United States Patent

Clark

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[54] FIRE HOSE NOZZLE

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[52] **U.S. Cl.** **239/394**, 277/81

[51] **Int. Cl.** **A62c 31/02**

[58] **Field of Search** 239/390, 394, 436, 437, 451, 239/392, 393; 277/16, 70, 71, 72, 74, 75, 81; 251/207

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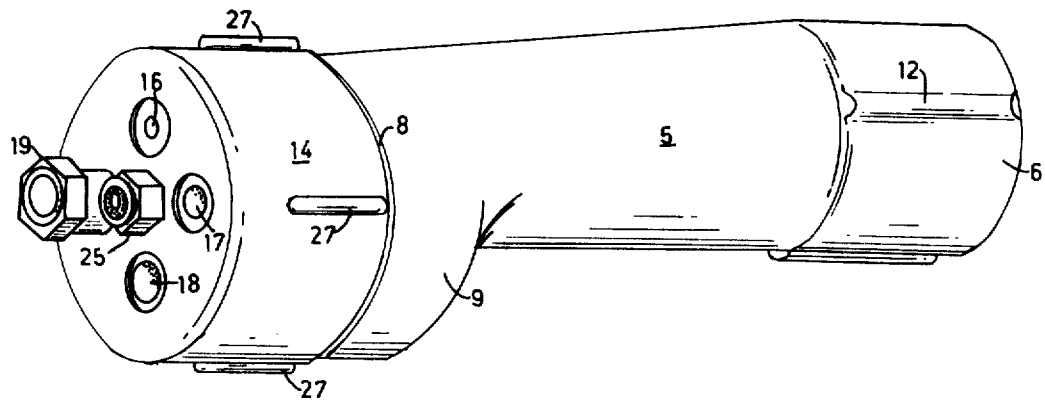
[57] **ABSTRACT**

A fire hose nozzle composed of a hollow handgrip portion and a rotatable nose section providing for the choice of any of a plurality of different sized jet. The handgrip portion has an offset enlarged end with a flat transverse face mounting a threaded stud and having an offset supply port connected with the interior of the handgrip portion. The nose section is mounted upon the stud and selectively tightened down by a nut onto the transverse face through a flat sealing washer of synthetic polymeric material to ensure a liquid-tight seal while permitting rotation of the casing.

