No. 712,693. Patented Nov. 4, 1902.

A. D. LINN.

SPRINKLER HEAD FOR FIRE EXTINGUISHERS.

(Application filed Jan. 3, 1902.)

(No Model.)

Fig. 1.

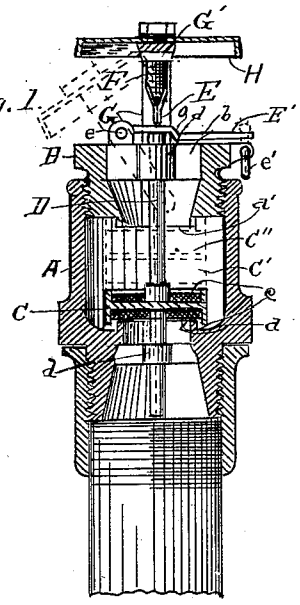


Fig. 2.

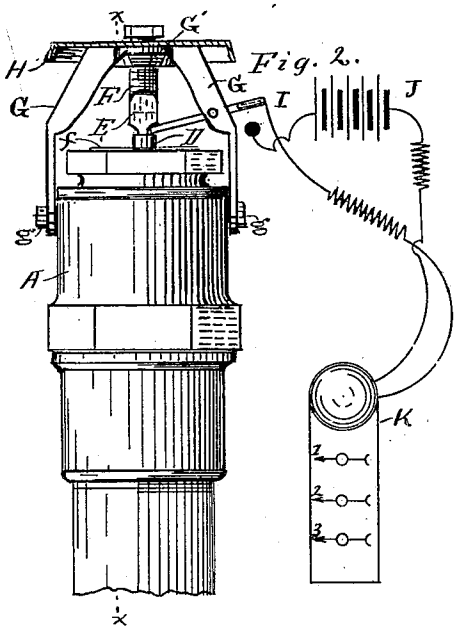




Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

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SPRINKLER-HEAD FOR FIRE-EXTINGUISHERS.

SPECIFICATION forming part of Letters Patent No. 712,693, dated November 4, 1902.

Application filed January 3, 1902. Serial No. 88,345. (No model.)

To all whom it may concern:

Be it known that I, ALLEN D. LINN, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Sprinkler-Heads for Fire-Extinguishers, of which the following is a specification.

My invention relates to improvements in sprinkler-heads for fire-extinguishers for use with automatic fire-extinguisher systems; and its objects are, first, to provide a water-head with which after it has been opened and while water is flowing through the valve may be seated and stop the flow of water, and, second, to provide for sounding an alarm when the valve has been opened for the outflow of water. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the head upon the line *x x* of Fig. 2. Fig. 2 is an elevation of the same, and Fig. 3 shows the clamping-bolt and the fusible plates disconnected to illustrate the manner of constructing this portion of the appliance.

Similar letters refer to similar parts throughout the several views.

A represents the cylinder or head proper. B is a plug that is screwed into the top of the head and is provided with a port *b* for the discharge of water when the valve C is raised from the valve-seat *a* and also with a valve-seat *a'*, designed to receive the valve C when the yoke G is thrown to one side to allow the valve-stem D to pass the end of the bolt F, as hereinafter more fully described.

G represents the yoke that supports the nut G', through which the bolt F is screwed. This bolt is made wedging at the lower end for the reception of the fusible plates E, which are thin plates of copper or other active heat-conductor that are soldered together to the point of angle, as indicated in Fig. 3, and the angling ends are soldered to the wedging end of the clamping-bolt F, as indicated in Figs. 1 and 2, in such a manner that the moment the solder is exposed to sufficient heat to melt the pressure of water under the valve C will force the plates apart and allow the valve-stem to rise until its upper end rests against the end of the bolt F and the valve assumes the position indicated by the dotted lines C', giving the water a free flow through the head out of the ports *b* and against the sprayer H. If it is desired to stop the flow of water from any particular head without shutting off the entire system, the yoke may be thrown over to the position indicated by the dotted lines in Fig. 1, which will allow the valve to rise to the position indicated by the dotted lines at C'' and become seated upon the valve-seat *a'*, thus shutting off the flow of water at once.

The lower end of the plates E is preferably formed to a point, so that it may enter a slight depression in the end of the valve-stem, so that the bolt F may be readily turned and screwed down to hold the valve firmly upon the seat *a* when in its normal state.

The valve-rod D is alined in and supported by the ways or yokes *d d*, so that it cannot but seat perfectly upon either of the seats provided for its reception.

