

*J. Reed,
Pump Lift.*

N^o 2,055.

Patented Apr. 16, 1841.

Fig. 1.

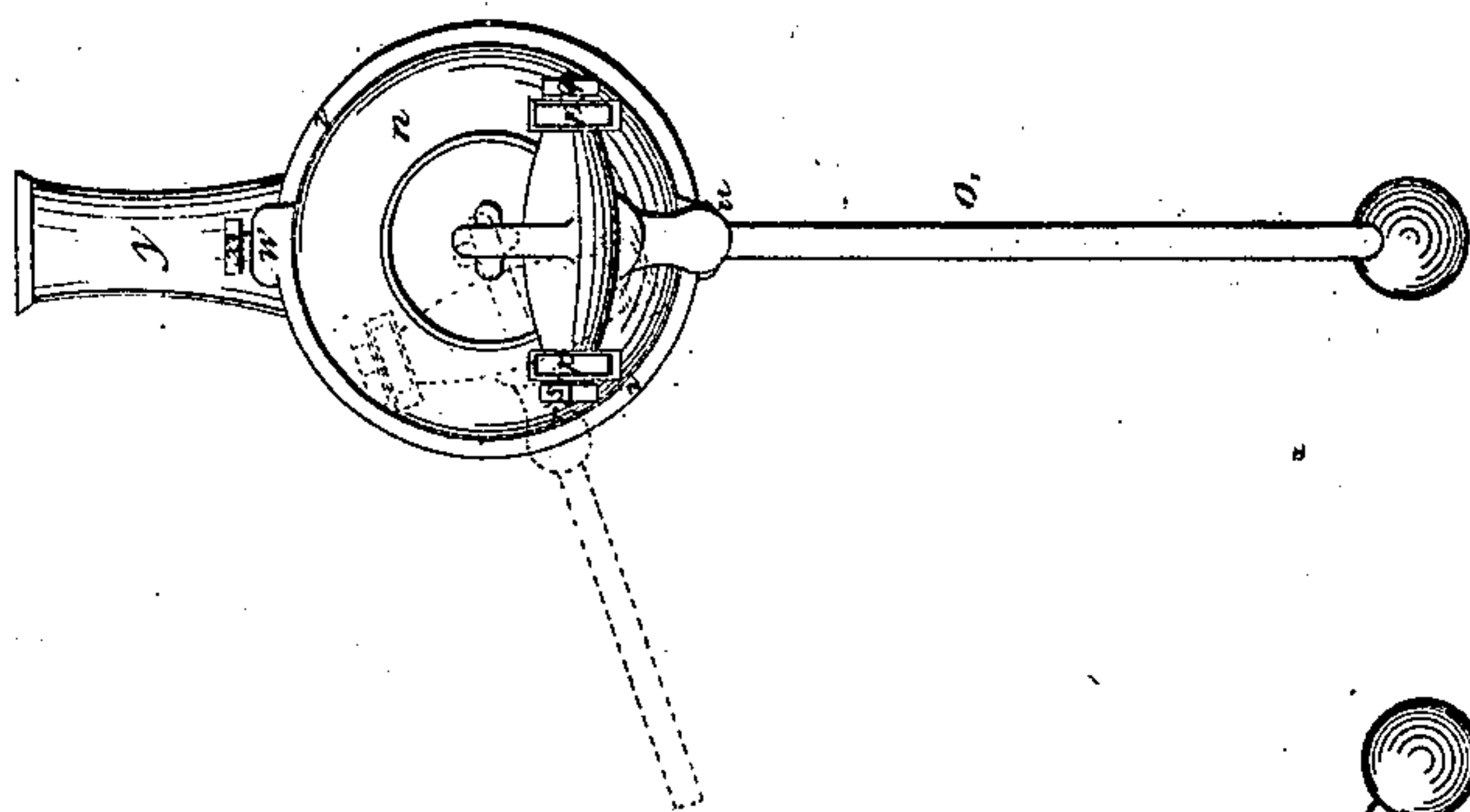


Fig. 3.

