

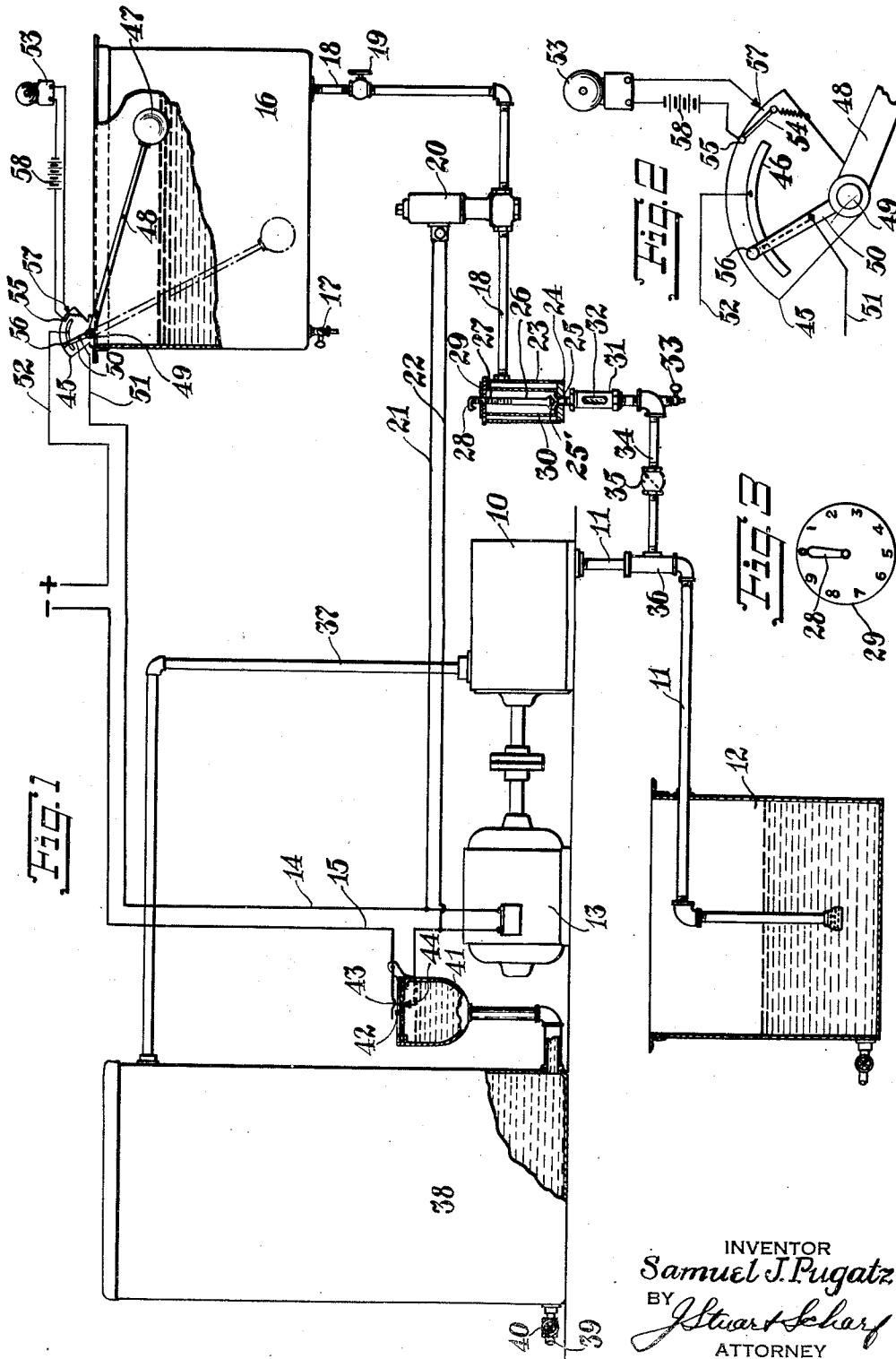
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AUTOMATIC CHLORINATOR

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AUTOMATIC CHLORINATOR

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1 Claim. (Cl. 210—28)

This invention relates to a system and apparatus for chlorinating water supplies.

The object of this invention is to provide an automatic system of controlling the supply of hypochlorite to the water to be treated; depending on the amount of water or pressure in the supply tank.

A further object of this invention is to provide a system of chlorinating water supplies by automatically cutting off the system when the supply of hypochlorite falls below a predetermined amount and causing an alarm or other signal to be given if any more of the hypochlorite is removed from the tank.

A further object of this invention is to provide a system of chlorinating water supplies by passing the chlorine solution through a controlled valve and a filter with a measuring drip valve into a pump and so arranged that the controlling valve is in operation only when the pump is in action.

These and other objects of the invention will be apparent to those skilled in the art from the following description taken in connection with the accompanying drawing. It is expressly understood, however, that the drawing is for the purpose of illustration only and is not designed as a definition of the limits of the invention; reference being had for this purpose to the appended claim.

Referring to the drawing:

Fig. 1 is a complete layout of the system.

Fig. 2 is a detail of the hypochlorite control and alarm.

Fig. 3 is a top view of the measuring valve.

In the drawing, the pump 10, which may be either of the reciprocating or rotary type, is connected to draw water through a suction pipe 11, from a tank 12, or from any other available source of supply. The pump is operated by a motor 13, the current for which is supplied by lines 14, 15.

