W. L. MORRIS.

AUTOMATIC VALVE.

APPLICATION FILED SEPT. 9, 1911.

1,114,019.

Patented Oct. 20, 1914.

Fig. 1.

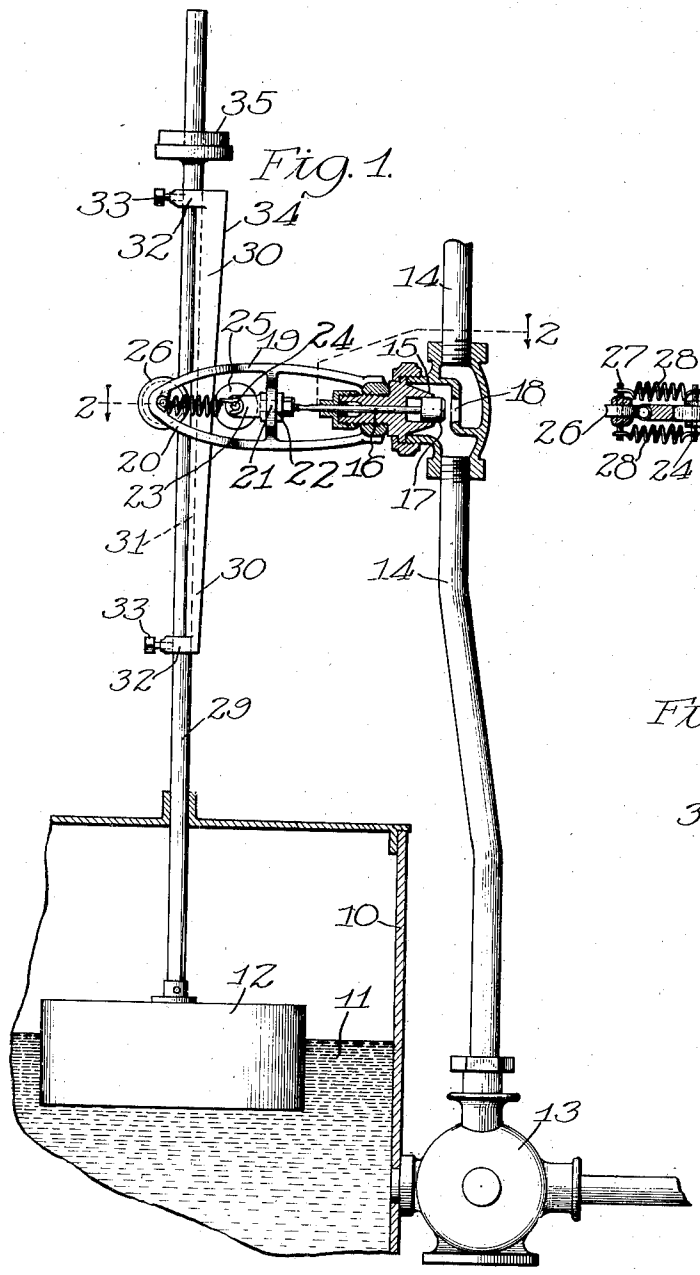


Fig. 2.

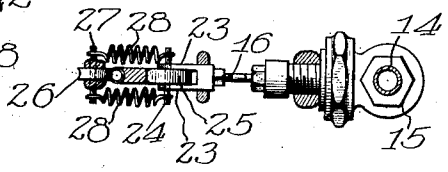
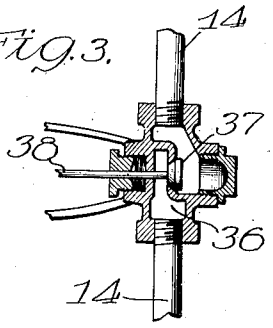


Fig. 3.



Witnesses:
G. W. Dwinnell Jr.
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UNITED STATES PATENT OFFICE.

