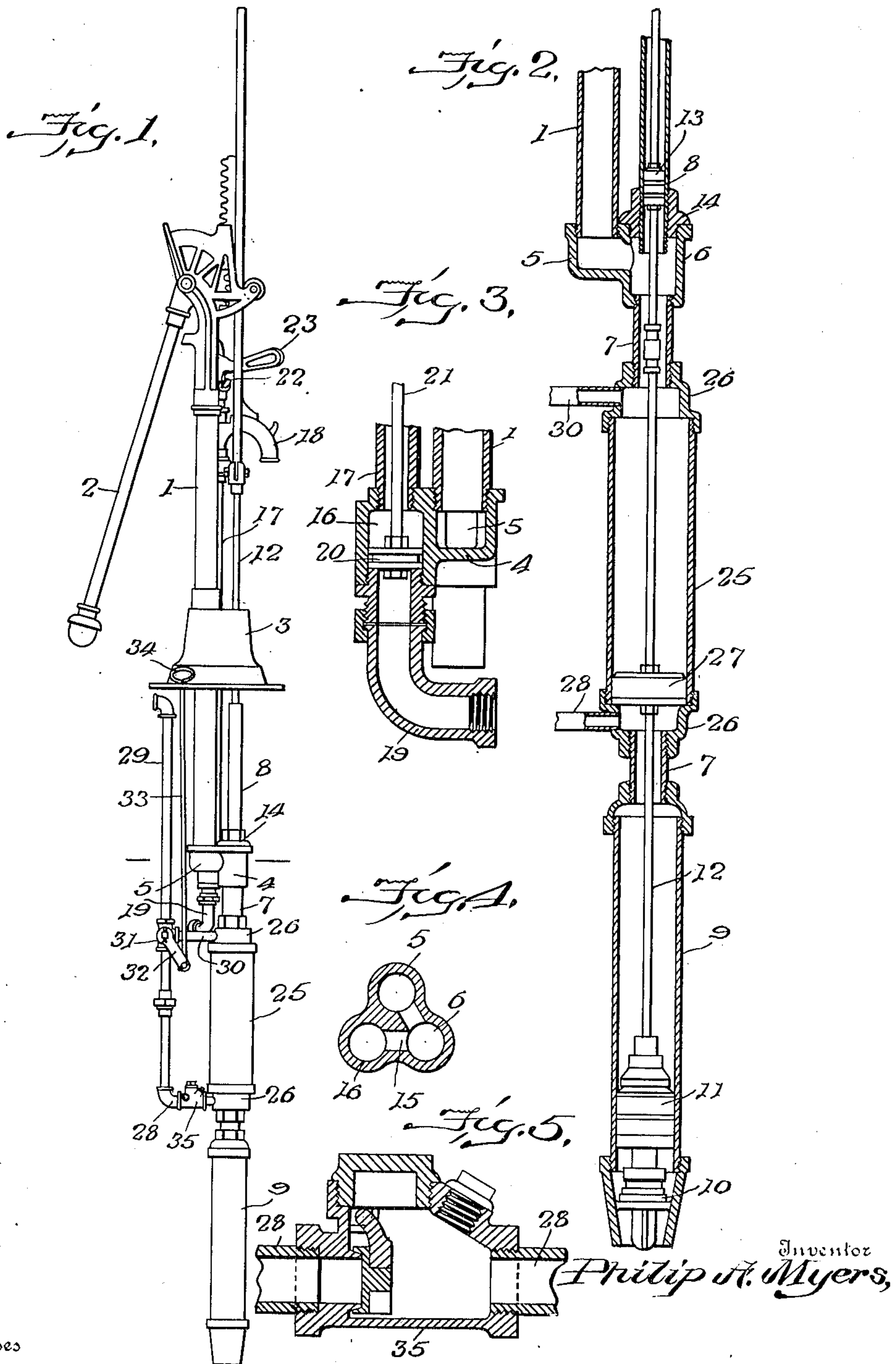


No. 871,135.

PATENTED NOV. 19, 1907.

P. A. MYERS.  
PUMP.

APPLICATION FILED MAY 15, 1907.



Witnesses

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## PUMP.

No. 871,135.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed May 15, 1907. Serial No. 373,711.

*To all whom it may concern:*

Be it known that I, PHILIP A. MYERS, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention relates to pumps, and more particularly to pumps such as are employed for forcing water into a storage receptacle where it is subjected to air pressure which forces it through a system of pipes.

The object of the invention is to provide a pump of this character which will pump the air and the water into the receptacle simultaneously, and which can be readily adjusted to pump either water alone or both air and water.

