

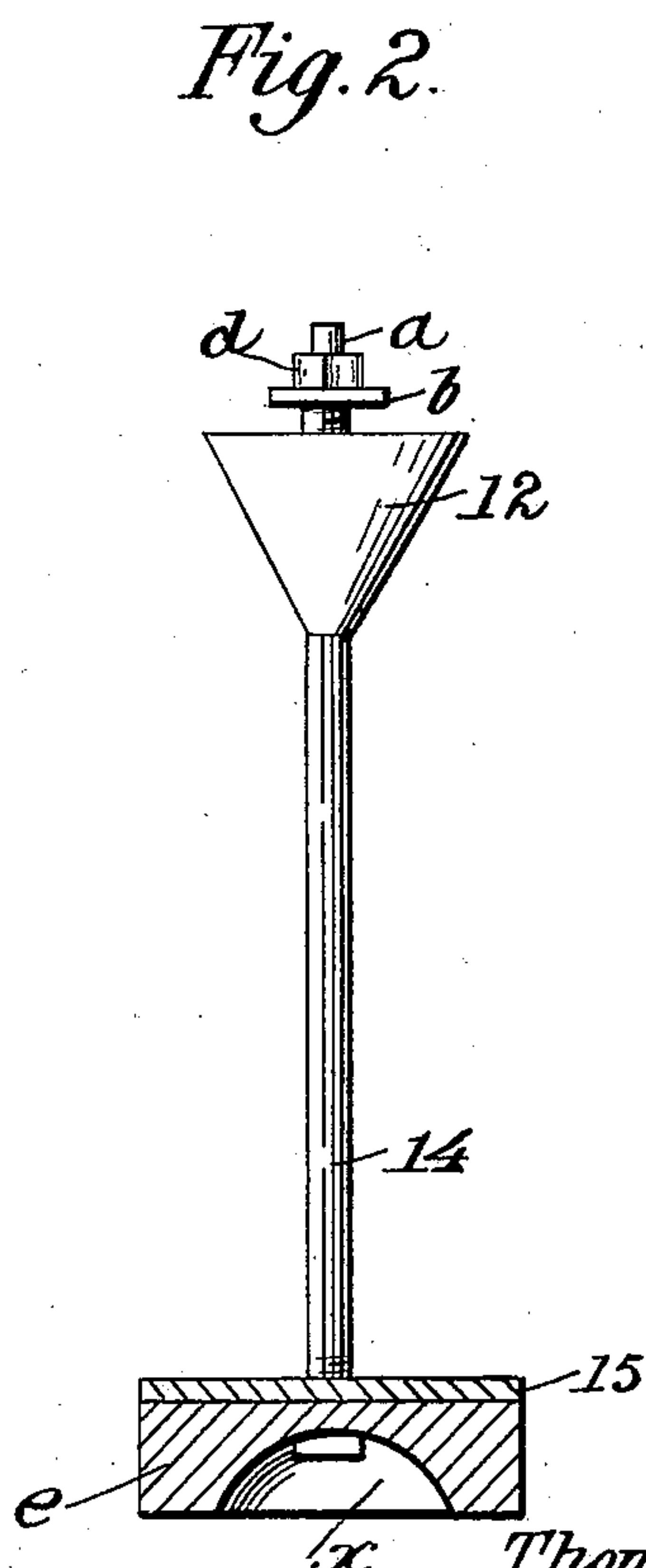
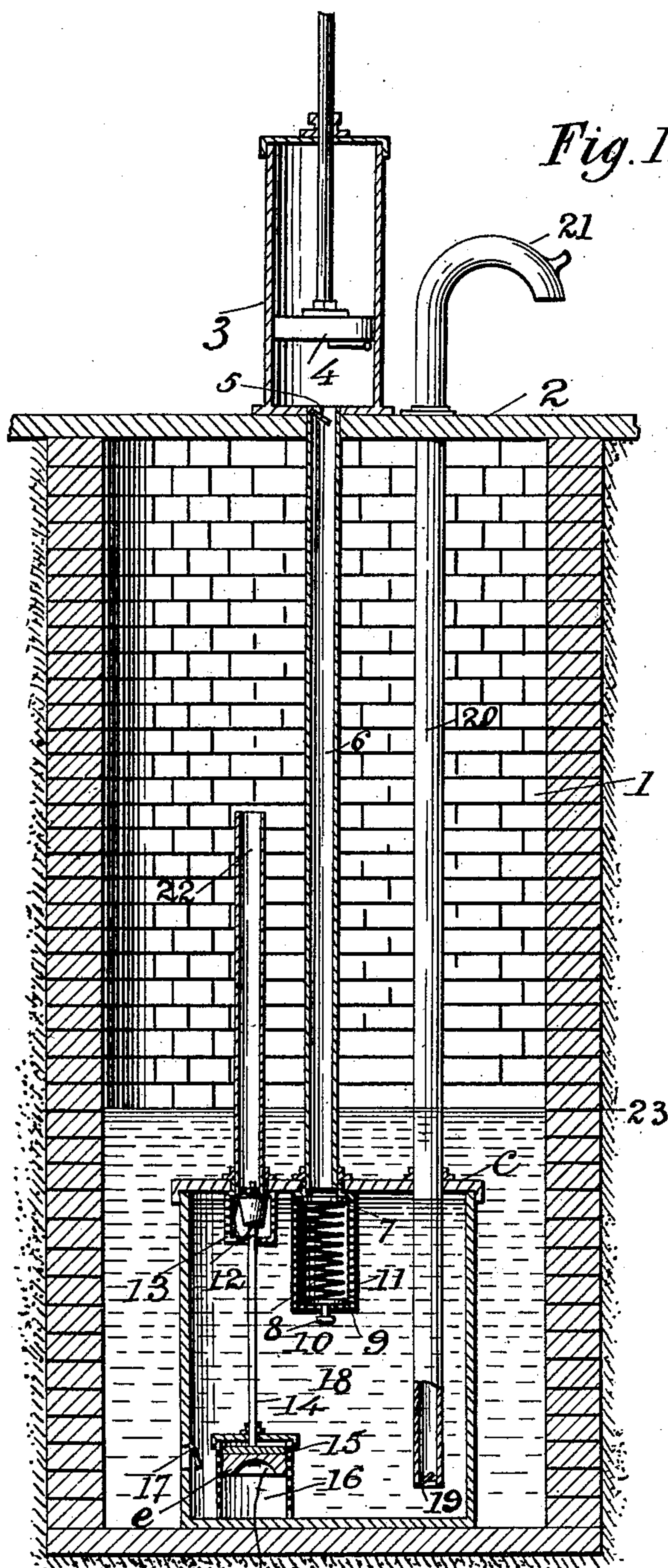
No. 631,732.

