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INJECTION NOZZLE

Filed April 3, 1945

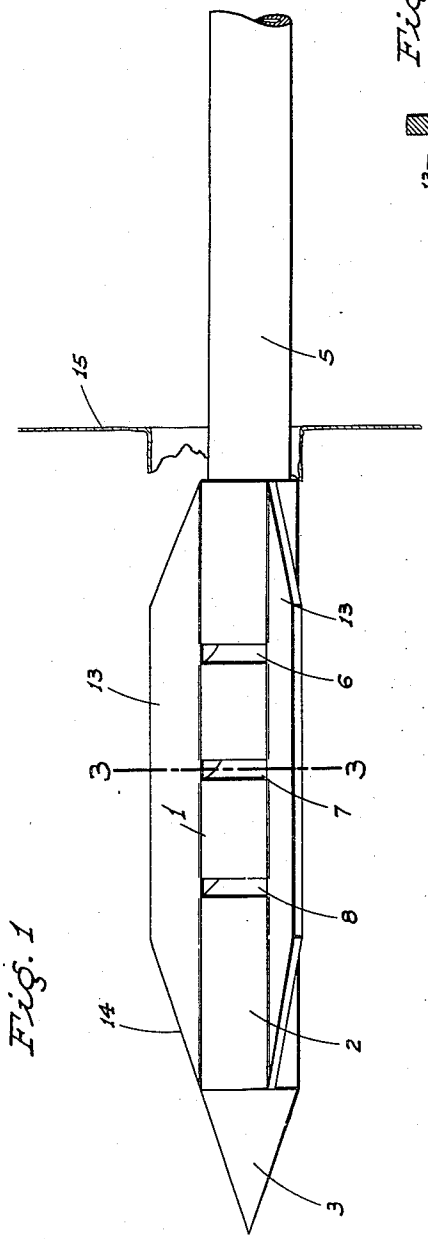


Fig. 1

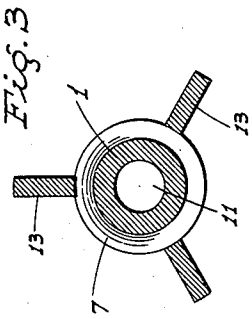


Fig. 3

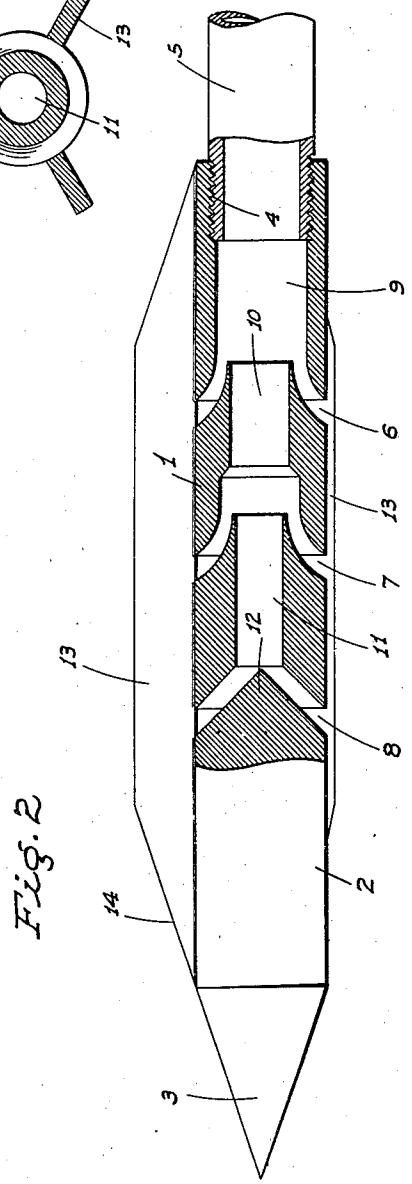


Fig. 2

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INJECTION NOZZLE

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3 Claims. (Cl. 299—110)

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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.

A further object of the present invention is to provide a fire fighting nozzle which is constructed and supported for injection, from an exterior point, into an enclosure within which a fire exists; said nozzle being adapted to pierce the enclosure for entry thereinto. For example, the nozzle is especially designed to pierce through sheet metal surfaces, such as on an airplane to gain access into the same, so that the fire extinguishing substance may then be discharged into the interior of such airplane to extinguish a fire therein.

