W. F. STEGALL.

WATER ELEVATOR.

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1,227,014. Patented May 22, 1917.

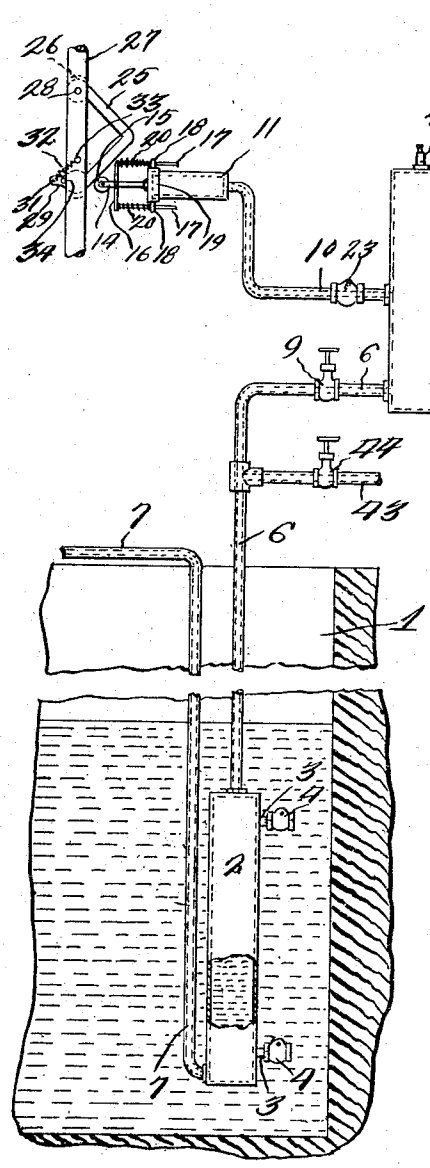


Fig. 1.

Fig. 2.

Fig. 3.

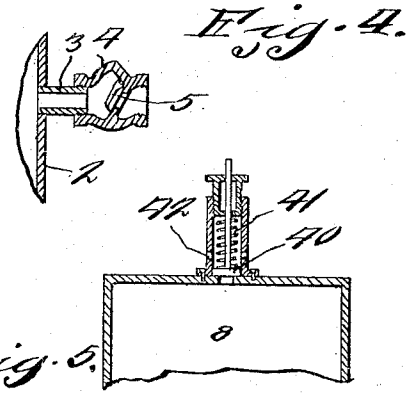


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

WALTER FRANKLIN STEGALL, OF CONCORD, NORTH CAROLINA.

WATER-ELEVATOR.

1,227,014. Specification of Letters Patent. Patented May 22, 1917.

Application filed February 9, 1916. Serial No. 77,178.

To all whom it may concern:

Be it known that I, WALTER F. STEGALL, a citizen of the United States, residing at Concord, in the county of Cabarrus, State of North Carolina, have invented 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 will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the art of water distribution, and particularly to an improved mechanism including a windmill to actuate pneumatic means for automatically elevating water from a well or the like for distribution.

One of the objects of the invention is the provision of improved means of connection between the pump and the reciprocating member or rod of a windmill, so that when the pressure exceeds the required amount of air pressure in the air tank, the back pressure upon the piston of the pump, will prevent the piston of the pump from being actuated, in which case the cam means upon the reciprocating member will be forced out of operative position by the piston.

In practical fields the details of construction may necessitate alterations, falling within the scope of what is claimed.

The invention comprises further features and combination of parts, as hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in elevation of the improved water elevator, as applied for use in connection with a well, which is shown in section.

Fig. 2 is an enlarged detail view of the device upon a windmill reciprocating member or rod, for pumping air into an air pressure reservoir or tank.

Fig. 3 is a detail perspective view of the pump actuating means carried by said reciprocating rod.

Fig. 4 is an enlarged detail sectional view of one of the check valves of a water reservoir in the well.

Fig. 5 is an enlarged detail sectional view of the upper part of the air pressure reservoir or tank, showing a blow-off valve, to relieve the air pressure reservoir of the excess air-pressure.

