(No Model.)

G. C. HALE.

FIRE EXTINGUISHER.

No. 598,924. Patented Feb. 15, 1898.

Fig. 1

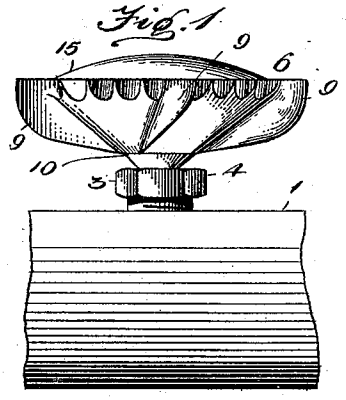


Fig. 2

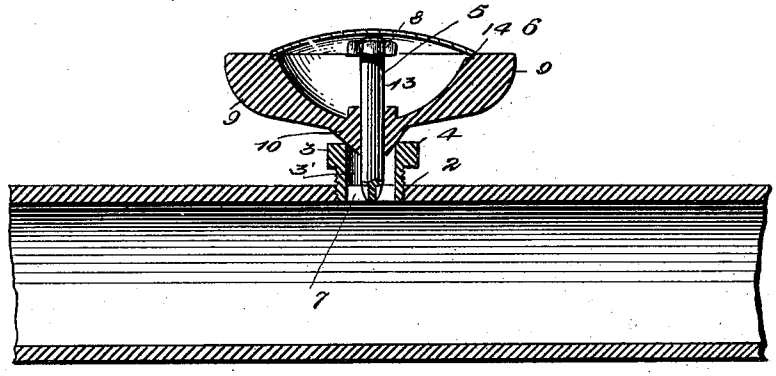
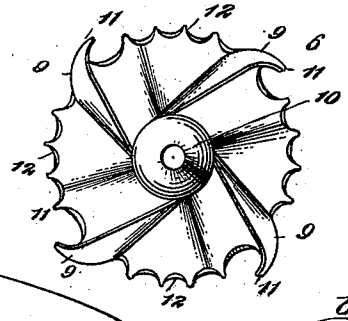


Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

GEORGE C. HALE, OF KANSAS CITY, MISSOURI, ASSIGNOR TO MILO E. LAWRANCE, OF SAME PLACE.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 598,924, dated February 15, 1898.

Application filed March 6, 1897. Serial No. 626,240. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. HALE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in fire-extinguishers of the class shown and described generically in an application for Letters Patent of the United States which I filed on the 17th day of February, 1897, bearing Serial No. 623,857, in which the distributing main or pipe of a fire-extinguishing system is provided with an outlet in its upper side or face and a revoluble distributer is supported over said pipe or main in a manner to normally rest by its own weight upon the outlet, so as to close the latter against the ingress and lodgment of dust and dirt, but at the same time said distributer is capable of a limited and unrestrained upward movement under the pressure of the jet or stream of water, which acts to raise the distributer and to rotate the same by impinging against spiral working surfaces on said distributer, whereby the latter is held raised and rotated by the escaping stream and the distributer breaks up and throws the water in the form of a spray around and upon the adjacent surfaces.

The object of my present invention is to simplify the construction of the extinguisher by providing a means which serves to operatively connect the distributer to the pipe or main and also form the outlet-nozzle so that the application of the nozzle to the pipe also attaches the means for supporting the distributer.

To these ends my invention consists of a tubular nozzle having a water-passage therethrough and a projecting spindle rigid therewith and a distributer-head fitted on said spindle to rotate and slide freely thereon, said head adapted to seat itself by gravity upon the open end of said tubular nozzle; and the invention further consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

I have illustrated the preferred embodiment of my invention in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved fire-extinguisher, showing it applied to one of the distributing-pipes of an extinguishing system. Fig. 2 is a vertical sectional elevation thereof. Fig. 3 is an inverted or bottom plan view of the nozzle. Fig. 4 is an inverted plan view of the distributer-head.

Like numerals of reference denote corresponding parts in all the figures of the drawings, referring to which—

The numeral 1 designates one of the distributing pipes or mains of a fire-extinguishing system, which, as is usual in this art, embodies a series of pipes or mains situated in rooms or other parts of a building or other structures where fires are likely to occur and also provided with a branch pipe or pipes leading to a source of water-supply—such as a tank, a street service-main, or to a place where the hose from a fire-engine may be connected with said extinguishing system.

According to my invention it is essential that the water-outlet shall be provided in the upper side of the distributing-pipe and the sprinkler device be arranged over said outlet to seat itself by gravity upon the pipe and close the outlet against the lodgment and accumulation of dust and dirt in and around said outlet. In the present invention these essential parts of the extinguishing system are provided by forming a threaded opening 2 in the top side of the pipe or main 1. Into this opening is screwed the lower externally-threaded end of the tubular nozzle 3, the upper part of which has a square, angular, or polygonal surface (indicated at 4) for the application of a wrench or other suitable implement for turning the nozzle in order to screw it into the threaded opening 2 or to unscrew it therefrom to enable the nozzle to be detached easily from the pipe or main 1. The nozzle carries the upright spindle 5, on which is loosely fitted the rotary and slidable distributer-head 6. In the preferred embodi-

