April 24, 1951 T. W. BURNAM 2,550,451

ENCLOSED FOG HEAD

Filed May 24, 1946

Fig. 1

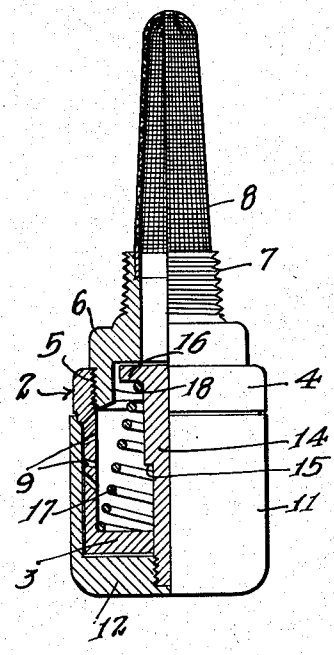
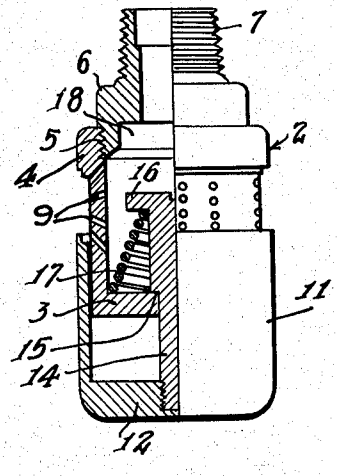



Fig. 2




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## ENCLOSED FOG HEAD

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3 Claims. (Cl. 299—143)

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This invention relates to fire extinguishing apparatus of the type known in the art as "fog heads or nozzles." In a fog head or nozzle there is provided one or more sets of orifices arranged to produce a plurality of streams of water impinging in such a manner as to result in the water of the stream being broken up into fine particles of fog.

It is the general object of the present invention to provide an enclosed fog head or nozzle for use in fire extinguishing operations of particular value on stationary installations.

Another object of the present invention is to provide a novel form of fog nozzle or head adapted particularly for stationary fire extinguishing installations in which the orifices of the nozzle are enclosed and protected from the elements during the inoperative state of the head and in which there is provided means for automatically closing the orifices when it is desired to operate the fog head.

Another object of the present invention is to provide a fog head of the type in which the orifices are enclosed when in inoperative position, with means for automatically opening the fog head when desired, which means are constructed and arranged for properly dividing the fluid space back of the orifices into a plurality of suitable water chambers.

The fog nozzle or head of the present invention will be fully understood from the following description of the preferred form or example of the fog head embodying the invention, for which purpose reference is hereafter made to the accompanying drawings, in which

Figure 1 represents an elevation in quarter-section of the fog head in the closed position; and

Figure 2 represents a similar elevation quarter-section of the fog head in the open, or operating, position.

Referring to the drawings, the fog head of the present invention preferably includes an orifice or nozzle member 2 which may be, as indicated generally, in the form of a cylindrical sleeve, although any other shape may be used in other forms of the invention. The bottom of the sleeve is provided with the closure 3 and the upper end is provided with an enlargement 4 internally threaded as indicated at 5 to a member 6 having a threaded stem 7, by means of which the fog head may be attached to a fluid supply system. The threaded stem 7 is preferably provided with a counterbore in which is fitted the lower end of a screen 8.

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The nozzle or orifice body 2 is provided with a plurality of circumferential equally spaced apart sets of orifices 9. Various arrangements of the sets of orifices may be provided, but as indicated in this form of the invention each set of the orifices is arranged in the same vertical plane, each set of orifices containing four orifices each having distinctly different angles from the others so that the fluid stream emerging from the orifices will impinge one against the other.

The nozzle is also preferably provided with a closure cup member 11 having an enclosed lower end 12 with upwardly extending cylindrical walls adapted in the closed position to completely cover the orifices 9 and to contact the enlargement 4 on the orifice 2. The closure cup 11 is held in position by a pin 14 threaded into a recess at the lower end of the bottom 12 and extending through an aperture in the lower end of the orifice member 2. The pin 14 is provided with a shoulder 15 in its middle portion for the purpose of providing space for limiting the downward movement of the pin and the flange, and above the shoulder 15 the pin is provided with the enlarged flange head 16. A coil spring 17 is provided which normally yieldingly urges the pin 14 and the closure cup 11 upwardly into the closed position.

In its upper position the head 16 substantially contacts the bottom of a reduced bore 18 of the member 6 so that it substantially impedes, or prevents, any flow of fluid through the device. The pressure of water applied to the device will cause the lowering of the pin 14 and cap member 11 into the position shown in Fig. 2 of the drawings. As indicated in Fig. 2 of the drawings particularly, the spacing between the stop shoulder 15 and the enlarged flange 16 are such as to position the flange 16 substantially in the center of the flange chamber back of the orifices 9, thereby dividing this fluid chamber into substantially two parts, one for serving the upper bore of the orifices and the other for serving the lower bore of the orifices. By so dividing this chamber it is found in accordance with the fluid requirements for orifices that a substantial improvement in the character of the spray pattern produced is effected.

In the use of the fog head of the present invention when normally installed on a distributor line in fixed position on the installation to be fire protected, it is found that by means of the spring on the individual fog heads the individual heads are closed and thereby protected from being de-

teriorated by contact with the elements. The lines leading to the individual fog heads are preferably maintained empty of water, except in the event of fire. Somewhere in the line suitable valve means, not shown, are provided for connecting the distributing lines to suitable sources of water pressure. In such event the water pressure automatically opens the fog nozzles of the present invention, which then efficiently operate for generation of water or other fluid fog in fire-extinguishing action.

While the particular form of the fog nozzle herein described is well adapted to carry out the objects of the present invention, various modifications and changes may be made, and this invention includes all the modifications and changes that come within the scope of the appended claims.

I claim:

1. A fog head comprising a sleeve having a cylindrical side wall and bottom wall, a set of fog generating orifices in said side wall, the sleeve providing a fluid chamber in back of said orfices, a closure member having a cylindrical wall, said closure member being movable alternately into a position to cover said orifices and into a position to uncover said orifices, an axial member extending from the closed member to the bottom wall of said sleeve into the fluid chamber, said axial member being provided with a stop for limiting the separation of the sleeve and closure member; said axial member having a flange positioned in substantially the center of the sets of orifices when said stop is engaged, and means yieldingly urging the closure member to the closed position.

2. A fog head comprising a sleeve having a cylindrical side wall and bottom wall, a set of fog generating orifices in said side wall, the sleeve providing a fluid chamber in back of said orfices, a closure member having a cylindrical wall, said closure member being movable alternately into a position to cover said orifices and into a position to uncover said orifices, an axial member extending from the closed member to the bottom wall of said sleeve into the fluid chamber, said axial member being provided with a stop for limiting the separation of the sleeve and closure member; said axial member having a flange positioned in substantially the center of the sets of orifices when said stop is engaged, and means yieldingly urging the closure member to the closed position, each set of orifices comprising four substantially circular aligned orifices.



3. A fog head comprising a sleeve having a plurality of sets of orifices circumferentially spaced apart, the sleeve being open at one end and having a closure at the other end, a cup-shaped closure member telescoped over the sleeve so as to in one position cover said orifices and movable into a second position to uncover said orifices, an axial member extending from the cup-shaped member through an opening in the closure of said sleeve, said axial member having a stop for limiting the separation of said sleeve and cup-shaped member, said axial member having a flange which, in open position, is substantially in the center of said sets of orifices.

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