

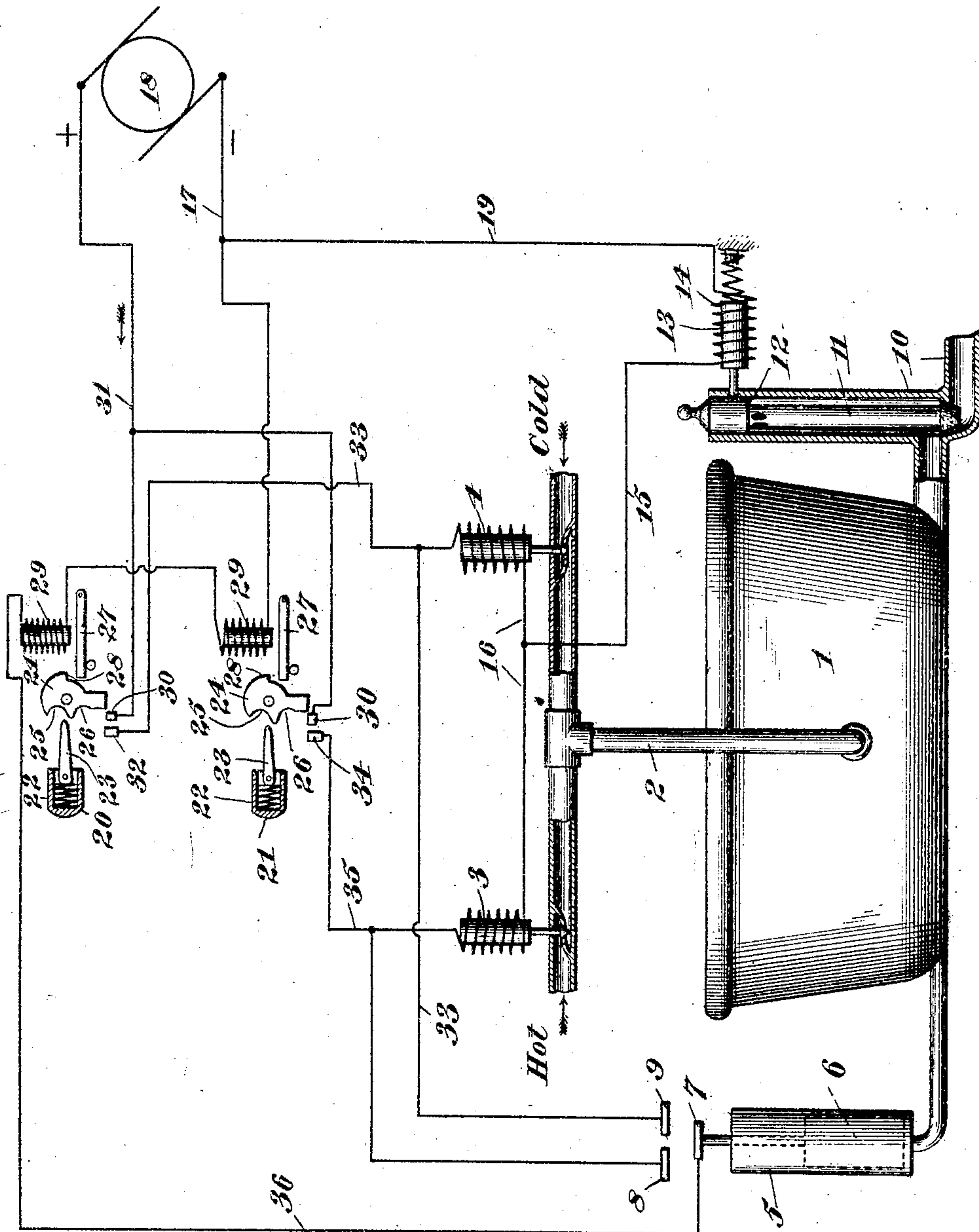
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I. G. WATERMAN.  
ELECTROMAGNETIC VALVE CONTROLLING MECHANISM.

