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NOZZLE

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2 Sheets-Sheet 2

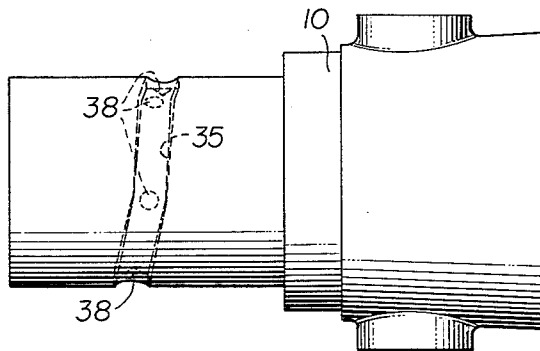


FIG. 4

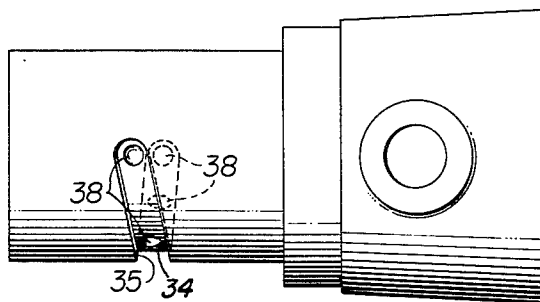


FIG. 5

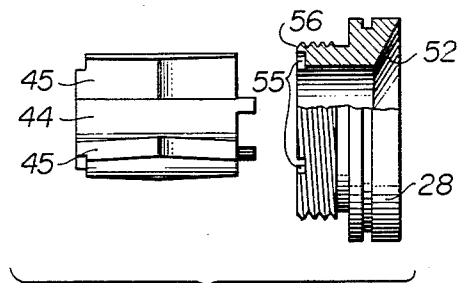


FIG. 6

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NOZZLE

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This invention relates to nozzles, and more particularly, fire fighting nozzles of the type which are adjustable to selectively provide either a straight stream or a fine dispersion, generally termed as "fog" with separately selective gallonage control.

There are a number of reasons why different gallonages of nozzle output are desired. For example, the supply of water available for fighting one fire may be materially different than the supply available for fighting another fire. Volunteer fire departments are often called upon to fight fires with a supply of water essentially obtained from tank trucks, or the like. At other times, they may be called upon to fight fires where ample supplies of water under good pressure are available. When there is a limited supply of water available, it is desirable to conserve that water supply. On the other hand, when there is an ample supply of water available, the water can be used freely. Further, the amount of water needed is dependent on the size of the fire and the stage of the fire. With a small fire it is desirable to limit the amount of water used to avoid excessive water damage.

Prior practice has often been for fire fighting organizations to maintain both a set of large fire fighting nozzles and a set of small nozzles. This has been done to provide the desired flexibility in fire fighting apparatus which permits a fire fighting organization to use either low or high quantities of water.

This invention provides one nozzle which permits an operator to quickly and accurately select the appropriate one of a plurality of gallonages for the circumstances presented to him. The nozzle is constructed to permit the operator to shut the nozzle off, change gallonages, and immediately turn the nozzle back on to meet varying needs in fighting a fire without undue delay such as might be experienced in changing from one nozzle to another. At the same time, the nozzle is so constructed that once it is in operation, it is a constant gallonage nozzle and the operator cannot accidentally or intentionally vary the gallonage of the nozzle without first turning the nozzle off. The gallonage selection provided is completely independent of any adjustment of stream contour or character. Conversely, the stream contour adjustment cannot effect the gallonage adjustment.

Constant gallonage is desirable in a nozzle equipped with a foam producing apparatus. In modern fire fighting technique an apparatus known as an "eductor" or a "proportioner" is often connected into and forms a part of the fluid supply line to the nozzle. These eductors are Venturi type apparatuses which draw detergents or other foam producing substances into the fire fighting fluid. The foam increases the fire smothering efficiency of an emitted stream. The efficient operation of a Venturi is dependent on relatively critical and constant flow of fluid through it. Therefore, the use of a variable gallonage nozzle in combination with an eductor results in inefficient operation of the eductor.