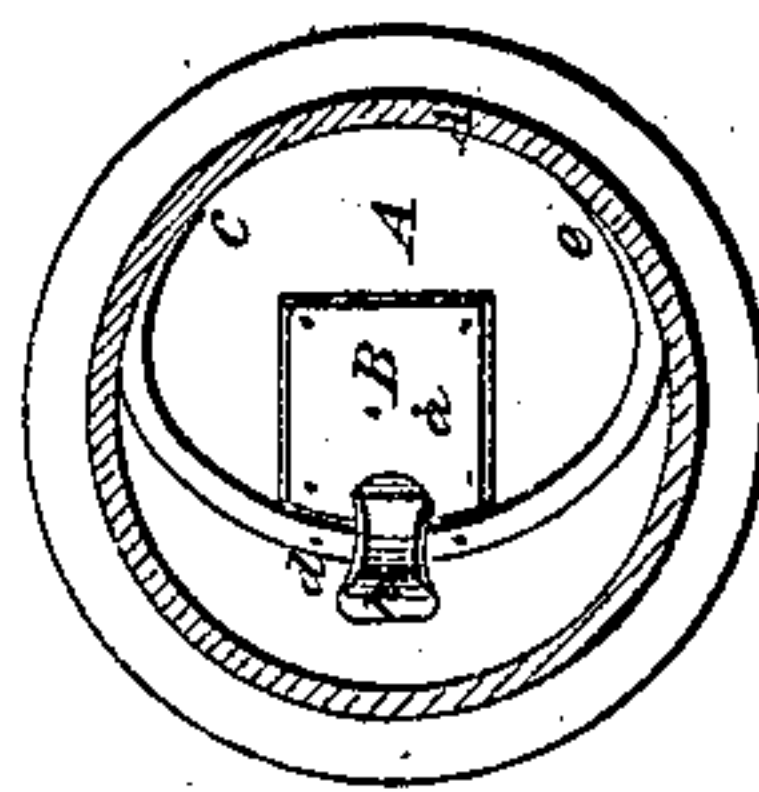


Fig. 2.

