

No. 648,101.

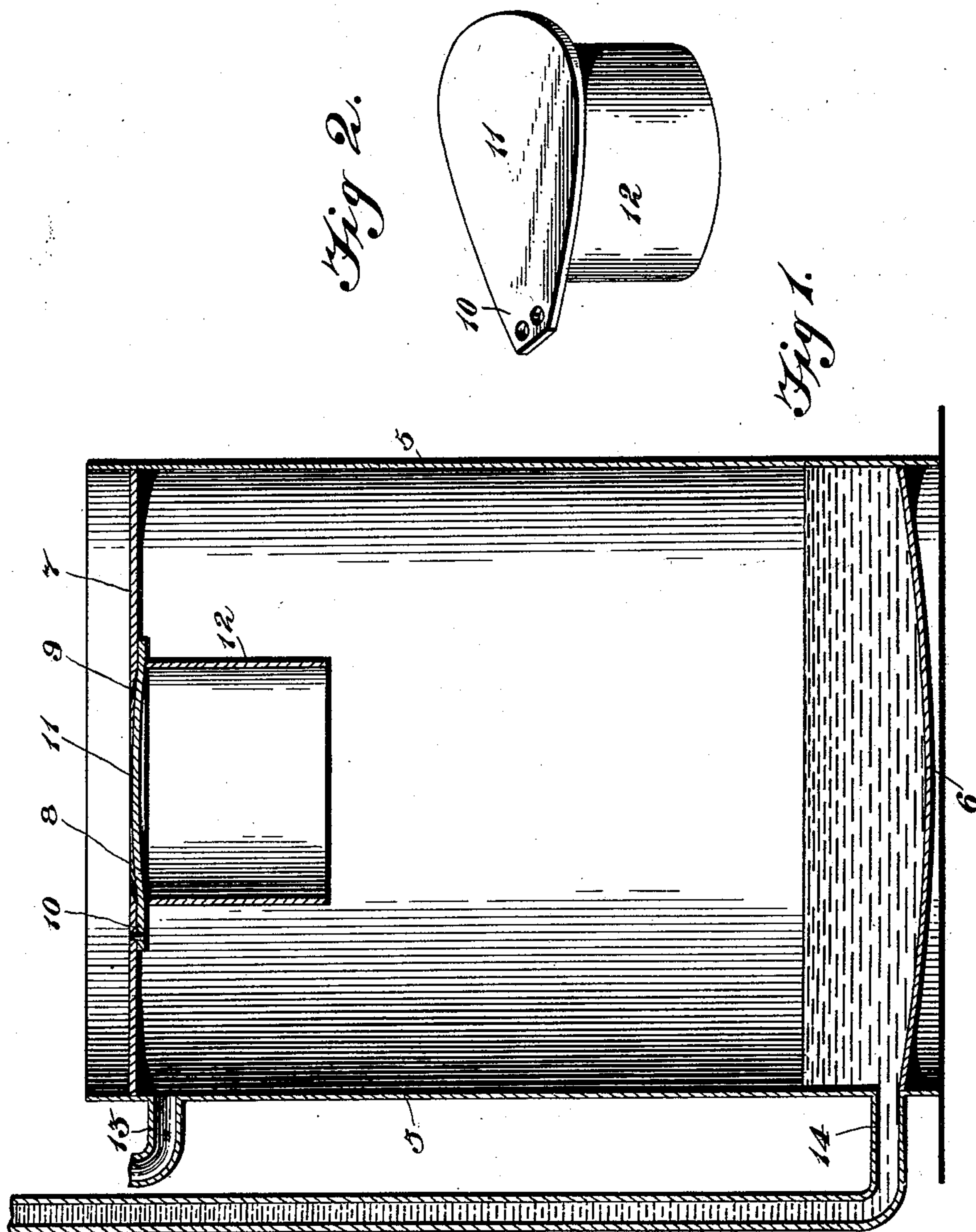
Patented Apr. 24, 1900.

J. W. CARPENTER.

WATER ELEVATOR.

(Application filed Nov. 7, 1899.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN WESLEY CARPENTER, OF BRIDGEWATER, VIRGINIA.

## WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 648,101, dated April 24, 1900.

Application filed November 7, 1899. Serial No. 736,150. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WESLEY CARPENTER, a citizen of the United States, residing at Bridgewater, in the county of Rockingham and State of Virginia, have invented a new and useful Water-Elevator, of which the following is a specification.

