United States Patent [19]

Specht

[11] **3,784,113**

[45] **Jan. 8, 1974**

[54] **NOZZLE**

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[73] Assignee: **American La France Inc.,** Willoughby, Ohio

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[21] Appl. No.: **288,017**

[52] **U.S. Cl.** **239/460,** 239/541, 239/583, 251/251

[51] **Int. Cl.** **B05b 1/30**

[58] **Field of Search** 251/251, 252, 256; 239/456, 459, 460, 539, 537, 541, 583

[56] **References Cited**

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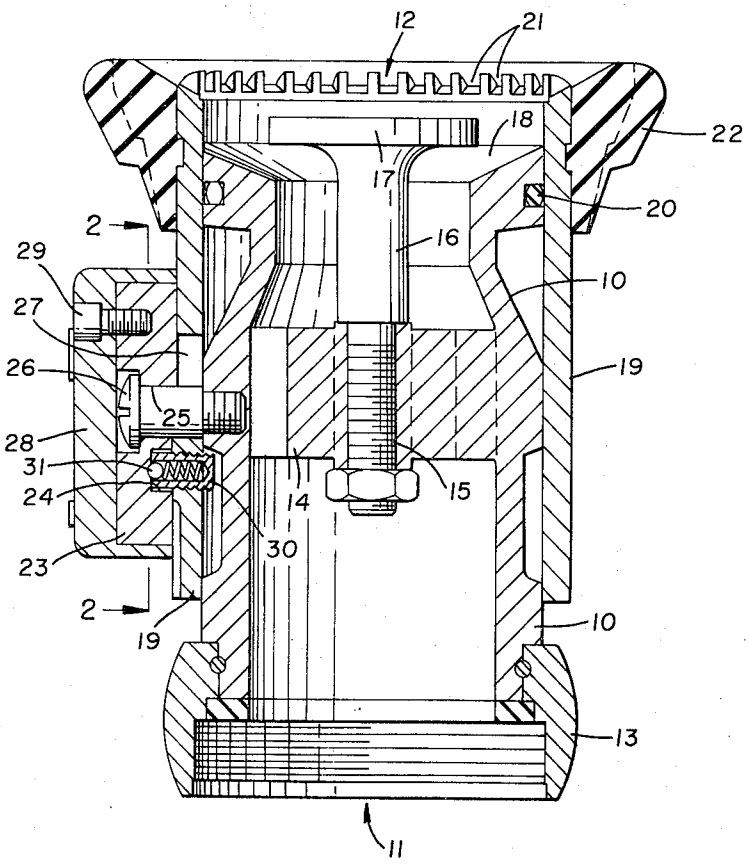
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Assistant Examiner—John J. Love
Attorney—Webster B. Harpman

[57] **ABSTRACT**

A fire hose nozzle of the high constant gallonage class positions a cylindrical stream pattern sleeve for reciprocal motion around and about a beveled discharge orifice in the nozzle which includes a centrally positioned baffle. A rotatable dial on the nozzle has a cam channel therein engaging a detent on the cylindrical sleeve for imparting reciprocal motion thereto, the cam channel being so formed that rotation of the same to predetermined positions locates the pattern forming sleeve so as to provide a straight stream, narrow fog or wide fog patterns as desired.

