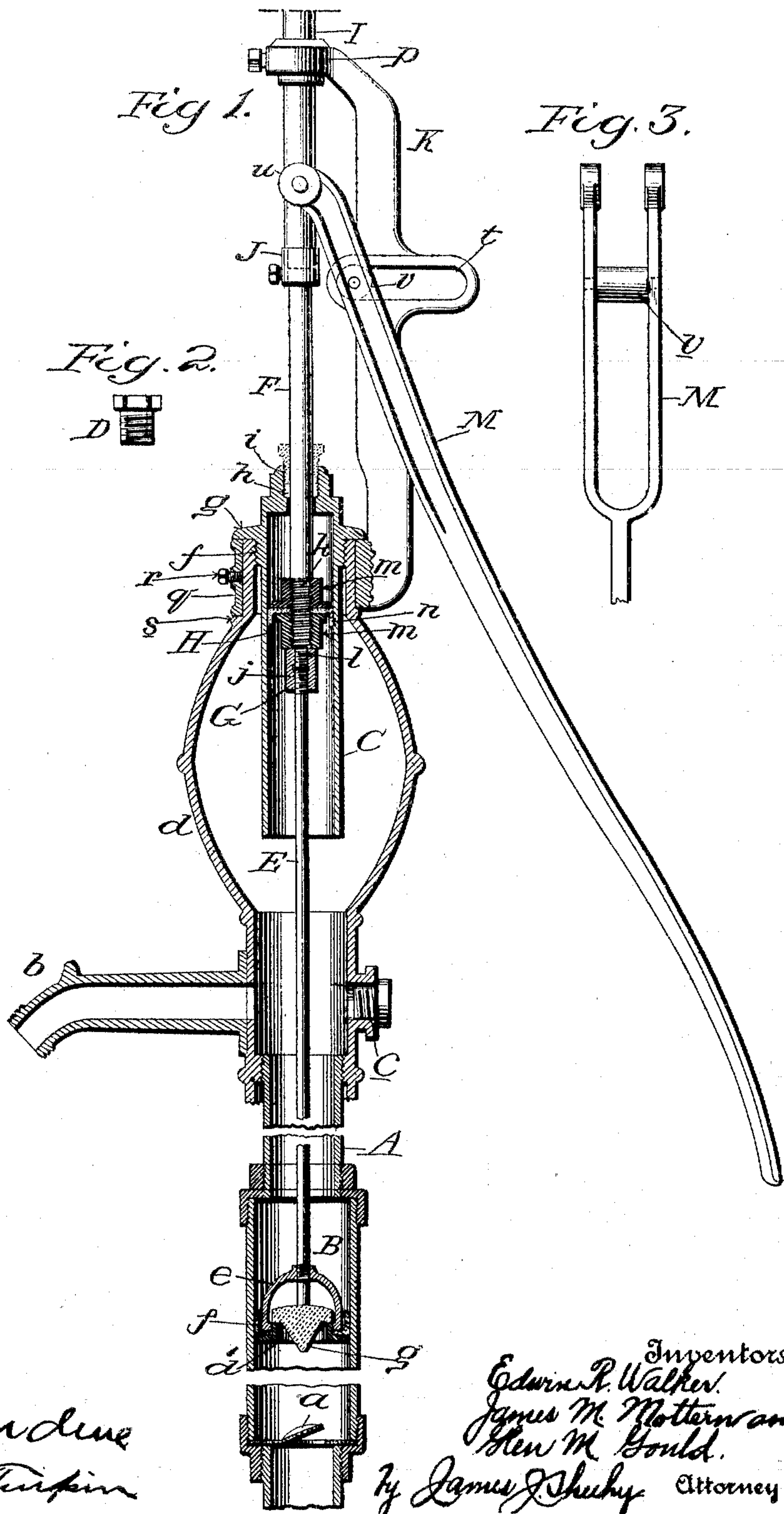
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PUMP.

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NO MODEL.



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## UNITED STATES PATENT OFFICE.

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## PUMP.

SPECIFICATION forming part of Letters Patent No. 767,092, dated August 9, 1904.

Application filed March 8, 1904. Serial No. 197,097. (No model.)

*To all whom it may concern:*

Be it known that we, EDWIN R. WALKER, JAMES M. MOTTERN, and GLEN M. GOULD, citizens of the United States, residing at Rockford, in the county of Spokane and State of Washington, have invented new and useful Improvements in Pumps, of which the following is a specification.

Our invention pertains to pumps; and it has for one of its objects to provide a double-acting pump adapted to be used to advantage in a drilled well.

Another object of the invention is to provide a pump constructed with a view of adapting it to be readily repaired.

Another object is to provide a pump constructed with a view of adapting it to be converted from a double-acting pump into either a straight lifting-pump or a single-acting force-pump; and another object is to provide a pump embodying such a construction that great leverage is afforded in proportion to the length of stroke.

Other advantageous features of the invention will be fully understood from the following description and claims when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view, partly in vertical section and partly in side elevation, illustrating the pump constituting the preferred embodiment of our invention as the same appears when converted into a double-acting force-pump. Fig. 2 is an elevation of the stuffing-gland comprised in our improvements removed, and Fig. 3 is a detail view taken at right angles to Fig. 1 and illustrating the operating-lever of the pump and the rolling fulcrum journaled in said lever.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is the barrel of our novel pump, which contains a downwardly-seating clack-valve *a* and is provided with a spout *b*, an auxiliary discharge *c*, and an air-chamber *d*, the latter being interiorly threaded at its upper end for a purpose presently set forth. The auxiliary discharge *c* of the barrel A is shown as closed

by a threaded plug; but it is obvious that when the said auxiliary discharge is to be used the plug may be removed and a pipe or the like screwed into the discharge-aperture.