The electric circuit and attachments I, J, and K simply illustrate how an alarm system may be attached to and operated by this head to sound an alarm the moment a valve has by any means been thrown off of the seat *a;* but the switch arm or lever I acts a double purpose—namely, first, it tends to crowd the lower end of the plates E off of the top of the valve-stem as said stem rises by reason of the severance of said plates, and, second, to close the circuit from the battery J through the alarm appliance K in the usual manner of closing electric circuits, and for this purpose I prefer that it be pivoted to one arm of the yoke G, as indicated in Fig. 2.

The yoke G is pivoted to the cylinder A, as at *g g*, in such a manner that it may be thrown over to one side, as indicated in Fig. 1, to carry the end of the bolt F out of the line of travel of the valve-stem D, so that the valve may rise to and seat upon the valve-seat *a'*, as hereinbefore indicated.

To render the valve positive in its action upon either seat, I place a proper packing *c*

upon each side, so that a water-tight joint may be assured upon either valve-seat. With this construction if, as often happens, the head is opened so that water flows through the ports *b* and it is necessary to shut off the flow suddenly to avert damage to property all that is necessary is to strike the yoke G a sharp blow with a stick or otherwise and throw it over, so that the valve-stem is free to pass upward, and the upper valve-seat is instantly covered by the valve and the flow of water stopped and held until the main supply can be shut off, if desired.

It is often necessary to fuse the plates E for the purpose of inspection, and to avert the danger of the valve remaining unseated long enough to allow the air all to escape from the pipes and the water to flow out sufficiently to render inconvenience or damage I pivot a lever E′ to the plug B, as at *e*, in position so that the lever will rest between the plates E and the top of the valve-stem. With this lever in this position as soon as the plates are unsoldered the lever will be carried up to contact with the end of the screw F, so that the unseating of the valve from *a* will allow the pressure of air and water to escape, indicating whether or not the system is in order, and to avert the danger of flooding with water the lever E′ may be drawn to the position indicated in Fig. 1 and secured to place by the link *e′*. The offset *o* is placed in the lever to avert the danger of throwing the yoke G over by the force of the lever E′, as it is thrown up against the bolt by being arranged to receive the end of the bolt at one side and the end of the valve-stem at the other side. This is designed only for a lever that is permanently placed between the valve-stem and the end of the bolt. In case of a temporary lever to be used only after the head has been tested a straight lever having a proper hook for engaging the pivot *e′* may be used.

f represents a cover of lead-foil or other suitable material to cover the water-ports *d* for the purpose of preventing dust, &c., from entering the chamber and interfering with the proper seating of the valve. This cover should be so applied and adjusted that it will not interfere with the full free flow of the water out of the ports when the head is in active operation.

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

1. In a sprinkler-head for fire-extinguishers, the main portion or cylinder A having a valve-seat within, a plug at the upper end having a valve-seat at its lower end and a water-port therethrough, in combination with a yoke pivoted to the cylinder, a bolt passing through said yoke and having the lower end tapered to a wedging form, and thin metal plates fusibly connected together and to the wedging end of said bolt, substantially as and for the purpose set forth.

2. In a sprinkler-head for fire-extinguishers, a cylinder having a valve-seat, a plug screwed into the end of said cylinder and provided with a valve-seat and a water-port, a double-faced valve within said cylinder, a yoke pivoted to said cylinder and supporting a nut, a bolt through said nut, the lower end of which is tapered to a flat wedge form, thin metal plates soldered together and to the wedged surfaces of said bolt, a valve-stem held to place by said bolt and plates, a lever pivoted to the yoke and in contact with the upper end of the valve-stem, and an electric switch and alarm system, substantially as and for the purpose set forth.

3. In a sprinkler-head for fire-extinguishers, a main cylinder, a valve and valve-stem within said cylinder, and a plug screwed into the end thereof, in combination with a yoke, a bolt screwed through said yoke the lower end of which is wedged, a thin sheet of metal soldered to each side of said wedge and soldered together below said wedge and extending to and bearing upon the upper end of the valve-stem, substantially as and for the purpose set forth.

4. In a sprinkler-head for fire-extinguishers, a main cylinder provided with valve-seats and water-ports, a valve and valve-stem, a plug having water-ports therethrough, a yoke, a retaining-bolt and fusible plates, and a lever pivoted to the plug and lying across the end of the valve-stem and beneath the end of the plates, substantially as and for the purpose set forth.

5. In a sprinkler-head for fire-extinguishers, a plug, a retaining-yoke and fusible plates, in combination with a lever pivoted to the plug and supported beneath the fusible plates a valve-stem held to place by said lever, and a link for holding said lever to place, substantially as and for the purpose set forth.

Signed at Grand Rapids, Michigan, December 28, 1901.

ALLEN D. LINN.

In presence of—
F. D. DIBBLE,
ITHIEL J. CILLEY.