UNITED STATES PATENT OFFICE.

WILLIAM NERACHER, OF CLEVELAND, OHIO.

AUTOMATIC FIRE-SPRINKLER.

Application filed September 6, 1887. Serial No. 248,932. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM NERACHER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful improvement in Automatic Fire-Sprinklers; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to automatic sprinklers of that class which are attached to permanent pipes located in the building to be protected, and provided with releasing devices operated by the heat in excess of the normal temperature.

It consists of the devices and combination of devices hereinafter explained.

My invention is illustrated in the accompanying drawings, in which—

Fig. 1 represents the distributer or spraying device and the valve-releasing devices, with the valve in place, attached to the nozzle in side elevation. Fig. 2 shows the same one-quarter turned from the position of Fig. 1, and with the valve and valve-releasing devices removed. Fig. 3 shows the apparatus in the same position of Fig. 2 and the releasing devices in place. Fig. 4 is a bottom view of the valve. Fig. 5 is a plan view of the upper face of the distributer or spraying device. Fig. 6 is a side elevation of the same.

In the drawings, Q represents the end of the nozzle of the discharge-pipe, and P the frame, which is attached to the nozzle. The valve which closes the nozzle is shown at G, and is adapted to close the end thereof and to be pressed tightly against it by the devices hereinafter described. The under surface of this valve is formed with a recess, O, in which the upper ends of spray-arms rest when the valve is in place to close the pipe. These spray-arms are represented clearly in Fig. 1.

They are bent so that the upper parts are inclined toward each other, while the lower parts, when in position to hold the valve in place, are approximately vertical. A fusible link connects the lower ends, as hereinafter explained. On the upper part of the spray-arms are collars or enlargements E, each of which has a shoulder, and on the inner side and against these shoulders brace D bears, their lower ends resting in baffles or against a rib on the upper end of a post, B, located midway on the lower cross-bar of the frame, this post forming also the center of the distributer. In this sprinkler the valve serves only the purpose of closing the nozzle until the approach of the fire, and it does not act in any manner as a distributer or sprinkler. The construction therefore of the supporting and releasing devices is designed to allow the valve and all the parts connected therewith to fall out of the way when the link is separated by the fusing of the solder. The construction and arrangement of the parts described secure this end.

The fusible link which holds the lower ends of the spring arms together is shown in Fig. 1, at H. It is composed of two arms, h h, having openings at their outer ends adapted to be slipped over the ends of the spring-arms and held by notches on the outer edges of said spring-arms. The inner ends of the arms h h are united by a coupling, g. This coupling is composed of two parts having flat portions and central depressed portions adapted to receive heads formed upon the inner ends of the arms h h. The flat portions are joined together by the easily-fusible solder. The links hold the spring-arms F together under some tension, and when the parts are released by reason of the heat the said arms F, having no other support than the outwardly-inclined sloping braces D, fall away from the valve g at once and allow it to drop, together with the arms F and braces D, thus leaving the space between the discharge-nozzle and the distributer entirely unobstructed.

The distributer or spraying device C is supported on the lower part of the frame in line with the mouth of the discharge-nozzle. It is made in the form or approximately in the form of a cone, having a hole in the center fitted to the post B, which projects into the hole when the distributor is in place and practically forms the apex of the cone. The conical upper surface of the distributor is provided with curved or spiral ribs L, which form channels N, curved in form and increasing in width from the center to the circumference. Near the lower ends of these channels they are partially obstructed by short projections m, which extend from the ribs part way across the channels. By this construction the water falling from the nozzle directly down upon the center of the distributor is carried down the channels, spreading out as it descends, and is partially...
discharged in a spirally-directed spray and partially turning upward and diffused by the short projections or obstructions m. Holes m' are also formed in the distributor, which also break up the water.

The construction and arrangement described supports the spring-arms after the manner of toggle-levers, the upper ends bearing against the under surface of the valve, and the lower ends secured by the link with the braces between to keep the arms extended, and thus great pressure is placed upon the valve.

It will be understood that these devices for supporting and automatically releasing the valve may be made of any suitable material, and may be varied in shape, provided they do not depart from the principle of the toggle-joints. I have represented the distributor as having a recess formed in its edge to receive the arms F; but this is not essential. The whole apparatus is attached to nozzles of a system of pipes suitably placed in a room in the manner well known to those skilled in the art.

The distributor may be fixed permanently on the frame; but by making a hole in its center, adapted to the post, it is securely held in place and may be readily removed for cleaning.

I claim as my invention—

1. The combination, with the nozzle of the water-discharging pipe, of the frame F, the valve G, the spring arms F, directly supporting said valve, a fusible link connecting the ends thereof, a distributor supported upon the frame below the nozzle, and the braces D, extending between the post R and the spring arms, all substantially as described.

2. The combination, in a fire-sprinkler, of a supply-pipe and valve therefor, of spring-arms for supporting the valve, collars E, secured to said arms, a fusible connection at their lower ends, a distributor supported in the frame, having a central opening, a post, R, fitting in said opening and provided with a central rib, and levers D, extending from said post to the collars on the spring arms, substantially as described.

3. In a fire-extinguisher, the combination, with the nozzle, of the supporting-frame, the valve covering the nozzle, the spring-arms bearing against the valve, the fusible link connecting their lower ends, shoulders on said arms, a post supported from the lower part of the frame, and braces between said post and the shoulders on the spring-arms, substantially as described.

4. In a fire-extinguisher, a valve and suitable frame, spring-arms held together at the lower ends by fusible connections supporting said valve, levers D between said arms and the frame, and a rim, o, formed upon the under side of the valve for retaining the arms against lateral displacement, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM NERACHER.

Witnesses:
C. S. INGALLS,
F. A. CUTLER.