To purify the water drawn from the tank 12, the following arrangement has been devised.

A tank 16, made of hard rubber or other material resistant against the chemicals used, is filled with hypochlorite or other sterilizing compound. The tank 16, is provided with a drain cock 17, and a pipe 18, with a stop valve 19, in the pipe line. A controlling valve 20, of the solenoid type is set in the pipe 18, with the current lines 21, 22 drawn from lines 14, 15.

The pipe line 18, then enters a drip valve 23, which comprises a casing 24, provided with an opening 25, at the bottom thereof. A thick slab

25' with an opening at the center is placed on the inside of the bottom of the casing 24 with the openings in alignment. A vertical stem 26, which is threaded at the top 27, in threaded relation with the top of the casing 27, and is arranged to travel up or down by revolving said stem. The stem is provided with a pointer 28, at the top, which faces a dial 29, on which numbers are exposed. By turning the stem 26, in one direction allows the opening 25, to be uncovered. The amount of opening is indicated by the number on the dial 29.

A filter 30 is set within the casing 24 around the slab 25', to withhold any impurities before the solution reaches the opening 25. The purpose of the slab 25' is to provide an obstruction or dam so that the impurities when they fall to the bottom of the casing will remain there and the slab 25' prevents them from being carried to the opening 25.

The usual opening allowed at 25, is just sufficient to cause a drop by drop passage. A sight feed bushing 31, with a glass covered opening 32, is provided so as to observe and check on the drop by drop passage.

A drain cock 33, is provided for cleaning purposes.

The solution now enters the pipe 34, and passes check valve 35, into the mixing bushing 36, in the suction line 11.

The chlorinated water now enters the pump 10, where it is pumped into pipe 37 then into the supply or pressure tank 38 which is provided with a discharge pipe 39, and valve 40.

In the arrangement described thus far, when the tank 16, is full and valve 19, is open, and the motor 13, is started, the solenoid valve 20 is automatically lifted and the system is in operation. The hypochlorite passes through the valve 20, into the drip valve 23, through the sight feed 31, into the mixing bushing 36 and the resulting chlorinated water is forced by the pump into the receiving or supply tank 38.

In order to safeguard the constant purity of the water and to provide automatic devices for starting and stopping the system, I have devised the following:

In the line 15, of the motor current supply lines 14, 15, there is inserted a pressure switch 41, of ordinary make, having the usual diaphragm operating with a pin 42, to separate the contact points 43, 44, so that if the pressure reaches above a predetermined amount the diaphragm pin 42, lifts or separates the contact points 43—44 and the current is broken, which

automatically stops the motor 13 of the pump 10, and by remote control desensitizes the solenoid which causes the valve 20 to close, which stops the supply of chlorine solution.

- 5 If however, the pressure in the tank 38 falls below a predetermined amount the contacts 42-44 will close and the current is on, causing the pump 10 to operate and the solenoid valve 20, to open thereby supplying chlorine solution to
10 the system.

- In order to provide a means for stopping the operation of the system when the hypochlorite tank is becoming empty the following steps are taken. A board of insulating material 45, is provided with a metal arc 46. A float 47, which rises and descends as the solution is added or subtracted, is attached to an arm 48, which is pivoted at 49, and connected to the arm 50, and moves with it at all times. On the arm 50, there
15 is a metal portion which is in contact with the metal arc 46, and a wire 51, is attached to said metal portion. A wire 52, is connected to the metal arm 46. The wires 51-52 form part of the circuit 14-15.

- 25 A warning signal as a bell 53, or a light can be employed to show that the system has stopped for lack of hypochlorite. In operation a switch 54, is hinged at 55, which is operated by the arm 50 when it is swung beyond the metal arc 46.
30 The end 56, of the arm forces the switch 54, to close and make contact with the wire 51 and cause the current to flow from a source 58 to ring the warning bell 53 or cause any other alarm or
35 signal.

In the operation of the system:

When the tank 16, is full of hypochlorite the current will pass through the arc 46, through the wire in arm 50 then to the pump motor 13

if the pressure switch 41 is closed and by remote control to the solenoid valve 20.

If, however, the tank 16, is empty the float will fall and the arm 50, will swing over beyond the metal arc 46, which will automatically break
5 the current supply which will stop the system. At the same time the handle on the arm 50 will close the switch 54 which will cause the alarm at 53.

It will be obvious that the invention is not
10 limited to the specific form described and illustrated in the drawing but is capable of a variety of mechanical embodiments. Various changes, which will now appear to those skilled in the art, may be made in the form, details of construction,
15 and arrangements of parts without departing from the spirit of the invention. Reference is therefore to be had to the appended claim for a definition of the limits of the invention.

What I claim is:

20 In a chlorinating system, a chlorine solution tank, a source of raw water supply, a mixing chamber, an electric control valve controlling the amount of solution entering said mixing chamber, a reservoir, an electric pump for draw-
25 ing chlorinated water from the mixing chamber into the reservoir, a level finding means in said tank and arranged to operate a switch, a switch mechanism operated by the pressure in said reservoir, and electric lines running through said
30 reservoir switch, though said tank level finding switch, through said electric pump and through said electric control valve and so arranged that should either switch become disengaged the current in the line stops and the electric control
35 valve stops the supply of chlorine solution to the mixing chamber and the pump becomes inoperative.

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