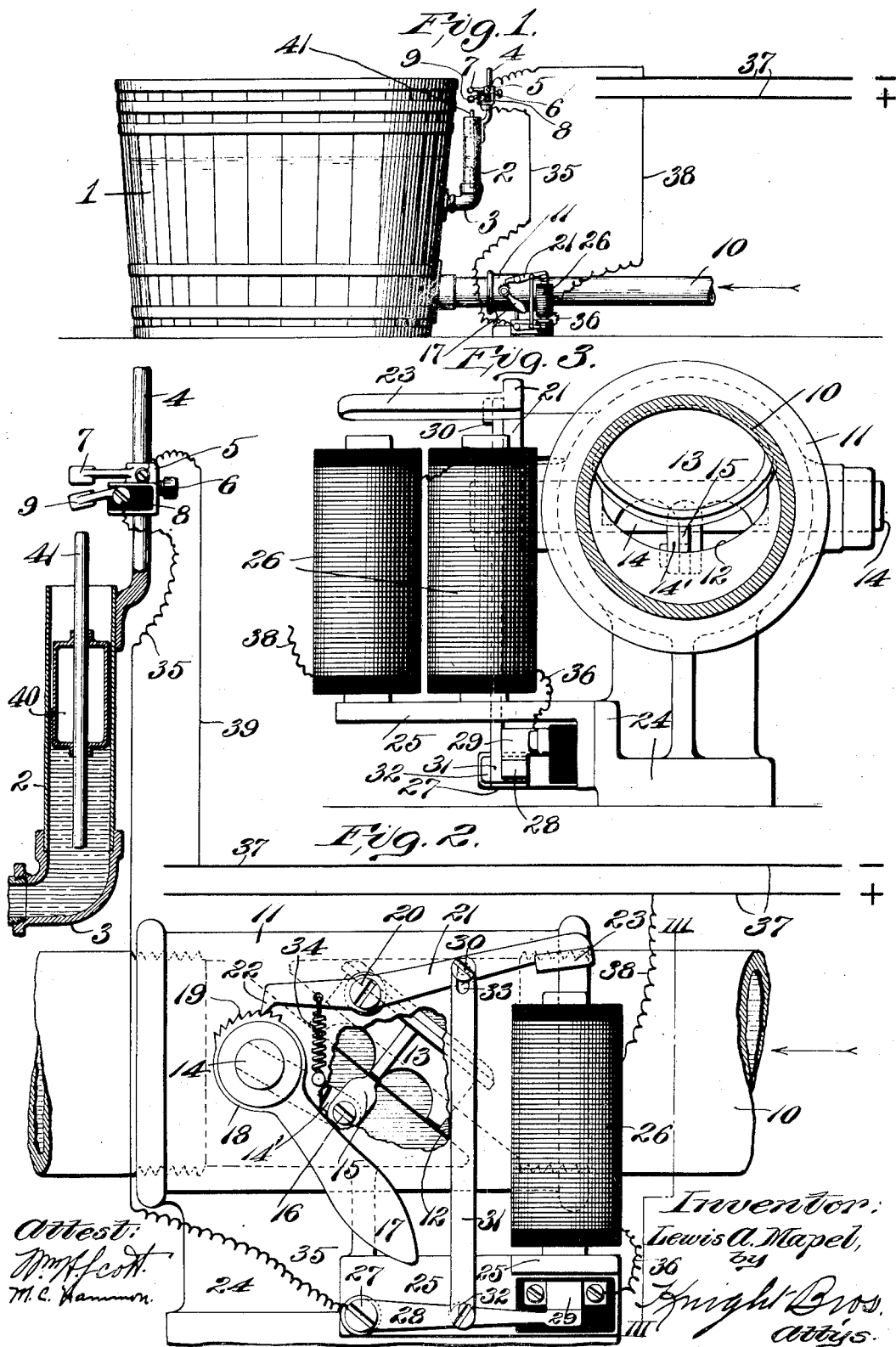


L. A. MAPEL.
ELECTRICALLY CONTROLLED VALVE.
APPLICATION FILED SEPT. 27, 1913.

1,179,537.

Patented Apr. 18, 1916.



UNITED STATES PATENT OFFICE.

LEWIS A. MAPEL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO MAPEL MANUFACTURING COMPANY, A CORPORATION OF MISSOURI.

ELECTRICALLY-CONTROLLED VALVE.

1,179,537.

Specification of Letters Patent.

Patented Apr. 18, 1916.

Application filed September 27, 1913. Serial No. 792,194.

To all whom it may concern:

Be it known that I, LEWIS A. MAPEL, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Electrically-Controlled Valves, of which the following is a specification.

