(No Model.)

# W. I. PHIFER.

## PUMP.

No. 571,929. Patented Nov. 24, 1896.

Fig. 1

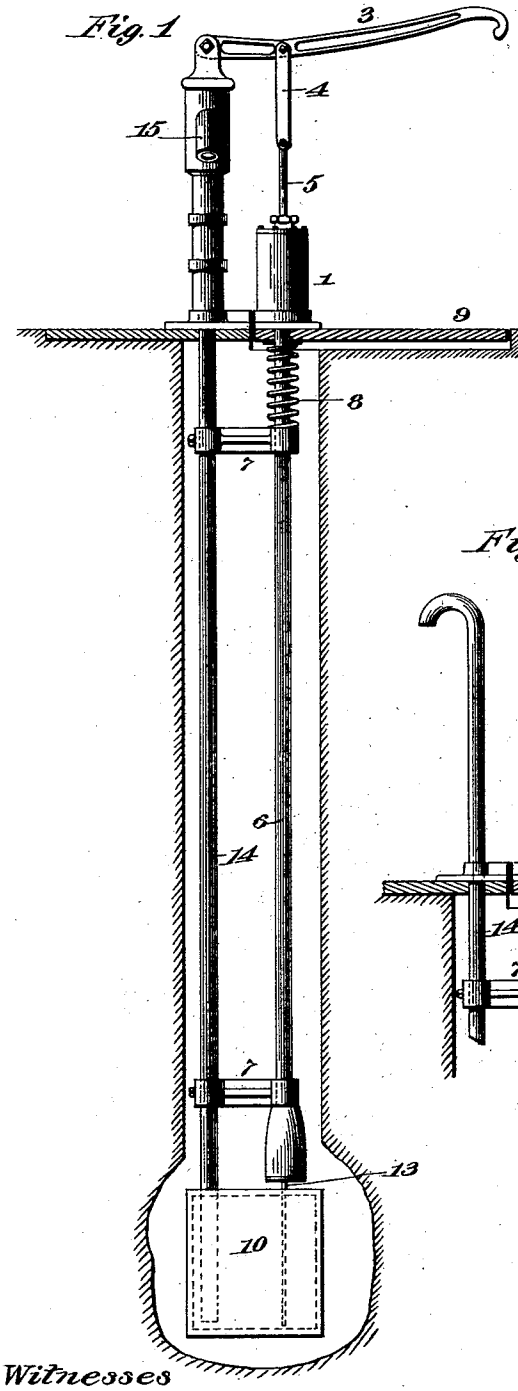


Fig. 2

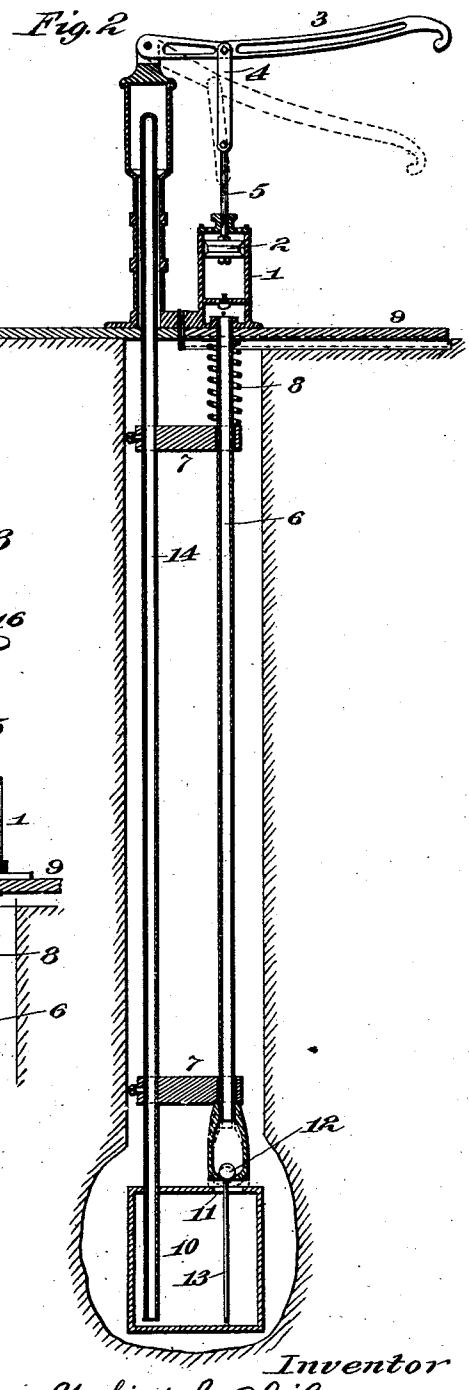


Fig. 3




Witnesses
E. G. McKee
K. A. Hare

Inventor
Washington I. Phifer
By John Wedderburn
his Atty

# UNITED STATES PATENT OFFICE.

WASHINGTON I. PHIFER, OF CALIFORNIA, MISSOURI, ASSIGNOR OF ONE-FOURTH TO OTTO CONRAD, OF SAME PLACE.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 571,929, dated November 24, 1896.

Application filed May 23, 1896. Serial No. 592,795. (No model.)

*To all whom it may concern:*

Be it known that I, WASHINGTON I. PHIFER, a citizen of the United States, residing at California, in the county of Moniteau and State of Missouri, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pumps, the object of the same being to provide a simple device for forcing water upward from wells, cisterns, and the like which is simple in construction, effective in operation, and which forces air through the water in the well or cistern each time the same is operated.

The invention consists of a cylinder having a reciprocating plunger therein, an air-pipe leading downwardly from said cylinder, a platform or small foot-rest connected to said air-pipe for forcing the same downward, a spring for normally holding said air-pipe upward, a water-chamber located in the well or cistern, having an opening in its upper end with which said air-pipe is adapted to make connection, a water-pipe leading upwardly from the lower end of said water-chamber, and suitable means for reciprocating said plunger.

The invention also consists in other details of construction and combinations of parts which will be hereinafter more fully described and claimed.

In the drawings, Figure 1 represents a side elevation of my improved pump complete. Fig. 2 is a vertical sectional view through the same. Fig. 3 is a detail view showing a modified form of the invention.