8 Claims, 4 Drawing Figures



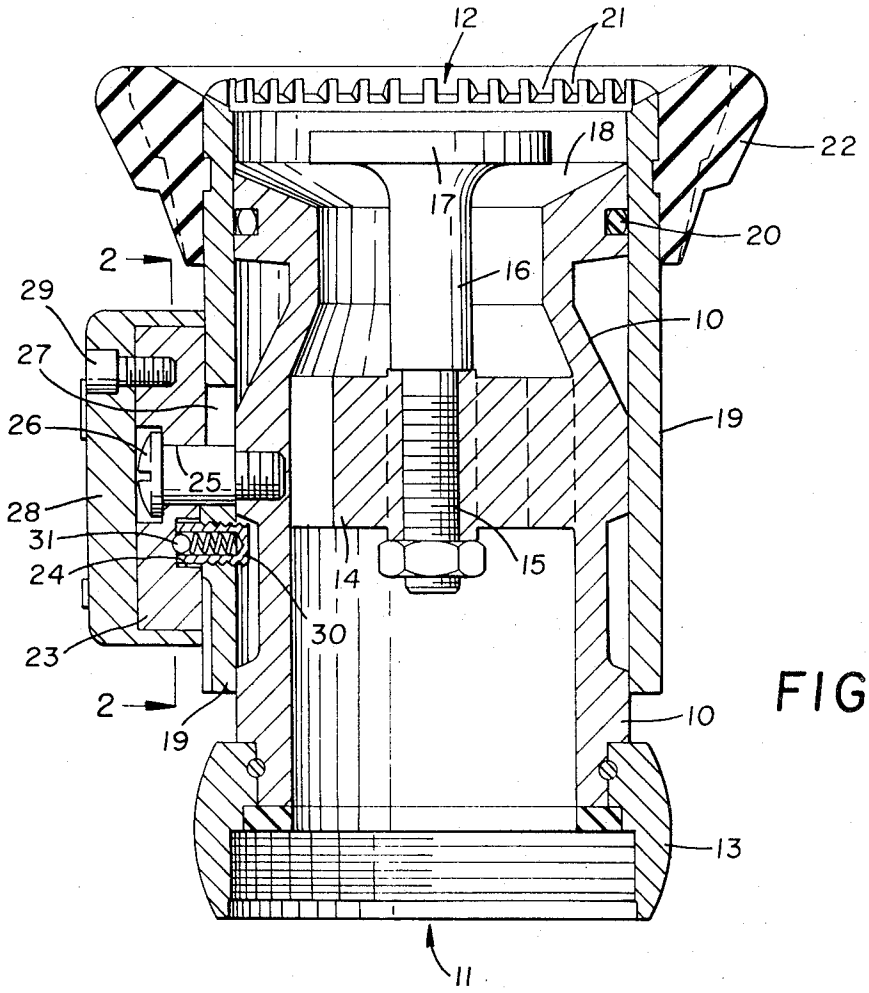

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FIG. 1

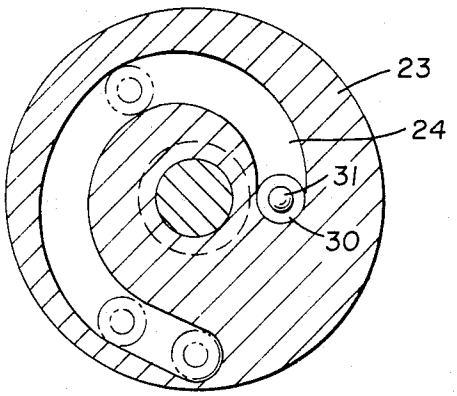

23
24
31
30

FIG. 2

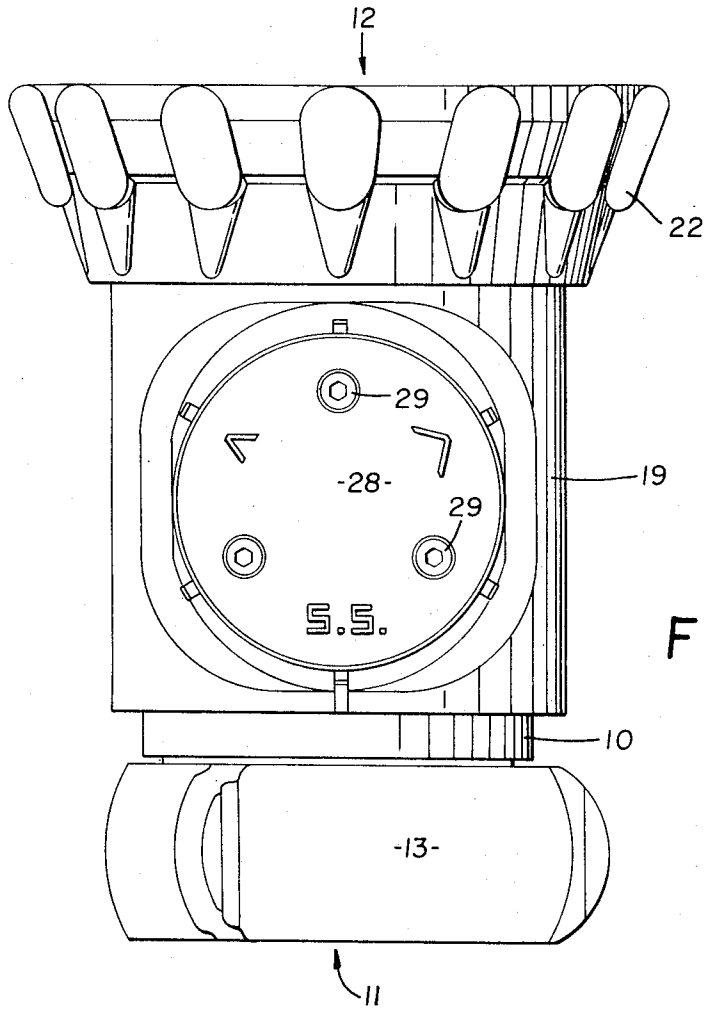


FIG. 3

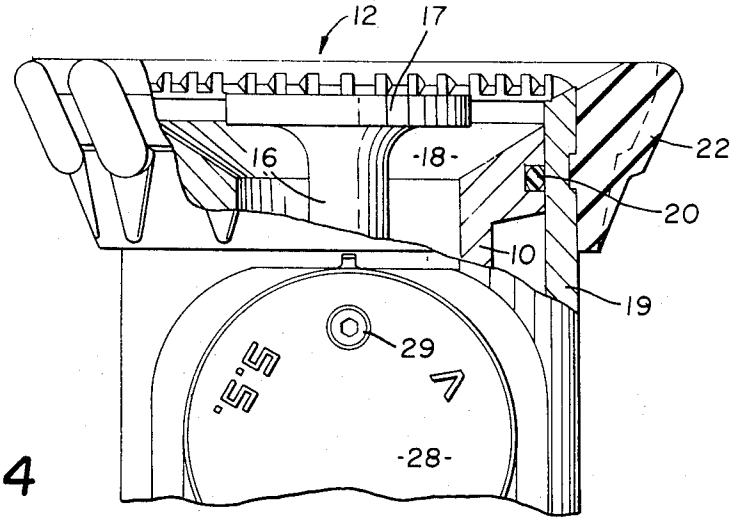


FIG. 4

NOZZLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to nozzles of the fire fighting type which are adjustable to selectively provide either a straight stream or a fine dispersion generally termed fog.

2. Description of the Prior Art

Prior structures of this type move a centrally positioned baffle relative to a beveled discharge opening as in U.S. Pat. Nos. 2,552,445, 2,565,457, 2,806,741 and 2,938,673. Still other nozzle of the general type rotate a cylindrical sleeve on the exterior of the nozzle body as by following a thread pattern or similar configuration as in U.S. Pat. Nos. 2,552,445, 2,991,016 and 3,150,829.

This invention simplifies and improves the construction and the operation of the nozzle by reciprocating the stream pattern forming sleeve on the nozzle body relative to the discharge orifice and more particularly by imparting the reciprocating motion to the sleeve by a dial incorporating a cam channel of irregular pattern arranged so that equally spaced locations on the dial result in full stream narrow fog and wide fog patterns of ideal distribution pattern and without the necessity of hunting for a particular pattern desired.

SUMMARY OF THE INVENTION

A fire fighting nozzle of the high constant gallonage class has a fixed nozzle structure with a beveled discharge opening and a circular baffle positioned adjacent thereto with a reciprocal stream pattern forming sleeve movable thereon by a control dial having a cam channel formed therein registering with and moving a detent on said sleeve, the configuration of the cam channel being such that predetermined equally spaced locations on the control dial result in predetermined desirable discharge pattern results when the nozzle is actuated and set by selecting the desired pattern on the control dial.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross sectional elevation of the nozzle.

