

(No Model.)

G. W. YOUNG.
AUTOMATIC VALVE.

No. 509,344.

Patented Nov. 21, 1893.

Fig. 2.

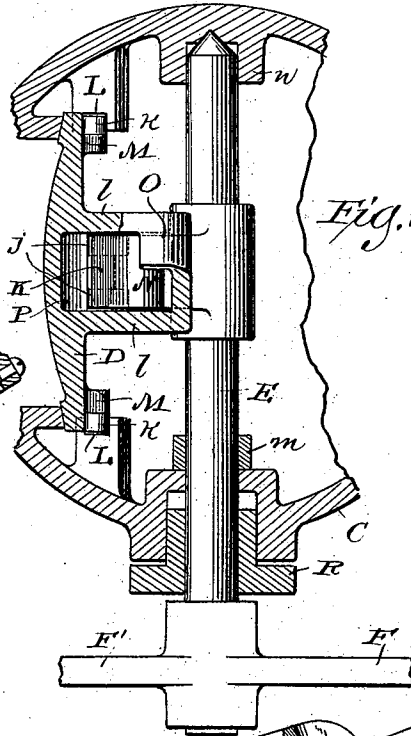
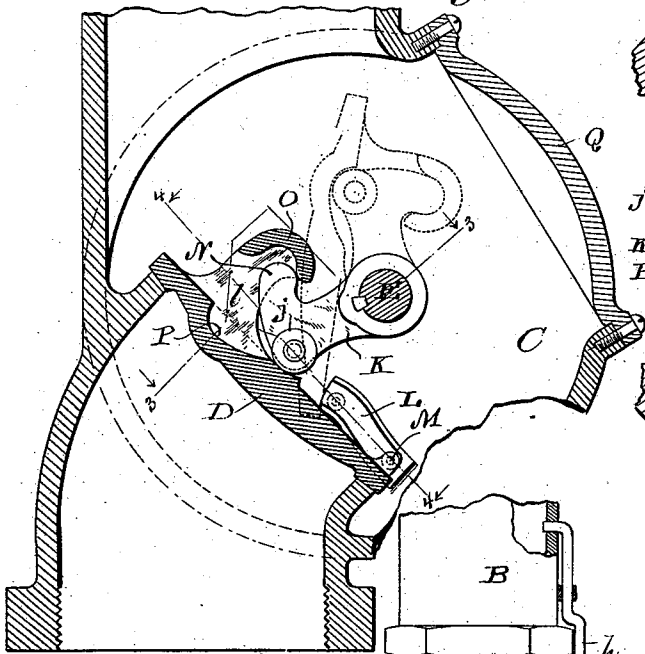


Fig. 3.

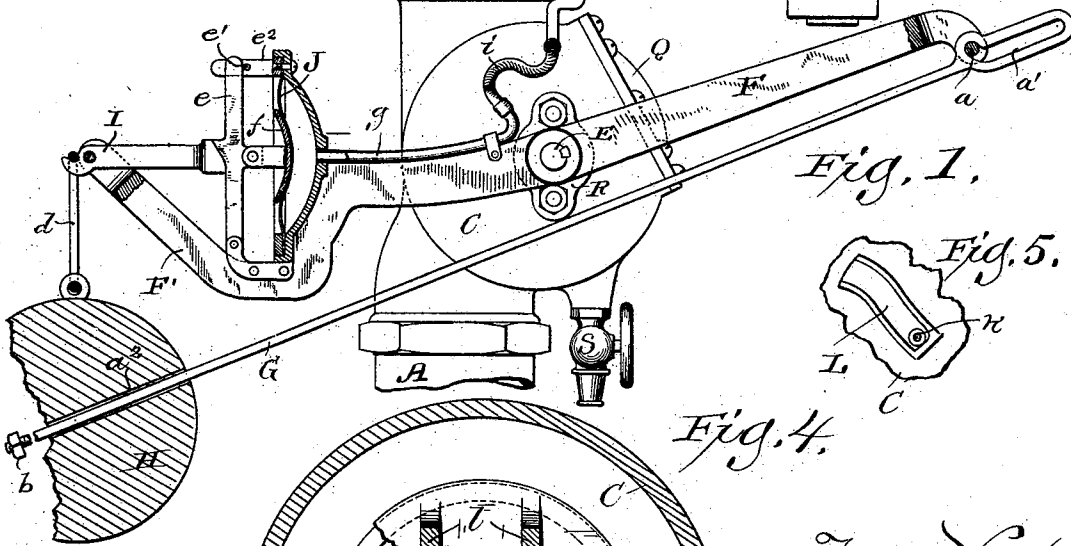


Fig. 1.

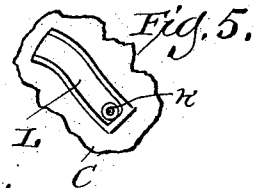
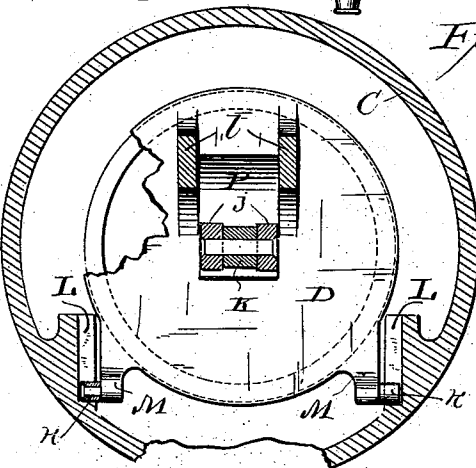


Fig. 5.

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. YOUNG, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO GEORGE KNOWLES, JR., OF SAME PLACE.

AUTOMATIC VALVE.

SPECIFICATION forming part of Letters Patent No. 509,344, dated November 21, 1893.

