Nov. 28, 1933. F. HANLAN 1,937,427

SHEET METAL HOSE NOZZLE

Filed July 24, 1931

FIG. 1.

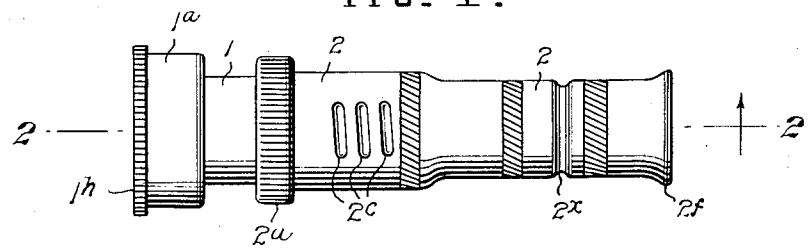


FIG. 2.

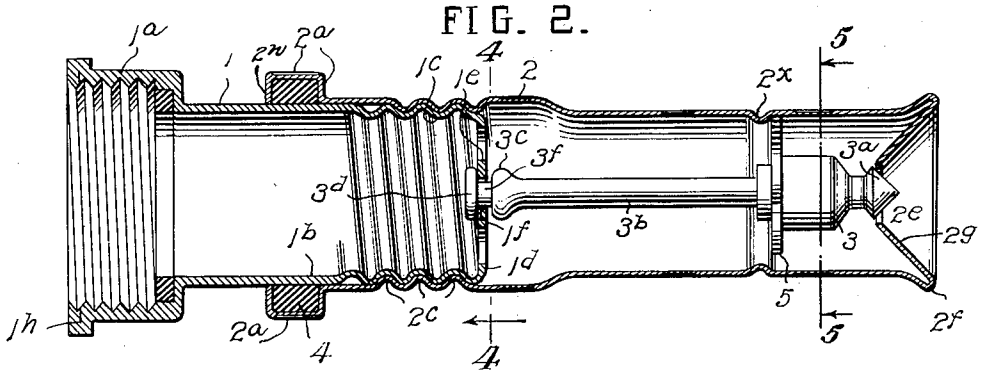


FIG. 3.

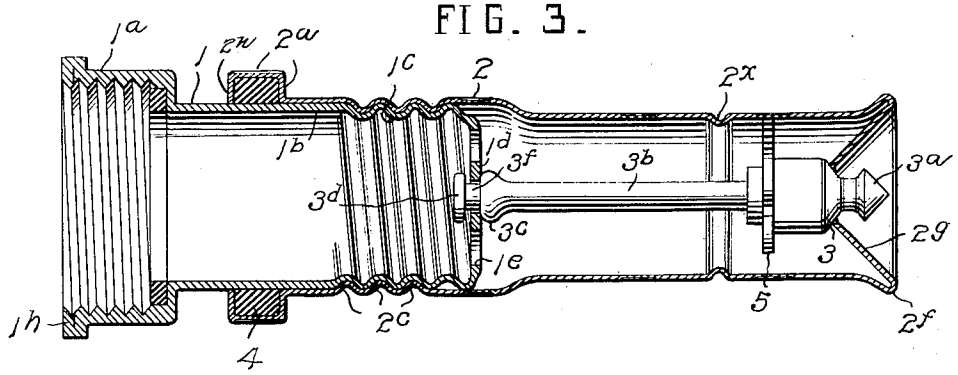


FIG. 4.

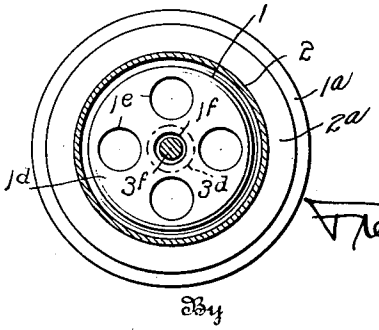
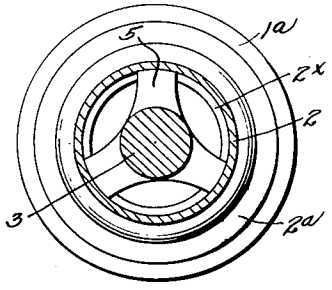


FIG. 5.



Inventor

Frederick Hanlan

By

Alexander Sell

Attorneys

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SHEET METAL HOSE NOZZLE

Frederick Hanlan, Battle Creek, Mich., assignor to H. B. Sherman Manufacturing Company, Battle Creek, Mich., a corporation of Michigan

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4 Claims. (Cl. 299—131)

This invention is an improvement in sheet metal hose nozzles and in the method of making same, said nozzles being of the general type shown in Sherman and Hanlan Patent No. 1,508,993, issued September 16, 1924; and the principal object of the present invention is to provide a novel nozzle, and method of making same from two pieces of sheet metal, excluding the spray point per se, as distinguished from the three part structure shown in the above mentioned patent, the part eliminated in my nozzle, and by my method being the usual stuffing box nut which holds the packing washer and completes the assembly in the old style nozzles.