Another reason for constant gallonage is that adjustments in the nozzle which vary the gallonage flow, will

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throw a damaging strain on a supply pump. The danger of such strain creates a necessity for constant surveillance of the pump. The nozzle of the present invention reduces the need for surveillance because the gallonage will not be altered without forewarning by a nozzle operator.

Another reason for the necessity of constant gallonage, is that when two or more fire fighting nozzles are supplied by a common source of fluid under pressure, an adjustment of one nozzle which causes a variation in the gallonage will effect the other nozzles. If the persons operating the other nozzles are not forewarned of such changes, injury can result. Further, variation in the gallonage is certain to change the efficiency of any eductor and alter the quantity of introduced foaming agents.

Accordingly, one of the principal objects of this invention is to provide a novel and improved nozzle which may be operated in one of a plurality of preselected constant gallonage adjustment positions.

Another object of the invention is to provide a nozzle which can be quickly and accurately adjusted to a desired preindexed gallonage without effecting the stream contour adjustments.

A further object of the invention is to provide a nozzle which permits the operator to select a desired gallonage, but prevents the operator from accidentally or intentionally altering the gallonage of the nozzle once the nozzle is placed in operation.

Conversely, another object of the invention is to provide an adjustable constant gallonage nozzle which must be shut off completely prior to alteration of the gallonage to thereby prevent such alteration without notice to others using the same source of water supply.

Yet another object of the invention is to provide a nozzle having a baffle which is selectively movable axially to either of two preselected positions to provide a dual gallonage nozzle.

Another of the principal objects of this invention is to provide a constant gallonage nozzle which is also selectively adjustable to provide either fog or straight stream emission.

Yet another object of the invention is to provide a novel and improved nozzle which has a plurality of selectable, predetermined gallonages, but which nonetheless when placed in operation is a constant gallonage nozzle having stream contour adjustment.

Heretofore it has been difficult to manufacture nozzles having stream adjustment provided by relative rotation of a base and a sleeve for axial shifting of the sleeve and base. Prior to this invention, it has been customary to assemble a nozzle, place it on a test rack, and operate it in a straight stream position. Only by such elaborate procedure could stream locating markers be placed on the nozzle parts.

Accordingly, another object of this invention is to provide a novel and improved fire fighting nozzle which can be made and completely assembled without the necessity of placing it on a test rack to locate stream position indicia.

Another and related object of the invention is to provide a nozzle having a body member and a sleeve member which is relatively movable to obtain stream adjustment in which relative rotation of the members causes such adjustment and in which the amount of rotation from each adjustment position to each contiguous adjustment position is uniform.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a sectional view along the axis of the

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novel and improved fire fighting nozzle of the present invention;

Figure 2 is a fragmentary sectional view of the device of Figure 1 as seen from the plane of cross section with the relatively adjustable parts shifted to a fog emission position;

Figure 3 is a fragmentary sectional view of the nozzle of Figure 1 as seen from the plane of cross section with the baffle shifted to a second constant gallonage position;

Figure 4 is a top plan view of the base member of the nozzle;

Figure 5 is a side elevational view of the device of Figure 4; and

Figure 6 is an exploded view partly in cross-section of the novel spider employed in this invention and the throat collar member.

In the drawings and in Figure 1 in particular, a nozzle N is disclosed which includes a fluid conduit in the form of a body 10. The body has a through fluid passage 24. At a first or inlet end 11 the body 10 is threaded to receive an annular adapter 12. The adapter 12 is a body extension which carries an annular swivel 13. The swivel 13 has internal threads 14 for connecting the nozzle to a male fire hose connector. A plurality of balls 15 are provided to facilitate relative rotation of the swivel 13 about the adapter 12. A gasket 16 is also provided. The gasket 16 serves to form a fluid type connection between a fire hose male coupling element and the adapter 12.

