(No Model.)

G. C. HALE.

FIRE EXTINGUISHER.

No. 599,330. Patented Feb. 22, 1898.

Fig. 1

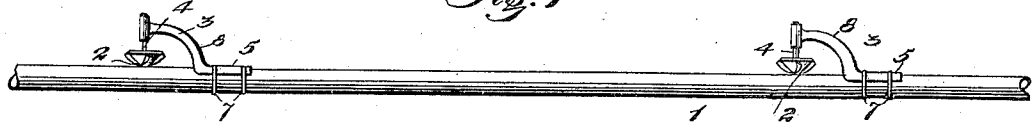


Fig. 2

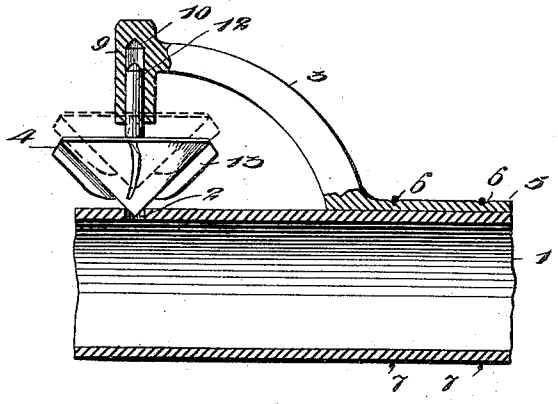


Fig. 3

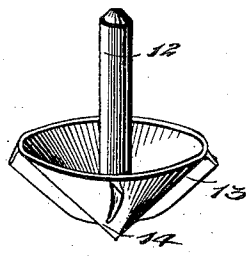
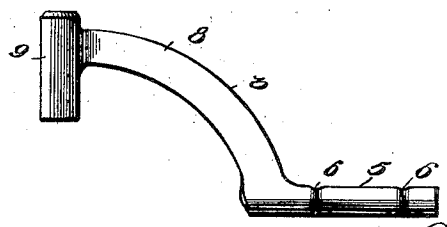


Fig. 4



Witnesses:
Edmund H. Strauss
H. J. Bernhard

George C. Hale
Inventor.
by Edson Bros.
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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. 599,330, dated February 22, 1898.

Application filed February 17, 1897. Serial No. 623,857. (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.

In the application of a fire-extinguishing system to a grain-elevator or other structure where dust is continually flying in the atmosphere provision must be made for preventing the lodgment and accumulation of the dust over the exit ports or nozzles of the distributing-pipes; otherwise such ports are liable to become filled and "choked up" by the accumulation of dust to such an extent as to seriously impede the flow of water.

Previous to my invention it has been proposed to close the outlet port or nozzle by a fusible seal which will be melted by the heat of the fire and to employ a valve held in place by a separable device normally maintained in proper position by a fusible joint and other mechanical appliances; but in such prior devices all the nozzles or outlets are closed by means which require solder to be melted by the heat before it is possible for water to escape in extinguishing the fire.

It is the object of my present invention to provide in a system for extinguishing fires a simple and inexpensive contrivance which will serve the dual purpose of closing the exit ports or nozzles against the accumulation therein of dust and dirt and as a distributer for the water as it spurts or jets under pressure from the supply-main of the extinguishing system.

To the accomplishment of these ends my invention consists in a fire-extinguishing system especially adapted for grain-elevators and other places where dust is liable to clog up the discharge-ports, in the combination, with a water pipe or main having a discharge port or nozzle opening through the upper side or face thereof, of a distributer-head mounted relatively to said port or nozzle to have a limited movement toward or from the same and to have a free rotary movement in a plane approximately parallel to the axial line of the pipe or main, said distributer-head being so combined and arranged that it will automatically seat itself by gravity upon the pipe or main, so as to close the port or nozzle therein against the accumulation of dust or dirt, said distributer-head lying in the path of the jet or stream of water which by impinging thereon keeps the distributer raised above the pipe or main and causes the same to be rotated for the purpose of breaking up the jet or stream of water and throwing it upon the adjacent surfaces to aid in extinguishing the fire or to saturate with water said surfaces to prevent the spread of a fire; and the invention further consists in the novel combination of devices and in the construction and arrangement of parts which will hereinafter be fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation of part of a fire-extinguishing system, showing a series of distributers applied to one of the pipes or mains thereof. Fig. 2 is a vertical sectional elevation, on an enlarged scale, of a part of the pipe or main and one of the distributers, the dotted line showing the distributer in its unseated raised position for throwing outwardly the jet or stream of water. Fig. 3 is a detail perspective view of the distributer-head. Fig. 4 is a detail view of one form of the bracket which may be used to support the distributer-head in operative relation to the main or pipe.

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

1 designates one of the pipes or mains of a fire-extinguishing system, which system embraces a series of pipes arranged in the various parts of a grain-elevator, building, &c., which may be most exposed to danger from conflagrations, and the system further provided with a branch service-pipe leading to a supply-tank, a service-main, or to a suitable place accessible by firemen for the attachment of a hose from a fire engine or steamer, whereby a full supply of water may be had for the pur-

pose of distribution by the pipes of the extinguishing system.