Referring more especially to the drawings, 1 designates a well, which may be any suitable size, and in which a water tank 2 may be located and supported in any suitable manner. The upper and lower portions of the tank 2 are provided with laterally extending connecting nipples 3, for connection to the check valve casings 4, in which suitable check valves 5 are arranged. When the tank 2 is relieved of the pressure of air therein, the water in the well will automatically lift the check valve 5, and fill the tank 2. Connected to the upper end 2 of the tank 2 to the pipe 6, and extending from the lower part of the tank 2 is a pipe or tube 7, through which the water or other fluid from the tank 2 may be forced by air pressure to any suitable location, for instance, to supply a farmhouse or the like and other places about the house. An air pressure tank or reservoir 8 is provided, to which the pipe 6 is connected as shown. Adjacent where the pipe 6 connects to the air reservoir or tank, it is provided with a valve 9. Also extending from the air reservoir or tank is a pipe 10, which connects to the pump cylinder 11, in which the usual pump piston 12 is mounted for reciprocation. The piston 12 is provided with a usual piston rod 13 having its outer ends provided with forks 14, in which a roller 15 is journaled. Adjacent the roller 15, the piston rod 13 has a cross head or transverse bar 16 provided with rods 17, which are guided in the laterally extending lugs 18 of the head 19 of the pump cylinder. Interposed between the lugs 18 and the end portions of the cross head or bar 16 and coiled about the rods 17 are coil springs 20, the functions of which are to force the piston rod 13 outwardly. The piston 12 is provided with a check valve 21, so arranged that when the piston 12 moves in the direction of the arrow *a*, air will enter between the piston 12 and the end 22 of the pump cylinder, so that upon reverse movement of the piston 12 the air will be forced through the pipe 10 into the air pressure reservoir or tank 8. The air in passing through the pipe 10 passes the check valve 23 of the pipe 10, thereby retaining the air in the reservoir 8. The openings or apertures 24 in the head 19 of the pump cylinder admit air into the pump cylinder, when the piston 12 moves in a reverse direction to the arrow *a*. It will be seen that the piston rod 13 is actuated against the action of the spring 20, by means of the cam member 25, which is pivoted in an opening 26 of the usual form of reciprocating rod or member 27 of a windmill (not

shown), by means of the pin 28. As shown, the cam member 25 is angular, and its end portion 29 is normally arranged in the opening 30 of the rod or member 27. A slot or groove 31 joins the two openings 26 and 30. Connected to the extremity of the end portion 29 by means of a pin 31^a, is a spring 32, the other end of which is connected to a pin 33 extending laterally of the rod or member 27. The action of the spring 32 holds the cam member 25 normally in the position shown in Fig. 2, there being a pin 34 carried by the end portion 29 contacting with the rod or member 27, to limit the cam member to such position.

As the rod or member 27 reciprocates the piston 12 is forced inwardly, and the springs 20 force the piston outwardly. The spring 32 is of greater strength than the combined springs 20, so as to hold the cam member 25 outwardly, as shown in full lines in Fig. 2, so that as the piston rod 27 reciprocates, the cam member 25 will actuate the pump piston 13 against the action of the springs 20. However, when the tank receives its full capacity of air, for instance, one hundred pounds pressure, the pressure in the tank would render the pump piston 12 inoperative, which would in turn render the cam 25 inoperative, as shown in dotted lines in Fig. 2. When the tank 8 is filled to its fullest capacity, the backward pressure on the check valve 23 will prevent the same from opening under the pressure of air coming through the pipe 10, which air in the pipe 10 between the check valve 23 and the piston will press back on the piston of the pump 11. This pressing back on the piston combined with the action of the springs 20, will overcome the tension of the spring 32, and hold the cam 25, as shown in dotted lines in Fig. 2, in which case the roller 15 will ride over the cam while in this dotted line position, without operating the piston. The upper end of the tank 8 is provided with an auxiliary blow-off safety valve 40, which is so tensioned by the spring 41, that when the valve 40 is raised above the openings 42, some of the excess air pressure will pass off through said openings. The pipe 6 has a laterally extending pipe 43 provided with a valve 44. When the valve 9 is closed, the air under pressure in the tank 8 is prevented from passing through the pipe 6. In this case the check valve 5 will automatically raise and allow water from the well to enter the tank or reservoir 2. Just so soon as the tank 2 is filled with water the valve 9 is opened, in which case air pressure from the reservoir 8 will pass through the pipe 6 and enter the reservoir 2, thereby forcing the water in the tank 2 out through the pipe 7, and to various parts of a farmhouse or the like (not shown), for consumption. When the water in the tank 2 has been displaced entirely by the air, the valve 9 is closed, and the valve 44 is opened, thereby allowing the air in the tank 2 to be displaced by the inrush of the water through the valves 4. After the tank 2 is again filled the valve 44 is closed and the valve 9 opened. When the valve 9 is opened, it relieves pressure in the tank 8, thereby also relieving back pressure upon the piston 12, in which case the reciprocating rod or member 27, through the medium of the cam member 25 will actuate the piston of the pump.

The invention having been set forth, what is claimed as new and useful is:—

1. In combination with a system for elevating water from a well including an air pressure reservoir, a pump having a spring tensioned piston to force air into the reservoir, a reciprocating rod having an angular cam member to actuate the spring tensioned piston of said pump, and a connection between the air reservoir and the pump including a check valve to open by the action of the air thereon to allow the air to enter the reservoir and closed by the back pressure of the air.

2. In combination with a system for elevating water from a well including an air pressure reservoir, a pump having a spring tensioned piston to force air into the reservoir, a reciprocating rod having a pivotally movable angular cam member including spring means to hold the cam member in operative position to actuate the spring tensioned piston of said pump, a connection between the air reservoir and the pump including a check valve, said spring means of the piston combined with the excess pressure of air between said valve and said piston when the reservoir is filled overcoming the spring means of the cam member to prevent actuation of said piston, and a pin on the cam member to contact with the reciprocating rod to limit the cam member in operative position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER FRANKLIN STEGALL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."