A. O. BROWN.

COMPRESSED AIR WATER ELEVATOR.

APPLICATION FILED OCT. 24, 1911.

1,032,272. Patented July 9, 1912.

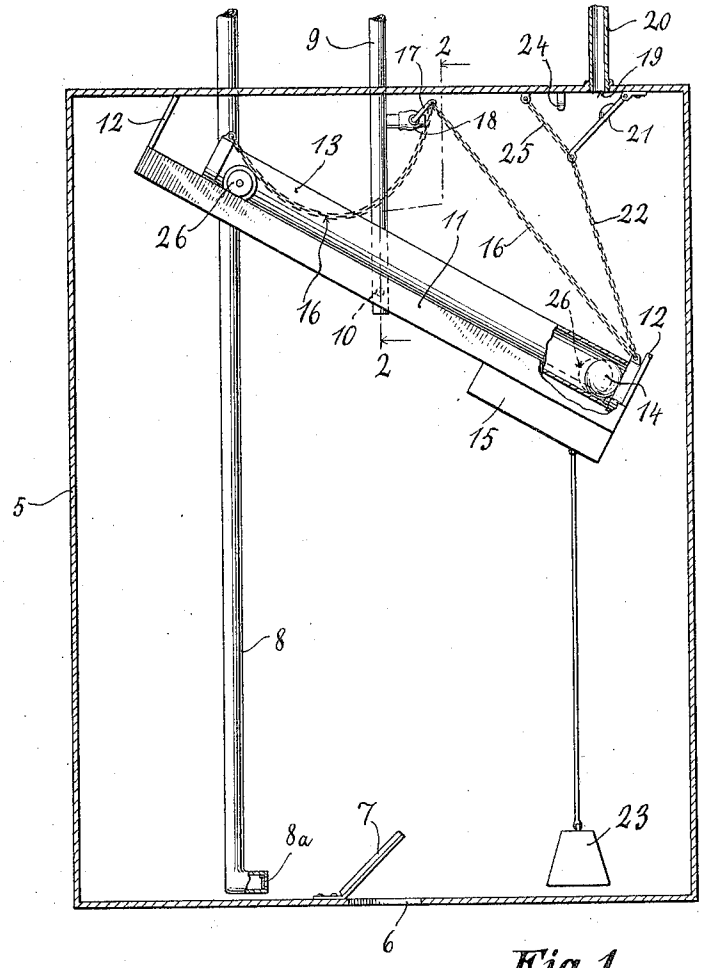

Fig. 1.

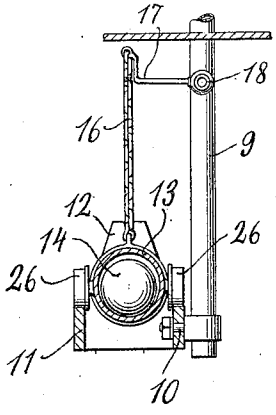

Fig. 2.

Witnesses

Inventor

Arthur O. Brown.

By Wilson B. Stevens & Co.

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ARTHUR O. BROWN, OF CHICAGO, ILLINOIS.

COMPRESSED-AIR WATER-ELEVATOR.

1,032,272. Specification of Letters Patent. **Patented July 9, 1912.**

Application filed October 24, 1911. Serial No. 656,370.

To all whom it may concern:

Be it known that I, ARTHUR O. BROWN, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Compressed-Air Water-Elevators, of which the following is a specification.

This invention relates to that class of water elevators which are operated by compressed air, a submerged air-tight tank being provided into which the water flows and from which it is expelled by air pressure.

A float actuated valve is provided for controlling the flow of air into the tank, and the present invention relates more particularly to the valve actuating mechanism, its object being to provide a mechanism which is reliable in operation and devoid of complicated parts to get out of order.

With these objects in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the accompanying drawing in which,

Figure 1 is an elevation of the apparatus, partly in section. Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Referring specifically to the drawing, 5 denotes a tank or other suitable receptacle which is submerged in the well or other source of water supply. In the bottom of the tank is an inlet 6 which has an inwardly opening valve 7. This valve opens when the air pressure is off, and allows the water from the well to flow into the tank. The water outlet of the tank is a pipe 8 extending thereinto and terminating close to the bottom thereof, the lower or inlet end of said pipe being provided with a check valve 8^a to prevent a back-flow into the tank. The pipe 8 is suitably connected to the house or other place where the water is to be used. The tank may be of any size, according to the desired capacity of the apparatus, and the size of the well or other water supply.

The compressed air is delivered into the tank 5 through a pipe 9, said pipe entering the tank through the top thereof, and depending for a short distance thereinto. The air supply will be connected to a suitable source of compressed air, which has not been illustrated, as it forms no part of the present invention.

