

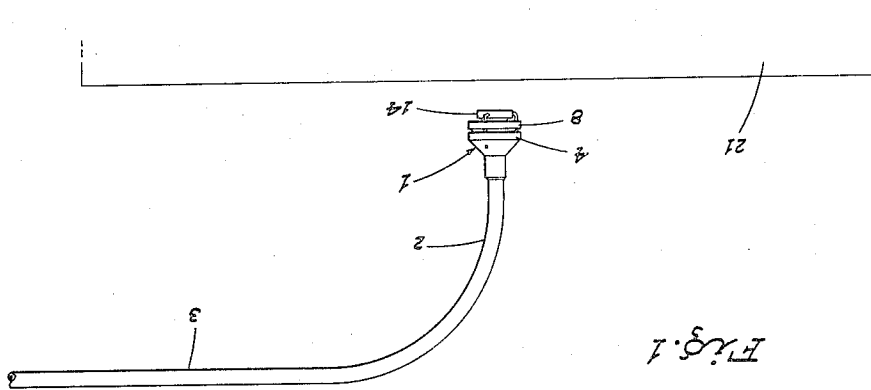


Fig. 1

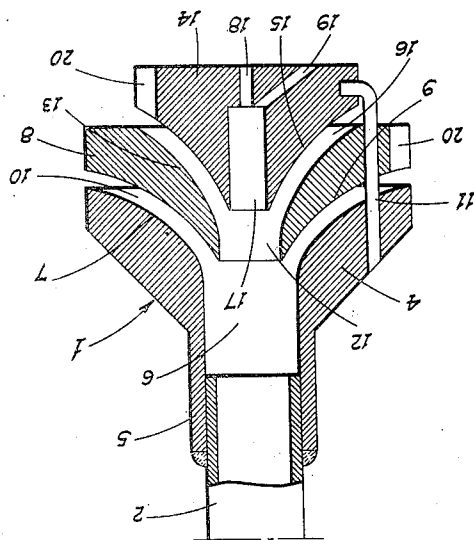


Fig. 2

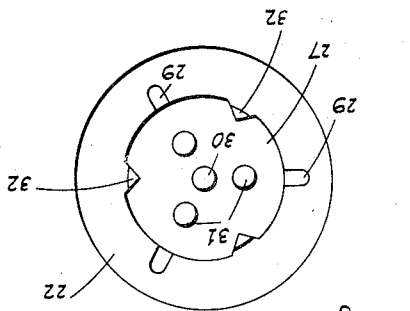


Fig. 3

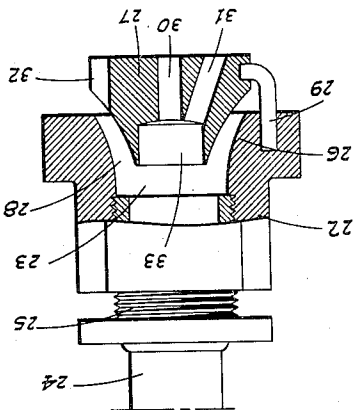


Fig. 4



Fig. 5

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OVERSHOT NOZZLE

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1 Claim. (Cl. 299—121)

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This invention relates in general to fire fighting equipment, and in particular the invention is directed to an improved nozzle for the discharge of a fire extinguishing substance.

One of the objects of this invention is to provide a fire fighting nozzle especially useful in connection with dry chemical fire extinguishing compounds in the form of powder which is fed in a high pressure stream of nitrogen or the like through the nozzle at high velocity.

Another object of the invention is to provide an overshot type fire fighting nozzle of novel construction; such nozzle, when in operation, producing a very effective fire extinguishing fog or blanket over the blazing area as, for example, an oil reservoir.

A further object of the invention is to provide a nozzle, of the type described, which includes means to discharge the high velocity fire fighting material both endwise and laterally from the nozzle in great diffusion, whereby to cover an extended area with the resultant fog.

Fig. 1 is an elevation of the nozzle in use.

Figure 2 is an enlarged sectional elevation of the nozzle.

Figure 3 is an enlarged front end view of the nozzle.

Figure 4 is a sectional elevation of a modification.

Figure 5 is a front end view of the nozzle shown in Fig. 4.

Referring now more particularly to the characters of reference on the drawings, and particularly at present to Figs. 1-3 inclusive, the nozzle is indicated generally at 1, and is shown mounted for over-shot use in connection with the downwardly forward end portion 2 of a tubular handle 3. At its forward end the handle is in communication with the nozzle 1, while at its rear end said handle is adapted to be connected with a source (not shown) of high pressure fire extinguishing substance, such as, for example, a dry chemical fire extinguisher in powder form carried in a high pressure stream of nitrogen.

The structural details of the nozzle 1 are shown in Figs. 2 and 3 and comprise the following:

The nozzle 1 comprises an annular relatively short main body 4 provided with a rearwardly extending tubular neck 5 which is coupled to the outer end of the handle portion 2 in any suitable manner.

The main body 4 includes an axial passage 6 whose internal diameter is at least as great as that of the adjacent end of the portion 2 of the handle 1. The axial passage 6 in body 4 is

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straight for some distance ahead of the neck 5 and thence flares sharply forwardly and outwardly to form a bell 7.