Another object of the invention is to provide a fire fighting nozzle, as in the preceding paragraph, comprising a ported tubular body which is elongated and provided with a solid point on its forward end, and a tubular handle supporting the body axially at the other end and also serving to supply the fire extinguishing substance under pressure to said nozzle; the latter having a plurality of longitudinally extending, circumferentially spaced ribs projecting radially from the outside thereof to facilitate rupturing of the surface as it is pierced.

A further object of the invention is to provide a simple and inexpensive injecting nozzle, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the device as in use.

Figure 2 is an enlarged side elevation, mainly in section, of said device.

Figure 3 is a cross section on line 3—3 of Fig. 1.

Referring now more particularly to the characters of reference on the drawing, the improved fire fighting nozzle comprises an elongated cylindrical body 1 having a solid forward end portion or section 2 shaped at the front end as a sharp conical point 3.

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Rearwardly of the solid section 2 the body is tubular, being formed as will hereinafter appear in detail.

At its rear end the body 1 is threaded, as at 4, onto the forward end of a rigid tubular handle 5 of substantial length; said handle being adapted to be connected with a source of high pressure fire extinguishing substance, as for example a dry chemical fire extinguisher in powder form carried in a high pressure stream of nitrogen.

Rearwardly of the forward solid section 2 of the body 1, the latter is formed with a plurality of annular ports, indicated at 6, 7, and 8, disposed in spaced relation lengthwise of the body. Said annular ports flare forwardly and outwardly, as shown; the ports 6 and 7 having matching, arcuate sidewalls, whereas the port 8 has matching but straight sidewalls.

The body 1, which is tubular from its rear end forwardly to the solid section 2, is formed with an internal passage which progressively reduces in internal diameter from the rear end to the forward end of said passage, as follows:

The passage portion 9 between the forward end of the tubular handle 5 and the rear end of port 6, is of an internal diameter at least as great as that of said handle. The passage portion 10 between the rear ends of ports 6 and 7 is of reduced internal diameter relative to the passage portion 9, while the passage portion 11 between the rear ends of ports 7 and 8 is of reduced internal diameter relative to the passage portion 10. Beyond the forward end of the passage portion 11 the rear end of the solid section 2 of the body is formed as a deflecting apex 12.

On the outside thereof the body 1 is fitted with a plurality of longitudinally extending, circumferentially spaced ribs 13 which extend from the rear of the body 1 forwardly to the rear end of te point 3; said ribs being relatively heavy-duty and projecting radially out from the body. The ribs taper inwardly and forwardly at the front, as at 14, in matching relation to the taper of point 3.

In use of the above described injection nozzle it is grasped by the handle 5 and forcefully pierced through a wall 15 of the enclosure in which a fire exists; the point 3 making the initial opening in the wall, while the following ribs 13 facilitate rupturing of said wall and the passage of the nozzle therethrough. When the body 1 is fully penetrated into the enclosure, the fire fighting substance is fed through the handle 5 into the tubular or passage portions of the body 1; such substance being delivered from the ports

6, 7, and 8 at high velocity, whereby full and effective fogging of such substance is accomplished. In this manner fires within enclosures, such as within airplanes, may be effectively brought under control and extinguished.

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 to not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A fire fighting nozzle comprising an elongated cylindrical body of substantially the same cross sectional diameter throughout its length, a solid sharp conical point projecting from the end of the body, a pluraltiy of circumferentially spaced relatively flat thin ribs on the outer surface of the body and projecting radially out therefrom, the forward ends of the ribs tapering inwardly and forwardly in matching relation to the taper of the conical point and forming a continuation of such taper, the body being provided with a central bore and spaced discharge passages leading from the bore through the side wall of the body between the ribs.

2. A fire fighting nozzle comprising an elongated cylindrical body of substantially the same cross sectional diameter throughout its length. the body being provided with a pluraltiy of longitudinal bores which are concentric with the body and in axial alinement with each other, said bores being of progressively decreasing relative cross sectional diameters, the body being provided with a generally radially disposed passageway leading from the end of each bore to the outside of the body, said body being provided with a piercing element forwardly of the passages.

3. A nozzle as in claim 2, in which the passageways each flare outwardly and toward the outer end of the body.

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