The primary object of this invention is to provide improved means for controlling the supply of a liquid which is to be obtained in receptacles and the like, in which proportions of other ingredients are to be mixed with a certain amount of liquid such as water.

Another object is to provide improved means for controlling a valve which is located in a liquid supply pipe, said pipe being adapted to discharge in to a receptacle when the valve is opened so that the valve will be automatically closed when the desired amount of water has been obtained in the receptacle.

A further object is to provide improved means whereby a valve located in a supply pipe can be opened to different extents and when the predetermined amount of liquid has passed by said valve, said valve is automatically closed.

Other and further objects will appear in the specification, and be specifically mentioned in the appended claims, reference being had to the accompanying drawings exemplifying the invention, and in which,

Figure 1 is a side elevation showing this improved device connected up with a receptacle. Fig. 2 is an enlarged fragmentary view showing the water column tube in section, and a portion of the valve casing of the water supply pipe broken away. Fig. 3 is an enlarged section taken on the line III—III of Fig. 2.

Referring to the drawings: 1 designates a receptacle to which is connected a water column 2, said column communicating with said receptacle through the elbow 3. Secured to said column 2, is a gage rod 4, said rod having slidably mounted thereon a block 5, said block adapted to be adjustably held on said rod by the set-screw 6. Secured to said block is an electrical contact 7, and pivotally mounted to said block at 8 is a contact lever 9, said contact points being located adjacent each other. Communicating with said receptacle 1 is a water supply pipe

10, and forming a part of said supply pipe is a valve housing 11, said housing having a preferably inclined valve seat 12 formed therein, in which is mounted a valve 13. Extending transversely and horizontally through said housing 11, and having its bearings in the outside of said housing, is a pin 14. Secured to said pin adjacent the center thereof and in the housing 11 is a lever 14', the end of said lever being connected to the depending portion 15 of said valve 13 by the pivotal connection 16. Mounted on one end of said pin 14, on the outside of said housing 11, is a hand lever 17, the hub portion 18 of said hand lever having formed thereon a series of ratchet teeth 19. Pivotal-ly mounted at 20 to one side of said housing 11 is a lever 21, said lever having formed thereon a pawl 22, and at the opposite end of said lever is mounted a magnet attracting portion 23. Depending from the under side of said housing 11 is a bracket 24, said bracket having secured thereto an auxiliary bracket 25. Secured to said bracket 25 are a pair of vertically mounted magnets 26, the upper ends of said magnets being located adjacent the under side of said magnet attracting portion 23 of said lever 21.

Pivotal-ly mounted at 27, to the bracket 25 is a lever 28, and secured to said bracket adjacent one end of said lever 28, is an electrical contact 29. Pivotal-ly mounted at 30 to the lever 21 is a link 31, the opposite end of said link being pivotally mounted at 32 to the lever 28, formed in said link 31. At the end, which is connected to the pivot 30 is an elongated opening 33. Secured to said lever 21 is one end of a coil spring 34, the opposite end of said spring being connected to the housing 11. Electrically connected to the contact point 9 is a wire 35, the opposite end of said wire being connected to the lever 28.

Leading from the contact 29 to one of the magnets 26, is a wire 36, and leading from one of said magnets to one of the line wires 37 is a wire 38. Leading from the contact point 7 to one of the line wires 37 is a wire 39. Movably mounted in the column 2 is a float 40, said float having vertically mounted therein a push-rod 41.

This improved device is used more especially where large amounts of water are required, said amounts having to be regulated in accordance with prescribed amounts

of other ingredients that are to be mixed in the water.

In the operation of this improved device assuming that a certain amount of water has
5 to be obtained in the receptacle 1, this amount of water being predetermined, the sliding block 5 is set in accordance therewith on the gage-rod 4. The hand lever 17 is then manipulated, and the valve 13 is
10 elevated from its seat 12. The water in the supply pipe 10 will then pass under the valve and into the receptacle 1. As the water rises in said receptacle, the same water level will be attained in the column 2.
15 The rising of the water in the receptacle will elevate the float 40 in the column 2, thus carrying the rod 41, and the upper end thereof will contact with and lift the contact lever 9 until said lever engages the contact 7. This contact of said contacts 7 and
20 9 will energize the circuit in which this improved device is located, thus energizing the magnets 26 and drawing down the portion 23 of the lever 21, which movement will elevate the pawl 22 from the ratchet teeth 19.
25 This elevating of the pawl 22 will unlock the elevated position of the valve 13, and the pressure of the water in the supply pipe 10 bearing against the upper side of said
30 valve 13 will immediately seat said valve on its seat 12, thus closing off further discharge into the receptacle 1. As the lever 21 was being drawn down by the magnets 26, the pivot 30 of said link 31 moved freely in the
35 elongated opening 33. But before the contact portion 23 of said lever 21 engaged said magnets 26, said pivot 30 reached the lower end of the opening 33, and the link 31 was moved downwardly. This movement of said
40 link 31 displaced the lever 28 from contact with the contact 29, which movement of said lever 28 from said contact 29 deenergized the circuit. The lever 21 would then be
45 returned to its normal position by the spring 34.