The reference character 19 identifies a ball-type shut off valve which is carried by the body 10 adjacent the inlet 11. The shut off valve has a handle 20 which is connected to a trunnion 21. A ball 22 is rotated approximately 90° by movement of the handle 20 and the connected trunnion 21. In Figure 1 the valve is shown in a shut off position with a ball passage 23 disposed with its axis normal to the axis of the nozzle. The ball 22 may be rotated 90° to align the passage 23 with the body passage 24 and thereby permit fluid to pass through the nozzle.

Adjacent an outlet or delivery end 27 of the base 10 the nozzle is formed to control both the volume and the contour of an emitted stream of fluid. Part of this stream control is provided by an annular throat collar 28 which is rigidly secured to the body 10 at the outlet end 27. The throat collar 28 is an extension of the body or conduit 10 and is therefore a part of the conduit or body. The connection may be formed by threads 29 with a suitable gasket 30 being provided to insure fluid tight integrity between the body 10 and the collar 28.

A tubular sleeve 31 is carried by the body 10. The sleeve 31 has a smooth cylindrically contoured inner surface 32 which is in sliding engagement with both the peripheral surface of the body 10 and the peripheral surface of the throat collar extension of the body 28. The body and the sleeve 31 are relatively movable both axially and rotatively.

A cam groove 35 is formed in the peripheral surface of the body 10. A cam groove follower 36 is threaded into an aperture 37 in the sleeve 31. The cam groove follower 36 extends into and coacts with the cam groove 35. As the sleeve 31 is rotated relative to the body 10, the coaction of the cam groove 35 and the follower 36 causes relative axial movement of the sleeve 31 and the body 10.

The relative axial movement of the sleeve 31 and body 10 is used to control the contour of an emitted stream. When the sleeve 31 or stream choke means is in the advanced position of Figure 1 the emitted stream is choked into a straight stream. When the sleeve 31 is in the retracted position of Figure 2 a wide angle fog is emitted. Intermediate adjustments are obtainable by

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locating the sleeve in positions intermediate the extremes of Figures 1 and 2.

A plurality of depressions 38 are formed in base 34 of the cam groove 35. A ball type detent 39 is carried in the cam groove follower 36. The detent 39 is urged by a spring 40 into engagement with the base of the cam groove 35. The spring 40 urges the ball detent 39 into each of the depressions 38 when there is alignment between the detent and a depression. As will subsequently be described in more detail, this action locates the various desired streams for the operator.

In the illustrated embodiment, a cuff 41, formed of rubber, is provided. The cuff 41 is peripherally carried by the sleeve 31. The cuff 41 is formed to facilitate gripping by the hand of an operator and thereby facilitate relative rotation of the sleeve and base.

One of the advantages of the invention is that the depressions 38 are uniformly spaced circumferentially speaking. This uniform spacing permits uniform adjustment rotation from one adjustment position to a contiguous adjustment and minimizes the danger of over adjustment.

Varying degrees of relative axial movement between the sleeve 31 and the body 10 are required when shifting the nozzle from one desired stream adjustment position to another. Thus, to move the sleeve from 60° fog position to 30° fog position, for example, requires less relative axial movement than to shift from either of the fog positions to straight stream. Even though this is true, the novel arrangement of the present invention permits the operator to use the same amount of rotation for adjustment from any stream position to a contiguous stream position. Figures 4 and 5 show that the pitch of the cam groove 35 varies in the segments of the groove between each adjacent pair of depressions to achieve this desired uniform rotation characteristic.

Previous proposals have provided threaded interconnection between a sleeve and body to cause relative axial movement upon relative rotation of the two. With such a construction it was necessary to put a nozzle on a test rack and adjust it while in operation to a straight stream position. Thereafter appropriate indicia were put on the nozzle parts to indicate the location of each stream. The cam and follower construction of the present invention permits a nozzle to be made and assembled without operating the nozzle to locate the various streams.