To the lower end of the air pipe 9, within the tank, is pivoted, as indicated at 10, a frame 11, the pivot being intermediate the ends of the frame. Slidably mounted in the frame between stops 12, at the ends thereof, is a tube 13 inclosing a ball or other shiftable weighted member 14. The frame is free to rock in a vertical plane, so that the ball may roll from one end of the tube to the other, and the latter may slide back and forth between the stops 12, when the frame is rocked. To one end of the frame is connected a float 15, and each end of the tube is connected by a chain or other suitable flexible device 16 to the handle 17 of a cock 18 connected to the air pipe within the tank. The air is discharged into the tank through the cock when the latter is opened. The lower end of the air pipe will be plugged up or otherwise closed.

In the top of the tank is an air exhaust port 19 to which an exhaust conducting pipe 20 is connected. The exhaust port is controlled by a valve 21 which is hinged to the top of the tank and is connected at its free end, by chain or other suitable flexible device 22, to one end of the tube 13. From the corresponding end of the frame 11 is also suspended a weight 23. To the top of the tank is secured a spring catch 24 which snaps over the free end of the valve 21 when the same is closed, and holds it closed. A chain or other suitable flexible device 25 also connects the free end of the valve 21 to the top of the tank and limits its downward or opening movement.

The operation of the apparatus is as follows: Fig. 1 shows the position of the parts when the tank is filling through the inlet 6, the cock 18 being closed, and the valve 21 open. The air supply is therefore shut off from the tank, and the air contained therein is exhausting. It will be noted that the right end of the frame has tilted downward, and the tube 13 and ball 14 have shifted to this end of the frame. When the water rising in the tank reaches the float 15, the right end of the frame rises, and the left end lowers. When the left end of the frame drops below the horizontal, the ball rolls down in the tube to that end and the tube also slides in the same direction until it engages the stop 12. This movement of the tube exerts a pull on the chain, whereby the cock 18 is opened. The right end of the frame also strikes the valve 21 and closes the same. Compressed air now enters the tank and forces the water from the same

through the pipe 8 to the place of use. As the tank empties the float lowers and tilts the frame in the opposite direction, so that the tube and ball are now shifted to the right to close the cock and shut off the air supply. The downward swing of the right end of the frame also pulls the valve 21 open to permit the escape of air from the tank. The tank now again fills and the herein-described operation is repeated. The specific gravity of the weight 23 should be slightly greater than that of the water, so that there will be but little resistance to the rise of the float when the tank is filling. The weight serves to augment the downward pull of the float when the water is lowering in the tank and thus insures the closing of the cock 18 and the opening of the valve 21 at the proper time. The tube is closed at its ends to prevent entrance of water, in view of which there is no danger of the ball getting rusty and sticking in the tube. In order to facilitate the movement of the tube, it is mounted on wheels 26.

I claim:

1. In a fluid-pressure water elevator, a tank having a valved inlet, a fluid-pressure exhaust and inlet, a valve controlling the fluid-pressure inlet, a float-actuated tiltable member in the tank and operatively connected to the fluid-pressure inlet valve, a valve controlling the exhaust, said exhaust valve being in the path of the tiltable member and closing by being engaged thereby, and a loose connection between the member and the exhaust valve to open said valve.

2. In a fluid-pressure water elevator, a tank having a valved inlet, a fluid-pressure exhaust and inlet, a valve controlling the fluid-pressure inlet, a float-actuated tiltable frame in the tank, a member carried by the frame and slidable thereon in the direction of its length when the frame tilts, and operating connections between the member and the fluid-pressure inlet and exhaust valves.

3. In a fluid-pressure water elevator, a tank having a valved inlet, a fluid-pressure exhaust and inlet, a valve controlling the fluid-pressure inlet, a float-actuated tiltable frame in the tank, a tube carried by the frame and slidable thereon in the direction of its length when the frame tilts, operating connections between the tube and the fluid-pressure inlet and the exhaust valves, and a weight loosely mounted in the tube.

4. In a fluid-pressure water elevator, a tank having a valved inlet, a fluid-pressure exhaust and inlet, a valve controlling the fluid-pressure inlet, a tiltable frame in the tank, a float carried by one end of the frame, a weight suspended from said end of the frame, a member carried by the frame and slidable thereon in the direction of its length when the frame tilts, and operating connections between the member and the fluid-pressure inlet and exhaust valves.

5. In a fluid-pressure water elevator, a tank having a valved inlet, a fluid-pressure exhaust and inlet, a valve controlling the fluid-pressure inlet, a float-actuated tiltable frame in the tank, and having stops at its ends, a member mounted on said frame and slidable thereon in the direction of its length between the stops when the frame tilts, and operating connections between the member and the fluid-pressure inlet and exhaust valves.

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

ARTHUR O. BROWN.

Witnesses:
S. J. LEHRER,
H. G. BATCHELOR.