5 Claims, 4 Drawing Figures



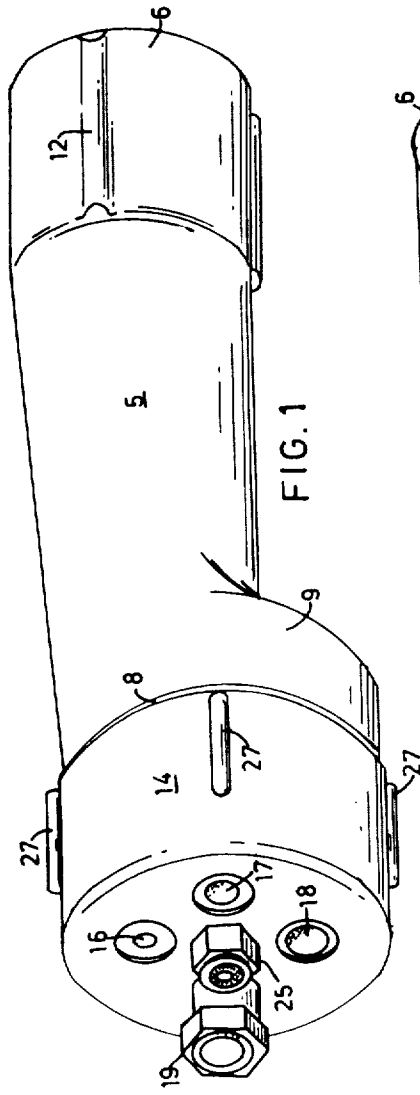


FIG. 1

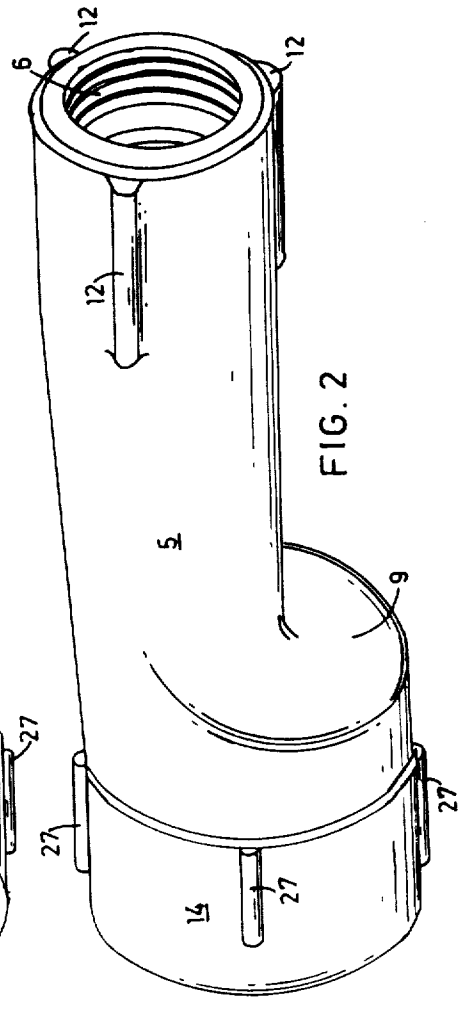


FIG. 2

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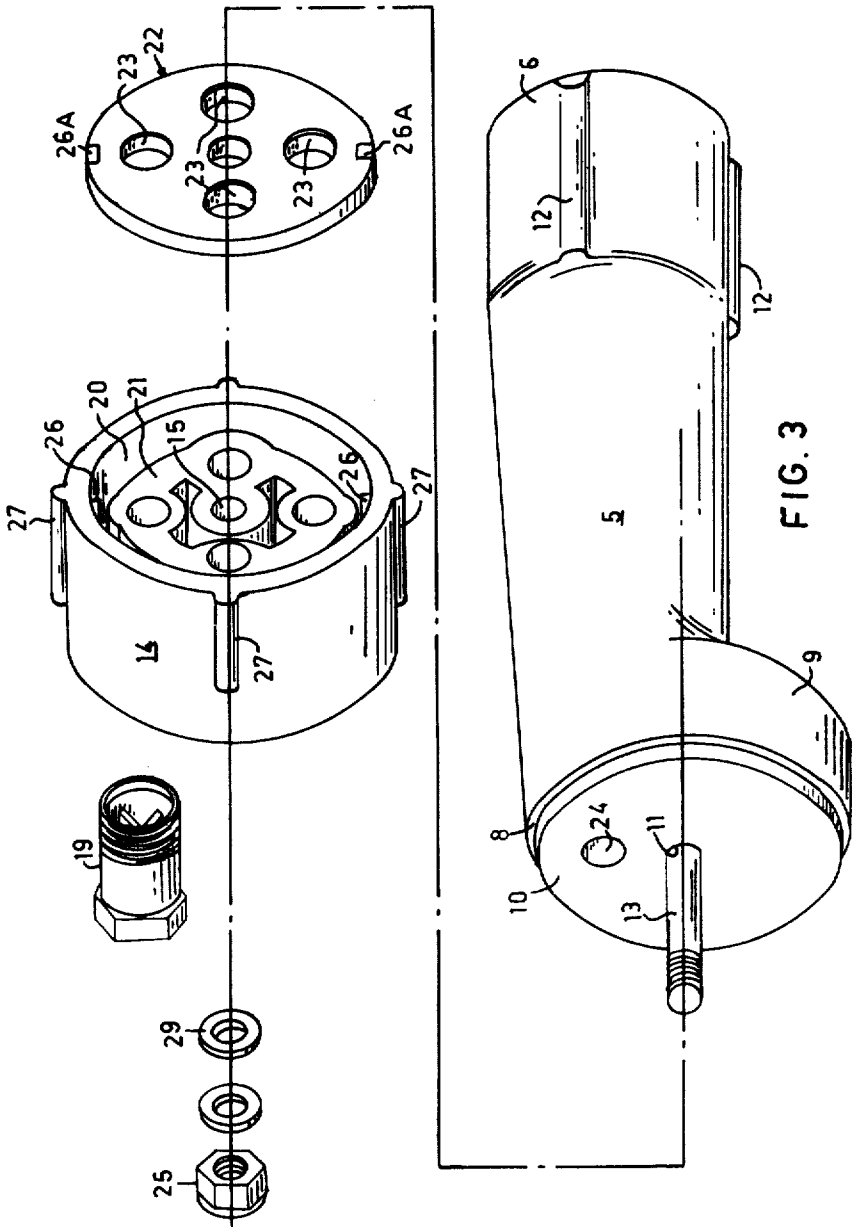
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FIG. 3

