

April 16, 1968

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3,378,207

NOZZLE ASSEMBLY FOR FIRE EXTINGUISHERS

Filed March 8, 1966

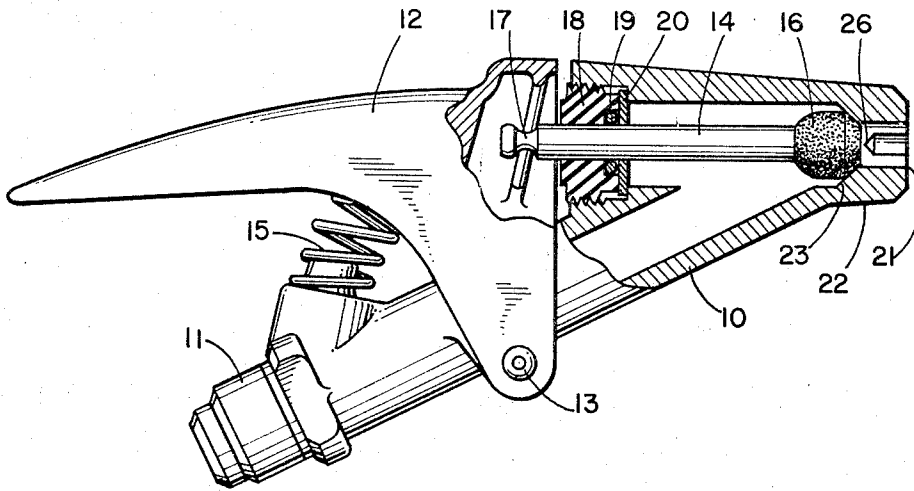


FIG. 1

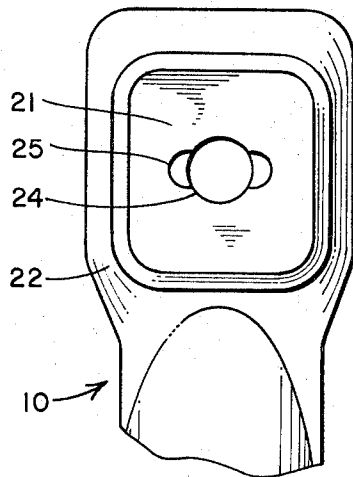


FIG. 2

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3,378,207

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Filed Mar. 8, 1966, Ser. No. 532,768

2 Claims. (Cl. 239—583)

ABSTRACT OF THE DISCLOSURE

A dry powder fire extinguisher nozzle having a central circular opening and a pair of opposing semicircular shaped side openings on diametrically opposite sides of the central opening and merging into the central opening to be common therewith. These side openings extend axially in a direction parallel to the axis of the central opening a given distance and then terminate short of the interior end of the central opening. The resulting structure functions to create a generally flattened conically shaped spray of powder from the fire extinguisher particularly useful for smothering Class A fires.

The present invention relates to a fire extinguisher and more particularly relates to an improved nozzle construction designed for use with dry chemical fire extinguishers of the portable type.

Although the invention will be described with respect to nozzles for fire extinguishers, it will be appreciated that the structural improvement of the nozzle may also be employed with other chemicals which are forced in dry or powdered form through openings or apertures under pressure, wherein the objectives sought are similar to those related to nozzles for fire extinguishers.

One of the problems associated with dry chemical fire extinguisher constructions is to provide a nozzle construction enabling the expelling of extinguishing powders therethrough so as to effectively smother or put out various types of fires. Fires are classified as Class A, Class B, and Class C fires, depending upon how the fire is initiated and what substance is burning. Recently, fire extinguishers have been designed with appropriate extinguishing agents so that the extinguisher is adaptable to smothering or putting out all classes of fires. Problems have occurred, however, particularly with respect to Class A or water extinguishable fires, in using dry chemical or powder extinguishing agents, since the extinguishing agent is not susceptible of being directed in its expulsion from the nozzle to effectively smother the fire in accordance with underwriting requirements. Thus, the dry powder spray may not be of the proper geometric configuration; also, the velocity may be so great so as to cause a draft and stir embers around or the like.

In view of the foregoing, one object of the present invention is to provide a novel aperture in a fire extinguisher nozzle which will effectively disperse the dry powder or chemical emitted therethrough in a manner so that the extinguisher nozzle is effective and suitable for use with Class A, Class B, and Class C fires.

Another object of the present invention is to provide a novel opening for a nozzle designed for use with a dry chemical fire extinguisher wherein the nozzle opening will cause the extinguishing agents to spread in a relatively flat, cone-like configuration to effectively smother and put out Class A fires.

Another object is to provide a novel opening for a nozzle which will reduce the velocity of the expelled powder.

Still a further object is to provide an improved nozzle construction for a dry chemical fire extinguisher, wherein the nozzle opening may be simply and economically formed and yet wherein the nozzle opening will be

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uniquely adaptable to exhausting or expelling pressurized fire extinguisher powders therethrough in a manner to effectively smother or put out Class A fires as well as Class B and Class C fires.

