

(No Model.)

W. T. MONTGOMERY.  
AUTOMATIC SPRINKLER.

No. 348,531.

Patented Aug. 31, 1886.

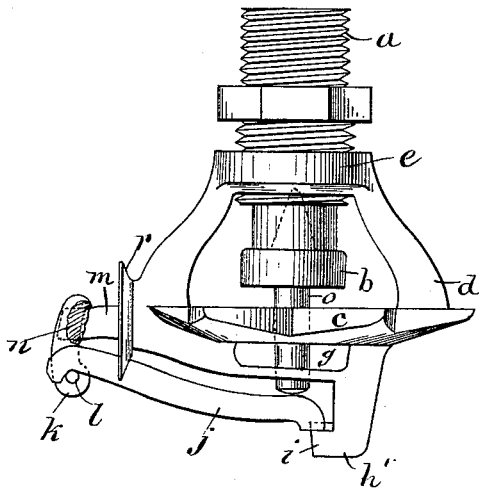


Fig. 1.

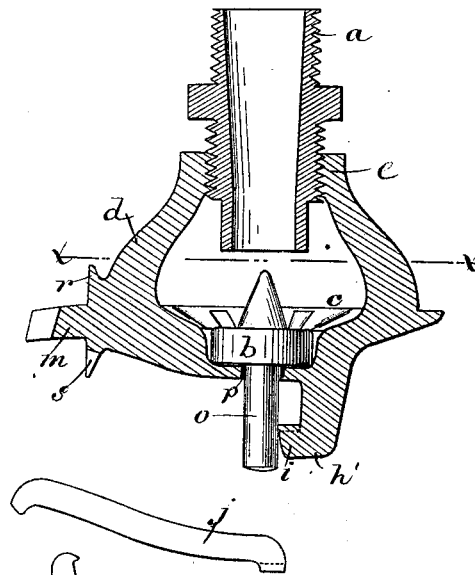


Fig. 2.

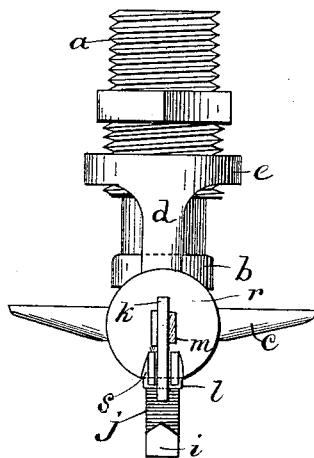


Fig. 3.

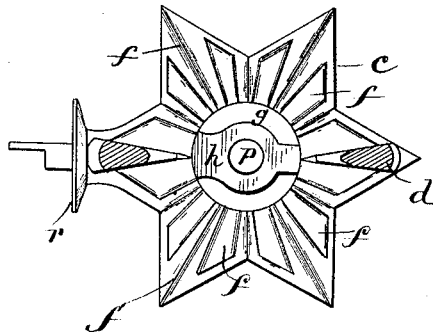


Fig. 4.

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# UNITED STATES PATENT OFFICE.

WILLIAM T. MONTGOMERY, OF WAKEFIELD, ASSIGNOR TO THE STAR MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

## AUTOMATIC SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 348,531, dated August 31, 1886.

Application filed January 2, 1886. Serial No. 187,377. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. MONTGOMERY, of Wakefield, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Sprinklers, of which the following is a specification.

This invention has for its object to provide a cheap, simple, and effective automatic sprinkler of that class in which a valve is held against a water-discharging nozzle by holding devices retained by a solder which is fusible or rupturable by heat, and released when the solder is fused, and in which a fixed distributor is placed in such relation to the nozzle as to cause the escaping water to radiate and scatter laterally over a considerable area.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved sprinkler. Fig. 2 represents a vertical section of the same. Fig. 3 represents a side elevation from a different point from that from which Fig. 1 is taken. Fig. 4 represents a section on line *x* *x*, Fig. 2, with the valve removed.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a water-discharging nozzle adapted to be screwed into or otherwise secured to a water-supply pipe.

*b* represents a valve, which is held against the nozzle to prevent the escape of water therefrom by means presently described.

*c* represents a star-shaped distributor, which is cast on a frame, *d*, which frame has an internally-threaded ring, *e*, screwed onto the threaded external surface of the nozzle *a*, the distributor *c* being thus held in such relation to the nozzle *a* that it will distribute or scatter readily the water escaping from the nozzle. The distributor *c* has radial grooves *f f* in its upper surface, and a central opening, *g*, which receives the valve *b* when the latter is released, the valve *b* being supported when released by a cross-bar, *h*, under the central opening in the distributor.

*h'* represents a lug cast on the under side of

the distributor *c*, and having a short inwardly-projecting arm, *i*, at its lower end, the upper side of said arm having an inverted-V shape in cross-section, as shown in Fig. 3.

*j* represents a lever, having at one end in its under side a V-shaped groove, formed to fit the upper surface of the arm *h*, the lever *j* being thus engaged with the arm, so that it will not slip off laterally. The opposite end of the arm *j* is slotted to receive a short arm or link, *k*, and the divisions formed by slotting the arm *j* bear on the ends of a pin, *l*, inserted in said link.

