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The present invention relates to a nozzle for automatic fire extinguishing devices. The invention is particularly directed to a nozzle type in which a closure body for the outlet opening of the nozzle is held in closing position by a safety element responsive to a certain temperature, for instance by a liquid filled ampule or vial or a soldered closure which at a certain alarm temperature is caused to burst or to melt.

It is an object of this invention with a nozzle of the above mentioned type, which may be termed a self-sealing nozzle, to assure the tightness or seal of the closure also if a pressure increase should occur in the fluid conduit.

It is a further object of this invention to provide a nozzle as set forth in the preceding paragraph which will be simple in construction and inexpensive in manufacture.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings illustrating an enlarged sectional view of a nozzle according to the invention.

The nozzle according to the invention is characterized primarily in that the seat for the closure body is arranged on a protrusion of the nozzle body which protrusion is yieldable in a resilient manner in response to a certain pressure of the extinguishing substance. Such protrusion may be provided as part of the nozzle body when forming the nozzle and by correspondingly dimensioning such protrusion so as to obtain a resilient yieldability. Such protrusion which may have the shape of a collar-like ring preferably consists of one piece with the nozzle body, i.e. is integral therewith, and may be formed out of the material of the nozzle body. In this way, a self-sealing nozzle will be obtained which can be produced at approximately the same costs as an ordinary nozzle without self-sealing ability.

Referring now to the drawing in detail, the nozzle body 1 is in customary manner designed as a nipple with outer thread 2 and an inner bore 3. The nozzle body 1 carries a yoke 4 with two legs and with a head 5 and is further provided with radially extending wings 6 forming a spray dish. The upper portion of the nozzle body is provided with an annular protrusion 7 and comprises a chamber 8 communicating with bore 3 through an opening 9. A truncated cone-shaped valve body 10 is inserted into the protrusion 7 and is held in its nozzle closing position in which the bore 3 is closed by said valve body 10 by means of a glass ampule or vial 11. This glass ampule 11 is clamped between the head 5 forming the upper bearing for said body 10 and the valve body 10 forming the lower bearing for said ampule 11. As will be seen from the drawing, the ampule 11 has a lower narrowing portion 12 which extends into the cavity of the valve body 10. The valve body 10 has its upper outwardly extending flange provided with a conical surface 13 pressed by said ampule 11 against a correspondingly shaped seat in the protrusion 7 through the intervention of a sealing ring 14 of polytetrafluoroethylene, also known under the name Teflon. The ampule 11 is filled with a liquid which at a certain alarm or release temperature will cause the ampule to burst. As a result thereof, the closure body 10 is released so that it will be lifted off its seat 13 by the pressure of the line system containing the extinguishing fluid. In this instance, the jet coming from bore 3 hits the dish 6 and will be sprayed all over the vicinity.

The annular protrusion 7 will when considering its annular width and the properties of the material from which it is made have such thin walls that it will be resiliently yieldable in the direction of the longitudinal axis of the nozzle. In this way the annular protrusion 7 will be able under the influence of the liquid pressure, which is also effective in chamber 8 and acts upon protrusion 7, to have its seat rest against the conical surface 13 of the valve body 10 at correspondingly increased pressure. The sealing pressure and thus the sealing effect of the closure will be correspondingly increased and this effect will be aided by the flat truncated coneshape of the annular protrusion 7. When a pressure increase in the line system of the extinguishing fluid calls for an increased seal, such an increased seal will automatically be obtained by the elasticity of the annular protrusion 7 with the effect that the seal will press against the conical surface 13 of valve body 10 at correspondingly increased pressure. The sealing ring 14 of Teflon will assure a tight engagement, also if a slight mutual displacement of the sealing surfaces should have occurred, while eliminating the necessity that the two surfaces completely and uniformly engage each other. On the other hand, the immediate lifting off of the valve body 10 without sticking or adhering effect will be assured. Instead of a Teflon ring, the seat of the annular protrusion 7 may also contain a tin seat as sealing means.

As will be evident from the drawing, the manufacture of the annular protrusion 7 during the manufacture of the entire nozzle body will be possible in a simple manner, for instance by turning out the chamber 8 from the body 10 of the nozzle. The nozzle body may be made as a single piece in spite of the self-sealing property of the nozzle. For purposes of increasing the resilient yieldability, the annular protrusion 7 may have a cross section with a wall thickness which slightly tapers toward the seat. Instead of by means of the ampule 11, the valve body 10 may be held in its closing position by a closure member soldered with a melting solder.

It is, of course, to be understood that the present invention is, by no means, limited to the particular construction shown in the drawing but also comprises any modifications within the scope of the appended claim.

What I claim is:

A nozzle arrangement responsive automatically to a certain temperature for fire extinguishing devices, which comprises: a nozzle body having axial passage means therethrough with an inlet connectable to a line containing fire extinguishing substance under pressure and provided with an outlet for conveying fire extinguishing substance to a place on fire, an annular flange yieldable axially of said nozzle body and formed integral with and of the same piece of the same material as said nozzle body and having an opening with a seat defining an outlet, a closure member normally resting on said seat, holding means to hold said closure member against said seat, said flange being yieldably pressed against said closure.
member by pressure of said fire extinguishing substance to hold said closure member against said seat to thereby cause said closure member to close said outlet, said holding means being operable in response to a certain temperature to become ineffective to thereby permit the pressure of the fire extinguishing substance in said passage means to lift said closure member off said seat.

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