A further object is to provide the sleeve with interrupted internally projecting rolled threads for engaging the threads on the base spindle to make the nozzle screw up and down and thereby open and close the valve in the nozzle. The interrupted thread is used rather than a continuous one since it creates a better outward appearance of the nozzle and comprises the equivalent of a corrugated hand hold, and furthermore it prevents the danger of drawing the shape of the sleeve or movable barrel out of alignment as might be the case if a completely rolled thread were applied at that point.

A further object is to provide a novel method and means for preventing separation of the sleeve and spindle when assembled, by rolling an internally projecting flange in the sleeve which will engage the centering spider on the valve stem and prevent the movable sleeve or barrel from screwing off from the base portion or spindle when assembled, while permitting sufficient movement of the parts to operate the valve.

Still further objects are to provide a nozzle which will be very neat in appearance; simple and economical to manufacture; and efficient in operation; also a nozzle which will throw a uniform spray, or stream, and by which the water can be absolutely shut off when desired.

The accompanying drawing illustrates a nozzle embodying my invention which will be explained with reference thereto; and the claims set forth the essential features of the invention, and novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawing:

Fig. 1 is a side view of the complete nozzle.

Fig. 2 is an enlarged longitudinal sectional view of the nozzle, opened.

Fig. 3 is a similar view thereof showing the nozzle closed.

Fig. 4 is a transverse section on the line 4—4 of Fig. 2.

Fig. 5 is a transverse section on the line 5—5 of Fig. 2.

The nozzle as shown comprises a spindle 1 and a base or hose-end portion 1*a*, which are preferably formed integrally of sheet brass. The base 1*a* is internally threaded for engagement with the nipple of a hose in the usual manner. The spindle is tubular and cylindric and is adapted to telescope into the sleeve 2, hereinafter described, and is provided adjacent the base 1*a* with a smooth outer surface portion 1*b*, and beyond this portion with a rolled threaded portion 1*c*, for engagement with the interrupted rolled threads 2*c* of the sleeve 2; and beyond the threaded portion 1*c* with an end portion 1*d* which is provided with offset openings 1*e*, (Fig. 4) and an axial aperture 1*f* for reception of the end of the valve stem 3*b*, hereinafter referred to. The base 1*a* and spindle 1 are preferably made integrally from sheet brass by successive drawing operations, and the outer end of the base 1 is thickened by doubling to form an exterior stiffening flange 1*h*.

Slidably mounted upon the spindle 1 is a sleeve 2, which is preferably made from sheet brass by drawing operations, and is longer than the smooth portion 1*b* of the spindle 1 and is adapted to telescope thereupon. The inner end of sleeve 2 which is nearest the base 1 is of such internal diameter as to slip over and loosely fit on the spindle 1*b*, and at the inner extremity of the stem is a hollow flange 2*a* in which is seated a packing washer 4 which is preferably enclosed by inturning the end 2*n* of the flange after the washer is inserted. The washer 4 slides upon the portion 1*b* of the spindle and prevents leakage of water between the spindle and sleeve. The above punch press operation of closing the end of flange 2*a* around the washer furthermore obviates the necessity of threading the inner end of the sleeve and applying the usual stuffing box nut thereto with the washer confined in the nut, thereby eliminating the usual nut entirely and saving the cost of the usual threading and assembling operations in connection therewith. The washer or gasket 4 confined in the part 2*a* of the sleeve makes a close water-tight slidable joint between the spindle and sleeve.

The sleeve 2 is roll threaded adjacent the part 2*a* to engage the rolled threads 1*c* of the spindle so that by turning the sleeve on the spindle the sleeve will be advanced or retracted longitudinally of said spindle. The threads 2*c* on the mov-

able sleeve which engage the threads 1c on the spindle preferably comprise interrupted internally projecting rolled threads 2c (see Fig. 1). This method permits the use of much lighter metal in the movable sleeve than is possible in the old nozzle where the threads were internal and had to be cut on a lathe, and a thickness of metal had to be allowed for the cutting away of the thread, while leaving a wall of sufficient thickness at the base of the thread for proper strength. This interrupted thread is used rather than a continuous one; first, because it creates a better exterior appearance of the nozzle and is the substantial equivalent of a corrugated hand hold; and second, it obviates the danger of drawing the shape of the sleeve out of alignment as might be the case if a complete rolled thread were applied at that point.

The sleeve 2 has its outer end closed by an integral head 2g, the metal of the sleeve being bent inwardly upon itself as at 2f to form this part 2g, and the inturned portion forming the head. In the center of the part 2g is formed an axial aperture 2e for the escape of water, which aperture is adapted to be closed by a valve 3.

The valve 3 and its stem 3b are preferably formed integrally out of brass rod as disclosed in the aforesaid Patent No. 1,508,993. The valve has on its outer end a tip or point 3a which is preferably conical and slightly larger in diameter at its base than the point of the valve 3, but is smaller in diameter than aperture 2e so the tip 3a can pass through the aperture while the body of the valve 3 will close the opening if sufficiently projected thereinto.