This invention relates to water-elevators in general, and more particularly to that class known as "compressed-air" water-elevators and including a submerged tank having an air-inlet opening and a water outlet or discharge opening and having also a valve water-inlet opening, the object of the invention being to provide an efficient construction in which the valve of the water-inlet opening will automatically open and close at the proper time and in which the valve will be more firmly seated as the pressure increases.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate like and corresponding parts in both views, Figure 1 is a vertical central section of the submerged tank constructed in accordance with the present invention and showing the positions of the several openings and of the water-inlet valve. Fig. 2 is a detail perspective view of the water-inlet valve.

Referring now to the drawings, 5 represents a preferably metallic tank, which is cylindrical in form and which has a bottom 6 and a head 7, the latter having a central opening 8, the wall of which is beveled inwardly, as shown at 9, to form an extended valve-seat.

Riveted or otherwise secured to the inner face of the head 7 is the narrowed end 10 of the projecting portion of a flexible flap 11, of leather or other suitable material, and which is adapted to fit over the opening 8 and to completely close it, the periphery of the flap being adapted to extend beyond the edge of the opening. The flap 11 forms the upper end of a cylindrical float 12, which is open at its lower end and which acts to raise the flap 11 against the head 7 of the tank when the water within the tank rises to a suitable height. The flap 11 thus forms a valve which coöperates with the seat 9 and which is in effect a float-valve due to the operation of the cylindrical float 12.

Connected with the side of the tank 5 and

opening into the tank directly below the head 7 is an air-inlet pipe 13, which is adapted to supply air to the tank from a suitable source, and opening also into the tank through a side thereof and directly above the bottom 6 is a water-outlet pipe 14, through which the water passes from the tank and upwardly and out of the well or cistern in which the tank is immersed.

In practice the tank is placed in the water of a well or cistern or in any other body of water and entirely below the surface thereof, when the flap-valve 11 will hang downwardly and into the tank, thereby permitting water to pass into the tank through the opening 8. When the water has reached the proper height in the tank, its buoyant action upon the float 12 will act to raise the latter and will correspondingly move the flap 11 and cause it to cover the opening 8. The pipe 14 is extended upwardly to a suitable distance, and, with the pipe 13, is connected to an air-pump of any desired style and by means of which air is forced through the pipe 13 and into the tank. As air is forced into the tank it displaces the water therein and forces it outwardly and upwardly through the pipe 14, the air at the same time exerting its pressure upon the flap 11 and bulging it upwardly, and thereby increasing the extent of the contact between the flap and the valve-seat 9. As the column of water in the pipe 14 increases in height, the tendency for the air to escape through the opening 8 is increased, and this tendency is overcome by the further bulging of the flap 11 and the consequent extension of the contacting surface of the flap. This action of the flap therefore serves to automatically balance the objectionable tendency of the excessive pressure. When the contents of the tank 5 have been exhausted, there is a free passage of the compressed air outwardly of the pipe 14, and in consequence the pressure within the tank drops, when the flap-valve 11 leaves its seat 9, due to the pressure of the water plus the weight of the valve and its attached cylinder, and the water rushes in until the tank is filled. The action above described may be then repeated.

It will of course be understood that the tank 5 may have any desired specific shape, that the several parts may have any desired propor-



tion, and that the apparatus may be employed in any connection to which it is applicable without departing from the spirit of the invention.

5 What is claimed is—

1. In a water-elevator, the combination with a tank having an air-inlet and a water-outlet, of a water-inlet opening having a tapered valve-seat, a flexible flap-valve attached to  
10 the tank and adapted to engage the seat and expand thereagainst under the influence of pressure within the tank, and an open-ended cylinder secured to the flap and having its upper end closed thereby, said cylinder en-  
15 gaging the flap beyond the edge of the valve-seat, whereby the valve will be prevented from buckling.

2. In a water-elevator, the combination with a tank having an air-inlet opening and a wa-

ter-outlet opening, of a water-inlet opening 20 having a tapered valve-seat, a flexible and elastic flap-valve adapted to lie across the water-inlet opening and move into and out of engagement with the tapered portion of the valve-seat, and a float secured to the flap- 25 valve and consisting of an open-ended cylinder secured at its upper end to the flap-valve exteriorly of the line of the valve-seat, said cylinder acting to prevent buckling of the flap-valve. 30

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN WESLEY CARPENTER.

Witnesses:

M. M. DIXON,

E. KEMP JONES.