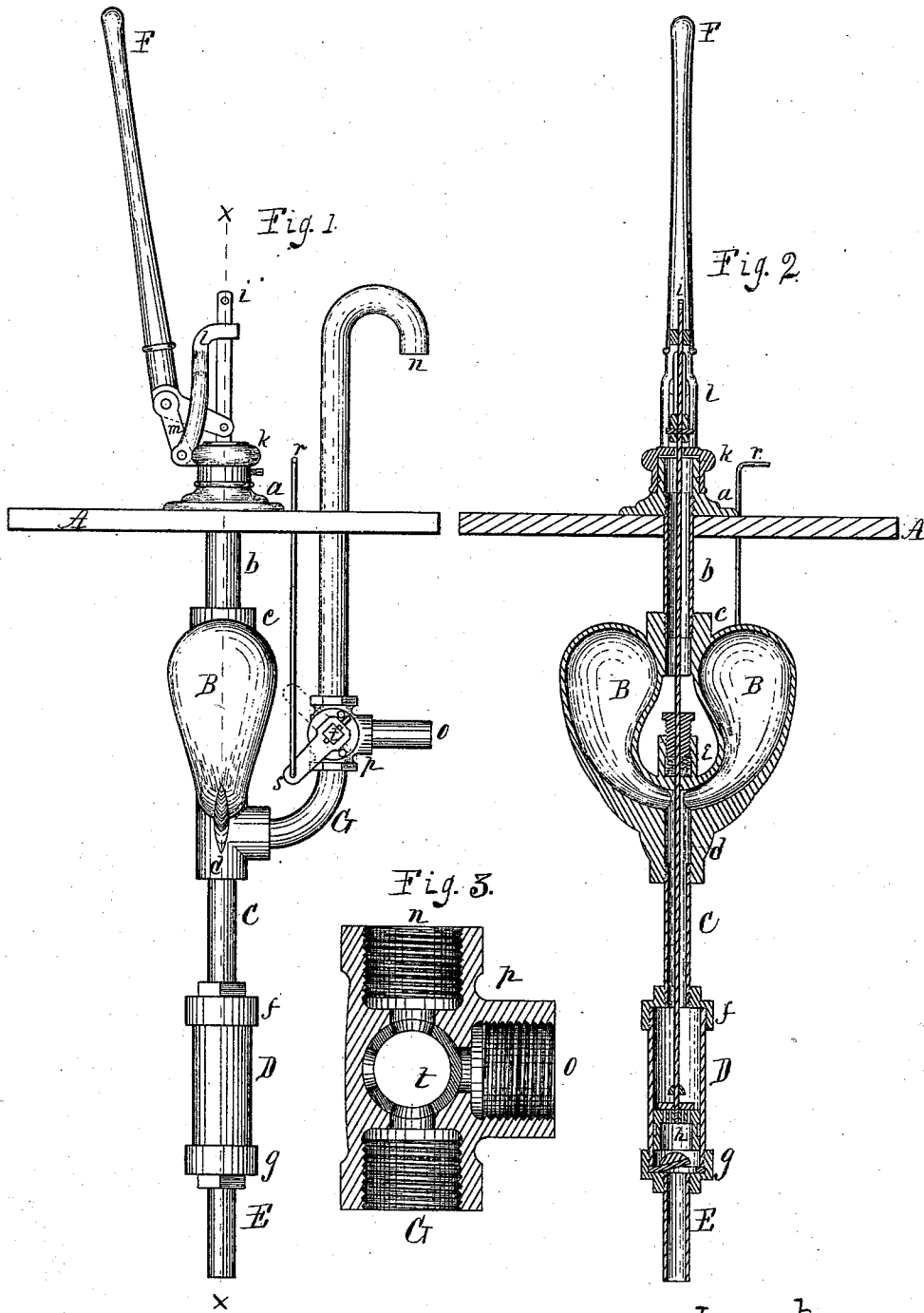


W. D. TRAHERN.
PUMP.

No. 177,667.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **177,667**, dated May 23, 1876; application filed April 19, 1876.

To all whom it may concern:

Be it known that I, WILLIAM D. TRAHERN, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Pumps, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to that class of pumps in which the plunger-rod, in entering the water-pipe, passes through a stuffing-box, and in the present state of the art, so far as known to me, when employed in wells or other similar situations, the stuffing-box has been supported in position by securing it to the lower end of a timber-piece secured to the surface-covering, from which it depends into the well; or they have been supported on a transverse timber supported in the side walls of the well.

To improve the pump in this and other respects, which will be hereinafter described, forms the subject-matter of this patent.

In the drawings, Figure 1 is a side elevation of my improved pump, and Fig. 2 is a transverse vertical section taken on dotted line *x*. Fig. 3 is an enlarged sectional view of the three-way faucet employed in the delivery-pipe.