WILLIAM L. MORRIS, OF FORT WAYNE, INDIANA, ASSIGNOR TO S. F. BOWSER & COMPANY, INCORPORATED, OF FORT WAYNE, INDIANA, A CORPORATION OF INDIANA.

AUTOMATIC VALVE.

1,114,019. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed September 9, 1911. Serial No. 648,437.

To all whom it may concern:

Be it known that I, WILLIAM L. MORRIS, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Automatic Valves, of which the following is a specification.

This invention relates to automatic valves more particularly designated and described as an automatic throttle valve, and used in connection with apparatus for maintaining fluid in a receptacle at a given level.

The principal object of the invention is to provide an improved, simple and cheap device of the class described which shall be effective and efficient in operation.

For the attainment of these ends and the accomplishment of other new and useful objects, as will appear, this invention consists in the features of novelty in the construction, combination and arrangement of the several parts generally described in the specification and shown in the drawing, but more particularly pointed out in the appended claims.

In the drawing, Figure 1 is a view partly in section of a valve and the preferred construction of an apparatus for operating it; Fig. 2 is a detail cross-sectional view on the line 2—2, Fig. 1; Fig. 3 is a detail sectional view of a valve which operates oppositely to the valve shown in Fig. 1.

In maintaining a fluid in a tank at the proper level, it is frequently desirable to provide means which are entirely automatic in action for accomplishing the desired result. It may be that it is desired to pump liquid into the tank or from the tank or receptacle to some other place.

This invention has for its object to provide an improved, simple device which may be regulated and adjusted to effect either one of these actions with a single valve.

Referring now more particularly to the drawing, and in the present exemplification of this invention, a portion of a tank or receptacle 10 is shown with liquid 11 at a certain height therein, and a float 12 supported in the liquid. Connected to the receptacle is a pump 13, which has a steam inlet pipe 14 controlled by a valve 15. This valve 15 is of any desired or suitable construction, and preferably has a valve stem 16 movable into and out of the valve casing, and operative to position the valve disk 17 upon the valve seat 18.

Attached to the valve 15 in any desired or suitable manner, such for example as by threading it upon the valve casing, is a frame 19. This frame is preferably composed of metal and is formed with a bifurcated extremity 20 and a guideway 21 intermediate of the ends. A guide 22 is secured to the valve stem 16 and is adapted to slide in the guideway 21. At the outer end of the guide 22 are pivotal bearing members 23 which are adapted to provide a pivotal mounting for the pin 24 and the wheel or roller 25. The bifurcated extremity 20 is adapted to provide a pivotal mounting for the roller 26 which has a pivot pin 27 extending from the sides thereof. Positioned between the rollers 25 and 26 are resilient members or springs 28 which are preferably secured to the extending pivot pins 24 and 27, and the tendency of these springs is to draw the roller 25 toward the roller 26.

Secured to the float 12 is a rod 29, and adjustably secured to the rod is a member 30. This member 30 is preferably formed with a groove 31 on one side, at the ends of which are collars 32 and fastening screws 33. The rod 29 is adapted to be inserted in the collars 32 to be positioned along the groove of the member 30 and to be adjustably locked in position by means of the locking bolts 33. The other side of the member 30 is formed with an inclined face 34 to vary the width of the member 30 from one end to the other. The rod 29 and the member 30 are positioned between the rollers 25 and 26, so that the latter bears against the rod 29 and the face 34 bears against the roller 25. It is evident that as the member 30 is moved through the bifurcated extremity of the frame 19, and relatively thereto between the rollers 25 and 26 that the roller 25 and the guide 22 will be moved in accordance with the movement of the member 30. In other words, the valve stem and the valve will be opened or closed in accordance with

the movement and position of the member 30 with respect to the valve.

It has been found that the pressure of steam against the valve is considerable, and if the weight of the float 12 is not sufficient to move the member 30 downwardly, as shown in Fig. 1, the valve will be held open. To counteract this tendency and to equalize the pressure upon the valve, there are provided adjustable weights 35 which are preferably positioned upon the rod 29.

