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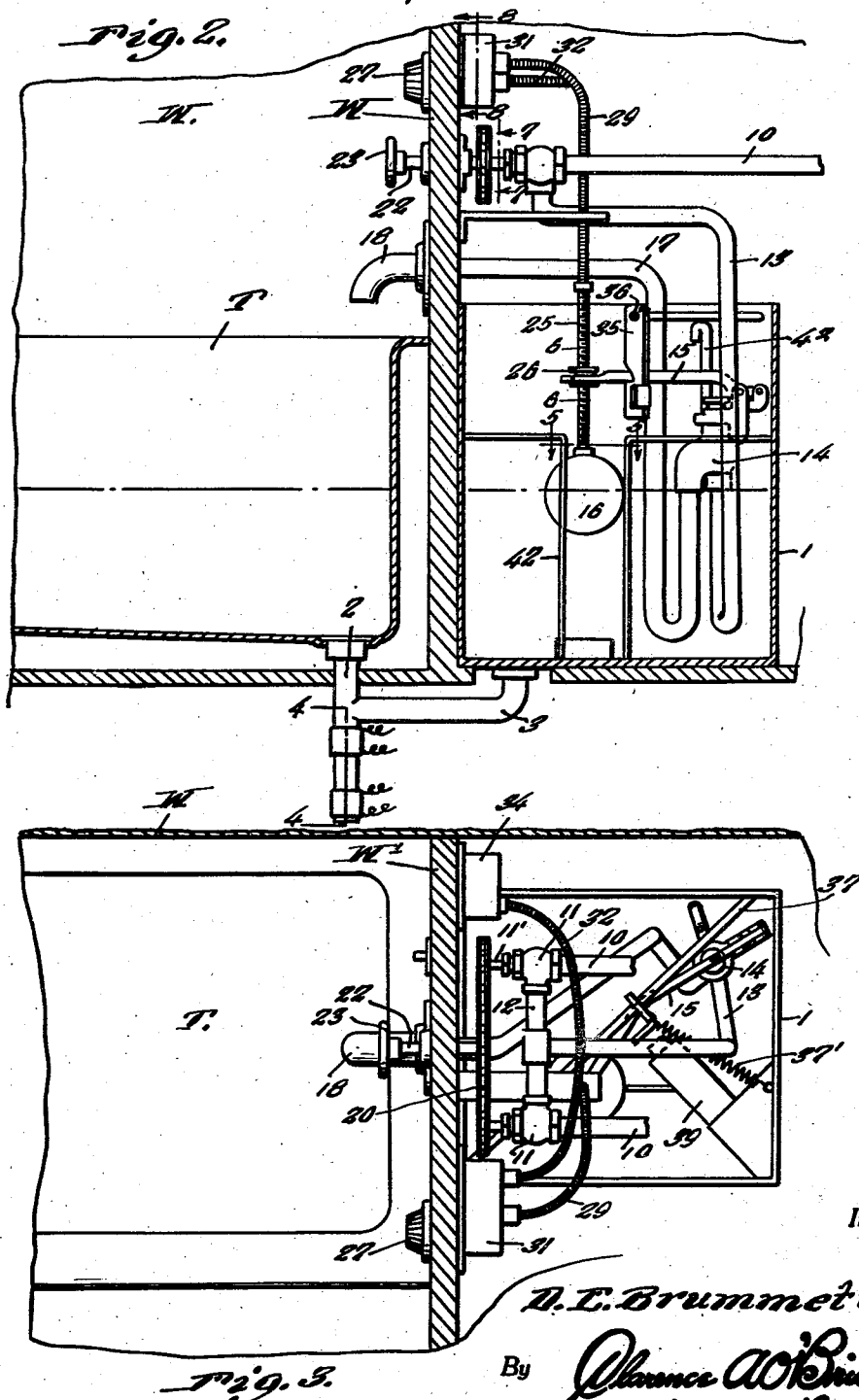
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AUTOMATIC WATER CONTROL FOR BATHTUBS

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AUTOMATIC WATER CONTROL FOR
BATHTUBS

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4 Claims. (Cl. 4—192)

This invention relates to an automatic water control for bathtubs, the general object of the invention being to provide adjustable means for regulating the level of water in the tub and also the temperature of the water whereby one by manipulating handles or knobs can have the tub filled to any desired level and the water at any suitable degree of temperature, with electric means for opening and closing a hidden drain means, such means also including means for starting the flow of water into the tub when the drain means is closed.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a perspective view of a portion of a bathroom, the waterflow of which is controlled and regulated by this invention.

