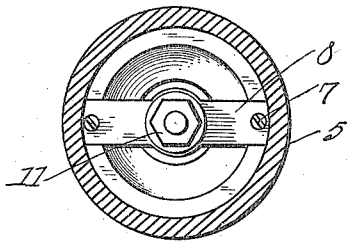


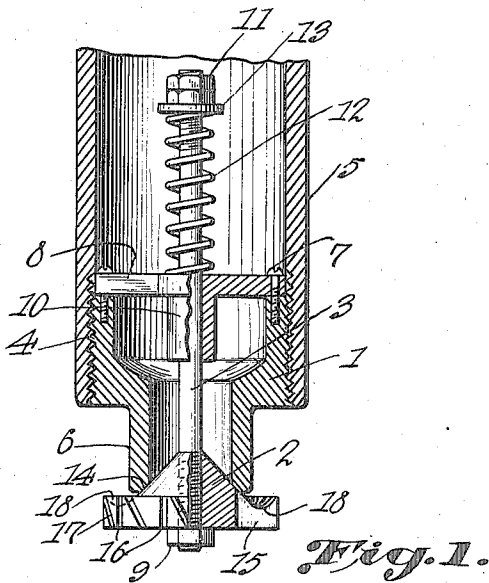
E. JOHNSON.  
 FIRE EXTINGUISHER SPRAY NOZZLE.  
 APPLICATION FILED FEB. 28, 1917.

1,286,333.

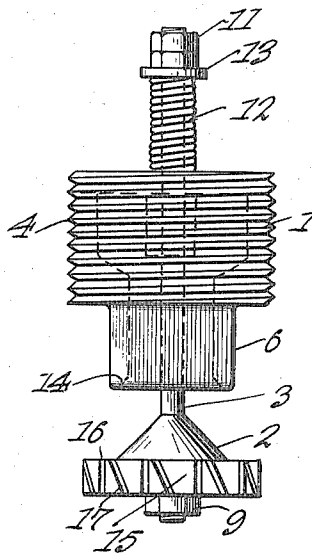
Patented Dec. 3, 1918.



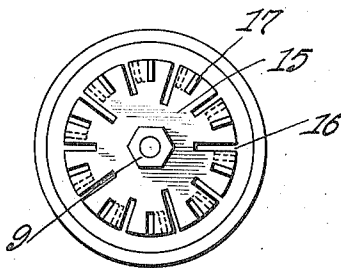
*Fig. 2.*



*Fig. 1.*



*Fig. 4.*



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

ELMER JOHNSON, OF WASHINGTON, DISTRICT OF COLUMBIA

FIRE-EXTINGUISHER SPRAY-NOZZLE.

1,286,333.

Specification of Letters Patent.

Patented Dec. 3, 1918.

Application filed February 23, 1917. Serial No. 151,604.

(DEDICATED TO THE PUBLIC.)

*To all whom it may concern:*

Be it known that I, ELMER JOHNSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Fire-Extinguisher Spray-  
Nozzles, of which the following is a specification.

In the application of a fire extinguishing system to threshing machines or other structures where dust is continually flying in the atmosphere, provision must be made for preventing lodgment and accumulation of dust and the like in the parts and passages of the distributing pipes which are liable to become clogged thereby to such an extent as to impede the escape of the fire extinguishing medium, and at the same time provision must be made for a free exit of such medium as the emergency may require.

Previous to my invention it had been proposed to close the outlet port or nozzle by a valve normally held closed by a fusible means which melts by the heat of a fire and permits the valve to open and the extinguishing fluid to escape.

It is the object of my present invention to provide a simple contrivance which will serve the dual purpose of closing the exit ports or nozzles against accumulation therein of dust and dirt and acting as a distributor for the fluid as it issues under pressure from the supply conduit of the extinguishing system; to further provide an improved rotary distributing sprinkler which will be readily set into action by the flow of the extinguishing fluid and effect an automatic spraying and distribution of the latter throughout a comparatively large space; to further provide means for normally maintaining the valve closed, but permitting the valve to open under the pressure of the extinguishing fluid and also to regulate the opening thereof in proportion to the flow of fluid through the nozzle, and to provide further construction and arrangement of parts the objects of which will more clearly appear hereinafter.