With these objects in view my invention consists in certain novel features of construction and in certain parts and combinations hereinafter to be described, and then more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a complete pump embodying my invention; Fig. 2 is a vertical section, taken centrally through the lower portion of such a pump; Fig. 3 is a detail sectional view of the discharge pipes and the valve controlling the flow through the same; Fig. 4 is a transverse sectional view on the line *xx* of Fig. 1; and Fig. 5 is a sectional detail view of the check valve.

In these drawings, I have illustrated the preferred form of my invention and have shown the same as embodied in a pump of well known construction, comprising an upright support or standard 1, upon which the handle 2 and the several parts of the operating mechanism are supported and which is provided at a point intermediate its ends with a base 3, which is adapted to rest upon a supporting platform and form a support for the pump as a whole. The standard 1 is preferably hollow and closed at its upper end to form an air chamber, as hereinafter described. Secured to the lower end of the hollow standard 1 is a housing 4 divided into three compartments, one of which compartments, as shown at 5, is screw-threaded at its upper end to receive the lower end of the hollow standard 1 and is closed at its lower end. This compartment 5 is connected at one side

to a compartment 6, (see Figs. 2 and 4), which is open at both its top and bottom and is connected at its lower end to the connecting pipe 7 and provided at its upper end with a plunger tube 8 extending in alinement with the connecting pipe 7 and of smaller diameter than said connecting pipe.

Supported from the connecting pipe is a pumping cylinder 9, provided with the usual pumping adjunct. This cylinder is preferably of the usual construction, having a valve 10 at the lower end thereof and provided with a lifting bucket or valved piston, 11, of any suitable construction, which is connected to a pump rod 12 which extends upward through the connecting pipe, chamber 6 and plunger tube 8 to a point near the upper end of the standard 1, where it is connected by any suitable means with the operating handle 2, this means being here shown as consisting of a rack secured to the pump rod 12 and a toothed segment secured to the operating handle 2 and adapted to engage said rack.

That portion of the pump rod 12, which extends through the plunger tube 8, is provided with an inverted bucket or piston 13 which serves to close said tube against the passage of water, but to allow the rod a free reciprocating movement therein. This tube may be secured to the chamber 6 in any suitable manner, but I prefer that herein shown, in which the tube is mounted in a plug or cap 14 which is screw-threaded in the upper end of the compartment 6. The compartment 6 is connected by a passage with a third compartment 16, (see Figs. 3 and 4), which is also open at the top and bottom and is connected at its upper end with a pipe 17 which is provided at its upper end with a discharge spout 18. At its lower end the compartment 16 is connected with a second discharge pipe 19, which preferably leads to a suitable storage tank. The flow of water to the pipes 17 and 19 is controlled by means of a double faced valve 20, mounted within the compartment 16 and adapted, when in its lower position, to close the pipe 19 and cause the water to flow through the pipe 17 and discharge spout 18, and, when in its upper position, to close the pipe 17 and cause the water to flow through the pipe 19 to the storage tank. This valve is provided with a suitable rod 21 which preferably ex-



tends to a point near the upper end of the standard 1 where it is provided with suitable means for operating the same, which is here shown as consisting of a cam 22 and a handle 23, the cam being adapted to engage the upper end of the rod and raise or lower the same when it is rotated about its center by means of its handle.

A second cylinder 25, of greater capacity than the cylinder 9, is interposed in the connecting pipe 7 at a point intermediate the cylinder 9 and the housing 4 and is provided with suitable pumping adjuncts. This cylinder may be secured at any suitable point intermediate these two parts and preferably consists of a cylinder similar in most respects to the cylinder 9, save that it is not provided with a valve at the lower end thereof, both the inlet and outlet passages being open at all times. This cylinder is preferably provided at its opposite ends with suitable caps 26 which serve as means for connecting the cylinder proper with the end of the connecting pipe 7. These caps are preferably hollow and form extensions at the opposite ends of the cylinder.

