No. 778,608. PATENTED DEC. 27, 1904.

J. ROGERS.

# AUTOMATIC AIR COMPRESSOR.

APPLICATION FILED DEC. 23, 1903.

Fig. 1.

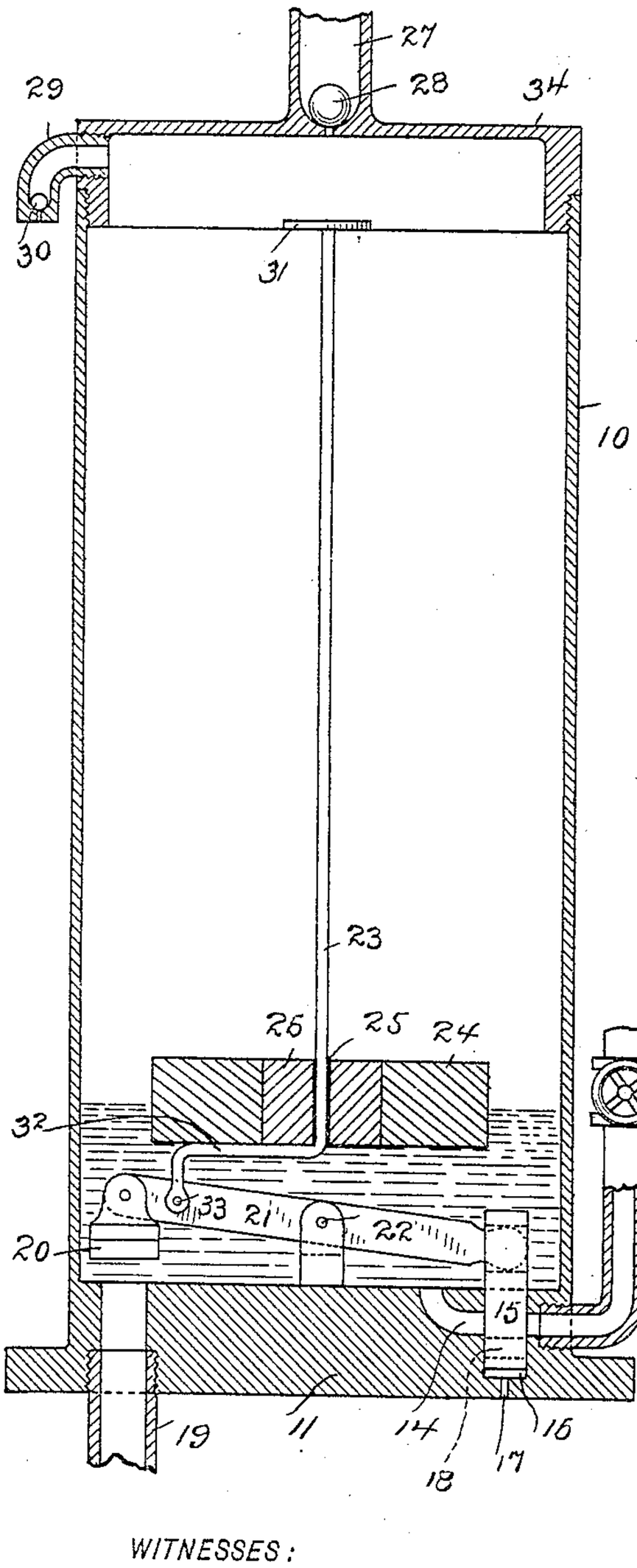
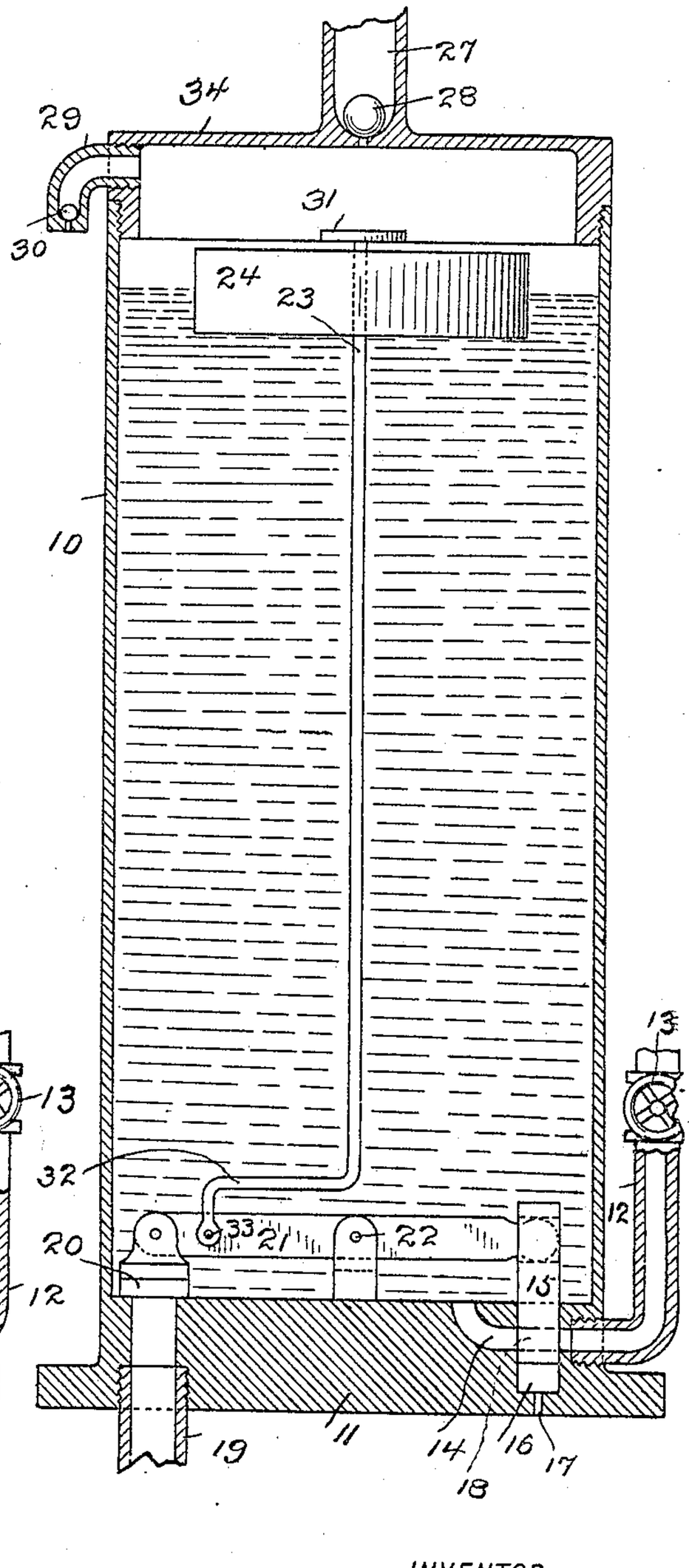