Like reference-numerals indicate like parts in the different views.

The cylinder 1 has mounted therein a plunger 2, which is adapted to be reciprocated by any suitable means. In the form shown in Fig. 1 an ordinary pump-lever 3 is connected, through a suitable pitman 4, with the plunger-rod 5 of the plunger 2, so that a vibration of the lever 3 will cause a reciprocation of the plunger 2. Suitable check-valves are provided in the plunger 2 and cylinder 1, so that the air will be forced outward from said cylinder upon the downward stroke of said plunger. Leading from the lower end of the cylinder 1 is an air-pipe 6, which is mounted in suitable bearings 7 and held normally upward by means of a spiral spring 8 engaging one of the bearings 7 and connected to said pipe 6. A platform or foot-rest 9, located adjacent to the pump-head, is connected to the air-pipe 6, so that when the pump is operated said platform will be depressed, carrying with it the air-pipe 6. In the bottom of the well or cistern from which my pump is to draw water I locate a water-chamber 10, having an opening 11 in its upper end, with which opening the lower end of the air-pipe 6 is adapted to connect. A ball check-valve 12 is provided in the lower end of the pipe 6, having a stem 13 thereon, which projects downwardly therefrom and engages, when the pipe 6 is in its lowermost position, the under side or bottom of the chamber 10. Leading upwardly from the lower part of the water-chamber 10 is a water-pipe 14, which connects with a suitable spout 15 in the pump-head.

In the form of my invention shown in Fig. 3 the plunger-rod 5 is provided with an ordinary handle 16, by which said plunger may be depressed for operating the pump. This form of my device is particularly adapted for use in shallow wells or cisterns wherein but a small amount of power is required to operate the pump.

