

(No Model.)

A. S. BUCHER.  
WATER ELEVATOR.

No. 540,207.

Patented May 28, 1895.

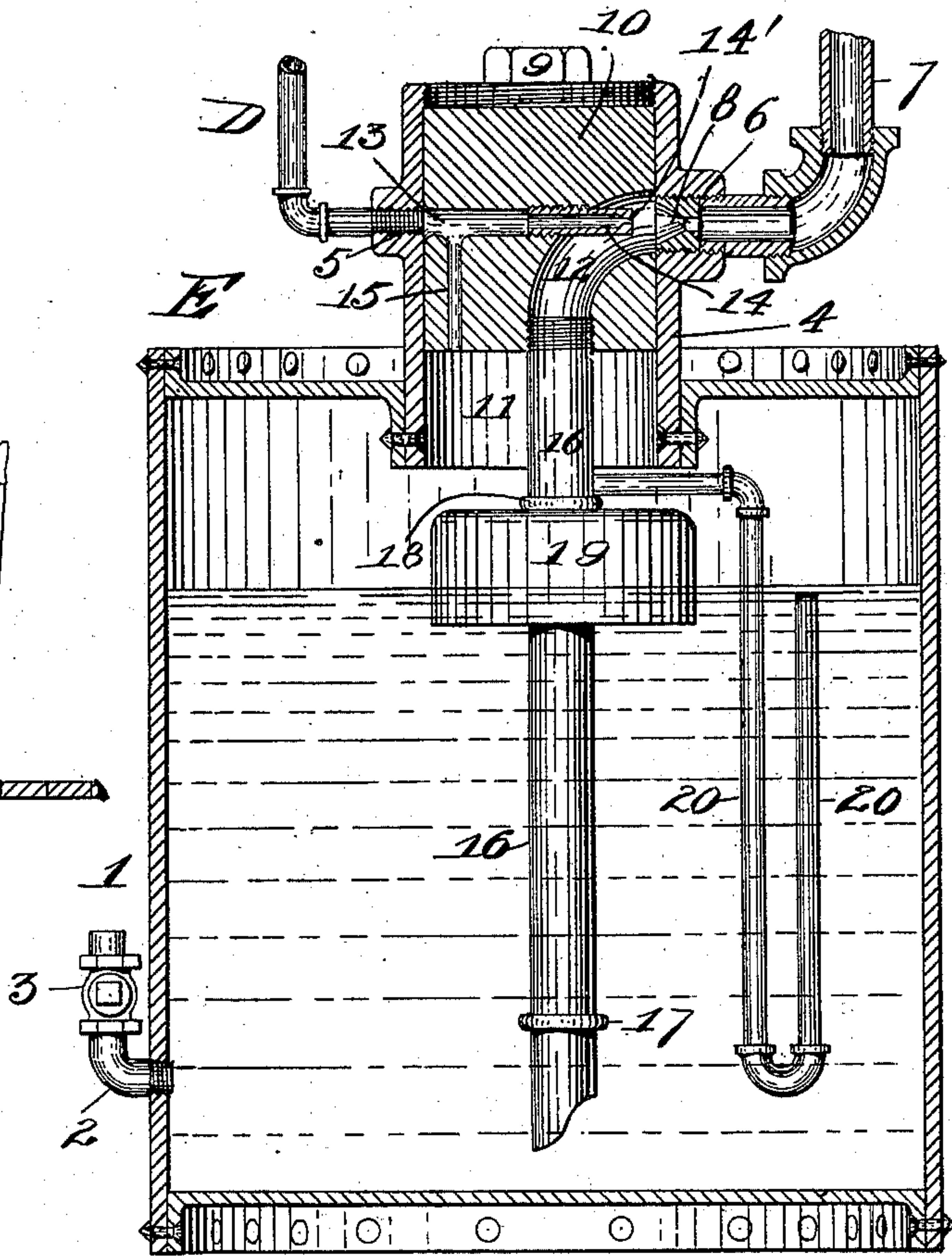
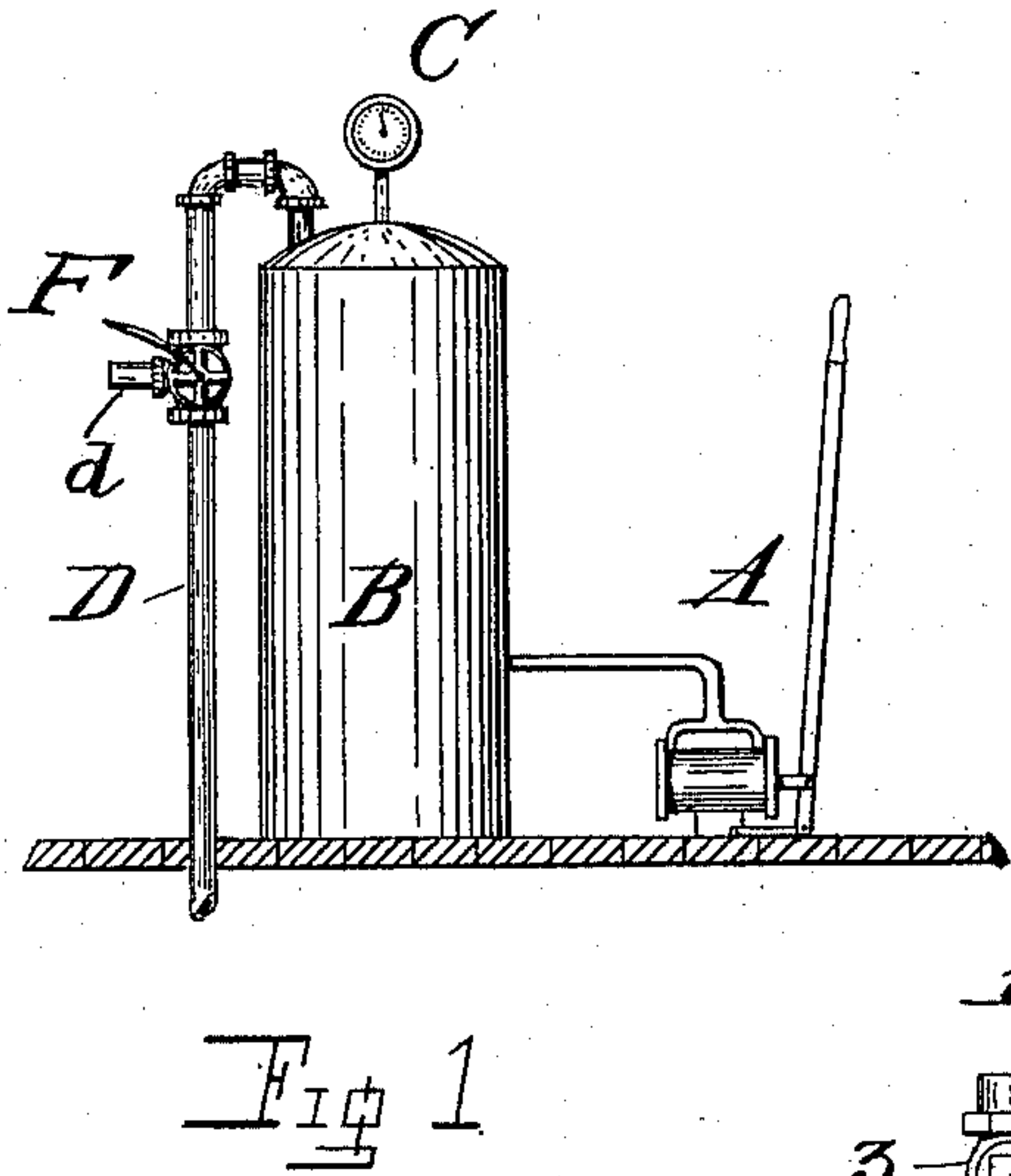


