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NOZZLE

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Fig. 1.

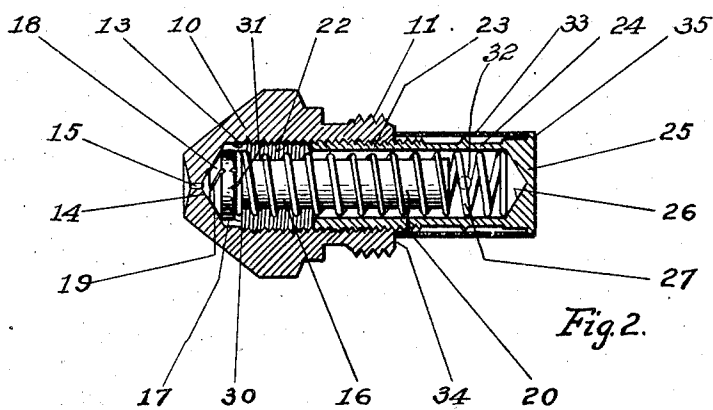
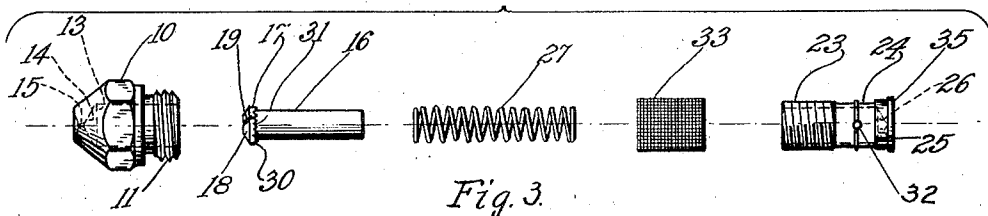
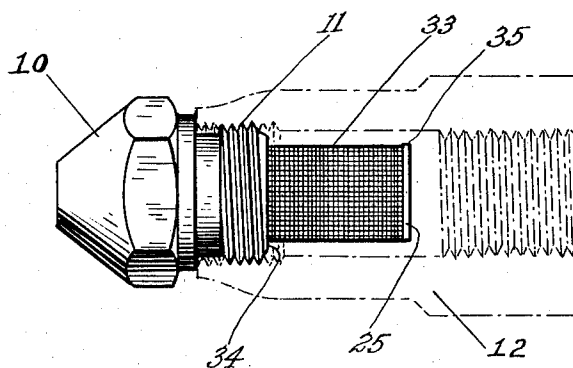


Fig. 2.

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NOZZLE

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2 Claims. (Cl. 299—120)

This invention relates to nozzles and more particularly to nozzles in which a terminal member is seated in a cavity in the discharge head. In such nozzles, the cavity in the discharge head terminates in a conical bottom which serves as a seat to receive a conical surface on the terminal member. Grooves in one of the conical surfaces provide passages for fluid past the seating conical surfaces to a discharge orifice extending through the head from the apex of the conical bottom of the cavity.

An important consideration in the design of such nozzles is the provision of a construction which will permit and attain proper seating of the terminal member in the conical seat in the head. Various constructions have been proposed for attaining this objective but none have been entirely satisfactory. It is also important that the parts be designed to make possible the most accurate machining thereof.

In accordance with the present invention a construction is provided such that as the parts are being assembled the terminal member is brought into engagement with its seat in the head and is rotated. At the same time the terminal member is supported so as to permit lateral and longitudinal self adjustment throughout its length. The construction is such that the parts of the nozzle may be assembled without tools and locked in position so they are not displaced in normal usage. Furthermore, the nozzle may be taken apart without the use of tools. In the most specific form of the nozzle, of the invention the long shank of the terminal member permits very accurate machining of the head.

The invention will be more clearly understood from the following description in conjunction with the accompanying drawing, in which:

Fig. 1 is an elevational view of a nozzle embodying the invention connected to a fitting forming part of the structure with which it is to be used.

Fig. 2 is a detail sectional view of the nozzle, and

Fig. 3 is a detail view of the nozzle with the parts separated.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of

description and not of limitation, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

