T. ELLIOTT.

VALVE MECHANISM FOR PUMP SUCTION PIPES.

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1,067,903.

Patented July 22, 1913.

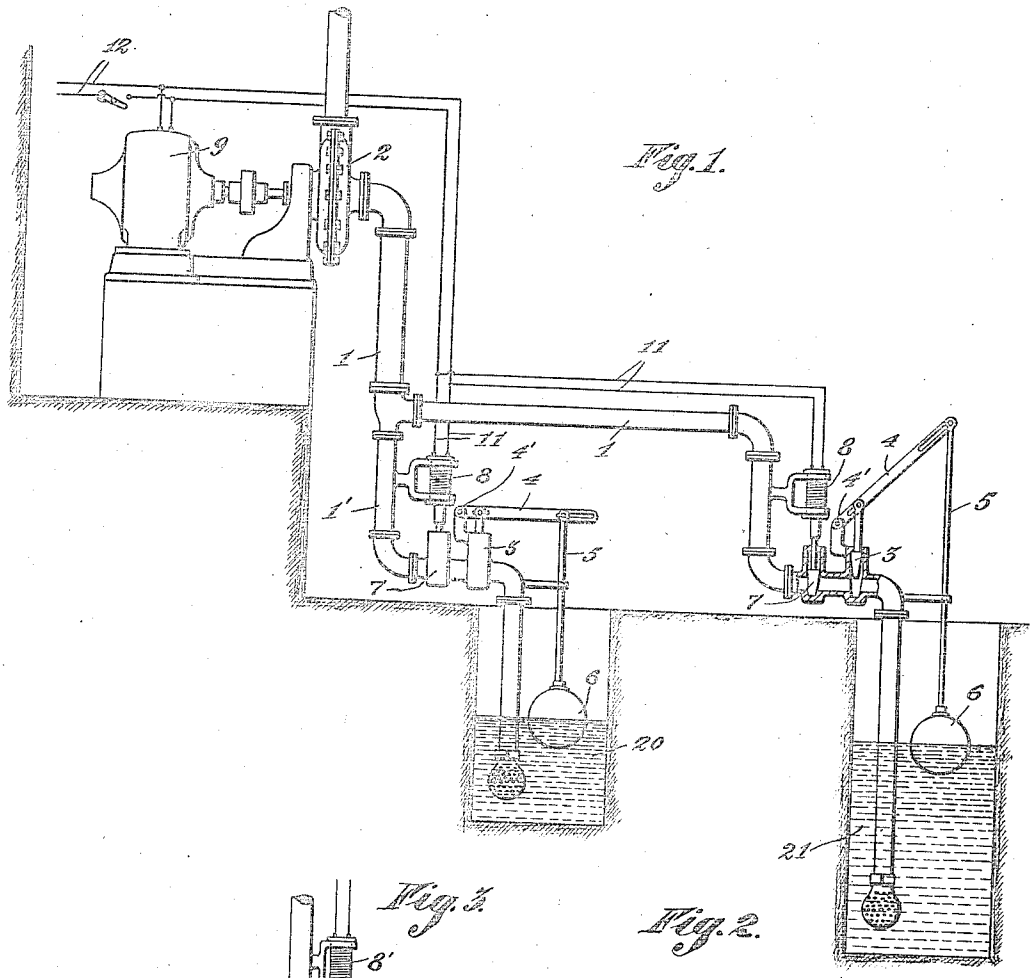


Fig. 1.

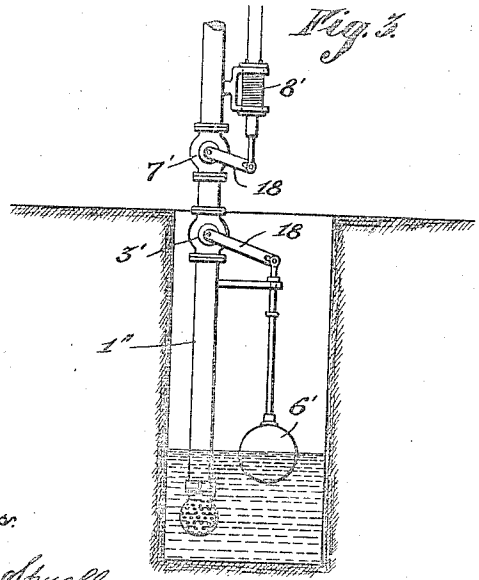


Fig. 3.

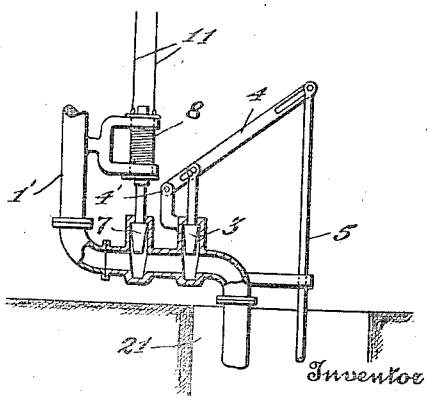


Fig. 2.