Fig. 2.




WITNESSES:

H. A. Lamb.

S. W. Atherton.

INVENTOR

John Rogers

BY

A. M. Wooster.

ATTORNEY

No. 778,608. Patented December 27, 1904.

# UNITED STATES PATENT OFFICE.

JOHN ROGERS, OF BRIDGEPORT, CONNECTICUT.

## AUTOMATIC AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 778,608, dated December 27, 1904.

Application filed December 23, 1903. Serial No. 186,311.

*To all whom it may concern:*

Be it known that I, JOHN ROGERS, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Automatic Air-Compressor, of which the following is a specification.

My invention has for its object to provide an automatic air-compressor adapted for general use, as in connection with beer-drawing apparatus, atomizers for physicians' use, or the production of light power for any purpose whatever, the only requirement being water-pressure of ordinary force, which may be supplied from a corporation system or from a tank.

With these and other objects in view my invention consists in the simple and novel automatic air- compressor of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to indicate the several parts.

Figure 1 is a vertical section of my novel air-compressor, showing the position of the parts after the completion of an actuation and while the water is passing from the body or cylinder, the eduction-valve being open and the induction-valve closed; and Fig. 2 is a similar view showing the position of the parts during the compressing operation, the induction-valve being open and the eduction-valve closed and the float being nearly at the limit of its upward movement.

10 denotes the body or cylinder, which may be made of metal and constructed in any ordinary or preferred manner. I have shown the body as provided with a base 11, which may be placed wherever convenient, and with a head or cap 34. Water is supplied by means of an induction-pipe 12, provided with a suitable shut-off 13. I have shown the induction-pipe as opening into a passage 14 in the base, in which is a suitable induction plunger-valve 15. This valve moves transversely to passage 14 in a recess 16. At the bottom of this recess is a vent 17 to prevent cushioning of the valve. The valve is provided with a transverse passage 18, which in the receiving position registers with passage 14, as in Fig. 2, so that water may pass freely into the cylinder. In the closed position, as in Fig. 1, passage 18 has moved below passage 14, so as to be out of alinement therewith and to wholly shut off the passage of water.

19 denotes an eduction-pipe leading from the reservoir, the opening to which is closed by an eduction-valve 20.

Valves 15 and 20 are carried by the opposite ends of a lever 21, pivoted, as at 22, within the cylinder.

23 denotes a rod pivoted to the lever, as at 33, and extending upward therefrom, which carries a weighted float 24, the upper end of said rod being entirely free. This float may be made of any suitable material, but must have sufficient weight to insure the closing of the eduction-valve, as will be more fully explained. The float is provided with a central opening 25, through which the rod passes, the float sliding freely upward or downward on the rod as the water rises or falls in the cylinder. In practice I find it practicable and satisfactory to make the floats of cork or wood and provide them with a weight 26. In the present instance the weight is shown as fixed in the center of the float and the hole for the rod is through the weight, the said weight taking all the wear due to sliding movements of the rod.