In the drawings, A represents the surface-covering of a well. *a* is a pump-base, secured to the upper surface of the well-cover, and its hollow center is screw-threaded, which receives the screw-threaded upper end of the suspension-pipe *b*, which extends through the well-cover into the well. B represents twin air-chambers, connected near their upper ends by a tubular portion represented at *c*, which receives the screw-threaded lower end of the suspension-pipe *b*. The air-chambers at their lower ends open into a water-chamber, *d*, which extends upward between the air-chambers. Its upper end is fitted in ordinary stuffing-box form, as represented at *e*. The lower end of water-chamber *d* is screw-threaded, and receives the screw-threaded upper end of water-pipe C, the lower end of which is also screw-threaded, and is received in the screw-threaded upper head, *f*, of pump-barrel D. The lower head, *g*, of pump-barrel D is also screw-threaded, and receives the screw-threaded upper end of water-pipe E, which extends to, or nearly

to, the bottom of the well. The pump-barrel D is of ordinary construction, and is fitted with a piston, *h*, which, together with the pump-barrel, are fitted with valves to operate to raise water in the usual manner. The piston *h* is connected to the lower end of the piston-rod *i*, which extends up through the water-pipe C, water-chamber *d*, stuffing-box *e*, suspension-pipe *b*, pump-base *c*, cap *k*, and guideway in the upper end of arm *l* on cap *k*, to be operated upon by any suitable appliance, to impart an up-and-down motion to the piston *h* for the purpose of raising water from the well. The pump-base *a* is provided with an upward-projecting tubular portion provided with an annular groove, and is fitted to enter the cap *k*, which is held in place by a set-screw passing through the neck of the cap into the annular groove in the tube, by means of which the cap *k* may be set and held in any position on the base. The cap *k* is provided with an upward-projecting arm, *l*, with its upper end fitted to serve as a guideway through which the free end of the piston-rod plays in the up-and-down movements. F is a lever pump-handle, of the form represented in the drawings, having its lower end of angular form, and is pivoted at its extreme lower end to the piston-rod. *m* is a hinged fulcrum-link, pivoted at its lower end in the base of the arm *l*, and at its upper end at the angle of the lever-handle F, and is employed for the purpose of imparting a vertical movement of the piston through its connection with the piston-rod, for the purpose of raising water from the well by hand-power, when employed as a hand-pump. G is a discharge-pipe, secured in the water-chamber *d* below the junction of the air-chambers with the water-chamber, and consists of two branches, *n* and *o*, one of which, *n*, rises through the surface-covering of the well, and is employed to deliver the water at the well. The other branch, *o*, is designed to be extended any proper distance under ground, if preferred, to any proper point for the purpose of delivering the water from the well at any proper point within the capacity of the pump; and for the purpose of changing the delivery of the water through either discharge-pipe, I have provided the discharge-pipes G, *n*, and *o*, at their junction, with a three-way faucet, *p*, fitted with stops to

limit its movements, so as to open it to its fullest capacity in either direction, and can be moved in either direction by means of the rod *r*, and its connection with the faucet by means of the crank-arm *s* on the barrel of the faucet. This faucet is of such construction that it cannot be set in any position within the limit of its movement so as to shut off the flow of water from both the discharge-pipes at the same time. This is of importance for the safety of the pump when operated by a windmill.

In Fig. 3 the barrel *t* of the faucet is shown in the position of the dotted lines in Fig. 1, in which instance the flow of water would be from the pipe *n*.

From the foregoing description, reference being had to the drawings, it will be seen that the twin air-chambers, fitted with suitable connections for the suspension-pipe *b*, water-pipe *C*, delivery-pipe *G*, and stuffing-box *e*, are composed of one casting, forming a yoke-connection between the suspension-pipe *b* and the stuffing-box *e* in such a manner as to cut off all water-connection with the suspension-pipe; and the stuffing-box being located in the yoke between the air-chambers, immediately above their junction with the water-chamber, insures a more perfect retention of the air in the chambers, and consequently a more perfect flow of water than when the stuffing-box is located on the top of the air-chamber, with the piston-rod passing from the top through the chamber.

The pump, as above described, is wholly suspended from the surface-covering of the well by means of the suspension-pipe *b*, connecting the parts. The object in employing the pipe *b* to suspend the pump from the surface-covering is to provide the means of admitting the piston-rod to play vertically in the axis of the pump to obviate any lateral or oblique action of the piston-rod on the suspended parts, to prevent lateral vibration thereof when operating the pump.

I have described the pump with twin air-chambers, and this I prefer; but it is evident that a single air-chamber may be employed

without departing from the gist of my invention; or, when air-chambers are not required, a yoke connecting the parts substantially in the same manner may be employed. I have also described the pump more particularly as a hand-pump; but it is also designed as a power-pump, and is well adapted to be operated by wind-power, which is accomplished by connecting the free end of the piston-rod *i* to the windmill, or the prime mover of any kind selected by the user.

I claim as my invention—

1. The twin air-chambers, provided with stuffing-box and suitable connection for the reception of the suspension-pipe *b*, water-pipe *C*, and discharge-pipe *G*, cast in one piece, substantially as and for the purpose hereinbefore set forth.

2. In combination with the air-chambers, as described, the water-pipes *C* and *E*, and pump-barrel *D*, as and for the purpose hereinbefore set forth.

3. In combination with the air-chambers, as described, the discharge-pipe *G*, with delivery-branches *n* and *o*, fitted at the junction of the several branches with a three-way faucet, *p*, operated by rod *r*, as and for the purpose hereinbefore set forth.

4. The suspension-pipe *b*, in combination with the pump-base *a* and stuffing-box *e* by yoke-connection, with pump thereto attached, for the purpose of suspending the pump from the surface-covering, and to admit the piston-rod to play vertically in the axis of the pump to prevent lateral vibration of the suspended parts, substantially as hereinbefore set forth.

5. In combination with the pump-base *a*, the adjustable cap *k*, fitted with guide-arm *l*, fulcrum-link *m*, and lever-handle *F*, for the purpose of adjusting the lever-handle to be operated from any convenient position, in the manner hereinbefore set forth.

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Witnesses:

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