

(No Model.)

O. T. STANTIAL & L. JOHNSON.
AUTOMATIC FIRE SPRINKLER.

No. 549,751.

Patented Nov. 12, 1895.

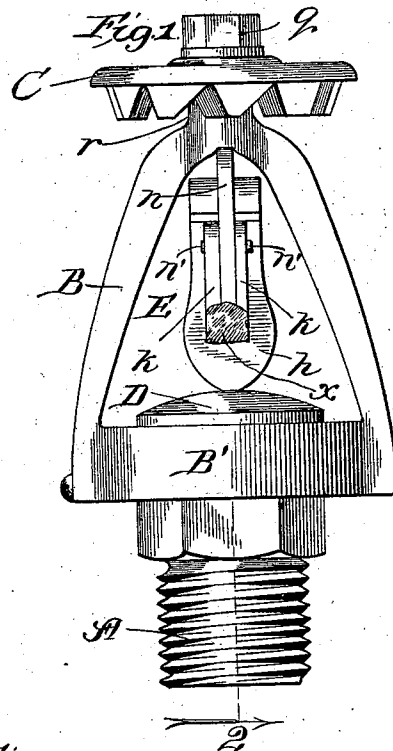
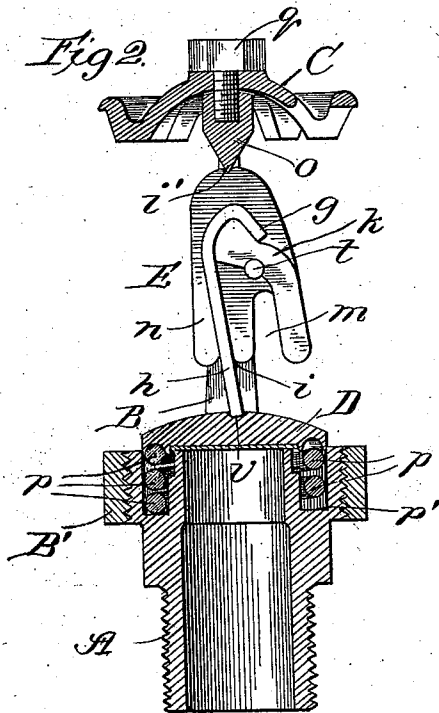


Fig. 3.

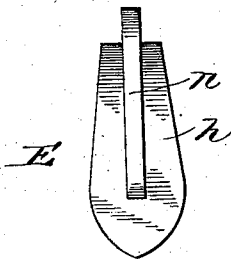


Fig. 4.

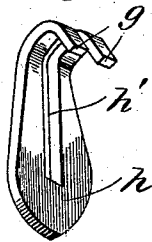
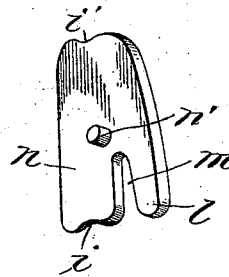


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

OTIS T. STANTIAL AND LOUIS JOHNSON, OF CHICAGO, ILLINOIS; SAID
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AUTOMATIC FIRE-SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 549,751, dated November 12, 1895.

Application filed March 16, 1895. Serial No. 541,987. (No model.)

To all whom it may concern:

Be it known that we, OTIS T. STANTIAL and LOUIS JOHNSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automatic Fire-Sprinklers, of which the following is a specification.

Our invention relates to an improvement in the class of automatic fire-sprinklers in which a nozzle has extending from it a frame affording a bearing for a strut to hold it against the valve for closing the nozzle, the strut involving a collapsible construction, the parts of which are normally sustained against
10 collapse under the pressure of fluid against the valve by a readily fusible joint, the giving way of which in case of fire causes the pressure to collapse the strut and free the valve to open the nozzle.

20 The object of our invention is to provide a novel but simple construction of collapsible or sectionally separable strut, whereby it shall readily collapse when released by the melting of a fusible joint under the pressure of fluid against the valve, particularly when assisted
25 by the recoil of a suitable spring confined against the valve and tending to unseat it.

Our invention consists in the general construction of our improved strut, and it also
30 consists in details of the construction and combinations of parts.

Referring to the accompanying drawings, Figure 1 is a view in elevation of a sprinkler provided with our improvement; Fig. 2, a section taken at the line 2 on Fig. 1, and viewed in the direction of the arrow; Fig. 3, a view in elevation of our improved strut by itself, presenting the side opposite that presented in Fig. 1; and Figs. 4 and 5 are perspective
40 views of details.

A is the nozzle of usual or any suitable construction adapting it to be fastened or coupled in a water-supply pipe in a building equipped with fire-extinguishing apparatus of the character to which our invention relates.

45 B' is a collar screwed upon the nozzle about its mouth and having extended from it a yoke B, at the apex of which is formed a stud *r*, affording a bearing for the distributing head
50 or disk C, shown as serrated circumferentially

and provided with perforations between the teeth, the head being fastened to the stud by means of a nut *q*.

D is the valve seated against the mouth of the nozzle A, and by preference against the tension of a spring *p*, confined by the valve in an annular socket *p'*, formed in the end of the nozzle about its mouth. The valve is normally held in its position of closing the mouth of the nozzle by a strut or brace E, extending against it from a bearing *o*, V-shaped in cross-section in the end of the yoke.