FIG. 2 is a vertical section on line 2—2 of FIG. 1.

FIG. 3 is a side elevation of the nozzle showing the exterior thereof and the control dial and

FIG. 4 is a side elevation of a portion of the nozzle seen in FIG. 2 with parts broken away and parts in cross section.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the form of the invention chosen for illustration herein the nozzle consists of a body **10** having an inlet end **11** and a discharge end **12** with a coupling **13** secured thereto about the inlet end **11** so that the nozzle can be attached to a coupling on a fire hose. The nozzle body **10** has a web **14** transversely thereof inwardly from the ends thereof which is centrally apertured as at **15** so as to receive and mount a stem **16** which supports a circular baffle **17** in spaced relation to an annular beveled surface **18** which defines a discharge orifice of the nozzle body **10.** A pattern forming sleeve **19** is reciprocally mounted on the exterior of the nozzle body **10** and sealed with respect thereto by an O-ring **20.** The upper end of the sleeve **19** has a plurality of circumferentially spaced, diamond shaped serrations **21** which serve to break up fluid passing through the nozzle and directed thereagainst by the baffle **17** into a fine dispersion known as fog. An annular rubber bumper **22** surrounds the serrations **21** in the outer end of the sleeve **19** and protect the same and is so shaped as to form an annular beveled extension of the angular base portions of the diamond shaped serrations **21.**

Those skilled in the art will observe that by repositioning the sleeve **19** with its serrated end in various positions relative to the circular baffle **17** and the discharge path thereabout, the stream of fluid passing through the nozzle can be altered from a straight stream to a wide fog pattern.