Figure 2 is a vertical sectional view through a portion of the room and the tub and also through portions of the invention with parts in elevation.

Figure 3 is a top plan view with parts in section.

Figure 4 is a section on the line 4—4 of Figure 2.

Figure 5 is a section on the line 5—5 of Figure 2.

Figure 6 is a section on the line 6—6 of Figure 2.

Figure 7 is a section on the line 7—7 of Figure 2.

Figure 8 is a section on the line 8—8 of Figure 2.

Figure 9 is a diagrammatic view of the circuit.

In these views the letter T indicates a bathtub located in a bathroom, portions of the walls being shown at W and in carrying out the invention a tank 1 is located in a hidden compartment or chamber adjacent the bathroom or in any other suitable place and the wall W' between this chamber and the bathroom carries the fixtures which act as controls for the various parts of the invention.

A pipe 2 leads downwardly from the bottom of the tub and a pipe 3 connects the bottom of the tank 1 with a part of the pipe 2, the pipe 2 extending downwardly below the junction of the pipe 3 therewith where it joins a waste pipe and below the junction of the pipes 2 and 3 is located in the pipe 2 a valve seat 5 for a downwardly closing valve 6 which has connected therewith upper and lower perforated armatures 7 for the upper and lower solenoids 8 which are carried by said part of the pipe 2, spring holding means 9 being provided for the upper armature for normally holding the valve in raised position until the lower solenoid is energized when the valve will be closed. Of course, when the valve is to

be opened again the upper solenoid is energized to raise the upper armature and the valve. These parts can be arranged in any suitable or desired manner so that the valve can be opened and closed by electric means.

Hot and cold water supply pipes 10 lead into the space above the tank 1 and have the valves 11 at their ends, the valves being connected together by a cross pipe 12 and this cross pipe is connected by a pipe 13 which leads to a valve 14 in the tank, this valve 14 being similar to that used in flush tanks and it includes the control arm 15 which is operated by a float 16. When the valve 14 is open water will flow therefrom through the pipe 17 to the curved outlet pipe 18 which extends through the wall W' and discharges into the tub. Of course, some of this water entering the tub will flow through the pipe 2 and pipe 3 into the tank 1 and raise the float 16 to a point where it will cause the arm 15 to close the valve 14 and thus stop flow of water into the tub and tank.

The stems 11' of the valve 11 have the sprocket wheels 19 thereon over which passes an endless chain 20, said chain being actuated by a large sprocket wheel 21 on a shaft 22 which is journaled in the wall W' and passes into the bathroom where it is provided with a knob 23 which has an indicator mark thereon for cooperating with the letters or characters 24 for indicating when the valves are closed or when the valves are adjusted to permit cold water to pass into the pipe 13 or a mixture of hot and cold water or hot water, or these characters can be made in the form of graduations of degrees so that the device can be regulated to supply water into the tub of any desired degree by simply adjusting the knob 23.

Means are also provided for regulating the amount of water to be placed in the tub and such means includes a threaded stem 25 for the float 16 which passes through a threaded collar 26 which is attached to the arm 15 as shown in Figures 2 and 6 so that as the shaft is turned the float is raised and lowered relatively to the collar and this will vary the time of closing movement of the valve 14 by the arm 15. This shaft is turned from a knob 27 rotatably arranged on the wall W' and having a Bowden wire or flexible shaft 29 connected with the shank thereof and this flexible shaft being connected with the screw threaded shaft 25 so that by turning the knob the screw shaft can be turned to raise or lower the float relative to the arm 15. Turning of the knob 27 also turns the gearing 30 in a casing 31 attached to the inner face of the wall W' and this gearing rotates a flexible shaft 32 which, in turn, operates the finger 33 over a dial 34 on the wall W', this dial carrying indicia indicating different water levels in the tub so that

when turning the knob to raise and lower the float the operator will also turn the arrow or pointer 33 and by looking at the dial to indicate when the parts are set to half fill the tub, three-quarters fill the tub or any other desired water level. Of course, when the pointer or arrow reaches the desired indication on the dial the knob is not turned any longer and the float will be in a position that it will close the valve 14 by means of the arm 15 when the level of water reaches that for which the indicating means are set.

