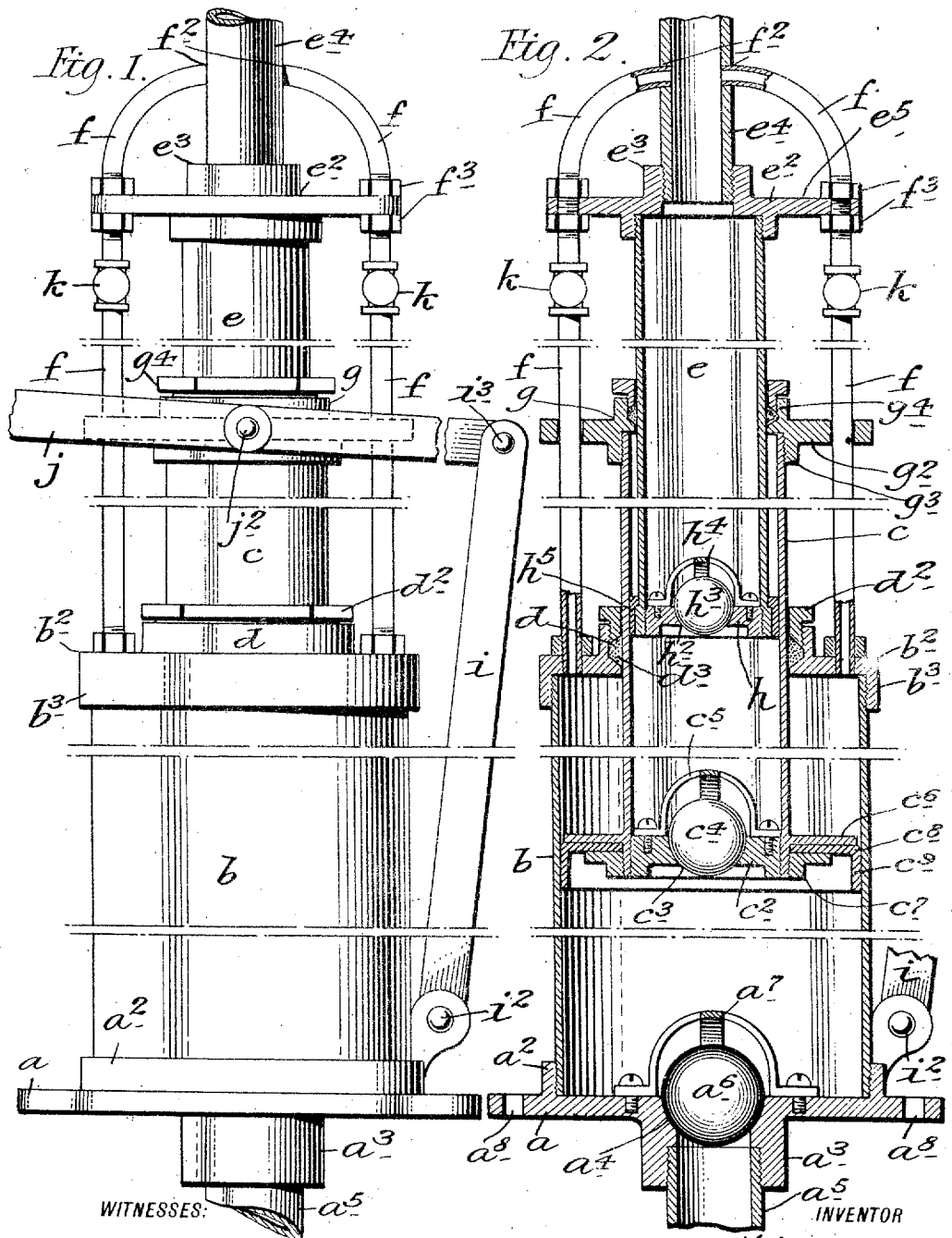


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APPLICATION FILED APR. 27, 1910.

987,934.

Patented Mar. 28, 1911.



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987,934.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed April 27, 1910. Serial No. 557,995.

To all whom it may concern:

Be it known that I, CHARLES WILLIAMS, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to pumps for elevating water, and the object thereof is to provide an improved device of this class by means of which water may be raised to a much higher point than is possible with pumps now employed for this purpose; a further object being to provide a pump of the class specified which may be operated by hand or power mechanism, and with these and other objects in view the invention consists in a pump of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a side view of a pump involving my invention, and;—Fig. 2 a central, vertical sectional view thereof.

In the practice of my invention I provide a base plate *a* having on the top surface thereof an annular flange or rim *a*², to which is secured a main cylinder *b*, said cylinder being preferably screwed into said flange or rim. The base plate *a* is also provided centrally thereof with a depending tubular coupling *a*³ having an annular valve seat *a*⁴, and through which, in practice, water is admitted to the cylinder *b* through a pipe *a*⁵, and placed on the valve seat *a*⁴ is a spherical valve *a*⁶ inclosed by a suitable cage *a*⁷ secured to the base plate *a*. The base plate *a* is also preferably provided with holes or apertures *a*⁸ through which screw or bolts may be passed to secure the pump to any suitable support when desired.

The cylinder *b* is provided with a cap *b*², having, in the form of construction shown, a flange or rim *b*³, which is screwed on to said cylinder and said cap is provided with a central opening through which is passed a plunger cylinder *c* provided at its lower end with a head *c*², which is secured therein and

provided with a port or passage *c*³ forming a valve seat on which is placed a spherical valve *c*⁴ inclosed by a cage *c*⁵ secured to said head. The lower end portion of the plunger cylinder *c* is also provided with an annular flange or rim *c*⁶, below which a threaded collar *c*⁷ is screwed onto the lower end of said cylinder and between the collar *c*⁷ and the flange or rim *c*⁶ is secured an annular flexible packing *c*⁸ having a depending skirt or rim *c*⁹ which closely fits the inner wall of the cylinder *b*.