In the exemplification of my invention shown by Fig. 1 the pump 13 maintains a constant level in the receptacle 10 by pumping fluid from the receptacle. It is evident that by reversing the member 30 so that the widest portion is located at the bottom that the pump 13 will be actuated by means of the valve 15 to maintain a constant level in the receptacle 10 by pumping fluid to the receptacle. It is also evident that a valve 36 such as shown by Fig. 3, in which the valve disk 37 is drawn outwardly by the valve stem 38 to close the valve, may also be used in connection with the apparatus shown by Fig. 1. With this kind of operating mechanism the action of the valve is entirely automatic and no attention need be paid to the operating mechanism. It is also evident that the valve 15 may be used directly to control a flow of fluid through the valve to a tank or receptacle in which the float 12 is located. In this case, to maintain the fluid at a given level it would be necessary to have the member 30 reversed.

While I have thus described the preferred construction, combination and arrangement of the several parts which constitute my invention, it is evident that others may make various changes without departing from the spirit and scope of my invention.

What I claim is:

1. The combination with a valve, of an adjustable member with an inclined surface movable relatively to the valve, means to support said member in its adjusted position, and operative connection between the member and the valve to open and close the latter in accordance with the movement of the member.

2. The combination with a valve, of a rod movably supported adjacent the valve, a member graduated in width adjustably positioned on and movable with the rod relatively to the valve, and means supported by the valve and having connection with the said member to operate the valve in accordance with the movement of the rod.

3. The combination with a valve having a valve stem movable therein, of a frame attached to the valve, a member with opposite faces one of which is inclined adjustable and movable in said frame, and means bearing resiliently upon one of said faces and operatively connected to move the stem in accordance with the movement of the said member.

4. The combination with a valve having a valve stem movable therein, of a frame attached to the valve, a member with faces forming a wedge-shaped piece and movable through the frame, a support for the member, rollers one of which bears on one of the wedge faces, the other bearing oppositely on the support, resilient means to draw the rollers together, and means operated by the movement of the rollers to move the stem of the valve.

5. The combination with a valve having a valve stem movable therein, of a frame attached to the valve, a member formed with one grooved side and another side with a surface inclined toward the grooved side, the member being movable through the said frame, a support for the member in engagement with its grooved side, bearing members, one of which is movable along one of the wedge sides, the other being movable on the support, resilient means to press the said bearing member together, and means connecting one of said bearing members to the valve stem whereby the valve is opened and closed in accordance with the movement of the said member through the frame.

6. The combination with a valve having a valve stem movable therein, of a frame attached to the valve, a member formed with one grooved side having collars and locking bolts at the ends and the other side inclined to form a member of varying width, a rod inserted through the collars, to which the said member is adjustably secured by the bolts, the said rod and member being movable through the frame, a roller member fixed in the frame against which the said rod bears, a second roller adapted to bear upon the inclined face of the member and secured to the valve stem, means to resiliently connect the two rollers whereby the movement of the rod and the said member through the frame effects the movement of the valve stem to open and close the valve.

7. The combination with a valve having a valve stem movable therein, a frame supported by the valve and having a bifurcated outer extremity and a guideway intermediate of the ends, a guide movable in said guideway and having pivotal bearings, a roller mounted therein a member having opposite faces inclined toward each other, movable through the bifurcated portion of the frame in contact with the said roller a support for the member, a second roller fixed in position at the bifurcated extremity bearing against the support, and springs attached to the first mentioned roller tending

to draw it toward the other roller whereby the movement of the member with its opposite faces between the rollers effects the movement of the valve stem in accordance with the movement of said member.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 31st day of August A. D. 1911.

WILLIAM L. MORRIS.

Witnesses:
J. W. BURROWS,
CHAS. M. SMITH.