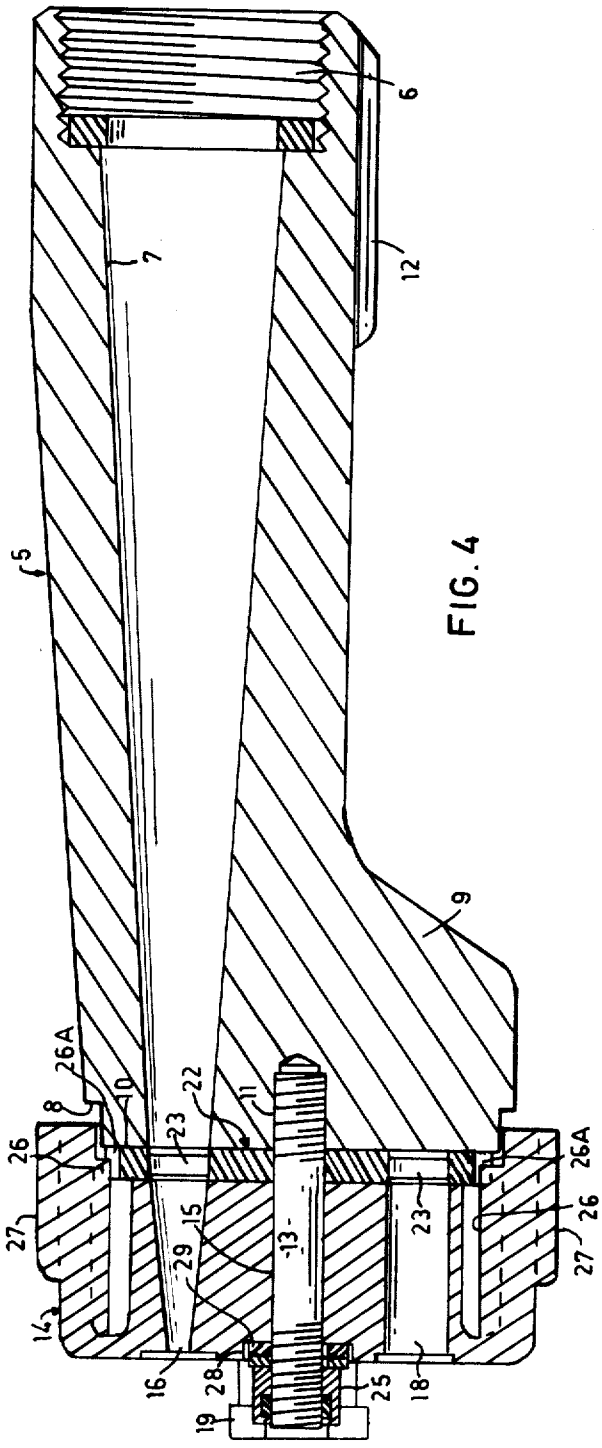

FIG. 4

FIRE HOSE NOZZLE

This invention relates to fire hose nozzles and more particularly to such nozzles provided with an adjustable jet.