Patented Aug. 22, 1899.

T. C. WRISTEN.
COMPRESSED AIR PUMP.

(Application filed Oct. 5, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS C. WRISTEN, OF DIGHTON, KANSAS.

COMPRESSED-AIR PUMP.

SPECIFICATION forming part of Letters Patent No. 631,732, dated August 22, 1899.

Application filed October 5, 1898. Serial No. 692,700. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. WRISTEN, a citizen of the United States, residing at Dighton, in the county of Lane and State of Kansas, have invented certain new and useful Improvements in Compressed-Air Pumps; and I do 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 an improved form of forcing-pump for raising water by the action of compressed air; and the object of the invention is to provide a simple, effective, and reliable device for this purpose.

To this end the invention consists in the construction, combination, and arrangement of the device, as will be hereinafter more fully explained, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical section of my improved pump. Fig. 2 is a detail view of the rod 14 with its connections.

The same figures and letters refer to the same parts throughout the views.

1 denotes the well, and 2 the cover or platform, on which the air-pump barrel 3 is mounted.

18 represents a reservoir, which consists of a closed chamber, cylindrical or polygonal in form, located below the water-line in the well and provided with a removable top *c*, a water-inlet valve 17, (any number of which may be used,) an escape-pipe 22, and a discharge-pipe 20, which latter extends from near the bottom of the reservoir 18 upward through the platform 2 and terminates in the usual gooseneck 21 and is connected by a pipe 6 with the lower end of the pump-barrel 3.