Mounted within the cylinder 25 and secured to the pump rod 12, which extends through the same, is a lifting bucket or valved piston 27, of any suitable construction, adapted to move in unison with the piston 11 of the cylinder 9. The cylinder 25 is provided with a suitable air inlet which preferably consists of a small pipe 28 connected thereto near the bottom of the cylinder, and is here shown as connected to the bottom cap 26 beyond the limit of movement of the piston. The pipe 28 is provided with an upwardly extending portion 29, having its upper end extending to a point above the water level and open to the atmosphere. A second pipe 30 is connected to the cylinder 25 near its upper end, preferably to the upper cap 26, beyond the limit of movement of the piston, and is connected at its outer end to the pipe 29, thus forming a by-pass connecting the opposite ends of the air pumping cylinder 25, the by-pass being connected with the interior of the cylinder by means of the hollow caps 26. The pipe 29 is provided at its point of union with said pipe 30 with a three way valve 31 connecting the pipes 28, 29 and 30 and provided with an operating arm 32, to which is connected a rod 33 which extends preferably above the supporting platform and is provided with a suitable operating handle 34, by means of which the three way valve 31 is turned to connect the pipe 28 either with the air through the upper portion of the pipe 29 or with the upper part of the cylinder 25 through the pipe 30. A suitable check valve 35 is interposed between the three way valve 31 in the pipe 28 and the cylinder 25.

The operation of the device will be readily understood from the foregoing description. The pump is operated in the usual manner by means of the handle 2, the pumping cylinder 9 and its pumping adjuncts lifting the water and forcing the same into the cylinder 25, where it is further elevated by means of the bucket 27. The cylinder 25 is of considerably greater capacity than the cylinder 9, and, when the pipe 28 is open to the atmosphere, the bucket 27 will draw in, through the check valve 35, a quantity of air substantially equal to the difference in the capacity of the two cylinders, which air is, on the next stroke of the piston, forced through the connecting pipe 7 to the discharge pipe 19 and into the storage tank. Thus, it will be seen that the operation of the pump in the usual manner serves to pump both air and water into the storage tank at one time. If it is desired to pump water alone, the valve 31 is turned to connect the upper pipe 30 with the pipe 28, thus cutting off the air from the pipe 28 and forming a by-pass which permits that portion of the contents of the cylinder 25 which is in excess of the capacity of the cylinder 9 to circulate through the by-pass and results merely in the circulation of this fluid without in any way interfering with or impeding the operation of the pump.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a pump of the character described, the combination, with a water pumping cylinder, an air pumping cylinder connected thereto, pistons for said cylinders, and a common discharge for the air and the water, of a by-pass connecting the opposite ends of said air pumping cylinder, and means for controlling the passage of fluid through the same.

2. In a pump of the character described, the combination, with a water pumping cylinder, an air pumping cylinder connected thereto and having an air inlet, pistons for said cylinders, and a common discharge for the air and the water, of a by-pass connecting the opposite ends of said air pumping cylinder, and means for simultaneously closing said air inlet and opening said by-pass.

3. In a pump of the character described, the combination, with a connecting pipe, a water pumping cylinder connected thereto, an air pumping cylinder interposed in said connecting pipe, and pistons for said cylinders, of a by-pass connected to said air pumping cylinder near the opposite ends



thereof, an air inlet pipe connected to said by-pass, and means for cutting off said by-pass from one end of said cylinder and connecting the air inlet pipe with the other end  
5 of said cylinder.

4. In a pump of the character described, the combination, with a connecting pipe, a water pumping cylinder connected thereto, an air pumping cylinder interposed in said  
10 connecting pipe, hollow caps closing the ends of said air pumping cylinder and adapted to receive the adjacent ends of said connecting pipe, and pistons for said cylinders, of a by-pass connected to said caps beyond the  
15 limits of movement of the piston in said air pumping cylinder, and means for simultaneously closing said air inlet and opening said by-pass.

5. In a pump of the character described,  
20 the combination, with a connecting pipe, a cylinder connected thereto, a bucket adapted to reciprocate in said cylinder, a second cylinder of greater capacity than said first-mentioned cylinder connected to said connecting  
25 pipe above said first-mentioned cylinder, a bucket within said second cylinder, and means for operating the buckets of said cylinders in unison, of a pipe connected to said second cylinder near the bottom thereof,  
30 and means for connecting said pipe either

with the open air or with the upper end of said second cylinder.

6. In a pump of the character described, the combination, with a connecting pipe, a cylinder connected thereto, a bucket adapted  
35 to reciprocate in said cylinder, a second cylinder of greater capacity than said first-mentioned cylinder connected to said connecting pipe above said first-mentioned cylinder, a bucket within said second cylinder, and  
40 means for operating the buckets of said cylinders in unison, of a pipe having one end connected to said cylinder near the bottom thereof and its other end open to the atmosphere, a second pipe connected at one end  
45 to said cylinder near its upper end and having its other end connected to said first-mentioned pipe, and a three-way valve mounted in said first-mentioned pipe at its point of  
50 connection with said last-mentioned pipe and adapted to connect said first-mentioned pipe either with the atmosphere or with the upper end of said cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP A. MYERS.

Witnesses:

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W. W. INGMAND.