The pipe 1 is arranged in a horizontal position, and in its upper side it is provided with a series of discharge ports or nozzles 2, arranged at suitable intervals—say from eight to fifteen feet apart. On the top side of this pipe 1 are fastened brackets 3, which sustain distributing-heads 4, one bracket and distributing-head being devoted to each of the ports or nozzles 2.

In the embodiment of my invention herein shown the bracket has a seat-like plate 5, concaved on its lower face to fit snugly upon the pipe and having grooves 6 in its upper face to accommodate the clamping wires or bands 7, which pass around the pipe and are fastened in place thereon by twisting the ends thereof together, whereby the bracket is securely clamped in position adjacent to the port or nozzle 2; but it is evident that other means may be employed to clamp the brackets in place. With this seat-plate 5 is made as an integral part thereof the overhanging arm 8, which is arched upwardly over the pipe, the free end of said arm terminating in an elongated vertical bearing 9. This vertical bearing is in axial alinement vertically with the port or nozzle 2 in the pipe 1, and the upper end of said bearing is closed, while the lower end of the bearing is open. The opening in the bearing terminates in a conical end, (indicated at 10 in Fig. 2,) which forms an end bearing or step for the upper conical end of the spindle 12 on the distributer-head 4, whereby a limited bearing-surface is provided for the end of the spindle, which reduces to a minimum the friction and wear on the coacting bearing and spindle of the distributer-head when the latter is raised and is rotated by the impact of the escaping water on its spiral blades. This distributer-head is in the form of an inverted cone, and said conical head and the spindle 12 are made or cast in a single piece of metal, although this is not strictly necessary. On the lower conical working surface of the distributer-head is provided a series of propeller-blades 13, which extend in spiral lines from the upper neutral edge of the head down the surface of the cone to a point above the apex of the cone, said apex of the cone being unobstructed by or free from the blades, as indicated at 14 in Fig. 3.

The bracket 3 and the distributer-head are so arranged and proportioned that the head and its spindle may have a limited vertical play relatively to the pipe 1. In its normal position the weight or gravity of the head and its spindle causes the head to descend and rest upon the pipe, in which position the apex 14 of the cone fits in the port or nozzle 2 of the pipe. As the broad surface of the inverted cone covers a certain area of the pipe, around the port or nozzle 2 therein, it is evident that the distributer-head protects the port or nozzle 2 against the accumulation of dust or dirt, because the dust cannot have access to the port, in which is fitted the apex 14 of the head, and the dust will lodge and accumulate upon the broad surface of the conical head. The spindle 12 is adapted to slide a limited distance in the bearing of the bracket, and it is also free to rotate therein, and when the head and spindle are raised to their full limits by the impact of the water thereon the upper conical end of the spindle fits in the conical end of the bearing, thus reducing to a minimum the friction on the parts.

When water under pressure is admitted to the extinguishing system either from a supply-tank or a service-main or from the hose of a fire-steamer, it rushes through the pipes until it finds outlet in the ports or nozzles 2, the pressure of the water being more than sufficient to lift all of the distributer-heads above the pipes. The spindle of each head slides in the bearing with the distributer-head until the end of the spindle abuts against the upper conical end of the bearing, and as the jet or stream of water impinges against the spiral blades on the head the latter is rotated and at the same time held in its raised position, whereby the rotary head serves to break up the solid jet and throw the water in the form of a spray upon the adjacent surfaces of a building to assist in extinguishing the fire or to saturate the parts with water, so as to reduce to a minimum the spread of the fire.

I am aware that changes in the form and proportion of parts and in the details of construction herein shown and described as the preferred embodiment of my invention may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications and alterations as fairly fall within the scope of my invention.

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

1. The combination of a pipe or main having an outlet port or nozzle in its upper side, a bracket on said pipe adjacent to said nozzle or port, and a rotatable distributer-head having a spindle slidably fitted in said bracket, and provided with spiral blades which terminate within the lower extremity of said head, thus forming on the head a surface adapted to snugly fit in the port or nozzle, for the purposes described, substantially as set forth.

2. The combination with a pipe or main provided in its upper side with an outlet port or nozzle, a bracket attached to said pipe and having an overhanging arm over the port, and an inverted conical distributer-head having a spindle slidably fitted in the arm of the bracket, said conical head adapted to be seated by gravity for its apex to fit in, and close

the port or nozzle, and provided with spiral blades, for the purposes described, substantially as set forth.

3. The combination of a main or pipe having in its upper side a port or nozzle, a bracket clamped upon said pipe and having its overhanging arm provided with a sleeve-like bearing, the upper end of which terminates in a conical step, an inverted conical distributer-head normally seated at its apex in the port or nozzle and provided with a series of spiral blades, and a slidable spindle attached to said head and fitted in said sleeve-like bearing to rotate and slide therein, the upper end of said spindle having a reduced end which, when the head and spindle are raised, is adapted to fit in the conical step of the sleeve-like bearing, for the purposes described, substantially as set forth.

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

GEORGE C. HALE.

Witnesses:
A. ERWIN,
W. J. MEDES.