An air-chamber may be used in connection with the reservoir 18 and may be placed either within or without the reservoir; but it is not essential to the successful working of the pump, and it forms no part of my present invention.

A downwardly-opening foot-valve 5 is mounted in the upper end of the pipe 6, and the lower end of the pipe 6 is closed by the spring-valve 7. The valve-casing 11 may be of any convenient form, open for the free passage of air and water. It is reduced at the

upper end, as shown in the drawings, threaded, and screws into a threaded orifice in the top of the reservoir 18. Through its lower end passes the set-screw 10, which, operating against the disk 9, adjusts the tension of the spring 8.

12 is an air-outlet valve, conical on the under side, made of cork or other light material, and faced with rubber or leather. The valve-casing 13 is similar to the casing 11 and is joined to the top of the reservoir 18 in like manner.

15 is a metallic disk, to which is attached a cork *e* or other light substance having a cavity *x* in its lower face, as shown in Fig. 2, and it has a vertical movement in the cylindrical casing 16, which is open for the passage of air and water and is fixed to the bottom of the reservoir 18 in any suitable manner. The disk 15 is buoyant and always remains at the top of the casing 16, except when the surface of the water in the reservoir 18 falls below that point.

14 is a rod threaded at each end. Its lower end screws into a threaded orifice in the disk 15, while its upper end passes up through an orifice in the valve 12 and is then reduced, as shown, at the point *a*, Fig. 2. A washer *b*, Fig. 2, which prevents the escape of air along the rod 14 through the valve 12, fits over this reduced part, and a nut *d*, Fig. 2, screws down to hold the washer *b* and the valve 12 in place. The washer *b* and the nut *d* are secured in place after the top of the reservoir 18 has been placed in position and before the pipe 22 has been attached. The valve 12 is free to move upon the rod 14 the full length of the casing 13, and the rod 14 is of just such a length as will permit the valve 12 to close only when the disk 15 is pressed against the top of the casing 16, the valve 12 pressing alike against the top of the casing 13 and the washer *b*, Fig. 2.

19 is a check-valve in the discharge-pipe 20, and 22 is a pipe through which air escapes from the reservoir 18. It is connected with the reservoir 18 and terminates at some point above the water-line 23 in the well.

As the piston 4, which may be operated by hand or power, descends a charge of air is forced into the air-pipe 6. The valve 5 prevents its return. When the air in the pipe 6

is sufficiently compressed to open the spring-valve 7, which is adjusted to open only when the pressure is sufficient to force water out through pipe 20 and gooseneck 21, it passes
 5 into the reservoir 18. As the water enters the reservoir through the valve 17 it rises and closes the valve 12. Each additional stroke of the piston 4 forces a corresponding quantity of water from the reservoir 18 until the
 10 water receding from the float *e*, to which the disk 15 is attached, the disk and valve 12 then fall of their own weight. The valve 17 opens, allowing the water to flow in from the well. The disk 15 rises with the water to the
 15 top of the casing 16. The water continues to rise in the reservoir 18 and on reaching the valve 12, the same being buoyant, carries it up to the pipe 22, thus closing it against the further escape of air. The pressure of the
 20 compressed air coming through valve 7 keeps it opened until the reservoir 18 is again emptied to be refilled as before.

Although I have specifically described the construction and relative arrangement of the
 25 several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

30 Having thus fully described my invention,

what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

The combination with the reservoir 18 provided with the inlet-valve 17, the valve discharge-pipe 20 communicating with said reservoir, of the air-compression cylinder 3, the pipe 6 connecting said cylinder and reservoir, the valve-casing 11 fixed within said reservoir and encompassing the lower end of said pipe 40 6, the valve 7, spring 8, and disk 9 located within said casing, and the set-screw 10 mounted in said casing and coacting with said disk and spring to close said valve 7, the casing 16, the disk 15, and the float *e* mounted therein, the casing 13, the valve 12 mounted therein, the rod 14 connecting said valve 12 and disk 15, and the air-pipe 22 extending from a point above the water-level, terminating in the reservoir, and in the path of the 50 valve 12, substantially as shown and described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS C. WRISTEN.

Witnesses:

J. VAN ARSDALE,
 CARROLL BOWER.