*m* represents an arm cast upon the frame *d* and distributor *c*, and extending outwardly therefrom. To said arm the upper end of the link *k* is secured by a solder, *n*, that fuses or ruptures at a comparatively low degree of heat, the lever *j* being thus supported and caused to hold the valve *b* against the nozzle *a*, said valve having a stem, *o*, which passes through a hole, *p*, in the cross-bar *h*, and bears on the lever *j*, as shown in Fig. 1.

The arm *m* has a beveled or inclined seat, *u*, on which the correspondingly-inclined edge of the link *k* bears, as shown by dotted lines in Fig. 1. Said link has a slight hook or protuberance, *k'*, having its under edge beveled or inclined, which projects over the upper edge of the arm *m*, correspondingly inclined, as shown. It will be seen that when the link is secured to the arm by the solder, the beveled seat *u* and the correspondingly-inclined edge of the link, together with the hook or protuberance *k'*, enable the link to resist downward strain to good advantage and relieve the solder-joint from much of the strain that would be imposed upon it if the link had no downward bearing on the arm. It will also be seen that but a slight amount of solder placed at a point where it will be most readily affected by heat will be necessary to hold valve *b* locked against the nozzle, as represented in Fig. 1, since but a slight force only will be required to hold the outer end of lever *j* up toward arm *m*, while the peculiar shape of the inner end of said lever, as also its seat on the arm *i*, provides against any displacement of the parts at this point by the pressure downward (which is very near the said point) of the stem *o* of

the valve *b*; yet the construction and arrangement of the lever and link are such that when the connection of the latter with arm *m* is ruptured they will drop out of the way and not be in the least liable to interfere with the operations of the valve.

*r* represents a flange or shield cast upon the frame *d*, between the distributor *c* and the solder-joint *n*, that connects the link *k* to the arm *m*. Said shield *r* prevents the water when first liberated from striking the solder, and thereby hardening it before the link is fully released. The location of this shield with respect to the other parts of the invention is such as not only to protect the solder-joint, as above stated, but to be out of the way of the outflow of water from the nozzle, being below the lateral or upwardly-inclined line of discharge of the same, an important advantage in contrivances of this character. In the lower portion of the shield is a groove, *s*, Fig. 2, which receives the lever *j*, the sides of the grooves fitting said lever closely, so that the shield steadies the lever *j* and prevents it from being laterally displaced at its outer end.

The operation of my improved device is as follows: In securing the valve *b* against the end of the nozzle *a*, the grooved end of the lever *j* is engaged with the arm *h* and its outer end with the groove *s* in the shield *r*. The link *k* is then engaged with the end of the lever *j* and soldered to the arm *m*, the lever *j* and valve *b* being thus secured so that the valve *b* cannot leave the nozzle *a* until the link *k* is detached from the arm *m*. In case the solder-joint *n* is ruptured by heat, the link *k* and lever *j* drop, as shown in Fig. 2, thus releasing the valve *b*, which falls and allows the water to escape.

It will be observed that there is no positive connection between the lever *j* and the lug *i*, the lever merely resting on the lug *i*, so that there is no liability of the lever being caused to adhere to the lug by corrosion.

The interior of the nozzle *a* is tapered, as shown in Fig. 2, the upper end being the larger. This form is adapted to prevent the bursting of the nozzle by ice forming therein, the gradual outward taper of the internal surface of the nozzle causing the ice forming therein to press upwardly, instead of outwardly.

In another pending application I have shown and claimed the star-shaped grooved distributor; hence I do not claim it in the present case.

By my improvements I am enabled to hold the parts comprising an automatic sprinkler securely in operative position, as shown in

Fig. 1, and yet the construction and arrangement of the devices are such as to require but the slightest force to hold them in position, enabling me to make the means of securing the link *k* to the arm *m* of the most delicate character, so that but a slight degree of heat only is necessary to affect its integrity and set the distributor in operation, and the shield thoroughly protects the link and its connections from the water without interfering with the distribution of the latter.

I claim—

1. The combination, with the nozzle and valve, of the frame provided with the distributor, the lug *h*, having the short arm *i*, arm *m*, provided with the inclined seat *u*, link *k*, having its edge adjacent to said seat correspondingly inclined, and provided with a hook or protuberance having its under edge beveled or inclined and projecting over arm *m*, also inclined at the point of contact with said hook, the grooved shield to protect said link and its connections from the water when the valve is being released, though located out of the line of the water-discharge when the device is in operation, the lever *j*, loosely engaged at its other end with said link *k*, the valve being provided with a stem resting when the valve is operating to close the nozzle on lever *j*, near the point of its connection with arm *i*, as set forth.

2. The combination of the nozzle, the frame detachably secured to said nozzle and provided with the distributor *c*, formed integral therewith, the lug *h*, provided with the short arm *i*, having the V-shaped seat, the shield *r*, having the groove *s* located out of the line of the water-discharge when the device is in operation, the arm *m*, also formed integral with the frame and provided with the inclined seat *u*, the lever *j*, having one end notched to correspond with the V-shaped seat of arm *i* and resting thereon, said lever passing through the groove in the shield *b*, the link *k*, engaged with the other end of the lever *j*, and having the hook or protuberance projecting over arm *m*, and connected to said arm by fusible solder *n*, and valve *b*, supported by said lever *j*, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of December, 1885.

WILLIAM T. MONTGOMERY.

Witnesses:

C. F. BROWN,  
H. BROWN.