Fig 2

Witnesses  
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# UNITED STATES PATENT OFFICE.

ALFRED S. BUCHER, OF DECATUR, GEORGIA.

## WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 540,207, dated May 28, 1895.

Application filed March 23, 1895. Serial No. 542,944. (No model.)

*To all whom it may concern:*

Be it known that I ALFRED S. BUCHER, a citizen of the United States of America, and a resident of Decatur, in the county of De Kalb and State of Georgia, have made a new and useful Water-Elevator; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

The invention is shown in the accompanying drawings, in which like reference marks are employed in the designation of corresponding elements of construction, as follows:

Figure 1 is an elevation of the air-compression pump, the reservoir, and connecting-piping. Fig. 2 is a sectional view of the well apparatus.

A is a pump suitable for the compression of air to the desired density, and B is a reservoir therefor, which is provided with a pressure gage C and a pipe D leading to the well-apparatus E. A three-way cock F is included in the pipe a D whereby the passage through same is controlled in a manner to be described hereinafter.

1 is the casing of the apparatus E, which may be of any form desired, although it is deemed best to make it of metal, preferably sheet-metal riveted or screwed together. A pipe 2 serves as an inlet for water, a check valve 3, adapted to be closed by pressure from the inside of the casing, governing the passage through said pipe. This pipe should enter at or near the bottom of the casing. Secured in a proper manner to the top of the casing 1 is a casting 4 bored out inside. An air-pipe leading from the reservoir B enters this casting through its side, 5 being a port for this purpose. On the opposite side of the casing is another passage 6 from which a pipe 7 leads to the point where it is desired to deliver the water, this pipe 7 being the water-discharge pipe of the device. Into the inner end of this passage 6 is screwed a bushing 8 having a small perforation through it, which perforation is flared on the inner side to about

the size of the passage 6. A cap 9 screws into and stops the upper end of the casing. A block 10 is fitted into the chamber 11 in the casting 4 so as to slide vertically therein, and a curved passage 12 leads from its bottom to a position where it will register with the passage 6 upon the elevation of the block 10, and of sufficient size to, when the block is at its lower limit of movement, leave a passage open from said passage 12 to the passage 6. A passage 13 leads from the opposite side of the block 10 in such a position that it will register with the passage 5, and extending through said block so that a jet 14 may be screwed thereinto and form a continuance thereof extending nearly to the opening in the bushing 8 and registering its aperture with the aperture in said bushing when the block 10 is elevated. The end of the passage in the jet 14 should be quite small. A passage 15 leads from the passage 13 downwardly into the chamber 11, thereby communicating with the interior of the casing 1. A pipe 16 provided with stops 17 and 18 in the form of rings secured thereto, respectively, near the top and bottom thereof, is screwed into the lower end of the block 10, communicating with the passage 12, and being open at its lower end. A float 19 moves freely on the pipe 16 between the stops 17 and 18. A pipe 20 enters the pipe 16 near its top at right angles thereto and is turned downwardly and then upwardly its open end being slightly below the level of the water in the casing when same is full.

The operation of this device is as follows: Air is compressed in the reservoir B by means of the pump A to the desired intensity and the cock F is opened so as to cause the air under pressure to pass straight through the pipe B and passages 5, 13, 15 and chamber 11 to the inside of the casing 1 which obviously applies pressure to the upper surface of the water therein, causing said water to flow upwardly upon the opening of the discharge-cock through the pipe 16, passage 12, bushing 8, to the discharge-pipe. The discharge-cock being open, air will be forced from the passage 13 through the jet 14 and out into the flowing stream of water in the passage 12 through the pin-hole 14', which aerates the water, whereby it is purified and caused to



“sparkle” as it flows into the receptacle from the discharge-cock. The aperture 14' and the passage through the pipe 20 are smaller in aggregate area than the area of the passage through the pipe 16, whereby the flow of water through the latter will not be interfered with. The water will continue to flow until the float 19 descending contacts with the stop 17, at which time the block 10 will be drawn downwardly in the chamber 11 closing communication between the passages 5 and 13, thereby cutting off the air-pressure from within the casing 1. The water from the discharge-pipe will then descend into the casing 1 and the valve 3 will open and allow the water to flow from the well into the casing 1 through the pipe 2 until it shall have filled same to the desired height. As the casing 1 is being filled, the air therein passes out through the pipe 20, which at all times has its opening above the water-level. As soon as the casing 1 is filled the float 19 strikes the ring 18 and moves the block 10 upwardly to the position shown in Fig. 2, and the device is again ready for operation, the closing of the discharge-valve preventing the outflow of air.

When it is desired to exhaust the air from the casing 1 when it is full of water and so allow the water to flow downwardly in the discharge-pipe, the valve F is so turned as to open communication between said casing and the atmosphere through the pipes D and d.

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

1. In a pneumatic water elevator, a receiver adapted to be submerged in a cistern an inlet-opening near its bottom a casing secured to and opening into the top thereof, and air-

inlet and a water outlet in the casing, a valve adapted to control said air-inlet, sliding in said casing and having passages leading from its lower side to both said inlet and outlet openings, a pipe screwed into the lower end of the passage communicating with said outlet opening, its lower end being open and extended to near the bottom of the receiver a float and stops therefor on said pipe, substantially as and for the purpose specified.

2. In a pneumatic water elevator, the combination of a receiver adapted to be submerged in a cistern, a casing secured to and communicating with the upper end thereof, an air inlet and a water outlet in said casing, a block sliding in said casing, an air passage therein leading from said air-inlet to the bottom of the block, a water pipe extending from near the bottom of the receiver to said block and thence through said block to said water outlet, a passage connecting said air-passage and said water-passage in said block and embouching into said water-passage through a constricted aperture opposite the outlet passage in said casing, a pipe-consisting of a return bend connected at one end to near the top of said water-pipe its bend near the bottom thereof and its other end just below the full water-level, and means for moving said block upon the water reaching its highest and lowest level, all combined arranged and operating substantially as and for the purpose specified.

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

ALFRED S. BUCHER.

Witnesses:

ALBERT P. WOOD,  
HARDIE L. KEITH.