The strut E, as shown, comprises a plate *n*, preferably of the approximate U shape illustrated, and provided in one end, at one side of its longitudinal center, with a recess *m*, forming a tongue *l*, which affords bearings at its opposite sides for the arm portions of dogs *k* *k*, fastened to the surfaces of the tongue by means of readily-fusible solder, as indicated at *x* in Fig. 1. Below the recess *m* the plate *n* has a stud *n'* extending through it and affording, at each side thereof, a fulcrum engaged by a dog *k* at a recess *t* therein, and the plate *n* is straddled by a hooked plate, shown as a fork *h*, seated at its crotch *h'* in a notch or seat *i* in one end of the plate *n*, which is provided with a similar notch or seat *i'* in its opposite end, one end of the plate *h* being pointed, as shown at *v*, there to enter a recess *v'* in the center of the valve D, and the opposite ends of the plate being formed into hooks *g* to engage the heads of the dogs *k*. As will be seen, the plate *h* seats at its crotch in the notch *i* and the plate *n* seats at its notch *i'* on the bearing *o* at points which are preferably in vertical line with each other, and the plate *h* inclines to one side of that line downward from its end in the recess *v'* and extends at its hook ends about the heads of the dogs *k*, to the shape of which the hooks should conform, as shown. The ends of the hooks *g* thus bear against the dogs close to the fulcrum *n'*, so that the dogs will slightly resist being turned by the pressure of fluid (supplemented by that of the spring *p*, if provided,) in the nozzle against the valve D, but not sufficiently to overcome it, the soldering of the dogs at *x* to the tongue *l* adding to them the additional and main resistance to their being
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so overcome. When the solder-joint which fastens the dogs to the tongue *l* is melted, the pressure against the valve *D* forces the plate *h* in the direction of its inclination, thereby causing the hooks *g*, by their engagement with the heads of the dogs, to turn the latter on their fulcrum *n'* and enable the pressure to swing the plate *h* outward on the fulcrum afforded by its seat in the notch *i*, thus collapsing the strut and permitting the valve to open.

The construction of strut thus described renders it very simple and highly sensitive or efficacious in quickly yielding or collapsing in case of fire, since the extent of soldered surfaces to be released by fusion is not only comparatively slight, but is immediately accessible to the heat of the fire, owing to the provision of the recess *m*, which affords an air-space, so that the hot air can circulate entirely about the lip *l* without requiring the entire plate *n* to be heated to effect the fusion.

The provision of the two hooks *g* and dogs *k* at opposite sides of the plate *n* is for balancing the parts; otherwise a hook and a dog on only one side of the plate might be used, and it would be within our invention to do so. Moreover, the strut may otherwise be modified in matters of detail without departure from our invention. Hence we do not limit it to the exact details of construction shown and described.

What we claim as new, and desire to secure by Letters Patent, is—

1. A strut for an automatic fire-sprinkler, comprising a plate having fulcrum-stud projections on its sides, dogs secured by a readily fusible junction on opposite sides of said plate to extend across and engage said fulcrums, and a fork-plate straddling said fulcrum-plate in inclined relation to its longitudinal center and engaging, at its ends, the heads of said dogs, substantially as described.

2. A strut for an automatic fire-sprinkler, comprising a plate having fulcrum-stud projections on its opposite sides, dogs secured by a readily fusible junction on opposite sides of said plate to extend across and engage said fulcrums, and a fork-plate terminating in hooks and straddling said fulcrum-plate in inclined relation to its longitudinal center and engaging at its hook-ends the heads of said dogs, substantially as described.

3. A strut for an automatic fire-sprinkler comprising a plate provided with a recess in one end forming a tongue, a fulcrum-stud extending from said plate, a hook-plate confined on said recessed plate in inclined relation to its longitudinal center, and a dog soldered to said tongue to extend across and engage said stud and engaged at its head by the hook-portion of said hook-plate, said recess afford-

ing air-space entirely about the solder-joint, substantially as described.

4. A strut for an automatic fire-sprinkler, comprising an approximately U-shaped plate provided in one end with a recess forming a tongue to one side of the longitudinal center and with a fulcrum-stud beyond the inner end of said recess, a plate seated on said U-shaped plate at its recessed end and in inclined relation to its longitudinal center and terminating in a hook, and a dog soldered toward one end to said tongue and engaged at its opposite end and confined against the fulcrum-stud by said hook, substantially as described.

5. A strut for an automatic fire-sprinkler, comprising a plate *n* having a seat *i'* at one end, a seat *i* and a recess *m* affording a tongue *l* at its opposite end and a fulcrum-stud *n'*, a forked-plate *h* inclinedly straddling the plate *n* on the seat *i* and terminating in hooks *g*, and dogs *k* fastened by readily fusible solder to opposite sides of said tongue to bear, near their heads, against the fulcrum, and engaged at the heads by said hooks close to said fulcrum, substantially as described.

6. In an automatic fire-sprinkler, the combination with the nozzle provided with a strut-bearing and a valve seated against the nozzle in opposition to the pressure therein, of a strut confined between said bearing and valve and comprising a fulcrum-carrying plate, a forked hook-plate straddling said fulcrum-plate and inclined to the axis between the bearing points of the strut, and dogs secured by a readily fusible junction on opposite sides of said fulcrum-plate to extend across and engage the fulcrums thereon and engaged at their heads by the hook-portion of said hook-plate, substantially as described.

7. An automatic fire-sprinkler comprising, in combination, a nozzle *A* provided with a yoke *B* having a strut-bearing *o* and carrying a distributor *C*, a valve *D* seated against the nozzle and a spring thereon, and a strut formed of a plate *n* having at one end a seat *i'* at which it is supported on said yoke-bearing, a seat *i* and a recess *m* affording a tongue *l* at its opposite end and a fulcrum-stud *n'*, a forked-plate inclinedly straddling the plate *n* on the seat *i* to bear at its pointed end centrally against the valve and terminating at its opposite end in hooks *g*, and dogs *k* fastened by readily fusible solder to opposite sides of said tongue to bear, near their heads, against the fulcrum, and engaged at the heads by said hooks close to said fulcrum, substantially as described.

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LOUIS JOHNSON.

In presence of—
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