Means for imparting reciprocal movement to the sleeve **19** is provided so that the nozzle may be desirably adjusted when in use and such means consists of a cam body **23** having a cam channel **24** formed therein as best seen in FIG. **1** and **2** of the drawings. By referring thereto in particular it will be seen that the cam body **23** is centrally apertured as at **25** and rotatably mounted with respect to the sleeve **19** and the nozzle body **10** by a pivot bolt **26** positioned through the aperture **25** and engaged in a threaded opening in the nozzle body **10.** A longitudinally extending slot **27** is formed in the sleeve **19** and the pivot bolt **26** engages the sides of the slot **27** in a slidable manner so as to permit reciprocal motion of the sleeve **19** relative to the pivot bolt **26.**

The cam body **23** is substantially enclosed by a cam cap **28** which is fastened thereto circumferentially spaced fasteners **29.** By referring now to FIG. **3** of the drawings it will be seen that the cam cap **28** is provided with indicia consisting of the letters S.S. indicating a solid stream location, a widespread V and a conventional V indicating wide and narrow fog pattern locations respectively. It will be observed that these are equally spaced circumferentially of the face of the cam cap **28.**

It will thus be seen that rotary motion imparted the cam cap **28** will rotate the cam body **23** in which the cam channel **24** is formed. In order that such motion may be translated to receiprocal motion a detent **30** is positioned in a side wall of the sleeve **19** and extends outwardly and inwardly thereof as best seen in FIG. **1** of the drawings, the outer end having a drilled opening therein in which a spring pressed ball **31** is located. The sides of the detent **30** slidably engage the cam channel **24** and depressions formed in the bottom of the cam channel **24** corresponding with the straight stream narrow fog and wide fog discharge pattern locations are engaged by the spring urged ball **31** when the same is moved thereinto.

It will thus be ssen that when the cam cap **28** is rotated the sleeve **19** will move longitudinally of the nozzle body **10** and thus vary the discharge pattern of the liquid flowing therethrough.

In FIG. **1** of the drawings, the sleeve **19** is shown spaced longitudinally of the circular baffle **17** and the discharge pattern will comprise a straight fluid stream.

By referring to FIG. **3** of the drawings, the exterior of the device will be seen in such position and it will be observed that the letters S.S. are at the lower portion of the dial indicating the straight stream being produced by the nozzle. At the same time the spring urged ball **31** has registered with a depression in the bottom

of the cam channel **24** thereby holding the nozzle in the desired setting.

In FIG. **4** of the drawings, the sleeve **19** has been moved to a position close to the circular baffle **17** and a wide fog pattern will be produced. The wide V symbol on the cam cap **28** will so indicate.

Those skilled in the art will observe that by predetermining the most desirable discharge patterns and indexing the same in the cam channel **24** the nozzle of the invention may be easily and quickly set to the desired discharge pattern. It will also be observed that the nozzle as disclosed is a constant gallonage nozzle by reason of the fixed position of the baffle **17** relative to the discharge orifice defined by the annular beveled opening **18** in the upper end of the nozzle body **10** and the fact that the lowermost portion thereof is of lesser area than any other portion of the fluid way through the nozzle body **10.**

It will further be seen that the coupling **13** is secured to the nozzle body **10** in the manner of a swivel so that the dial and its indicia may always be positioned in an easy to see and manipulate location relative to the hose or pipe to which the nozzle may be attached.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention.

I claim:

1. A nozzle having a body defining a conduit having an inlet end and an outlet end, a sleeve telescopically positioned about said body having a stream forming portion extending beyond said outlet end, a circular baffle carried by said body and positioned adjacent said outlet end thereof, said body and sleeve including coacting means to cause relative longitudinal movement, said means including a perpendicular pivot on said body extending outwardly through a longitudinally extending slot in said sleeve, a cam body rotably mounted on said perpendicular pivot, a cam channel in said cam body adjacent said sleeve and a detent on said sleeve engaging said cam channel.

2. The nozzle of claim **1** and wherein the cam channel is of irregular configuration so as to move the sleeve in different degrees relative to said rotation of said cam body.

3. The nozzle of claim **1** wherein said channel has depressions therein therealong, and a spring urged ball in said detent registers with said depressions to hold said cam body in predetermined relation to said detent.

4. The nozzle of claim **1** and wherein said outlet end of said body has an annular bevel extending inwardly to an area of smaller diamer.

5. The nozzle of claim **4** and wherein said circular baffle is of larger diameter than said area of smaller diameter in said body.

6. The nozzle of claim **1** and wherein said baffle is carried on a web centrally of said body.

7. The nozzle of claim **1** wherein indicia on said cam body corresponds with predetermined positions of said sleeve relative to said body and the resultant discharge pattern.

8. The nozzle of claim **1** wherein said cam body is circular and an indicia carrying flanged cap is positioned thereover and secured thereto so that rotary motion imparted said cap and body will move said sleeve longitudinally of said body.

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