A nozzle embodying the invention is illustrated in the accompanying drawing and comprises a head 10 provided with a threaded portion 11 to receive a fitting 12 forming part of the apparatus with which the nozzle is to be used. The head 10 is provided with a cavity 13 terminating in a conical bottom 14. A discharge orifice 15 extends from the apex of the conical bottom 14 through the head 10. A terminal member 16 is positioned within the cavity 13 and is provided with a head having a cylindrical portion 17 and a truncated conical portion 18. The conical surface 18 is provided with grooves 19. The terminal member is provided with a shank 20 of reduced diameter extending from the cylindrical portion 17 of the head outside of the cavity 13. The cavity 13 is large enough to permit lateral movement of the terminal member 16. The cavity 13 is provided with an internally threaded portion 22 adapted to receive the threaded portion 23 of an elongated sleeve 24. The sleeve 24 is provided with a closure 25 at its outer end having a conical cavity 26 upon its inner face. A coil spring 27 is fitted within the sleeve 24 so as to surround the shank 20 of the terminal member and provide clearance with both. One end of the spring 27 engages the cavity 26 and its other end engages a shoulder 30 adjacent the cylindrical portion 17 of the head. The shoulder 30 may be provided with a plurality of nicks 31 for a purpose to be described hereinafter. The sleeve 24 is provided with apertures 32 which are covered by a cylindrical wire mesh screen 33 extending between the inner end 34 of the head and an annular flange 35 formed near the outer end of the sleeve 24.

The major portion of the spring 27 is housed within the sleeve 24 which serves as a guide for the spring and assists the latter in approximately positioning the conical surface 18 of the terminal member in its proper seating relation to the conical surface 14 in the head 10. In assembling the parts of the nozzle the terminal member 16 is first placed in the cavity 13 with the conical surface 18 engaging the conical surface 14. The sleeve 24 having the spring 27 inserted therein is then threaded in the cavity 13. It will be noted that the spring 27 is at all times in engagement with the shoulder 30 and therefore tends to urge the conical surface 18 at all times in engagement with the conical surface 14. As the sleeve is threaded into the cavity the free end of the spring 27 tends to engage one of the nicks 31 in the shoulder 30

and consequently the terminal member 16, spring 27 and sleeve 24 tend to rotate in unison thereby facilitating proper seating of the surface 18 upon the surface 14. At the same time the terminal member 16 is free to move longitudinally and laterally and permit self-adjustment.

It will be noted that when the sleeve 24 has been threaded into the cavity the spring 27 tends to take up the play in the threaded connection between the sleeve 24 and cavity and thereby tends to offer resistance to unscrewing of the sleeve. Likewise the free ends of the wire mesh screen 33 tend to bite into the end 34 of the head and the annular flange 35 on the sleeve 24 and further tend to resist unscrewing of the sleeve 24. The wire mesh screen 33 also tends to exert a resilient force tending to urge the sleeve 24 axially outward and in this respect acts similar to the coil spring 27. In this manner the wire mesh sleeve 33 and the coil spring 20 tend to serve as a double lock preventing unscrewing of the sleeve 24 and consequent unseating of the terminal member 16. It will be further noted that the parts of the nozzle may be completely assembled and disassembled without the use of tools. Inasmuch as the terminal member projects outside of the cavity 13 it can be easily removed from the latter even if it should happen to stick. The elongated shank 20 tends to assist in aligning the terminal member so as to obtain proper seating thereof.

The head of the terminal member 16 including the cylindrical portion 17 and conical portion 18 should be as thin as the conical portion and the grooves 19 will permit in order to take advantage of the invention to the fullest extent. If, in assembling the parts, the terminal member is tilted, the spring 27 will exert pressure acting both transversely and longitudinally of the terminal member. This is particularly true if, as is generally the case, the spring is not absolutely straight. If the head of the terminal member is thin, the transverse pressure exerted by the spring 27 is practically negligible. On the other hand, if the head is thick, the effect of the transverse

pressure exerted by the spring is very substantial and tends to tilt the terminal member and prevent proper seating thereof.

I claim:

1. A nozzle comprising a body having a cavity terminating in a conical bottom, said body having a discharge orifice extending from said conical bottom, a terminal member with a head having a conical surface adapted to engage said conical bottom and having a shank extending from said head, the transverse dimension of said head being less than that of said cavity to permit lateral movement of said head and being greater than that of said shank to provide a shoulder, an apertured closure for said cavity threaded to said body, and a coil spring interposed between said shoulder and closure adapted, as said closure is threaded to said body, to hold said head yieldingly against said conical bottom and to transmit rotary movement to the terminal member and permit lateral and longitudinal movement thereof thereby permitting proper seating of said head against said conical bottom.

2. A nozzle comprising a body having a cavity terminating in a conical bottom, said body having a discharge orifice extending from said conical bottom, a terminal member having a head with a conical surface adapted to engage said conical bottom and having a shank extending from said head, the transverse dimension of said head being less than that of said cavity to permit lateral movement of said head and being greater than that of said shank to provide a shoulder, a sleeve threaded to said body and having a radially inward extending portion at its outer end, a coil spring interposed between said sleeve and shank with one end engaging said shoulder and its other end engaging said radially extending portion of the sleeve, and means on said shoulder adapted to cooperate with said spring to transmit rotary movement to said head while permitting lateral and longitudinal movement thereof as said sleeve is threaded to said body.

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