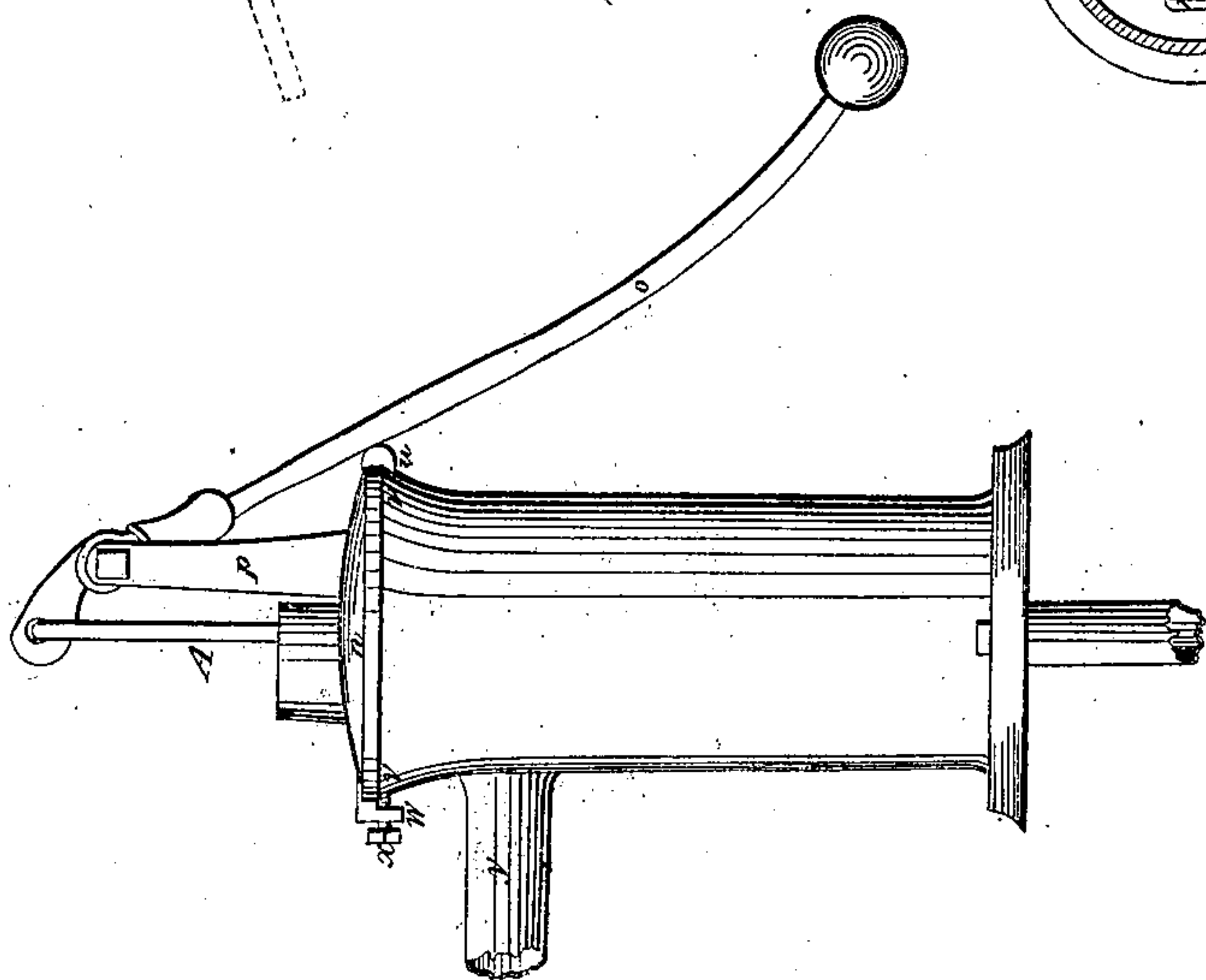
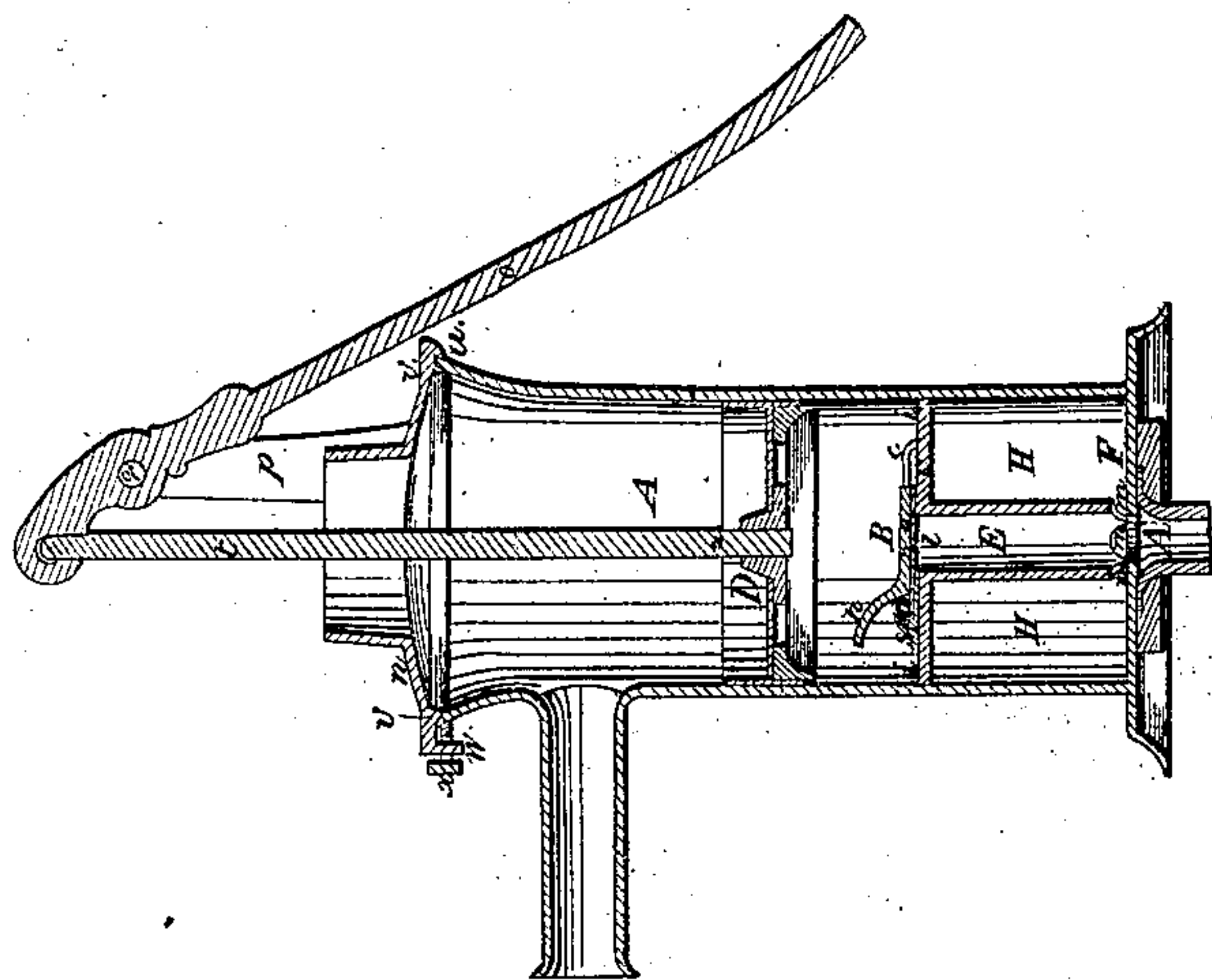