The operation of my improved pump is as follows: When it is desired to draw water from the well or cistern, the operator steps upon the platform 9, which, through its connection with the pipe 6, forces said pipe downward and makes connection between the lower end thereof and the upper end of the water-chamber 10, at the same time opening the check-valve 12 by bringing its stem 13 into engagement with the bottom of the chamber 10. The plunger 2 is then reciprocated either by operating the pump-handle 3 or by forcing down upon the handle 17. In either case air is forced downward through the pipe 6 into the upper part of the chamber 10 and forces out the water in said chamber through the pipe 14, leading upwardly therefrom. When a sufficient amount of water has been drawn, the operator stepping off of the platform 9 enables the pipe 6 to be raised

through the action of the spring 8, disconnecting the lower end of said pipe from the upper end of the chamber 10. This being done, water rushes in through the opening 11, refilling the chamber 10, and the compressed air which was in said chamber is released and percolates through the water, keeping it fresh and pure. In order to make the connection between the lower end of the pipe 6 and the upper end of the chamber 10 water and air tight, I secure to the lower end of said pipe rubber or other suitable packing material.

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

1. In a pump, the combination with an air-cylinder, a plunger therein and means for reciprocating said plunger, of a water-chamber having an opening in the upper end thereof, a water-pipe leading upwardly from said chamber, an air-pipe leading downwardly from said cylinder, means for normally holding said pipe out of connection with said water-chamber and means for connecting said pipe and chamber, substantially as and for the purpose described.

2. In a pump, the combination with an air-cylinder, a plunger therein and means for reciprocating said plunger, of a slidingly-mounted air-pipe leading downwardly from said cylinder, means for holding said pipe normally upward, a valve in the lower end of said pipe, a water-chamber having an opening in its upper side with which said pipe is adapted to be brought into engagement, a water-pipe leading upwardly from said chamber and means for forcing said air-pipe downward, simultaneously opening said valve and connecting said pipe and chamber, substantially as and for the purpose described.

3. In a pump, the combination with an air-cylinder, a plunger therein and means for reciprocating said plunger, of a slidingly-mounted air-pipe leading downwardly from said cylinder, means for holding said pipe normally upward, a ball-valve in the lower end of said pipe having a stem extending downwardly therefrom, a water-chamber, a water-pipe leading upwardly therefrom, and means for forcing said air-pipe downwardly, whereby connection is made between the lower end of said pipe and said chamber and said valve is released by the engagement of its stem with the bottom of said chamber, substantially as and for the purpose described.

4. In a pump, the combination with an air-cylinder, a plunger therein and means for reciprocating said plunger, of an air-pipe leading downwardly therefrom, slidingly mounted in suitable guides or bearings, a platform connected to the upper end of said pipe, a spring for normally holding said pipe in its upper position, a water-chamber, having an opening therein, located beneath the lower end of said pipe, and a water-pipe leading upwardly from said chamber whereby, upon the depression of said platform, said air-pipe will be forced downwardly and connection made between it and said water-chamber, substantially as and for the purpose described.

5. In a pump, the combination with an air-cylinder, a plunger therein and means for reciprocating said plunger, of an air-pipe leading downwardly therefrom, slidingly mounted in suitable guides or bearings, a platform connected to the upper end of said pipe, a spring for normally holding said pipe in its upper position, a ball-valve on the lower end of said pipe having a stem extending downwardly therefrom, a water-chamber having an opening therein in which the stem of said valve projects, and a water-pipe leading upwardly from said chamber whereby, upon the depression of said platform, said air-pipe will be forced downwardly, connection will be made between it and said chamber, and said valve will be opened by the engagement of its stem with the bottom of said chamber, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WASHINGTON I. PHIFER.

Witnesses:
S. B. PHIFER,
E. M. FRANCIS.