APPLICATION FILED MAY 11, 1903.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

ISAAC G. WATERMAN, OF SANTA BARBARA, CALIFORNIA.

## ELECTROMAGNETIC-VALVE-CONTROLLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 775,019, dated November 15, 1904.

Application filed May 11, 1903. Serial No. 156,675. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC G. WATERMAN, a citizen of the United States, residing at Santa Barbara, in the county of Santa Barbara and State of California, have invented new and useful Improvements in Electromagnetic-Valve-Controlling Mechanisms, of which the following is a specification.

This invention relates to electromagnetic-valve-controlling mechanism.

In my copending application filed January 31, 1903, Serial No. 141,388, I have shown an improved electromagnetically-released locking device for holding open the waste-valve of a bath-tub or lavatory. In my copending applications filed June 24, 1902, Serial Nos. 113,002 and 113,003, I have disclosed a self-closing electromagnetically-opened valve, and in my Patent No. 732,477, dated June 30, 1903, and application filed January 31, 1903, Serial No. 141,385, I have set forth the construction of certain improved push-button electric switches having electromagnetic throw-off mechanisms. In other applications I have shown electrical-contact-controlling floats for automatically causing cessation of the water-supply when a certain level of water in the bath-tub or lavatory is attained. These various inventions are designed for use in connection with each other in providing an electromagnetic-valve-controlling system or mechanism for turning on and cutting off the supply of hot and cold water to a bath-tub or lavatory, and the present invention embodies their novel combinations and cooperating features.

The invention is set forth in detail hereinafter and the novel features recited in the appended claims.

The accompanying drawing illustrates the invention diagrammatically.

The bath-tub 1 receives its supply of water through the pipe 2, which is fed by the hot and cold water pipes, the latter being controlled by the self-closing electromagnetically-opened valves 3 and 4. In communication with the bottom of the bath-tub is a float-tank 5, in which is a float 6, having a contact-head 7 separated from contacts 8 and 9 except when the water in the bath-tub 1 is at the predetermined level at which cutting off of the water-

supply is desired, at which time the contact 7 bridges the contacts 8 and 9.

The bath-tub has the usual waste-pipe 10 and waste-valve 11; but the latter is provided with a shoulder 12, adapted to be engaged by a spring-projected core or plunger 13 when the waste-valve has been raised by hand, and thus locked in open position. This plunger or core is surrounded by a magnet-coil 14, whose electrical energization causes retraction of the core and release of the waste-valve 11, which thereupon drops by gravity and closes the waste-pipe. The coil 14 is in series circuit with both magnet-coils 3 and 4 through the branches 15 and 16, and it is also connected to the return wire or feeder 17, leading to generator 18 by branch 19.

For opening and closing the valves 3 and 4 switches 20 and 21 of the construction set forth in my Patent No. 732,477, dated June 30, 1903, and application filed January 31, 1903, Serial No. 141,385, are employed. These switches embrace a push-button 22, having a spring-pressed pivoted finger 23, a pivoted tumbler 24, having notches 25 and 26, adapted to be engaged by the finger 23, and an armature 27 for engaging a shoulder 28 on the tumbler when the armature is attracted by an electromagnet 29.

The switches each have a contact 30 connected to the feeder-wire 31. The switch 20 has a contact 32 having a circuit 33 leading to magnet 4 and float-contact 9, and the switch 21 has a contact 34 having a circuit 35 leading to magnet 3 and float-contact 8. From float-contact 7 runs a circuit 36, which includes magnets 29 and feeder 17. Normally both valve-coils 3 and 4 are deenergized and the valves closed, so that no water is flowing into the bath-tub 1. The float 5 is down. The tumblers 24 and other parts are in the position shown in the drawings.

If a supply of hot water is desired, a push-button of switch 21 is pressed in, and the finger 23 passes into notch 25 and snaps the tumbler into engagement with contacts 30 and 34, where it remains. A current then passes via circuits 31 and 35 through magnet-coil 3, circuit 16 and 15, magnet-coil 14, and back to the generator by circuits 19 and 17. In tak-



ing this path the valve 3 is opened and remains so and the core 13 disengaged from the shoulder 12, allowing the waste-valve 11 to close automatically.