Fig. 4.



UNITED STATES PATENT OFFICE.

JESSE REED, OF MARSHFIELD, MASSACHUSETTS.

PUMP.

Specification of Letters Patent No. 2,055, dated April 16, 1841.

To all whom it may concern:

Be it known that I, JESSE REED, of Marshfield, in the county of Plymouth and State of Massachusetts, have invented new and useful Improvements in Pumps for Raising Water or other fluids from Wells or Cisterns, and that the following is a full and exact description of the same.

The said description, taken in connection with the accompanying drawings hereinafter referred to, composes my specification, setting forth and exhibiting the principles of construction of my improvements, by which they may be distinguished from others of a like character, and such parts or combinations therein, as I claim and for which I solicit an exclusive property, to be secured to me by Letters Patent.

Figure 1, represents a top view; Fig. 2, an elevation; Fig. 3, a horizontal section above the lower valve, and Fig. 4 a vertical section of a pump constructed with my improvements.

The body or cylinder of my pump is to be cast iron, but may be of any suitable material, and may be formed and shaped as denoted in the different drawings, and as will be hereafter more particularly explained.

The first of my improvements consists in the manner of fitting and arranging the lower valve. This is seen in Figs. 3 and 4, where A is the cylinder or pump and B the valve above mentioned. It consists of a square or other proper shaped plate *a*, of cast iron, having a piece *b*, of sole leather riveted to its underside. The leather is somewhat longer than the valve plate, or extends back, and is riveted or otherwise properly confined, to the middle of a curved spring *c d e*, Fig. 3, *d*, Fig. 4, on the lower side thereof, the said curved spring being placed at a short distance back of the rear side of the valve plate, *a*, in order to permit the valve to rise upward, the leather or narrow portion thereof, intervening between the rear of the valve plate and the inner side of the spring, forming the hinge of the valve. The spring *c d e*, Fig. 3, has a shape or curve somewhat approaching to a semi-ellipse—or rather more than the same, as seen in Fig. 3. Now, when the spring, with the valve affixed thereto, as above described, is in-

serted in the pump chamber and rests on the bottom plate C thereof, the expansive force of the ends *c, e*, of the spring acting on the inner circumference of the cylinder or chamber A, keeps the valve in its position or on its seat during the operations of the pump. The central part *d*, Figs. 3 and 4, of the spring is confined to the top of the plate C, by being passed into a notch *f* of a stud *g*, cast or projecting from the upper surface of the bottom of the chamber, as seen in Fig. 4. Each end *c, e* of the spring *c d e*, is turned downward at right angles to the spring, a distance about equal to the thickness of the leather *b*, as seen at *c* Fig. 4. From the above, it will be seen, that the valve may be easily removed at any time, if repairs thereto are requisite, by simply inserting a hook, on the end of a piece of wire, under the spring *c d e*, and lifting it out of the chamber; and in order, effectually to open the lower valve, to let off the water in cold weather, to prevent the same from freezing and bursting the pipe, a curved projection *h* is cast to the top of the valve plate *a*, extending back, as seen in Figs. 3 and 4. When the pump brake or handle is lifted up very high, it will depress the upper box, to such a degree, as to cause it to strike upon the end of the projection *h*, and bearing down upon the same, open the valve. But this being no part of my present invention, but having been heretofore patented by me, it requires no further description.