A spider 44 is carried in the body 10. The spider 44 has a plurality of legs 45. Preferably there are three legs 45 which are in sliding abutment with inner surface 46 of the body 10. The sliding abutment permits relative axial and rotational movement, but substantially prevents relative radial movement. A baffle 43 having a stem 47 and a head 48 is also provided. The baffle stem 47 projects through an axial aperture in the spider 44 and is fixed to the spider by a nut 49. The nut 49 is threaded onto an end of the baffle stem 47. Coacting flats 50 are provided on the baffle stem 47 and the spider 44 to prevent relative rotation of the spider and stem.

The throat collar 28 has an inner surface 53 which defines the outlet end of the through fluid passage in the nozzle. The throat collar 28 has a flaring annular surface 52 which defines a segment of a cone. The throat surface 52 flares radially outwardly from the throat inner passage surface 53.

The baffle head 48 is a water diverting head. It is a circular body which is concentric with the conical surface 52 and the inner surface 53 of the throat collar 28. It will be seen that the baffle head 48 is of greater diameter than the throat through passage surface 53.

Another of the outstanding advantages of the invention is provided by the coaction of the baffle head 48 and the conical surface 52. The baffle head 48 and the conical surface 52 together define an annular orifice 54 which is a flow or gallonage control constriction. This

flow control constriction assures constant gallonage. The throat control constriction 54 is designed to provide the smallest cross-sectional area across the fluid path through the nozzle in whatever adjustment position the nozzle is placed. Forward shifting of the sleeve 31 to the position of Figure 1 permits the sleeve to bend an emitted stream into a straight stream. As examination of Figure 1 will reveal, the cross-sectional area of the space between the sleeve and the baffle head is preferably substantially greater than the cross-sectional area of the orifice 54. The gallonage of this nozzle under all operating conditions is constant.

Retraction of the sleeve to the position shown in Figure 2 permits an emitted stream to be a so-called 120° fog stream. Any desired number of stream contours between these two extremes can be obtained by selective positioning of the sleeve and by formation of an appropriate number of depressions 38. Even though the nozzle is so adjustable, the volume of water flowing through the nozzle is constant because the constriction 54 controls the volume. Thus, the disclosed nozzle is a constant gallonage nozzle even though it is selectively either a fog or a straight stream nozzle.

The outstanding advantage of this invention is that while the nozzle is constant gallonage when in operation, the operator may nonetheless select the desired gallonage before turning the nozzle on. The operator may also quickly and accurately change gallonages to meet varying conditions as a fire is being fought. Thus, once most of a fire has been put out the operator may conclude the fire fighting operation without undue water damage and without changing nozzles to avoid such damage. This advantage is achieved by providing a baffle which is axially shiftable to one of a plurality of preselected positions. In the preferred and disclosed embodiment there are two such positions.

The throat collar has a radial inner end surface 56 which lies essentially normal to the axis of the nozzle. The throat collar 28 has a plurality of slots 55 formed in the inner end 56. There is one slot 55 for each spider leg 45, and both the spider legs and slots are preferably uniformly spaced angularly. With the preferred number of three legs 45 and slots 55, each leg and each slot is located 120° from the other two legs and slots respectively.

A spring 58 is interposed between a body shoulder 59 and the spider 44. The spring 58 urges the spider 44 forward against the throat collar 28. In Figure 1 the legs 45, of the spider 44, are disposed in the slots 55 of the throat collar 28. This is a maximum gallonage position with the baffle head 48 a maximum distance from the surface 52. If an operator wishes to change to a minimum gallonage, he must first shift the ball shut off valve to the position of Figure 1 to stop the flow of water. He then simply presses the baffle head 48 inwardly or rearwardly and rotates it. This action shifts the baffle head 48 and the connected spider 44 in against the action of spring 58. The rotation takes the legs 45 and the slots 55 out of alignment. When the operator releases the inward pressure, the spring 58 urges the spider 44 forward so that the legs 45 contact the end surface 56 in the position shown in Figure 3. This is the minimum gallonage position of the disclosed and preferred nozzle.