5 To obtain a supply of cold water, the switch 20 is operated and the contacts 30 and 32 bridged, whereupon a current flows via circuits 31 33, coil 4, circuits 16 and 15, coil 14, circuits 19 and 17, thus opening valve 4. Hot  
10 and cold water will then be flowing simultaneously. If the waste-valve 11 had not been released previously by the opening of the hot-water-valve circuit, it would be released on completing the circuit of the cold-water valve.

15 The valves 3 and 4 will remain open as long as the current is flowing. To close either valve, the push-button 22 is again pressed in, and the finger then passes into notch 26 and snaps the tumbler off the contacts 30 and 32  
20 or 30 and 34, as the case may be.

If the water is allowed to run until it reaches the level at which it is desired to cut it off automatically, the rise of the float 6 causes contact 7 to engage contacts 8 and 9, whereupon  
25 the current from circuit 31 passes via the contacts of either or both switches (according as either or both tumblers are on their contacts) and the contacts 8 or 9 through contact 7, circuit 36, magnet-coils 29, and back to the gen-  
30 erator by way of circuit 17. The magnets 29 attract the armatures 27, which thereupon engage the shoulders 28 and throw the tumblers off their contacts, thus breaking the valve-circuits and allowing the valves to close and  
35 cut off the supply of water to the receptacle 1. To drain the water from the receptacle, the waste-valve 11 is raised by hand and thereupon locked by the core 13.

40 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a fluid-receptacle, of a supply-valve therefor, a self-closing waste-valve for the receptacle, means for operating  
45 said waste-valve by hand, means for locking the waste-valve in open position, and means for automatically releasing the waste-valve to permit it to close when the supply-valve is opened.

50 2. The combination with a fluid-receptacle, of a supply-valve therefor, a self-closing waste-valve for the receptacle, means for operating said waste-valve by hand, means for locking the waste-valve in open position, electrically-  
55 operated means for opening the supply-valve and releasing the locking mechanism of the

waste-valve to permit it to close when the supply-valve is opened, and means controlling the operation of said electrically-operated means.

3. The combination with a fluid-receptacle, 6c of a self-closing supply-valve, means for electrically opening said supply-valve, said supply-valve closing upon deenergization of its electrical operating means, a self-closing waste-valve for the receptacle, means for op- 65 erating said self-closing waste-valve by hand, means for locking the self-closing waste-valve in open position, and means for automatically releasing the waste-valve to permit it to close when the supply-valve is opened. 70

4. The combination with a fluid-receptacle, of a self-closing supply-valve therefor, means for electrically opening said supply-valve, said valve closing on deenergization of its elec- 75 trical opening means, a self-closing waste-valve for the receptacle, means for operating said waste-valve by hand, means for locking the waste-valve in open position, and electrically-controlled means for releasing the locking means which is automatically energized when 80 the supply-valve is opened.

5. The combination with a fluid-receptacle, of a self-closing supply-valve therefor, elec- 85 trically-operated means for holding the supply-valve opened while said electrically-operated means is energized, a switch for controlling the electrically-operated means of the supply-valve at will, a waste-valve for the receptacle, and electrically-operated means for automati- 90 cally causing the waste-valve to close when the supply-valve-operating means is energized.

6. The combination with a fluid-receptacle, of a self-closing supply-valve therefor, elec- 95 trically-operated means for holding the supply-valve opened while said electrically-operated means is energized, a switch for controlling the electrically-operated means of the supply-valve at will, a self-closing waste-valve, means 100 for operating the waste-valve by hand, means for locking the waste-valve in open position, and electrically-controlled means for releasing the waste-valve which means are automatically energized when the supply-valve-operating means is energized. 105

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

ISAAC G. WATERMAN.

Witnesses:

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E. S. PILLARD.