The cap *b*² of the cylinder *b* and through which the plunger cylinder *c* passes is provided with a stuffing box *d* comprising a flange or rim formed on said cap and a gland *d*² screwed thereto together with an annular packing *d*³.

Within the plunger cylinder *c* is fitted a supplemental stationary cylinder *e*, the upper end of which is closed by a cap *e*² having a central tubular coupling *e*³, in which is secured the discharge pipe *e*⁴ of the pump and connected with the cap *b*² of the cylinder *b* are tubular rods *f* which pass up through the rim portion *e*⁵ of the cap *e*² and are connected with the discharge pipe *e*⁴ at *f*², and said tubular rods *f* are provided above and below the cap *e*² with set nuts *f*³.

The plunger cylinder *c* is provided with a cap *g* having a flange or rim *g*², through which the rods *f* pass, and said rods *f* form guides for the plunger *c* in the operation of the pump as hereinafter described, and the cap *g* is provided on the bottom thereof with a flange or rim *g*³, into which the upper end of the plunger cylinder *c* is screwed and said cap is provided with a stuffing box *g*⁴ similar to the stuffing box *d*.

The lower end of the supplemental stationary cylinder *e* is closed by a head *h*, which is screwed thereto and provided with a port or passage *h*² forming an annular valve seat, on which is placed a spherical valve *h*³ which is inclosed by a cage *h*⁴ secured to the head *h* and the lower end of the cylinder *e* is also provided with an annular packing *h*⁵ which closely fits the plunger cylinder *c*.

In Fig. 1 of the accompanying drawing I have shown a link member *i* pivoted to the bottom of the main cylinder *b* at *i*² and at the upper end of which is pivoted at *i*³ a yoke-shaped handle lever *j*, the opposite sides of which are pivoted to the cap *g*² of the plunger cylinder *g* at *j*² and by means of

the handle lever *j* the pump may be operated by hand as will be readily understood.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. The pump may be secured to the water supply pipe *e*³ as shown, or it may be secured to any support and a water supply pipe connected therewith, and when in position for use it is operated in the form of construction shown by means of the handle lever *j*. At each upward movement of the plunger cylinder *c* water rushes into the cylinder *b* through the coupling *a*³, and at each downward movement of said plunger cylinder this water is forced into the plunger cylinder, and at the next upward movement of said plunger cylinder the water therein is forced into the stationary cylinder *e* from which it is forced through the delivery pipe *e*⁴ at each following outward or upward movement of the cylinder *c* and the supply of water delivered by the pipe *e*⁴ will thus, as will be seen, and with the construction shown, be an intermittent supply.

It will be evident, however, that two pumps made in this manner may be geared together so that the supply of water through the pipe *e*⁴, which will communicate with both of said pumps, may be a continuous supply if desired.

The rods *f* which form a guide and support for the plunger cylinder *c* are made tubular in form in order that any air or water that may collect in the upper or outer end of the cylinder *b* by leakage or otherwise, may be forced out of said cylinder *b* and into the discharge or delivery pipe *e*⁴, and these tubular rods are provided with check valves *k* which operate to prevent back flow into said cylinder.

It will be understood that the cylinders *b*, *c* and *e* may be made of any desired length and transverse dimensions and the said pump may be of any desired capacity and may, if desired, be operated by power instead of by hand as herein shown and described, and the extent or height to which water may be raised or elevated will depend on the length of the said cylinders, and the valves *a*³, *c*⁴ and *h*³, which operate as ordinary check valves, instead of being spherical in form and inclosed in cages may also be made of other styles, and various changes in and modifications of the construction herein described may be made, within the scope of the appended claims, without de-

parting from the spirit of my invention or sacrificing its advantages.

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

1. In a pump, a stationary cylinder provided at one end with an inlet controlled by a check valve, a plunger cylinder, one end of which is movable through and in the other end of the stationary cylinder and provided with a head having a port or passage controlled by a check valve, and a supplemental stationary cylinder, one end of which passes into the other end portion of the plunger cylinder and is closed by a head having a port or passage controlled by a check valve, the outer end portion of the supplemental stationary cylinder being provided with a discharge pipe, and means for operating the plunger cylinder, the outer end portion of the main stationary cylinder being also provided with tubes which communicate therewith and with the discharge pipe.

2. A pump, comprising main and supplemental stationary cylinders, which are placed in the same axial line, a plunger cylinder mounted on the supplemental stationary cylinder and passed into the main stationary cylinder, the end of the plunger cylinder which passes into the main cylinder being closed by a head provided with a port or passage controlled by a check valve, the end of the supplemental stationary cylinder which passes into the plunger cylinder being closed by a head having a port or passage controlled by a check valve, said end of the plunger cylinder and said end of the stationary cylinder also forming pistons movable in the main stationary cylinder and the plunger cylinder, the outer end of the main stationary cylinder being provided with an inlet controlled by a check valve and the outer end of the supplemental stationary cylinder being provided with a discharge pipe, the inner end of the main stationary cylinder and said discharge pipe being also connected by tubes having check valves.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 26th day of April 1910.

CHARLES WILLIAMS.

Witnesses:

J. E. MULREANY,
B. M. RYERSON.