The reverse adjustment from minimum to maximum gallonage is achieved when the operator simply rotates the baffle head 48 until the legs become aligned to the slots 55. The legs 45 will then snap into the slots 55 under the urging of the springs 58. This is the position of Figure 1.

It will be seen that the construction so described prevents an operator from accidentally changing the gallonage of his nozzle. If he intends to change the gallonage, he will remember to warn other fire fighters who may be operating connected nozzles or pumps of the action he is about to take. Further, the operator of this nozzle automatically gets the maximum performance out of a

connected eductor. It is not necessary for him to adjust the nozzle until the appropriate gallonage is provided. Further, the operator cannot unknowingly and accidentally alter the gallonage of his nozzle and thereby unknowingly reduce the efficiency of a connected eductor.

While the invention has been described with a great deal of clarity and detail, it is believed that it essentially comprises a constant gallonage nozzle which may be used in any of a plurality of selectively obtainable fluid emission patterns. A device has also been described in which adjustment from one stream to another is obtainable with a uniform amount of relative rotation and which can be manufactured and assembled without rack testing before the nozzle is completed. A nozzle has also been described which while constant gallonage also has the advantage of permitting an operator to preselect that gallonage.

Although the invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim:

1. A nozzle for use with a fire hose, said nozzle having a through water conduit, said nozzle having an outlet at one end, baffle means having a head and a support portion in said conduit, said baffle means head being spaced from said outlet end and being of a diameter greater than that of said conduit adjacent said outlet end, resilient means interconnecting said conduit and said baffle means and urging the latter away from said conduit outlet, and said nozzle having longitudinally spaced stop means between said conduit and said baffle means which may be selectively engaged to determine the spacing between said baffle and the outlet of said conduit.

2. The device of claim 1 wherein said stop means are between said conduit and said baffle support means.

3. In a fire fighting nozzle having a body defining a through fluid passage and means to adjust the contour of a fluid stream emitted from the passage at its outlet end, the improvement which comprises, a baffle carried in said passage and having an elongated stem and an enlarged circular water diverting head spaced from said outlet end, said baffle having a greater diameter than the diameter of said passage adjacent said outlet end, said baffle being longitudinally movable relative to said body, spider means maintaining said baffle and passage in coaxial relationship, said baffle having a plurality of longitudinally spaced fluid rate of flow control positions, said nozzle including a plurality of longitudinally spaced stop means, said baffle being operably connectable to said stop means one at a time to locate each of said positions, and resilient means urging said baffle into a selected operative connection to hold the baffle in a selected position.

4. The device of claim 3 wherein the resilient means is a spring which urges the baffle head away from said outlet stream control surface.

5. In a fire fighting nozzle the improvement which comprises, a conduit member having a through fluid passage and a discharge end, said conduit having a flared discharge end stream contour surface, a baffle member having an elongated stem and an enlarged head of a diameter greater than the inside diameter of said discharge end surface, spider means in said conduit and holding said conduit and baffle in coaxial relationship, said baffle and conduit being relatively movable longitudinally to a plurality of longitudinally spaced preselected gallonage control positions, said baffle head and said surface being spaced at a preselected distance and defining a constricting throat therebetween when said members are in each of said positions, indexing stop and holding means operably connecting said members to index the members into said preselected positions one at a time, and a stream contour control sleeve

telescoped around said members and axially movable relative to said members, said sleeve having a greater water carrying capacity at all times than the constricting throat defined by the members in each of said pre-selected positions.

