No. 785,426. PATENTED MAR. 21, 1905.

A. D. LINN & I. J. CILLEY.

SPRINKLER HEAD FOR AUTOMATIC FIRE EXTINGUISHERS.

APPLICATION FILED AUG. 25 1902. RENEWED MAY 12, 1904.

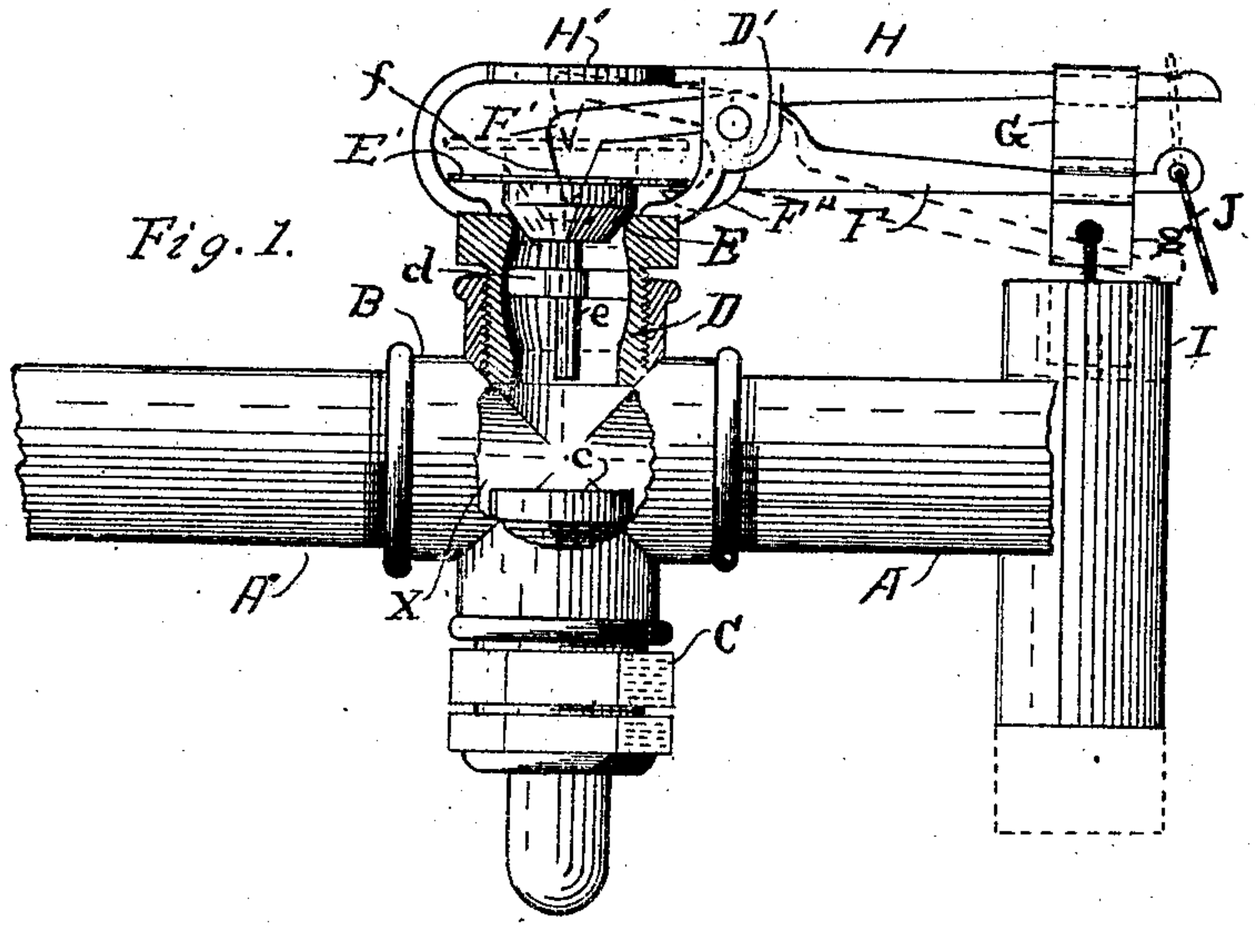

Fig. 1.