B is a piston movable in the barrel A and made up, by preference, of an annular body *d'*, a cage *e*, connected to said body, packing *f*, interposed and secured between the body and the cage, and a non-return valve *g*, disposed on the body and in the cage.

The parts of our invention thus far described operate in the usual manner—that is to say, on the upstroke of the piston B water is drawn upwardly past the clack-valve *a* and the water above the piston is raised by the same, while on the downstroke of the piston water trapped above the valve *a* raises the valve *g* of the piston and passes through the piston to a point above the same. Also on the downstroke of the piston water is forced by the same upwardly past the valve *g*.

C is a cylinder, preferably of brass, disposed in the air-chamber *d* and having threads *f* engaging the threads at the upper end of the chamber and also having a collar-flange bearing on and extending outwardly beyond said end of the chamber, as indicated by *g*. The said cylinder is open at its lower end and is provided at its upper end with an aperture *h* and an interiorly-threaded socket *i*, the latter to receive a removable stuffing-gland D.

E is a rod connected to the piston B and threaded at its upper end, as indicated by *j*; F, a rod extending through the stuffing-gland D and having a threaded portion *k* and a reduced and threaded lower end *l*; G, an interiorly-threaded union receiving and connecting the meeting ends of the rods E and F; H, a piston comprising body portions *m*, mounted on the threaded portion *k* of the rod F, and packing *n*, of leather or other suitable material, interposed and secured between said body portions; I, a windmill-head, and J a coupling secured on the upper end of the rod F, preferably through the medium of a set-screw, and having a threaded socket receiving the lower end of the head I. In virtue of the construction just described it will be observed that the cylinder C may be removed from the



air-chamber *d* and the gland *D* from the cylinder *C*; also, that when the cylinder *C* is removed and the rod *F* is uncoupled from the windmill-head *I* the packing *n* of the piston *H* may be readily removed and as readily replaced with new packing, which is an important advantage, since it conduces to the lifetime of the pump as a whole.

*K* is a frame having a guide-box *p* at its upper end for the head *I* and a collar *q* at its lower end, which collar surrounds and is preferably connected, through the medium of one or more set-screws *r*, to the upper end of the air-chamber *d* and is interposed between an exterior shoulder *s* of said chamber and the flange *g* of the cylinder *C*. The frame *K* is also provided at an intermediate point of its length with a slot *t*, preferably disposed at right angles to the rod *F*.

*M* is the lever through the medium of which the pump is operated. The said lever is bifurcated at its upper end to adapt it to straddle the frame *K*, is pivoted to the head *I* at *u*, and is provided with a rolling fulcrum *v*. This latter is journaled at its ends in the arms of the lever, as best shown in Fig. 3, changeable for different-length strokes, and is disposed and adapted to roll in the slot *t* of the frame *K*. In virtue of the lever *M* being mounted as just described it will be observed that great leverage is afforded in proportion to the length of the strokes when the lever is actuated, and hence the pump may be worked with a minimum amount of effort.

As shown in Fig. 1 of the drawings and with the stuffing-gland *D* removed, our improved construction constitutes a double-acting force-pump which is advantageous, since it may be used to advantage in a drilled well the diameter of which is too small to admit an ordinary double-acting force-pump.

When it is desired to convert the pump into a straight lifting-pump, the same may be accomplished by removing not only the stuffing-gland *D*, but also the piston *H*, while to make the pump a single-acting force-pump the piston *H* is removed and the stuffing-gland *D* placed in position, as shown by dotted lines in Fig. 1.

It will be apparent from the foregoing that the cylinder *C* can be placed in any single-acting force-pump having an air-chamber on its barrel and that through the medium of the said cylinder and the piston complementary thereto the single-acting force-pump is converted into a double-acting force-pump.

We have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of our invention in order to impart a full, clear, and exact understanding of the same. We do not desire, however, to be understood as confining ourselves to such

specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of our invention as claimed.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a pump, the combination of a frame having a slot, a reciprocatory piston having a rod, a lever having a fork straddling the frame and pivotally connected to the piston-rod, and a rolling fulcrum journaled in the arms of the lever-fork and arranged to roll to and fro in the slot of the frame.

2. In a pump, the combination of a barrel having an air-chamber at its upper end provided with an exterior shoulder, a frame having a collar at its lower end surrounding the upper end of the air-chamber and resting on the shoulder thereof, and also having a horizontal slot, means for securing the frame on the air-chamber, a piston movable in the barrel and having a rod guided in the frame, a lever having a fork straddling the frame and pivotally connected to the piston-rod, and a rolling fulcrum journaled in the arms of said fork and arranged to roll to and fro in the slot of the frame.

3. In a pump, the combination of a barrel having an air-chamber at its upper end; said air-chamber being interiorly threaded at its upper end and provided with an exterior shoulder *s*, a removable cylinder open at its lower end and closed at its upper end and having exterior threads engaging the interior threads of the air-chamber, and also having an exterior flange *g* arranged above the upper end of the air-chamber, a frame having a collar at its lower end surrounding the upper end of the air-chamber and interposed between the shoulder *s* thereof and the flange *g* of the cylinder, and also having a horizontal guideway, a piston disposed in the cylinder and having a rod extending through the upper end thereof, a lever connected to the piston-rod, a rolling fulcrum mounted in the lever and disposed and arranged to roll to and fro in the guideway of the frame, a downwardly-seating non-return valve in the barrel, a piston movable in the barrel above said valve and comprising a downwardly-seating valve, and a connection between the said piston and the first-mentioned piston.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

EDWIN R. WALKER.  
JAMES M. MOTTERN.  
GLEN M. GOULD.

Witnesses:

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