6. A fluid dispersing nozzle comprising, a fluid conduit member having a through fluid passage and a delivery end opening, a baffle member located in said end opening, said baffle member being located in spaced relationship to said fluid conduit member, said baffle member including an enlarged head having a diameter greater than the conduit passage adjacent the delivery end, said baffle and conduit members jointly defining an annular orifice, said baffle and conduit members being formed to impart a maximum fog spray character to a fluid stream emitted through said orifice, means interposed between the baffle member and the conduit member and rigidly interconnectable with both of the members when the device is in operation to prevent relative rotative adjustment movement and relative longitudinal movement of the members to maintain the water carrying capacity of said orifice at a constant value, and stream choke means selectively positionable around said orifice and said baffle member head, said choke means having a greater water carrying capacity than said orifice under all operating conditions, whereby the emitted fluid may be gathered into any desired degree of reconstituted stream.

7. An adjustable constant gallonage fire fighting nozzle comprising an elongated tubular body having a through fluid passage and first and second open ends, the first end being connectable to a fire hose coupling element or the like, the body having an outwardly flared annular flow control surface adjacent said second end, said surface defining a segment of a cone, a spider carried by said base and disposed in said passage, a baffle having an elongated stem and an enlarged circular water diverting head, the baffle stem being connected to said spider, said spider and baffle each being held in a preselected axial position, the baffle head being of greater diameter than the inside diameter of said base surface and being spaced from the base surface to coact with the base surface to control the flow of fluid through said nozzle, and an axially shiftable tubular open ended sleeve having a smooth cylindrically contoured inner surface, the sleeve being telescoped over said body and the sleeve inner surface being in slidable engagement with the body, the sleeve and body being relatively axially shiftable to first and second extreme positions, the first extreme position being an advanced straight stream position, the second extreme position being a retracted fog position, the baffle and the body conical surface being spaced to provide a constricting throat to control the flow of fluid through said nozzle, means interposed between the baffle and the body and rigidly interconnectable with both of the baffle and the body when the device is in operation to prevent relative rotative adjustment movement and relative longitudinal movement of the baffle and the body, the sleeve when in the straight stream position being disposed about the baffle head in spaced relationship therewith, the cross-sectional area of the space between the baffle head and inner surface being greater than the cross-sectional area of said constricting throat.

8. In an adjustable fire fighting nozzle, a tubular body having a through fluid conducting passage terminating at an outlet end, the body being a rigid member of predetermined and fixed length, a spider positioned in the passage and connected to the body, a baffle carried by the spider and having a stem disposed along the axis of the passage, the baffle having a head of a diameter greater than the diameter of the passage adjacent the outlet end, said nozzle including means interposed between the baffle and the body and rigidly interconnecting the baffle and the body when the device is in operation to prevent relative rotative adjustment movement and relative longitudinal

movement of the members when the nozzle is in operation to define a flow control annular throat, a sleeve slideably connected to the body for relative axial movement, said sleeve being shiftable from an advanced to a retracted stream control position, and said sleeve having a greater water carrying capacity at all times than said throat.

9. The device of claim 1 wherein a stream choke means is positioned around said conduit and longitudinally movable relative to said conduit to deflect an emitted stream of water and thereby selectively vary the character of the emitted stream, said choke means having a greater water carrying capacity in all positions than the space between the baffle and the outlet of said conduit.

10. The device of claim 6 wherein the means interposed between the baffle and the body members includes at least one notch formed in one of the members and at least one projection formed on the other of the members and disposed within the notch when the device is in operation.

11. The device of claim 6 wherein baffle member and conduit member are relatively movable longitudinally to a selected one of a plurality of gallonage positions when the device is not in operation and wherein the means interposed between the baffle member and the conduit member includes means to index said member into the selected one of said positions and maintain the members in such selected position when the device is in operation.

12. The device of claim 6 wherein the conduit members and the stream choke means are tubular elements telescoped together and wherein one of the elements has an adjustment cam groove in a surface thereof and disposed transversely to the axis of the nozzle, and wherein a cam follower is carried by the other element and projects into the groove, and wherein the groove has a smooth guiding side wall abutable with the follower to cause relative axial movement of the elements upon relative rotation thereof.