My second improvement is thus described. The upper box is represented at D Fig. 4. The barrel of the pump is cast or formed somewhat longer than the common pump. In the lower part thereof, I insert a circular plate C, which I affix therein, by a ring or iron cement *i i*, when the pump is constructed of iron, or by soldering the same when of brass or copper or other metal, or in any other proper manner. A tube or pipe E is connected to the center of the plate C, passing thence downward, and resting on the center of the lower plate F, or bottom of the pump barrel, over the hole *k* therein, through which the water rises from the pipe G, which communicates with the well or cistern from which the same is to be elevated. An opening *l* is made through the center of the plate C, over which the lower valve B

rests, and alternately opens and closes the communication between the pipe E and the space between the upper and lower boxes. From the above, it will be seen, that a chamber H H, is formed between the plate C, and the bottom F of the pump surrounding the exterior of the tube E. The tube E which should be rather larger in diameter than the tube G—should communicate with the chamber H H, by one or more holes *m*, bored or formed through the lower end of the pipe E as seen in Fig. 4.

The tube G is connected in any convenient manner, to the lower side of the bottom F, so that the joint may be water and air tight. From the above, it will be seen that when the upper box is raised or put in motion, the air is drawn from the pipe *o*, and a considerable quantity will also be extracted from the chamber H H. The water rushing up the pipe G, by the pressure of the external atmosphere, fills the same and enters and partly fills the chamber H, H, or to the height of the top of the orifices *m. m.* At the next upward stroke of the piston or upper box from the contiguity of the chamber H, and pump barrel, most of the water in the former, and a portion of that in the pipe G, together with a portion of the air in the chamber H H, will be immediately drawn through the pipe E, into the space between the upper and lower boxes, or between the plate C and the box D, leaving a partial vacuum in the space H H. As, in the generality of pumps, the pipe G is not sufficiently large, to admit the water to pass up so freely, without friction, and in such quantity, as is required, during the time of each upward stroke of the piston, the barrel of the pump or space between the upper and lower boxes is seldom filled, and the consequence is, that when the upper box is suffered to descend, it does the same, with a sudden jerk or blow upon the top surface of the water, occasioned by the pressure of the atmosphere, the chamber below the same being only partially filled with water. A partial vacuum, being formed as above mentioned in the space H H, by the rise of the piston, and consequent extraction of a portion of the water and air therefrom, while the piston descends the water of the cistern is still rising through the tube G, into the chamber H; and at the next upward stroke of the piston, all or nearly all that has accumulated therein, will be drawn therefrom, as before, and a certain quantity of water, (equal to that raised by the common kind of pump,) will, at the same time, rise through the pipe G. Now, during the interval of time, of the downward stroke of the piston, an extra quantity, besides the above, rises into the chamber—H H, and is drawn therefrom, and fills that space before mentioned, the vacuum of which, caused the

return of the piston with the sudden jerk or blow as described,—and thus it will be seen, that by the addition of the chamber H H, to the barrel of the pump, all that portion of water which is prevented from rising, (when the piston is elevated) by the friction of the pipe G, has the opportunity of ascending into the chamber H, during the time of the downward stroke of the piston or upper box D. With a pump, constructed on the above principles, a very material difference in the quantity of water raised, over those of the ordinary kind in common use, is perceptible, and a great saving of labor is effected, particularly when used on shipboard for discharging water from the hold of a vessel.

The next of my improvements consists in so arranging the top of the pump, to which the handle or lever, which raises the piston, is connected, that the handle may be moved around and set at any angle, with respect to the nose, or spout from or through which, the water is discharged. In Figs. 1, 2, 4, *n* is the top plate of the pump, to which the handle or lever *o* Figs. 1, 2, is connected by two standards *p, p*, projecting upward therefrom. The lever *o*, turns on a bolt or pin *q r* as a fulcrum, passing through holes bored through the top of each standard *p*, and that part of the lever *o*, intervening between the same, as seen in Fig. 1. The end *r* of the bolt *q r*, has a screw cut thereon, on which a nut *s* is screwed, to confine the bolt in position. The piston rod *t* is joined to the end of the lever *o*, over the same, as seen in the drawing.