What I claim is:

1. The combination with a liquid passage, a valve seat supported in said passage obliquely to the axis thereof, a valve in said
50 passage at one side of said valve seat whereby the flowing liquid actuates said valve toward said valve seat, a rod extending across said passage at the opposite side of said
55 valve seat from said valve, and a connection from said rod for moving said valve from and to said valve seat, of manual means for actuating said rod to move said valve from said seat in opposition to the pressure
60 of the flowing liquid, a series of teeth rigidly supported by said rod, an element arranged to engage said teeth to hold said rod and said valve in their different adjustments, a device actuating said element in one
65 direction to engage said teeth, a normally deenergized actuator for releasing said ele-

ment, and means under control of the liquid that has passed said valve for energizing and enabling said actuator to operate in releasing said element.

2. In a liquid supply pipe, a valve seat 70 having a passage therethrough, a valve in said pipe on the influent side of said valve seat and movable to and from said seat to close and to open the passage therethrough, a member on the opposite side of said valve 75 seat for moving said valve from said valve seat in opposition to the pressure of the liquid, an actuating device for actuating said member, an element for holding said member and thereby said valve in various 80 selected adjustments, a normally deenergized actuator, a normally open electric circuit adapted to be closed to energize said actuator, a switch for closing said circuit, a float 85 under control of the liquid that has passed said valve for closing said switch and enabling said actuator to be energized, and means controlled by said actuator for releasing said element.

3. The combination of a liquid supply passage, a valve seat in said passage, a puppet 90 valve on the influent side of said valve seat, a rockable rod on the effluent side of said valve seat, a connecting device whereby turning of said rod in one direction will 95 move said valve from said valve seat, an element for holding said rod in position to hold said valve from said valve seat in opposition to the pressure of the flowing liquid, a normally deenergized actuator for releasing 100 said element, mechanism for energizing said actuator, means under control of the liquid that has passed said valve determining when said mechanism will energize the actuator, means for supporting a part of said 105 mechanism in different positions to vary the amount of liquid required to pass said valve before said actuator will be energized, and a part actuated by said element to deenergize said actuator as an incident to release of 110 said element from said rod.

4. The combination of a liquid supply passage, a valve within said passage for opening and closing the same, a device for 115 moving said valve to and holding it in open adjustment, an element for engaging and holding said device in position to hold said valve open, a normally deenergized actuator for disengaging said element from said device to enable said valve to close, a normally 120 open electric circuit for energizing said actuator, mechanism for closing said circuit, a device under control of the liquid that has passed said valve for actuating said mechanism to close said circuit, means for supporting 125 said mechanism in different positions to vary the quantity of liquid required to pass said valve before said mechanism will be actuated, and means actuated by said engaging and holding element to open said 130

circuit as an incident to disengagement of said element, as aforesaid.

5 5. In a liquid supply passage, a valve for opening and closing the same, and a device
 10 for moving said valve to open position, in combination with a lever for engaging said
 15 device to hold said valve open, means for actuating said lever into engagement with
 20 said device, a normally deenergized electric actuator, mechanism under control of the
 liquid that has passed said valve for energizing said actuator, a float device controlled
 by the liquid that has passed said valve for operating the same mechanism to position
 to energize said actuator, a connection operated by said actuator for releasing said lever
 from said device, a part movable to position to deenergize said actuator, and means actuated
 by said lever for moving said part to position to deenergize said actuator as an
 incident to the release of said lever.

25 6. In a liquid supply passage, a valve movable to close and to open said passage, a rod operable to move said valve to open
 position, a lever movable into and out of engagement with said rod, a normally de-

energized electromagnet for operating said lever to disengage the same from said rod, a normally open electric circuit for energizing
 said magnet, a switch for closing said circuit, a float device under control of the
 liquid that has passed said valve for closing said switch to energize said magnet, means
 for supporting said switch in different positions relative to said float device, whereby
 the quantity of liquid, required to pass said valve before said switch will be closed, may
 be optionally varied, a part movable to position to deenergize said actuator, means actuated
 by said lever for moving said part to position to deenergize said actuator as an
 incident to the release of said lever, and means for actuating said lever to place said
 part in position to energize said actuator as an incident to opening the valve.

In testimony whereof, I have hereunto affixed my signature.

LEWIS A. MAPEL.

In the presence of—

H. G. FLETCHER,
 M. C. HAMMON.

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