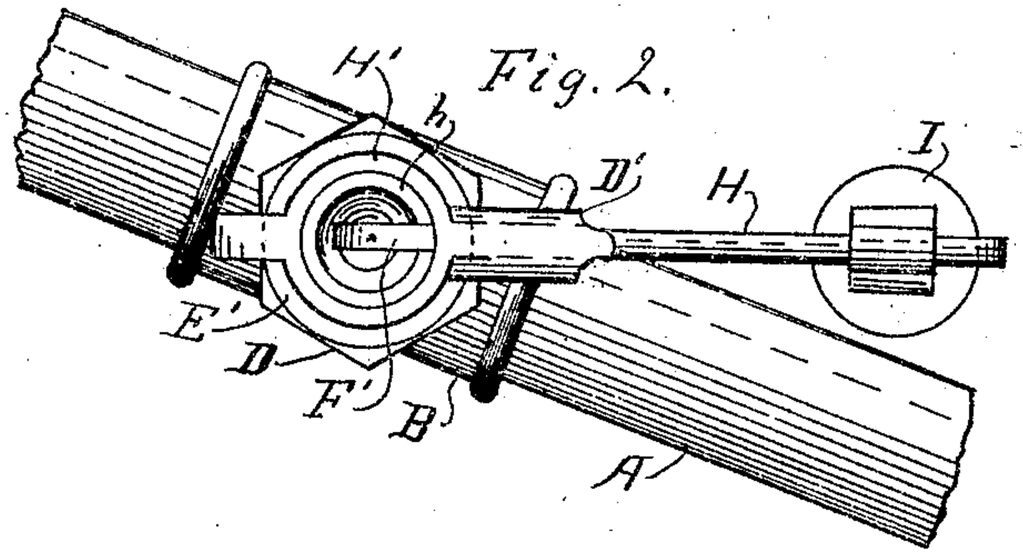

Fig. 2.

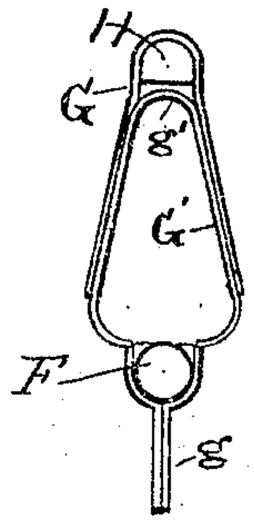

Fig. 4

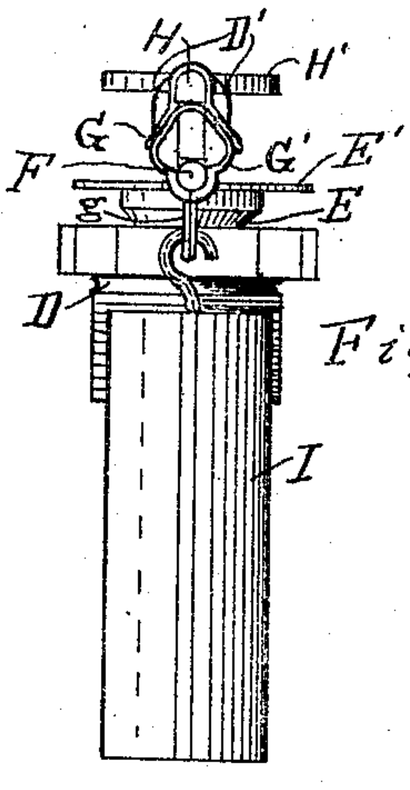

Fig. 3.

Witnesses:

G. E. Cilley

A. Algier

Inventors.

Allen D. Linn

Ithiel J. Cilley

By Ithiel J. Cilley

Attorney.

No. 785,426. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

ALLEN D. LINN AND ITHIEL J. CILLEY, OF GRAND RAPIDS, MICHIGAN.

SPRINKLER-HEAD FOR AUTOMATIC FIRE-EXTINGUISHERS.

SPECIFICATION forming part of Letters Patent No. 785,426, dated March 21, 1905.

Application filed August 25, 1902. Renewed May 12, 1904. Serial No. 207,692.

To all whom it may concern:

Be it known that we, ALLEN D. LINN and ITHIEL J. CILLEY, citizens 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 Automatic Fire-Extinguishers, of which the following is a specification.

Our invention relates to improvements in the sprinkler-heads for use in automatic-fire-extinguisher systems described in our application No. 207,693; and its objects are, first, to avert the danger of water flowing through a partly-opened valve upon the fusible plates and prevent the heat from melting the solder, and thus render the head inoperative, and, second, to provide a means whereby the opening of the valve will be positively insured when the fusible plates have been separated by excessive heat.