ment of my invention the spindle is integral with the tubular nozzle, is arranged axially in relation thereto, and projects above the open end of said nozzle for a suitable distance, so as to support said head 6 and permit it to have the necessary sliding movement upward on the spindle and away from the mouth of the nozzle. The spindle is joined to the nozzle by an open spider 7, (shown more clearly by Fig. 3,) and said spider and spindle are preferably integral with the nozzle. A water-passage 3′ extends through the nozzle, and the spider is cut away or has its arms spaced apart to provide the openings or passages 7′ through the spider, which passages 7′ provide for the free egress of water from the pipe or main through the tubular nozzle. The upper end of the spindle has a male thread cut thereon to receive a nut 8, which prevents the head 6 from becoming disconnected from the spindle and which limits the upward play of the head 6 on said spindle, but other forms of stop devices may be used in lieu of the nut 8.

The distributer-head 5 has the form shown by the drawings, in which the lower surface thereof is approximately inverted-cone shaped. On the lower face of the head is provided a series of spiral ribs 9, which extend upward along the head from a point above the apex 10 to and beyond the edge of the head, and these ribs terminate at their upper outer extremities in the curved overhanging lips 11, said ribs gradually increasing in depth from their lower inner ends to their upper outer ends, as shown. The periphery of the head, between the overhanging lips 11 at the free ends of the spiral ribs, is corrugated or toothed, as at 12, and the center of the head terminates in the inverted conical teat-like apex 10. This form of the head constitutes an efficient means for distributing the water in the form of a spray, and the spiral tapering ribs thereon furnish the means for giving rotary motion to the head when the stream or jet of water impinges against the working surface of the head.

In the upper side of the distributer-head is provided a cavity 13 and an annular recess 14, the latter forming a seat for the peripheral edge of a metallic cap-plate 15, which is adapted to be sprung into place within the annular seat, thus closing the cavity against the accumulation of dust and dirt. Through the center of the head and its apex 10 is formed a vertical passage 16, that provides for the introduction of the head on the fixed spindle. The head is fitted loosely on the spindle, the check-nut is screwed on the threaded end of the spindle, and the cap-plate is sprung into place within the annular seat in the head, a space being provided between the nut and the head to permit the head to have the necessary sliding movement before it is arrested by the nut. Normally the head rests by gravity upon the open end of the nozzle, so that the apex 10 of said head fits in the nozzle, whereby the head overhangs the nozzle and its apex closes the nozzle to prevent the accumulation of dust and dirt to clog up the nozzle. When the water is admitted to or forced through the main 1 under pressure, it escapes through the nozzle and acts against the distributer-head with sufficient force to lift said head clear from the nozzle and to maintain the head in such raised position. Under these conditions the stream or jet of water impinges against the spiral ribs on the raised head and the latter is rotated and raised by the water as it issues from the main, the head also serving to break up the stream or jet of water and to distribute the same in the form of a spray upon the surfaces or parts of a building adjacent to the sprinkler. When the flow of water ceases, the head descends automatically by gravity and seats itself upon the nozzle, thus overhanging the nozzle and closing the same against the lodgment of dust, &c.

My new device is very simple in construction, consisting practically of two parts—*i. e.*, the nozzle with the spindle and the head. The head and nozzle are preferably each cast in a single piece and afterward finished in any suitable style.

While I have shown the nozzle as having a male thread to screw into a threaded opening in the pipe or main, I do not limit myself to this particular construction, because the nozzle may be fastened to the pipe by other styles of couplings or joints, nor do I restrict myself to the precise details of construction and form and proportion of parts herein shown and described, as it is evident that changes can be made therein without departing from the scope of my invention.

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

1. The combination with a main or pipe, of a substantially cylindrical nozzle projecting upwardly from said main or pipe and having a longitudinal liquid-passage terminating in an open mouth at the upper extremity of said nozzle, a spindle carried by said nozzle and projecting therefrom, and a rotatable and slidable distributer-head fitted loosely on said spindle to overhang the nozzle, said head having on its lower surface a central protuberance to rest upon the nozzle and also provided with a series of spiral fins which extend outwardly and upwardly from said protuberance, for the purposes described, substantially as set forth.

2. The combination with a main, of a tubular nozzle coupled to the upper side of said main and provided with an axial spindle, a distributer-head fitted loosely on said spindle and provided with a smooth conical center and with spiral blades that extend from said center toward the edge of said head, and a stop device to arrest the upward-sliding movement of the head on said spindle, as set forth.

3. The combination of a nozzle having an axial liquid-passage terminating in an open mouth at the upper extremity of the same, a

spindle carried by the nozzle in axial relation thereto and projecting through and beyond the open mouth of its liquid-passage, a slidable and rotatable head having its lower flaring surface ribbed spirally and terminating in a smooth apex adapted to seat upon the mouth of the nozzle and provided in its upper side with a cavity in which terminates the upper end of the spindle on which the head is fitted loosely, a check device attached to the spindle, and a cap-plate connected to the head to close the cavity therein and to conceal the upper extremity of the spindle and the check device, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE C. HALE.

Witnesses:
A. ERWIN,
B. F. COLLINS.