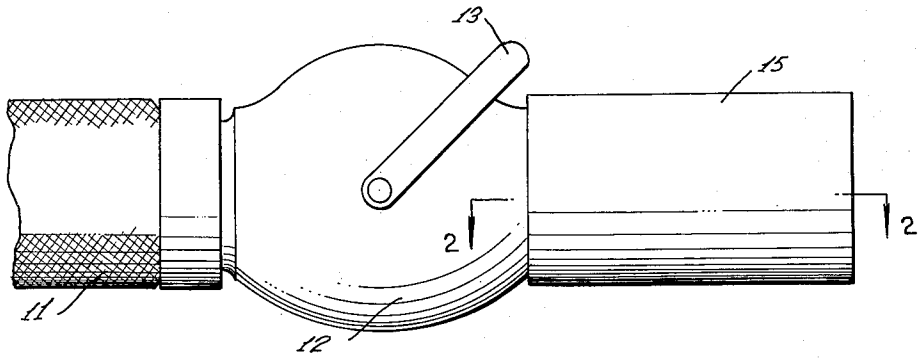
Feb. 12, 1952 C. W. SMITH 2,585,509

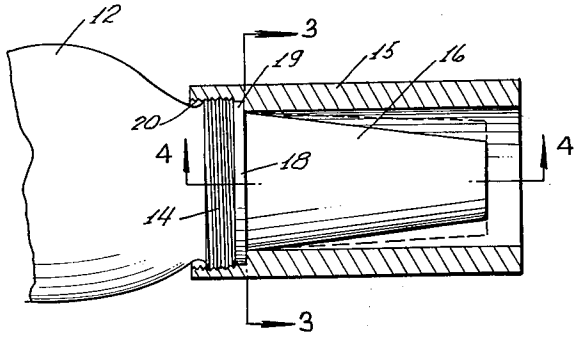
SELF-ADJUSTING FIRE NOZZLE

Filed Nov. 4, 1949

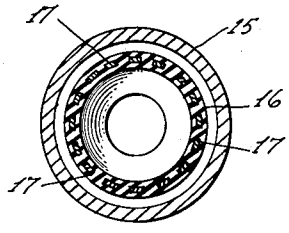
FIG—1



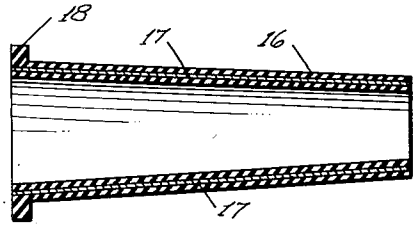
FIG—2



FIG—3



FIG—4



INVENTOR
CHARLIE W. SMITH

BY
McMorrow, Berman & Davidson
ATTORNEYS

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SELF-ADJUSTING FIRE NOZZLE

Charlie W. Smith, Little Rock, Ark.

Application November 4, 1949, Serial No. 125,504

1 Claim. (Cl. 299—133)

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This invention relates to hose nozzle attachments, and more particularly to a nozzle attachment for a high pressure hose of the type employed in fire fighting.

A main object of the invention is to provide a novel and improved self-adjusting tip attachment for a fire hose, said attachment being very simple in construction, being easy to install, and being automatically expansible under conditions of increased water pressure whereby it may be employed on a fire hose over a wide range of variation of water pressure, avoiding the necessity of changing nozzles on the hose.

A further object of the invention is to provide an improved nozzle attachment for a high pressure water hose which provides an orifice which automatically adjusts itself in size in accordance with the degree of water pressure at the nozzle, whereby it is unnecessary to change nozzle tips for different degrees of water pressure, said attachment being inexpensive to manufacture, being very rugged in construction, and requiring very little labor to install.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is a side elevational view of the discharge end of a high pressure water hose employing a nozzle tip attachment constructed in accordance with the present invention;

Figure 2 is a cross-sectional detail view taken on line 2—2 of Figure 1;

Figure 3 is a transverse cross-sectional view taken on line 3—3 of Figure 2;

Figure 4 is a longitudinal cross-sectional detail view of the expansible tip device employed in the nozzle of Figure 1, said view being taken on line 4—4 of Figure 2.

Referring to the drawings, 11 designates the end of a high pressure water hose, such as a fire hose, and 12 designates a conventional cut-off valve secured to the end of the hose 11 in any suitable manner. The valve 12 has an operating handle 13 for opening and closing the valve. The valve 12 is formed at its outer end with a threaded extension 14, and threadedly engaged on said extension is a cylindrical sleeve 15. Designated at 16 is a tapering tip member which is preferably formed of molded rubber or similar resilient nonmetallic material, said tip member having embedded therein a plurality of evenly spaced, longitudinally extending, flat strips of spring metal, such as spring steel, designated at 17. At its larger end the tip member 16 is

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formed with an integral, outwardly extended, annular flange 18 which is received in an annular shouldered recess 19. The recess 19 is formed in the sleeve member 15 adjacent the internal threads thereof, designated at 20, which engage on the threads 14 of the valve member 12. The annular recess 19 is formed with substantially the same mean outer diameter of the threads 14, whereby the end of the valve member 12 may engage the flange 18 and compress said flange against the shoulder of the recess 19, as shown in Figure 2. This rigidly clamps the tapering tip member 16 within the sleeve member 15.

When water under pressure travels through the tip member 16, the smaller end of the tip member is caused to expand slightly when the pressure of the water increases, automatically providing a larger discharge orifice for the water. The resilient strips 17 are thereby flexed outwardly as the material of the tip member expands, and exert a reinforcing action on the tip member. At the same time said metal strips prevent permanent distortion of the tip member and cause the tip member to contract to its original size when the pressure is relieved.

It is therefore seen that a novel device has been provided which automatically expands to provide an increased orifice under conditions of high pressure, whereas a smaller orifice is provided when the water is at a relatively low pressure. Therefore, it is unnecessary to change nozzles when water pressure conditions in the hose 11 vary. A single nozzle device such as above illustrated may therefore be employed under a wide range of water pressure conditions.

While a specific embodiment of a self-adjusting pressure responsive nozzle for high pressure water hose has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claim.

What is claimed is:

A self adjusting hose nozzle for attachment to the end of a high pressure hose comprising an open ended cylindrical member having one end adapted to be secured on said end of said hose, a tip member fabricated of an elastic nonmetallic material positioned longitudinally within said cylindrical member and having one end secured therein in communication with said end of said hose and having the other end terminating contiguous to and spaced inwardly from the

other end of said cylindrical member and providing an outlet orifice, said tip member being tapered inwardly from said one end to said other end thereof whereby upon flow of water through said tip member, said orifice automatically adjusts in size in accordance with the degree of water pressure in said hose, and means carried by said tip member for preventing the permanent distortion of the latter, said means comprising a plurality of circumferentially spaced longitudinally extending strips fabricated of resilient material embedded in said tip member.

CHARLIE W. SMITH.

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