We attain the objects named by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of an automatic-fire-extinguisher system cut away at X and a sectional elevation of the head, hereinafter described, in position. Fig. 2 is a plan of the same. Fig. 3 is an end elevation of the sprinkler-head and connections, showing the form and application of the fusible plates or link; and Fig. 4 is an edge elevation of the plates or link formed by the plates.

Similar letters refer to similar parts throughout the several views.

A represents the main line of water-pipe in an automatic-fire-extinguisher system.

B is the cross that connects the sprinkler-head in the system, and C represents a form of shut-off recently constructed by us and which is fully illustrated and described in our recent application for United States Letters Patent covering the same, the valve *c* being designed to be raised to position to shut off the flow of water through the sprinkler-head when it is necessary or desirable to do so.

D is a sectional elevation of the sprinkler-head, showing the seating of the valve E.

The valve E is provided with a downwardly-projecting stem *e*, which passes through an aperture through the bridge *d*, and the upper surface is countersunk for the reception of the projecting point *f* of the arm F′ of the lever F, so that the valve will be held steadily in position when opened for the flow of water by the action of the arm above and of the stem through the bridge below.

To avert the danger of outflowing water coming in contact with the fusible plates or link G before the same has disconnected and preventing it from unsoldering, we make use of a horizontal arm H and lever F, thus carrying the link some distance to one side of instead of directly over the valve, as in the sprinkler-heads in common use, and make the standard D′, which supports the lever F, broad enough so that there is little or no danger of a moderate flow of water passing by it and striking the link G G′.

The stationary arm H, the standards H′ and D′, and the base D are cast in one piece, the standard D′ being provided with a mortise for the reception of the lever F F′, which is pivoted therein, as shown in Fig. 1, and the standard H′ is provided with an opening *h*, through which a tool may be passed to form or repair the valve-seat in the base D.

The link G is composed of two thin plates of metal, the outer sheet G being open at the lower end and designed to pass over the arm H and to solder to the plate G′ with a solder that melts at a very low degree of heat. The lower or inner plate G′ is formed with a bow or bearing *g′* at the upper end that is situated just below the arm H and some little distance above the upper surface of the arm F, so that when the plates have been disconnected by melting the solder in the usual manner the plate or link G′ will drop a little distance before striking the arm F. To render this construction available for the purpose for which it is designed, we suspend a weight I from the lug *g*, so that the contact of the link G′ with the arm F will be by a sudden quick stroke, which will force the arm down with more than ordinary force and will force the arm F″ under the flange E′ of the valve and positively insure the unseating of the valve. The flange E′ is also utilized to form the vertically-escaping column of water into a horizontally-radiating spray.

J represents a link designed to be used for securing the lever F in place and seating the valve so that water cannot flow through after the link G has been disconnected and it is desired to close the valve and stop the flow of water. This is done by throwing the lever up to place and then carrying the auxiliary link J over the arm H, as indicated by its dotted lines. This device is designed principally for use where the head is being applied to an old system of piping, where it would be expensive and inconvenient to apply the shut-off shown at C *c* in Fig. 1.

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

1. In combination with the valve and valve-seat of a sprinkler-head for automatic fire-extinguishers, a supporting-frame constructed above the valve, an arm projecting horizontally from the top of the frame, a lever pivoted to the frame below the arm, one arm of said lever projecting to the center of the frame and engaging a countersink in the top of the valve, a second arm extending under and in position to engage the rim of the valve, and the main arm of the lever extending out under and parallel with the arm on the frame, and a fusible link supporting it, substantially as and for the purpose set forth.

2. In combination with the valve and valve-seat of a sprinkler-head, a horizontal supporting-arm, a lever pivoted below the arm and one arm of said lever acting upon the upper surface of the valve, a flange upon the valve, a fusible link securing the outer end of the lever to the supporting-arm, the inner plate of said link forming a bow at the upper end and having a depending lug at the lower end, a weight suspended from said lug, and an arm projecting from the lower surface of the lever to and under the flange on the valve, substantially as and for the purpose set forth.

3. In combination with a sprinkler-head having horizontal supporting-arm and lever, a fusible link formed of two plates, the upper of said plates forming a bow at the upper end and open at the lower end, the lower or inner plate forming a bow at the upper end below the bow of the upper plate and connected at the lower end, said lower plate soldered to the upper plate, and a weight connected with the lower end of said lower plate, substantially as and for the purpose set forth.

Signed at Grand Rapids, Michigan, July 21, 1902.

ALLEN D. LINN.
ITHIEL J. CILLEY.

In presence of—
NELLIE CILLEY,
LOUIE CILLEY.