One form of nozzle of this kind which has hitherto been produced comprises a hand-held metal base portion on the outer end of which is provided a rotatable casing. Several different size through jets in the casing may be moved into and out of register with a water supply port in the base by rotation of the casing. The casing and the base portions are held together by a set screw passing through the casing and screwed into a threaded socket in the base. A sealing washer of synthetic material is positioned between the casing and the base to effect a fluid-tight seal therebetween. Sealing against fluid leaks in the assembly is, therefore, dependent upon the degree of insertion of the set screw into its threaded socket.

As it is important to maintain ease of rotation of the casing with respect to the base for variation of available fluid jets from the nozzle, the degree of insertion of the set screw has been found to be critical and it has, therefore, been found necessary to arrange the length of the set screw and the depth of its threaded socket so that the set screw "bottoms" therein. The resulting friction between the screw and its socket thereby prevents variation in the screw adjustment with rotation of the casing. It is extremely difficult to achieve and maintain ready rotation of such a casing while ensuring proof against leaks and unscrewing of the set screw with casing rotation.

It is the principal object of this invention to provide a fire hose nozzle capable of providing a selection of different size fluid jets, which is substantially free from the above defects.

In one general form of the invention there is provided a fire hose nozzle comprising a base portion having a fluid supply port and being connectable to the hose or other fluid source, a jet casing rotatably mounted on said base portion and having through jets of different dimensions movable by rotation of said casing into and out of register with said fluid supply port, a threaded stud carried upon the base portion and protruding through a bore in the casing, a nut threaded upon the end of the stud to secure rotatable assembly of the casing to the base portion, and a sealing washer of synthetic polymeric material between the casing and the base portion to render the assembly leakproof.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a front perspective view of the fire hose nozzle of the invention;

FIG. 2 is a rear perspective view of the nozzle;

FIG. 3 is an exploded perspective view of the component parts of the nozzle; and,

FIG. 4 is a side elevation in section of the assembled nozzle.

According to the preferred embodiment of the invention shown in the drawings the fire hose nozzle consists of a hollow elongated truncated metal cone 5 having an adaptor socket 6 at one end for attachment to a fire hose, a foam container or to a fluid pump proper and having a tapering axial passage 7 extending from the socket 6 to the opposite end 8 of the cone 5. An integral offset cylindrical enlargement 9 is provided at

the truncated end of the base in the outer face 10 of which is medially formed a threaded socket 11. Longitudinal reinforcing and hand-gripping ribs 12 are provided at spaced intervals around the socket 6. The outer end surface of the base enlargement 9 is machine-finished to provide a spigot comprising the flat transversely extending face 10. A metal stud 13 threaded at opposite ends has its mounting end screwed tightly into the threaded socket 11 in the base portion 9.

A cylindrical metal casing 14, preferably die-caste, having an axial bore 15 for insertion over the outer end of the stud 13 is provided with a series of longitudinal jets 16, 17, 18 and 19 of different dimensions spaced from each other in a circular array around the axial bore 15. The casing 14 is provided on its face confronting the machined-surface 10 of the base with a cylindrical recess 20 whose floor 21 is similarly machined flat and parallel to the outer end face 10 of the base portion enlargement 9. Preferably, both confronting faces 10 and 21 have a reduced diameter so that mating male and female confronting end portions are formed in the base 9 and casing 14.