The top plate *n*, of the pump, has a small piece or stud *u* projecting downward over the rim *v v*, cast around the entire top of the pump cylinder, as shown in Figs. 4, 1. Another and similar piece *w*, projecting downward from the plate *n*, on the opposite part thereof, to where the piece *u* is connected, has a screw *x*, (or other similar contrivance, sufficient for the purpose), passing through the same, the end of which screw, when screwed up, shuts against the chamfered edge of the rim *v, v*, as seen in the drawing and drawing the stud *u* against the rim *v*, confines the plate *n* to the pump barrel. Therefore it will be seen, that the handle or lever *o*, of the pump, may be set to any position, with respect to the nose or spout *y*, from which the water runs; by simply turning the upper plate *n*, and the box D, about until the handle is set in the position required, when it is then fixed by turning up the screw *x*.

Having thus described my improvements in pumps, I shall claim—

1. The method of confining the lower valve to its seat, so that it may be easily removed therefrom, for repair or other purpose, by means of a spring, to which

the valve is connected, and which rests on the upper surface of the bottom of the pump barrel, its ends pressing against the interior circumference of the barrel, the same being arranged and constructed substantially as herein before described.

2. I claim, the particular mode above described of constructing a pump, with an air chamber below the lower box, into the bottom of which chamber, the pipe communicating, with the cistern or well is inserted or connected in any proper manner, and through which chamber another pipe passes, the lower end of which, is situated immediately over the top of the induction pipe, while the upper end is joined or connected to the top of the chamber, the said pipe, communicating at top, with the pump barrel, (the lower valve of the same being immediately over and upon its ends), and at bottom, (by any sufficient number of holes or orifices bored through the same), with the said chamber through which it passes, the whole being arranged substantially as above described, and for the purpose of permitting the water, from the cistern or well, to rise into the chamber during the downward stroke of the piston or upper box, and otherwise operating in manner as herein before explained and set forth; meaning in the above not to claim the addition of an air chamber to the lifting pump, but my particular mode of constructing and applying the same as above described.

3. I claim, the method of adjusting the pump handle or lever, which raises and depresses the upper box, by attaching said lever to the top plate or cover of the pump barrel, and arranging said plate or cover as before described, so that it may be turned around and fixed in position by a screw or other similar or suitable contrivance, the whole being constructed and operating substantially as herein above explained and exhibited in the accompanying drawings.

In testimony that the above is a true specification of my improvements in pumps I have hereunto subscribed my name this twenty eighth day of December in the year eighteen hundred and forty.

JESSE REED.

Witnesses:

55 R. H. EDDY,
CALEB EDDY.

Disclaimer.

To Hon. CHARLES MASON, *Commissioner of Patents:*

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The petition of JESSE REED, of Marshfield, in the county of Plymouth and State of Massachusetts, respectfully represents that he was the inventor of certain "improvements in pumps" for which Letters Patent were granted to him under date of April 16th, A. D. 1841; that he has reason to believe that through inadvertence and mistake, the claim made in the specification of said Letters Patent is too broad, including that of which the said patentee was not the first inventor. Your petitioner therefore, hereby enters his disclaimer to that part of the claim in the aforementioned specification, which is in the following words, to wit: "2. I claim the particular mode above described, of constructing a pump, with an air chamber below the lower box, into the bottom of which chamber the pipe communicating with the cistern or well, is inserted, or connected, in any proper manner, and through which chamber another pipe passes, the lower end of which is situated immediately over the top of the induction pipe, while the upper end is joined, or connected, to the top of the chamber, the said pipe communicating at top, with the pump barrel, the lower valve of the same being immediately over and upon its ends, and at bottom, by any sufficient number of holes or orifices, bored through the same with the said chamber, through which it passes, the whole being arranged substantially as described, and for the purpose of permitting the water from the cistern or well, to rise into the chamber, during the downward stroke of the piston or upper box, and otherwise operating in manner as herein before explained and set forth, meaning in the above not to claim the addition of an air-chamber to the lifting pump, but my particular mode of constructing and applying the same as described," which disclaimer is to operate to the extent of the whole interest in said Letters Patent vested in your petitioner, by the grant to him as aforesaid, who has paid ten dollars into the Treasury of the United States, agreeably to the requirements of the act of Congress in that case made and provided.

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JESSE REED.

Boston, April 9, 1855.