13. The device of claim 12 wherein the guiding side wall has a plurality of segments each of different pitch than the remaining segments.

14. The device of claim 12 wherein the groove has a base with a plurality of spaced depressions therein and wherein said follower includes spring actuated detent means selectively engageable one at a time with an aligned one of said depression.

15. In a fire fighting nozzle having a body having a through open ended fluid conduction passage and a sleeve carried thereby in axially shiftable relationship for adjusting the contour of an emitted stream, the improvement comprising, an annular throat collar fixed to the body adjacent the outlet end of the body through passage, the throat collar having inner and outer ends, the throat collar having a fluid passage therethrough, the collar inner end having a plurality of axially extending slots opening towards the inlet end of said body, a spider carried in said body and having a plurality of legs extending radially outwardly past the extremities of the throat fluid passage, a baffle having an elongated stem extending through the throat passage and connected to the spider, the baffle also having an enlarged circular head concentric with the throat passage, said baffle being of greater diameter than the throat passage, the baffle and spider being axially and rotatively movable relative to said body and throat, the spider legs being disposable in said slots in a first adjustment position, the spider legs being engageable with said throat collar inner end to provide a second adjustment position, the baffle head and throat collar outer end defining a constricting flow control passage, and resilient means carried by the body and urging said spider legs into abutment with the throat collar.

16. In a fire fighting nozzle having a body having a through open ended fluid conduction passage and a sleeve carried thereby in axially shiftable relationship for adjust-

ing the contour of an emitted stream, the improvement comprising, an axially movable spider carried in the body through passage, the body having first and second longitudinally spaced adjustment stop means, the spider being selectively positionable to a first adjustment position to engage the first stop means and to a second adjustment position to engage the second stop means, resilient means urging the spider against said stop means, and a baffle having an enlarged head coactable with one of said body ends to provide a fluid flow control construction, said baffle having a diameter greater than said body passage, the cross sectional area of said constriction being of greater diameter than the inside diameter of said base surface and being adjustable to first and second preselected sizes by the selective positioning of said spider.

17. An adjustable constant gallonage fire fighting nozzle comprising an elongated tubular body having a through fluid passage and first and second open ends, the first end being connectable to a fire hose coupling element or the like, the body having an outwardly flared annular flow control surface formed adjacent said second end, said surface defining a segment of a cone, a spider carried by said base and disposed in said passage, a baffle having an elongated stem and an enlarged circular water diverting head, the baffle stem being connected to said spider, said spider and baffle being held in a preselected axial position, the baffle head being of greater diameter than the inside diameter of said base surface and being coactable with the base surface to control the flow of fluid through said nozzle, and an axially shiftable tubular open ended sleeve having a smooth cylindrically contoured inner surface, the sleeve being telescoped over said body and the sleeve inner surface being in sliding engagement with the body, the sleeve and body being relatively axially shiftable to first and second extreme positions, the first extreme position being an advanced straight stream position, the second extreme position being a retracted fog position, the body having an adjustment cam groove in the periphery thereof, a cam groove follower carried by the sleeve and disposed at least in part within said groove, the follower and groove being coactable to cause relative axial movement of the sleeve and body from the first to the second extreme position upon relative rotation, the baffle and the body conical surface being spaced to provide a constricting throat to control the flow of fluid through said nozzle, the sleeve when in the straight stream position being disposed about the baffle head in spaced relationship therewith, the cross sectional area of the space between the baffle head and sleeve inner surface being greater than the cross sectional area of said constricting throat.