A fluid sealing washer 22 having a series of offset bores 23, arranged in a circumferentially uniformly spaced array, registerable with the outer end 24 of the tapering passage 7 of the base portion 5, is positioned between the confronting parallel surfaces 10 and 21 of the casing 14 and base 5. A self-locking nut 25 when screwed to the outer end of the stud 13 serves to hold the casing 14 to the base enlargement 9 with sufficient force to effect fluid seal therebetween while permitting manual rotation of the casing 14 with respect to the base enlargement 9. Keys in the form of longitudinal ribs 26 are provided in the inner wall of the recess 20 to locate in peripheral radial slots 26A in the sealing washer 22 and to ensure that it rotates with the casing 14. In this way the array of different dimensioned jets 16, 17, 18 and 19 in the casing 14 may be moved into and out of register with the end 24 of the passage 7 via the appropriate bore 23 in the sealing washer 22. One of these jets 19 may be a fog generator. As an alternative construction to the above, the washer 22 may be provided with a single offset bore 23 held permanently in register with the passage end 24 by keying of the washer 22 to the base portion enlargement 9 by pins or the like engaging in apertures in the washer 22.

The outer periphery of the casing 14 is preferably knurled or provided with gripping ribs 27 to facilitate its rotation. Preferably, also, the outer face of the casing may be provided with a cylindrical recess 28 about its medial bore 11 to accommodate an anti-friction washer 29. Both this washer 29 and the fluid sealing washer 22 referred to above are composed of synthetic polymeric material such as Nylon, Teflon or the like having anti-frictional and resilient qualities.

It will be seen with this assembly that ready adjustment may be effected to its tightness so as to maintain good fluid sealing and free rotation of the casing 14 at all times. The self-locking characteristic of the tightening nut 25 will ensure that rotation of the casing 14 does not affect the tightness of the assembly.

Whereas a specific embodiment has been described in the foregoing passages it is to be understood that other forms are possible within the scope of this invention.

What I claim is:

1. A fire hose comprising a base portion having a frusto conical stem, an offset enlargement on one end of the stem and having a flat end face, a fluid supply passage extending through both the stem and the enlargement and tapering from an adaptor socket at the other end of the stem to said flat end face, a stud with a threaded outer end upstanding from the center of said face and spaced from said fluid supply passage, a cylindrical spigot formed on said enlargement and about the flat face, a substantially cylindrical end casing rotatably mounted by a central bore upon the stud and having a plurality of through jets of different dimensions spaced in an array around the central bore, a socket in one end of the casing, a flat sealing washer of synthetic polymeric material located within the socket and keyed to the casing to rotate therewith, said washer being mounted by a central hole over the stud and having an array of bores each in register with an end of a respective through jet in the casing, and an assembly nut screwed on the end of the stud to hold said spigot in a liquid-tight fashion within said socket and thereby to hold said casing to said base portion while permitting rotation between the casing and the base portion.

2. A fire hose nozzle comprising a base portion having a stem, an offset enlargement on one end of the stem and having a flat end face, a fluid supply passage extending through both the stem and the enlargement and tapering from an adaptor socket at the other end of the stem to said flat end face, a stud with a threaded outer end upstanding from said face and spaced from said fluid supply passage, a cylindrical spigot formed on said enlargement and about said flat end face, a substantially cylindrical end casing rotatably mounted by a central bore upon the stud and having a plurality of through jets of different dimensions spaced in an array around the central bore, a socket in one end of the casing, a flat sealing washer of synthetic polymeric material located between the socket and said end face of the enlargement, said washer being mounted by a central hole over the stud and having at least one bore for register with said fluid supply passage and one of said through jets, and an assembly nut screwed on the end of the stud to hold said spigot in a liquid-tight fashion within said socket and thereby to hold said casing to said base portion while permitting rotation between the casing and the base portion.

3. A fire hose nozzle according to claim 2, comprising keying means on the casing locking the sealing washer for rotation therewith, said sealing washer having a circumferentially spaced array of said bores disposed around the central hole, each bore being in register with a respective one of the through jets in the casing.

4. A fire hose nozzle according to claim 3, wherein said keying means are internal longitudinal ribs in the casing engaging in peripheral radial slots in the sealing washer.

5. A fire hose nozzle according to claim 2, comprising a second sealing washer positioned between the nut and the casing, said casing having a recess surrounding one end of the bore therein and accommodating said second sealing washer.

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