Beyond the bell 7 and in axial alignment with the annular main body 4, the nozzle includes an annular frusto-conical deflector 8 whose rear face is forwardly and outwardly flared, as at 9, in spaced but matching relation to the bell 7; the space between the bell 7 and face 9 providing an annular forwardly and outwardly flaring port 10.

The annular frusto-conical deflector 8 is of substantially the same diameter as the annular main body 4, and is connected to the latter with the proper spacing between bell 7 and face 9 by means of a plurality of circumferentially spaced connecting pins 11 disposed parallel to the axis of said nozzles and adjacent but short of the peripheries of the body 4 and deflector 8.

The deflector 8 is formed with an axial passage 12 extending therethrough, said passage, at its rear end, being of reduced diameter relative to the rear end portion of the passage 6 with which said passage 12 communicates. Ahead of its rear end portion the axial passage 12 flares sharply forwardly and outwardly to provide another bell 13.

An annular end deflector 14 of frusto-conical configuration projects into the bell 13; the rear face 15 of the deflector 14 being symmetrical to but spaced from the bell 13 whereby to form a forwardly and outwardly flaring port 16 corresponding generally to but disposed ahead of the port 10.

The end deflector 14 is of lesser diameter than the deflector 8 and is supported in position by the forward end portions of the circumferentially spaced pins 11 in the manner clearly shown in Fig. 2.

The end deflector 14 includes therein an axial passage 17 open at its rear end in communication with the passage 12 of deflector 8, but of substantially reduced diameter. The passage 17 terminates in the end deflector 14 short of the outer end thereof, and a central axial jet 18, together with a plurality of circumferentially spaced, diverging jets 19, communicate at their inner ends with the passage 17. The jets 19 open through the outer end or face of the end deflector 14 in symmetrically spaced relation about said central jet 18.

Both the annular frusto-conical deflector 8 and the annular frusto-conical end deflector 14 are formed, at circumferentially spaced points, in the peripheries thereof, with diffusing notches

20. The connecting pins 11 extend from the body 4 through the intermediate deflector 8 inwardly of its peripheral notches 20 and connect with the periphery of the end deflector 14 intermediate its peripheral notches 20; thus avoiding interference with each set of notches and assuring of effective diffusing action thereby.

In use of the above described nozzle, it is disposed over the source of a fire, here indicated diagrammatically in Fig. 1 as an open topped tank 21. The operator stands to one side and projects the tubular handle 3 toward the fire, with the down-turned forward end portion 2 directly over the fire in the manner shown in Fig. 1.

Thereafter the high pressure fire extinguishing medium is introduced into the handle 3 and thence discharges laterally from the nozzle through the ports 10 and 16, and endwise from the nozzle through the jets 18 and 19. The jet 18 discharges substantially straight downward, while the jets 19 discharge divergently. With the fire extinguishing medium discharging from the several openings of the nozzle, as above, an effective fire blanketing fog is developed over an extended area, accomplishing extinguishment of the fire in a minimum of time.

The notches 20 as formed in the peripheries of the deflectors 8 and 14 serve to further the diffusing action of the nozzle. As the notched annular periphery of the end deflector 14 is of substantially lesser diameter than, and concentric to, the notched annular periphery of the intermediate deflector 8, fire fighting fluid is diffused forwardly from said notched peripheries different distances from the longitudinal axis of the nozzle which is advantageous.

In the embodiment of Figs. 4 and 5, the disclosed nozzle is similar to the form shown in Figs. 1-3 inclusive, but omits the intermediate deflector 8. This form of the nozzle comprises an annular body 22 having an axial passage 23 there-through; said body being coupled to the tubular handle 24 by a threaded connection 25, with the handle in communication with the passage 23.

The passage 23 flares forwardly and outwardly at its forward end portion to form a bell 26, and an end deflector 27 of frusto-conical configuration and of substantially the same arrangement as the end deflector 14, but slightly shorter, projects into the bell as shown, whereby to form an annular forwardly and outwardly flaring port 28. The end deflector 27 is supported, as in the previous embodiment, by circumferentially spaced pins 29. The end deflector 27 similarly includes a central jet 30, diverging jets 31, and peripheral diffusing notches 32; said jets communicating at their inner ends with an axial passage 33 in the deflector 27, which passage is of lesser internal diameter than, but communicating with, the passage 23 in body 22.

The nozzle shown in Figs. 4 and 5 is used and functions in the same manner as the embodiment of Figs. 1-3, inclusive.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

A fire fighting nozzle comprising a body having an axial passage therethrough, the forward end portion of the passage flaring forwardly and outwardly to form a bell, an intermediate frusto-conical deflector projecting centrally into the bell in adjacent but spaced relation, the space between the bell and said intermediate deflector forming an annular forwardly and outwardly flaring port, said intermediate deflector having an axial passage therethrough which flares forwardly and outwardly at its forward end portion to form another bell, a frusto-conical end deflector projecting centrally into said other bell in adjacent but spaced relation, the space between said other bell and the end deflector forming another annular forwardly and outwardly flaring port, the end deflector having an axial passage therein from its inner end forwardly to a port short of its outer end, the apex of the intermediate deflector and the inner end of the axial passage therein being of reduced diameter relative to the axial passage in the body, the apex of the end deflector and the inner end of the axial passage therein being of reduced diameter relative to the axial passage in said intermediate deflector, there being jet passage means through the outer end portion of said end deflector communicating with the axial passage in said end deflector, and means connecting the body and said deflectors in rigid unitary relation.

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