At the upper end of the cylinder is an air-pipe 27, the entrance to which is reduced and which is closed by a valve 28. This valve may be either a flap-valve or a disk valve or a ball-valve, as shown in the drawings.

29 denotes an air-inlet pipe, which is provided with a valve 30, which may be a flap-valve or a disk valve or a ball-valve, as shown in the drawings.

At the upper end of the rod is a suitable head 31, which is adapted to be engaged by the float in its upward movement when the water has nearly filled the cylinder, so that continued rising of the water will cause the float to lift the rod, and with it the eduction-valve, moving it from the position shown in Fig. 2 to the position shown in Fig. 1 and permitting water to pass under it and out through the eduction-pipe, thus draining the cylinder. The lever and eduction and induc-

tion valves will remain in this position until the eduction-valve is again closed and the induction-valve opened by the action of the weighted float as it descends with the water. In the present instance I have shown rod 23 as bent to provide an offset 32, which is engaged by the weighted float. This construction is not only a simple one, in that it provides a shoulder to be engaged by the combined weight and float to cause downward movement of the rod, but it also brings the lower end of the rod to a proper point for connection with the lever at 33, while the upright portion of the rod on which the float slides remains substantially in the center of the cylinder.

The operation is as follows: Fig. 1 shows the position of the parts when the cylinder has been nearly drained and the eduction-valve is about to be closed by the weighted float, and Fig. 2 shows the position of the parts when the cylinder is nearly filled with water and the eduction-valve is about to be opened to drain the cylinder. It will be readily understood from the drawings that as one valve opens the other closes. The opening of the eduction-valve closes the induction-valve, thus shutting off the water, and the closing of the eduction-valve opens the induction-valve, thus permitting water to flow into the cylinder again. Turning to Fig. 1, it will be noted that the cylinder has nearly drained. An instant later the drainage of water from the cylinder will cause the weighted valve to close the eduction-valve in Fig. 2, and the lever will simultaneously open the induction-valve by the tilting upward of the opposite end thereof. When it is not desired to have the compressor operate, shut-off 13 in the induction-pipe is closed. As soon as this shut-off is opened the compressor begins to operate, and its continued operation is automatic. The shut-off being open and the induction-valve open, as in Fig. 1, the full supply of water in the induction-pipe will pass into the cylinder and will raise the float, as in Fig. 2, and an instant after the position shown in Fig. 2 the float will engage the head upon the rod and will lift the rod, and with it the eduction-valve, the lever simultaneously closing the induction-valve by the tilting downward of the opposite end thereof. It will be obvious that just as fast as the water rises in the cylinder the air in the cylinder will be forced out through pipe 27, the valve in said pipe yielding readily to pressure from within the cylinder. The valve in the air-inlet pipe, on the other hand, is tightly closed by pressure of air from within the cylinder, so that no air can escape.

Air-pipe 27 may lead to a reservoir for storage purposes, as in supplying power to the air-chamber of an atomizer, as for physicians' use, or to apparatus for drawing beer and other carbonated or aerated beverages. These uses of my novel compressor are merely mentioned as illustrative of the various uses to which it may be applied. As already stated, in use its action is automatic until the water-supply is shut off.

Having thus described my invention, I claim—

1. An air-compressor comprising a cylinder having induction and eduction pipes and valves in said pipes, a pivoted lever to whose opposite ends said valves are connected so that they will open and close alternately, an outgoing air-pipe provided with a valve, an air-inlet pipe provided with a valve, a rod extending upward from the lever and offset near its lower end and having a free upper end provided with a head and a float moving freely on said rod, the float rising on the rod as water rises in the cylinder and by engagement with the head raising the rod, tilting the lever and simultaneously opening the eduction-valve and closing the induction-valve, and said float falling with the water and closing the eduction-valve and again opening the induction-valve, said action being continuous so long as the water-supply continues.

2. An air-compressor comprising a cylinder having induction and eduction pipes, an eduction-valve, an induction plunger-valve having a transverse opening adapted to register with the induction-pipe, a lever pivoted within the cylinder to one end of which the eduction-valve is connected, the other end engaging the induction-valve, an outgoing air-pipe provided with a valve, an air-inlet pipe provided with a valve, a rod extending upward from the lever and offset near its lower end and having a free upper end provided with a head and a float adapted to rise and fall on the rod with the rise and fall of water in the cylinder, substantially as shown, for the purpose specified.

3. An air-compressor comprising a cylinder having induction and eduction pipes and valves in said pipes, a pivoted lever whose opposite ends are connected to said valves, an outgoing air-pipe provided with a valve, an air-inlet pipe provided with a valve, a rod extending upward from the lever and having a head and a float which rises and falls with water in the cylinder and alternately opens and closes the induction and eduction valves, said float having a weight in its center portion provided with an opening which receives said rod.

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

JOHN ROGERS.

Witnesses:
A. M. WOOSTER,
S. W. ATHERTON.