5 These and other objects and advantages of the present invention are generally achieved by providing an improved fire extinguisher nozzle assembly wherein the nozzle is defined at its outlet end by sidewall means defining a central cylindrical opening; valve means co-
10 operating with the internal end of said opening; and, a pair of opposing circular openings along a diameter of said central opening, said opposing circular openings being characterized by a diameter less than one-half the diameter of said central opening and having a portion
15 thereof common to said central opening. The opposing openings extend substantially but only partially through the tip end of the nozzle so as to not interfere with the function of the valve.

A better understanding of the invention will be had by reference to the drawings showing merely an illustrative embodiment of the invention, and in which:

FIGURE 1 is a side view, partially in section, of an improved nozzle assembly according to the present invention; and

25 FIGURE 2 is an enlarged front elevational view of the nozzle assembly shown in FIGURE 1.

Referring now to the drawings, there is shown in FIGURE 1 a somewhat conventional nozzle construction including a body 10 having a threaded end 11. The threaded end 11 would normally be connected to a fire
30 extinguisher hose or the like. A lever 12 is pivotably coupled at 13 to the body 10 and designed to be actuated manually to open and close a valve stem 14 against the biasing action of a spring 15.

35 The valve stem 14 has formed on the outer end thereof a valve or seal 16. On its inner end, the valve stem is provided with an annular groove 17 designed to cooperate with the lever 12 such that movement of the lever 12 will effect axial movement of the valve stem 14 and
40 valve 16.

Surrounding the valve stem 14 is a bushing 18 including an O-ring 19. The bushing 18 may be threaded into the body 10 and acts as a seal preventing any escape of fire extinguishing agent past the inner end of the valve
45 stem 14. If desired, a washer 20 may also be provided for the bushing 18 to cooperate therewith.

For the most part, the features heretofore described are not considered new or novel except in combination with the improved nozzle opening to be hereinafter described. As an important feature of the present invention, the outlet end or tip of the nozzle body 10 defines generally a nozzle opening 21 as more clearly seen in the view of FIGURE 2. The nozzle opening 21 is formed,
50 as stated, in the outlet end or tip end 22 of the nozzle and has an inner seat portion 23 designed to cooperate with the valve 16.

The opening 21 is itself defined by a central opening 24 having formed therewith spaced-apart, opposing smaller arcuate openings 25. The central opening 24 extends
60 entirely through the tip end 22 to cooperate with the seat portion 23 as heretofore stated. The side openings 25 extend only partially but substantially through the tip end 22 of the nozzle to terminate as indicated at 26 in FIGURE 1.

70 Preferably, in forming the nozzle opening 21, the openings 25 are first drilled in spaced apart disposition in a given plane; thereafter, the central opening is drilled in the manner shown so as to partially overlap the spaced apart side openings 25. Preferably, the side openings are of a diameter less than one-half the diameter of the central opening 24.

It has been found that this type of construction results in a flow of powder through the outlet end of the nozzle opening 21 forming a generally flat, conically shaped spray configuration of powder of low velocity which is particularly effective to smother or put out Class A fires. In the past, only a single central opening was used; and although many efforts have been made to modify the construction to obtain a nozzle opening effective for Class A fires, this is the first construction, to applicant's knowledge, which has effectively resulted in a nozzle opening construction suitable for extinguishing Class A fires with dry powder, which nozzle opening is also satisfactory for Class B and Class C fires.

It will be appreciated that certain modifications and changes may be made in the nozzle opening of the present invention without departing from the spirit and scope of the invention, and such changes are deemed to fall within the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. In a fire extinguisher nozzle designed for use with a dry powder fire extinguisher, a front end provided on said nozzle having a central opening therethrough; valve means within said nozzle designed to close off the interior portion of said central opening when said nozzle is not being actuated; a pair of opposing circular side openings aligned on a diameter of said central opening and partial-

ly overlapping and being common to said central opening, and said side openings extending axially into the sidewalls of the outlet end of said nozzle and terminating short of said interior portion of said central opening, said side openings cooperating with said central opening to create a generally flattened conically shaped spray emitting from said fire extinguisher, particularly effective to smother out Class A fires.

2. A fire extinguisher nozzle, according to claim 1, in which said side openings are characterized by a diameter less than one-half the diameter of said central opening.

References Cited

UNITED STATES PATENTS

15	2,101,175	12/1937	Gustafsson	-----	239—601	X
	2,138,300	11/1938	Gustafsson	-----	239—601	X
	2,208,850	7/1940	Mayer	-----	239—583	X
	2,589,213	3/1952	Allen	-----	239—583	X
	2,781,101	2/1957	Allen	-----	239—583	X
20	3,088,522	5/1963	Zellner	-----	169—31	
	1,890,517	12/1932	Laengel	-----	169—31	
	1,958,044	5/1934	Hendricks	-----	239—599	X
	2,785,760	3/1957	Fleming et al.	-----	169—31	

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