When the arm reaches a position where the valve 14 is closed thereby it is engaged by a depending latch member 35 suitably supported from a rod 36 in the top of the tank and this latch member holds the parts in position with the valve closed. The latch member is held in latching position by a spring 37 and at its lower end has an armature 38 thereon which is attracted to a magnet or solenoid 39 when the same is energized and, of course, when this is done the member 35 swings out of engagement with the arm 15 so that the float can drop as the water level drops.

As shown in Figure 9 the solenoid 39 is in circuit with the solenoid 8 which acts to close the valve 6 and this circuit is controlled by a switch 40 on the wall W' so that it can be manipulated by the bather and the circuit for the upper solenoid 8 for opening the valve is shown at 8' and is controlled by the switch 41 on the wall W'.

Thus one wishing to take a bath would first turn the knob 27 to adjust the float 16 and turn the pointer 33 and the gauge 34 to the desired water level and he would manipulate the switch 40 to close the valve 6 and release the latch member 35 which would permit the float to move downwardly and cause the arm 15 to open the valve and if the knob 23 had been turned from "off" position water would start to flow from the hot and cold water pipes through the valves 11 and pipe 13 through the valve 14 and pipe 17 and discharge into the tub through the member 18. Of course, this member 23 would have been adjusted to open the valve 11 to an extent to provide a proper mixture of the hot and cold water to make the water flowing into the tub of the desired temperature. As the water level rises in the tub and tank it will raise the float 16 until the collar 26 raises the arm 15 and causes the valve 14 to close and thus stop further flow of water so that the tub will be filled to a level on which the indicator was set. As the arm 15 moves to the raised position to close the float it will be engaged by the latch member 35 which holds the parts in raised position with the valve closed until the switch 40 is again closed. When it is desired to empty the tub the switch 41 is closed which supplies current to the upper solenoid 8 and this attracts the upper armature and opens the valve. Guide rods 42 are suitably supported in the tank 1 for the float 16 and the usual gooseneck pipe 43 extends upwardly from the valve.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In combination with a tub and hot and cold water supply pipes, a tank in communication with the tub, a float controlled valve in the tank, a pipe leading from the outlet of the valve to supply water to the tub, valves in the hot and cold water pipes, a pipe connecting the valves together, a pipe connecting the last-mentioned pipe with the valve in the tank, means for adjusting the hot and cold water valves to regulate the temperature of water flowing through the first-mentioned valve, means for regulating the time of closure of the first valve by the float for regulating the water level in the tub.

2. In combination with a tub and hot and cold water supply pipes, a tank in communication with the tub, a float controlled valve in the tank, a pipe leading from the outlet of the valve to supply water to the tub, valves in the hot and cold water pipes, a pipe connecting the valves together, a pipe connecting the last-mentioned pipe with the valve in the tank, means for adjusting the hot and cold water valves to regulate the temperature of water flowing through the first-mentioned valve, means for regulating the time of closure of the first valve by the float for regulating the water level in the tub, a drain valve, electric means for opening and closing the same.

3. In combination with a tub and hot and cold water supply pipes, a tank in communication with the tub, a float controlled valve in the tank, a pipe leading from the outlet of the valve to supply water to the tub, valves in the hot and cold water pipes, a pipe connecting the valves together, a pipe connecting the last-mentioned pipe with the valve in the tank, means for adjusting the hot and cold water valves to regulate the temperature of water flowing through the first-mentioned valve, means for regulating the time of closure of the first valve by the float for regulating the water level in the tub, a drain valve, electric means for opening and closing the same, a latch for holding the float operated valve member in raised position with the valve closed and electric means for releasing the latch means when the waste valve is closed.

4. In combination with a tub of a bathroom and hot and cold water supply pipes, a tank located in a chamber adjacent the bathroom, means for connecting the bottom of the tank to the waste pipe of the tub above the waste valve therein, hot and cold water valves in the hot and cold water pipes located in the chamber, manually operated means for manipulating said valves from the bathroom, a cross pipe connecting the valves together, a float operated valve in the tank, pipes leading from the cross pipe into the float operated valve, a pipe leading from the float operated valve through the wall between the chamber and the bathroom to supply water to the tub, means for adjusting the float relative to the valve operating member actuated by the float for regulating the level of water supplied to the tub, said means including a knob in the bathroom, a gauge for indicating the water level for which the float adjusting means are set, said gauge being operated by turning of said float adjusting means, electric means for closing and opening the waste valve, switches in the bathroom for controlling said electric means, a latch member for holding the float operated member in raised position with the valve closed and means for releasing said latch member when the electric means for closing the waste valve is actuated.