Referring to the accompanying drawing: Figure 1 is a sectional view of my sprinkler head;

Fig. 2 is a top plan view thereof;

Fig. 3 is a bottom plan view of the same;

Fig. 4 is an elevation of the same, omitting the pipe.

As illustrated, the device comprises a plug 1, bored to different diameters, one end of which plug is of larger diameter than the other and screw-threaded at 4 for securement to the end of the conduit 5, while the other end 6 serves as the nozzle for the extinguishing fluid and further comprises a conical valve member 2 the lower portion of which is shaped and slotted to form a rotary spray head 15. A cross-bar 8, to which is integrally fixed a hub 10, is secured at its ends to the inner portion of the plug 1 by means of the screws 7. Both the bar and the hub are centrally bored for the reception and guidance, along its axis, of the valve stem 3. The hub functions as a bearing with sufficient length substantially to maintain the axis of the valve stem 3 and pipe 5 coincident.

The inner end of the stem is screw-threaded for the reception of the nuts 11, one of which acts as a nut-lock. A coiled spring 12 surrounds the stem 3 between the bar 8 and the nuts 11, a washer 13 being interposed between an end of the spring and one of the nuts 11 to act as an abutment therefor.

The outer end of the stem 3 is threaded for the attachment thereto of the combined valve and spray element 2 and the nut 9.

The valve, which is cone-shaped, seats against the beveled seat 14 of the nozzle 6 and is normally held to its seat by means of the spring 12.

The lower portion 15 of the element 2 constitutes the spray head. It is slotted with the vertical slots 16 and the inclined slots 17. It will be noticed that the vertical slots are cut in at varying radial depths which is for the purpose of causing the liquid issuing therethrough to be projected to different parts of the area to be protected, yet they are not cut at such a depth as to cause the valve 2 to leak when seated. The inclined slots 17 are of less radial depth and function, as the issuing stream of liquid from the nozzle 6 impinges against the inclined surfaces thereof, to rotatably propel the valve and sprayer about the axis of the organization. The other slots 16 provide passages for the fluid to pass to the space below the spray head which would otherwise remain unsprinkled

without these slots. It will also be noticed that the sprayer is provided with an annular trough 18 which receives the liquid as it flows down the surface of the cone and diverts the same upwardly so as to spray the same over an elevated area as well as at a distance.

In its use and operation the valve 2 is normally maintained seated by means of the spring 12. When the extinguishing system is put into operation the extinguishing medium is forced through the pipe 5 with sufficient pressure to cause the valve 2 to open. As the liquid issues from the nozzle 6 a portion of it impinges against the inclined surfaces of the slots 17 thereby causing the spray head to rotate, another portion issues through the slots 16, and the rest is thrown upwardly from the trough 18 and laterally through the slots 16. This, therefore, results in an equal distribution of the extinguishing medium over a comparatively large area.

The greater the pressure the more will the valve open, thereby exposing a large annular orifice, and the smaller the pressure the smaller the orifice, the spring 12 being of such strength as to provide for this.

Having described my invention, what I claim is:

1. The combination of a conduit, a rotatable closure means therefor, resilient means normally maintaining the latter closed and abnormally permitting the same to open and also regulating the opening in accordance with the pressure in said conduit, and spray means integral with the closure means for spraying the issuing fluid and provided with

inwardly extending spray slots, certain of said slots disposed at an angle to the axis of the valve for rotating the latter as the fluid issues therefrom.

2. A spraying valve comprising a valve seat, a valve including a conical portion adapted to contact with the seat and a flange at the larger end of the cone adapted to extend beyond the seat, said flange having slots extending inward from its periphery in planes at an angle to the axis of the valve.

3. A spraying valve comprising a conical valve portion and a flange at the larger end of the valve, said flange having slots extending inwardly from its periphery at relatively different angles to the axis of the valve.

4. A spraying valve comprising a conical valve portion and a flange at the larger end of the valve, said flange having a depression surrounding the cone, the inner wall of which merges with the wall of the cone and slots extending inwardly from the periphery of the flange and at relatively different angles to the axis of the valve.

5. A spraying nozzle having a conical valve portion and a flange at the larger end of the cone, said flange having a depression surrounding the cone and slots extending inwardly from the periphery of the flange and at relatively different angles to the axis of the valve.

In witness whereof, I affix my signature in the presence of two subscribing witnesses.

ELMER JOHNSON.

Witnesses:

E. B. McCORMICK,  
LAWRENCE L. BEEBE.