Application filed August 28, 1891. Serial No. 403,989. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. YOUNG, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Automatic Valves; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates more particularly to automatic valves for sprinkler systems; and it consists in certain peculiarities of construction and combination of parts to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

15 In the drawings, Figure 1 represents a side elevation of the actuating mechanism of my valve, partly in section and partly broken away to better illustrate the invention; Fig. 2, a vertical longitudinal section of the valve; 20 Fig. 3, a section of the same on line 3—3 of Fig. 2; Fig. 4, a section on line 4—4 of Fig. 2, and Fig. 5 a detail view of one of the cam grooves.

Referring by letter to the drawings, in Fig. 1, A represents the service pipe of a sprinkler-system connected to a riser B, by means of a coupling C, which constitutes the casing of the valve D, the stem E of the latter being extended through said casing and keyed 30 to a lever that extends in opposite directions from said stem in the form of arms F, F'. The arm F is provided at its outer end with a pin *a* that engages the slotted end *a'* of a rod G, and forms a pivot for the latter, said rod extending through a central aperture *a''* in a weight H and the movement of this weight being limited by a stop *b* on the rod. When the parts are in their normal positions the weight H is suspended from the outer end of 40 the arm F', so as to be readily detached therefrom; the means shown being a lever I pivoted to said lever-arm, the short arm of the lever I terminating in a hook to engage a link *d* on the weight H, the long arm being beveled on its upper face to receive a corresponding beveled face on a lever *e* which is pivoted to the lever arm F', together with a metal diaphragm J, the latter being normally filled with compressed air which locks the beveled faces of levers *e* and I, by means of a

disk *f*, the face of which rests upon the diaphragm and is connected to lever *e* by a lug on the opposite side thereof, thus holding the weight suspended until such time as the air is released. Attached to the lever-arm F' is 55 a pipe *g* which leads from the diaphragm and terminates near the valve-stem, where it is connected to a pipe *h* by a flexible tube *i*, said pipe *h*, at a distance above the valve casing, being tapped into the riser from which 60 the air-supply is obtained. By this construction I am enabled to carry my releasing mechanism upon the lever-arm F', the flexible tube *i* allowing for the rotation of the same. Centrally located in the valve-casing and keyed 65 to the stem E is an arm K which has anti-friction rollers *j* journaled at its outer end, the latter serving to hold the valve D against its seat, by means of weight H and lever-arm F'.

Projecting upward from arm K and forming a part thereof is a radial finger N, the face of which is rounded at its extremity to engage a corresponding projection or pocket O on the valve, the side walls *l* of said pocket 75 being of sufficient distance apart to allow the finger to rest between them thereby preventing any side motion of the upper part of the valve when opened. On the face of the valve and directly opposite the pocket O is another 80 pocket P, in which the rollers *j* on the arm K, fit, when the valve is opened, as shown by dotted lines in Fig. 2, of the drawings.

At the lower end, and projecting out on either side of the valve D are lugs M, M, which 85 form trunnions for the same, and rest loosely in cam-grooves or guides L, L, on the valve-casing, thus forming a positive guide for the valve when opened and keeping it in position when closed, the lugs M M resting on the bottom of said grooves and having sufficient play therein to always insure a perfect seating of the valve. As shown the lugs at their ends may be fitted with rollers *k*, *k*, to prevent any liability of sticking. 95

The valve-casing B is provided with a hand hole Q, through which the valve-mechanism can be readily put in position, the stem being slipped through a stuffing-box R, and a collar *m* placed on the stem to keep it in position. 100

The finger K is next keyed fast, the stem is then shoved into a socket *n* on the casing, and the collar *m* made fast.

The operation of my device is as follows:
 5 When a leak occurs in the sprinkler-system through the opening of a sprinkler-head, the compressed-air in the riser escapes and likewise that in the diaphragm J, which causes the weight H to revolve lever I and release
 10 itself from the hook, the weight and rod then swinging on the pin *a* to a perpendicular position. The slot *a'* which has a pocket at its lower end in which the pin rests is now pulled out of said pocket by the weight, giving the
 15 lever-arm a sudden jerk. As the other end of the slot strikes the pin *a* to start the valve from its seat, the arm F through weight H, then swings down to a perpendicular position and opens the valve by rotating the stem
 20 E, which lifts the rollers *j* from said valve at the same time causing the finger N to strike the pocket O and rock the valve sufficiently on its trunnions to loosen it from its seat. It is then lifted upward. The trunnions moving
 25 in the cam grooves cause the valve to feather and when the weight and lever arm come to rest having made about a quarter turn, the valve is fully open and presents its edge to the flow of water thereby giving a straight
 30 free passage for the same. When it is desired to restore the parts to their normal position the valve is closed and the weight again attached to the hooked-lever I. Lever *e* is

then pressed forward to lock the parts, and a pin is inserted in a hole *e'* of the lever guide *e*² 35 to hold the same until the air pressure is restored. The water in the riser is drained through a cock S in the bottom of the valve casing, the sprinkler-heads being closed and air-pressure again restored. The pin is then 40 pulled out of the hole *e'* of the lever guide *e*² and the parts are restored.

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

1. The combination of a valve, trunnions 45 for the same, guides for the trunnions, a rock arm arranged to normally oppose the valve and a projection on the valve in the path of said rock-arm, substantially as set forth. 50

2. The combination of a valve, trunnions for the same mounted in guides and having a weight controlled arm arranged to normally hold the valve closed, a releasing mechanism for the weight and a projection on the valve 55 to engage said arm when the weight is released, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee, and in the State of 60 Wisconsin, in the presence of two witnesses.

GEORGE W. YOUNG.

Witnesses:

N. E. OLIPHANT,
 WM. KLUG.