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UNITED STATES PATENT OFFICE.

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VALVE MECHANISM FOR PUMP SUCTION-PIPES.

1,067,903. Specification of Letters Patent. Patented July 22, 1913.

Application filed June 1, 1912. Serial No. 701,040.

To all whom it may concern:

Be it known that I, THOMAS ELLIOTT, a subject of the King of Great Britain, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Valve Mechanism for Pump Suction-Pipes, of which the following is a specification.

My invention relates to pumping apparatus, having more particular reference to apparatus of this character employed for pumping out sumps, or other pits or the like, and has for its primary object the provision of mechanism through the medium of which the suction pipe is automatically closed against intake of fluid.

A further object resides in the provision of auxiliary valve mechanism for the suction pipe.

Other objects will be set forth as my description progresses and those features of construction, arrangements and combinations of parts on which I desire protection succinctly defined in my annexed claims.

Referring to the accompanying drawing, wherein like numerals of reference indicate like parts throughout: Figure 1 is an elevation of my invention, installed as in use, a portion of the suction pipe being broken away. Fig. 2 is a fragmentary elevation with parts broken away, showing both valves in open position, and Fig. 3 is a fragmentary elevation of the suction pipe and controlling valves therefor in modified arrangement.

My invention is particularly adapted for use in connection with apparatus for pumping water from mines, excavations or other depressions in the earth, and for the purpose of illustration, I have shown the same connected for operation in conjunction with two drainage pits or wells 20, 21.

Reference numeral 1 indicates the suction pipe of a pump 2, as for example, a centrifugal pump, the same extending into pit or well 21 and having a branch 1′ extending into well or pit 20. Said suction pipe proper and the branch 1′ thereof are each provided with valve mechanism for automatically controlling the intake of water. These valve mechanisms being identical in construction, a description of one will suffice.

Reference numeral 3 indicates a slide valve whose stem is connected with a lever 4, fulcrumed at 4′ and having its free slotted end portion connected with the rod 5 of a float 6, which latter is positioned externally of the suction pipe for raising and lowering movement by the water in which the lower end portion of said pipe is submerged. Adjacent to valve 3 is a valve 7 having its stem connected with the core of a solenoid 8 for raising or opening movement by the latter, and for closing movement by gravity when said solenoid is deënergized.

Reference numeral 9 indicates an electric motor, for operating pump 2, and 12 the circuit wires thereof which lead to a suitable source of electrical energy, not shown. Solenoid 8 is connected by wires 11 to the circuit wires 12, whereby, during operation of the motor, a portion of the current will be shunted to solenoid 8. As the water in pits or wells 20, 21 is removed, floats 6 will lower and thereby close valves 3, this occurring prior to the level of the water in the pits or wells falling below the lower ends of the suction pipes. When motor 9 is stopped, valves 7 close, as hereinbefore set forth, and remain so until the motor is again started, thereby preventing the water in the suction pipe escaping incident to the opening of valves 3, which obviously occurs during refilling of the pits or wells.

In Fig. 3 I have shown a modified construction wherein the suction pipe 1″ is provided with rotary valves, as 3′, 7′, the same being provided with fixed arms 18, connected with float 6′ and with the core of solenoid 8′ respectively, as shown.

By my invention, which can be employed in conjunction with any number of pits or wells, necessity of injecting or otherwise providing the pump with a priming charge is overcome, and further, as the various valves 3 are operated independent of one another, the same will automatically open and close during the pumping operation in accordance with the supply of water controlled thereby.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent of the United States of America, is:—

1. In apparatus of the character described, in combination with the pump suction pipe, a pair of valves for controlling the passage of fluid therethrough, a float externally of said pipe connected to one of said valves, and a solenoid having its core connected to

the other of said valves for positively operating the same.

2. In apparatus of the character described, in combination with the pump suction pipe, adapted to have its lower end submerged, a valve in said pipe, a float connected to said valve for operating the same, a second valve in said pipe, and means for operating said second valve arranged externally of said pipe and directly connected to the valve for positively moving the same.

3. In apparatus of the character described, in combination with the pump suction pipe adapted to have its lower end submerged, a valve in said pipe, a float connected to said valve for operating the same, a second valve mounted in said pipe and movable into the pipe and outwardly therefrom, and means for operating said second valve independently of said first named valve arranged externally of said pipe and directly connected to said second valve for positively moving the same.

4. In apparatus of the character described, a pump, a valve in the suction pipe of said pump, an electric motor for operating said pump, electrically controlled means for operating said valve connected in circuit with said motor, a second valve in said pipe, and a float connected with said second valve for operating the same.

Signed at Seattle, Washington this 14th day of May 1912.

THOMAS ELLIOTT.

Witnesses:
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