18. A constant gallonage fire fighting nozzle comprising, an elongated tubular body member having a through fluid passage and first and second open ends, an annular adapter fixed to the body first end, an annular swivel rotatably connected to the adapter, the swivel having internal threads for connection to a male fire hose connecting element, a ball type shut off valve carried by the body adjacent said body first end, an annular throat collar fixed to the body second end, a spider carried by said body and having a plurality of legs in said through passage, the spider being rotatably and axially movable relative to said body and substantially held against radial movement, the spider being disposed between the throat collar and the shut off valve, the throat collar having a smooth inner end surface located in a radial plane, the collar having a plurality of slots extending longitudinally from said collar inner surface, the spider legs being selectively receivable in said slots to provide one flow control position, the spider legs being shiftable out of said slots and positionable against the collar inner end surface to provide a second adjustment position, said body having an inwardly projecting annular shoulder adjacent said shut off valve, a spring interposed between said spider and said shoulder and urging said spider into said adjust-

ment positions, a baffle having an elongated stem, the stem having first and second ends, the stem first end being connected to said spider, the throat collar having an outer end flow control surface, the baffle having an enlarged circular head fixed to the stem second end, said head having a greater diameter than the inside diameter of said throat collar, the baffle head and said throat collar flow control surface together defining an annular gallonage control constriction, a tubular sleeve having a cylindrically contoured inner surface in sliding engagement with the periphery of said body and said throat collar, a cam groove in the periphery of said body, and a cam follower carried by said sleeve and projecting into said groove, said cam follower and groove coacting to cause relative axial movement of the body and the sleeve on relative rotation of the sleeve and body whereby to adjust the contour of an emitted stream of fluid.

19. In a fire fighting nozzle having a body defining a through water conducting passage, an annular outlet stream control surface and means to adjust the contour of an emitted stream the improvement which comprises, a spider disposed in the passage, a baffle having an enlarged circular head in spaced relationship with said stream control surface, said baffle having a diameter greater than said stream control surface adjacent said outlet end, said baffle also having an elongated stem extending longitudinally from one side of the head, the baffle being carried by the spider and longitudinally disposed in said passage, the baffle being longitudinally and rotatively shiftable relative to said body, said nozzle including a plurality of longitudinally spaced groups of stops, said baffle being selectively operably connectable to each group of stops one at a time to provide selective spacing adjustment positions between said head and said surface, a spring carried by said body and in operative connection with said baffle, said spring urging said baffle into operative connection with the selected group of stops, said spaced baffle head and surface together defining a flow control constricting throat therebetween limiting the rate of fluid flow through the nozzle, the rate of flow being a different preselected rate for each such adjustment position.

20. A fire fighting nozzle comprising an elongated tubular body member having an open ended through fluid passage, the first end being connectable to a fire hose coupling element or the like, the body having an outwardly flared annular flow control surface formed adjacent said second end, a spider carried by said base and disposed in said passage, a baffle carried by the spider and having an elongated stem and an enlarged circular water diverting head, said baffle being held in a preselected axial position, and an axially shiftable tubular open ended sleeve member having an inner surface, the body having an outer surface, the sleeve being telescoped over said body and the sleeve inner surface being in sliding engagement with the body outer surfaces, the sleeve and body being relatively axially shiftable to first and second extreme positions, the first extreme position being an advanced straight stream position, the second extreme position being a retracted fog position, the sliding surface of one of the members including an adjustment cam groove, a cam groove follower carried by the other of the members and disposed at least in part within said groove, the follower and groove being coactable to cause relative axial movement of the sleeve and body from the first to the second extreme position upon relative rotation thereof, said baffle head and the body conical surface being spaced to provide a constricting throat to control the flow of fluid through said nozzle, the sleeve when in the straight stream position being disposed about the baffle head in spaced relationship therewith, the cross-sectional area of the space between the baffle head and sleeve inner surface being greater than the cross-sectional area of said constricting throat, said body including a plurality of longitudinally spaced sets of stops, said baffle being selectively operably connectable with said sets

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of stops one set at a time to provide pre-selection of throat area, and resilient means carried by said body and in operable connection with said baffle to urge said baffle into operative connection with a selected group of stops whereby to provide a device in which a constricting rate of flow control throat is provided and in which the baffle may be placed in one of a plurality of selectable positions to provide a desired cross-sectional area in the constricting throat.

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