The valve stem 3b extends axially of the sleeve 2 and its inner end is so connected to part 1d of the spindle that the stem will be moved by and with the spindle but is capable of slight lateral vibration and preferably free rotatorial motion thereon, as in the aforesaid Patent #1,508,993. As shown the stem has a contracted cylindrical end 3f of smaller diameter than the aperture 1f in the end 1d of the spindle, and passes therethrough, the valve stem being loosely connected to the part 1d by the part 3f, which has a shoulder 3c at one side of opening 1f and the opposite end of the part 3f is flared or spread outwardly as at 3d at the other side of the opening 1f. The shoulder 3c enables the spindle to force the valve 3 outwardly and into the opening 2e when the sleeve 2 is turned so as to cause it to move on the spindle toward the base 1a and more or less open the aperture or close it water tight.

To the stem 3b just below the valve head 3 is connected a spider or guide 5 which is slidable in the sleeve 2 and is adapted to center the tip of valve 3 in the discharge orifice 2e. When the tip of valve 3 has been entered in the aperture the water itself will automatically center the valve in the discharge aperture because of the yieldable or floating connection of the valve to the spindle 1 as in the aforesaid patent.

The telescopic movements of the spindle and sleeve are limited so that they cannot be separated by the longitudinal movement of the sleeve on the spindle, and so that the sleeve cannot be unscrewed and removed from the spindle by an annular internally projecting rib or corrugation 2x formed by a press operation at a point immediately behind the spider 5 when the sleeve is in fully extended position. When the valve is fully opened the centering spider 5 on the valve stem 3b will engage this corrugation and prevent the movable sleeve from screwing entirely off the base portion or spindle.

The nozzle has the appearance of being very heavy and the drawn sheet metal parts are so formed as to secure thickness where strength is essential, without making it necessary to use heavy, thick stampings. With this invention the complete spindle or hose end member 1 may be formed integral of sheet metal; the complete sleeve 2 may be formed integral of sheet metal; the valve 3 and stem may be formed integral out of rod metal; and the spider or guide 5 can be readily stamped.

My method of constructing and assembling the parts eliminates various threading operations and other machine operations, both on the stuffing box, sleeve, and spindle which would otherwise be necessary; and this nozzle is exceedingly economical to manufacture. When the point 3a is withdrawn or nearly withdrawn from the outlet in the sleeve 2 the nozzle will throw a solid stream. As the valve is advanced toward the seat the nozzle throws a coarse, or medium or fine spray, and when the valve seats the water is fully cut off.

I do not limit my invention to the exact forms shown in the drawing for obviously changes may be made within the scope of the claims.

I claim:—

1. In a nozzle; a sleeve having threads adjacent one end and an outlet aperture at its other end; a combined tubular base and spindle having the base portion threaded for engagement with a hose nipple and the spindle portion of less diameter than the base portion and threaded for engagement with the threaded portion of the sleeve, said spindle having an outlet for water at its inner end; a valve adapted to close the outlet aperture in the sleeve and having a stem connected with the inner end of the spindle, and a spider on said valve stem within the sleeve; said sleeve having an inwardly projecting corrugation between the spider and the spindle of less internal diameter than the external diameter of the spider adapted to prevent removal of the sleeve from the spindle but permit the valve to be opened.

2. In a nozzle; a sleeve having internal threads adjacent one end and an outlet opening at its other end; a combined tubular base and spindle formed integrally, the base portion being threaded for engagement with a hose nipple and the spindle portion being of less diameter than the base and threaded for engagement with the threaded portion of the sleeve and having its inner end provided with an outlet for the water; a valve adapted to close the outlet opening in the sleeve and having a stem connected with the inner end of the spindle, said sleeve having an annular recess in its threaded end; a washer in said recess fitted around the spindle; a spider on said valve stem within the sleeve, said sleeve having an inwardly projecting corrugation between the spider and outlet of the spindle, said corrugation being of less internal diameter than the external diameter of the spider and adapted to prevent removal of the sleeve from the spindle but permit the valve to be opened.

3. In a nozzle; a sleeve formed of drawn metal having internal threads adjacent one end and an outlet opening at its other end; a combined tubular base and spindle formed integrally from drawn metal, the base portion being threaded for engagement with a hose nipple, the spindle portion being of less diameter than the base

portion and having threads in its side walls for engagement with the threaded portion of the sleeve, said spindle having its inner end provided with an outlet for the water; a valve adapted to close the outlet opening in the sleeve and having its stem loosely connected with the inner end of the spindle, and a spider on said valve stem within the sleeve; said sleeve having an inwardly projecting rolled corrugation between the spider and outlet of the spindle, said corrugation being of less internal diameter than the external diameter of the spider and adapted to prevent removal of the sleeve from the spindle but permit the valve to be opened.

4. In a nozzle; a sleeve formed of drawn metal having internal threads adjacent one end and an outlet opening at its other end; a combined tubular base and spindle formed integrally from drawn metal, the base portion being threaded for engagement with a hose nipple, the spindle portion being of less diameter than the base and having threads in its side walls for engagement with the threaded portion of the sleeve, said spindle having its inner end provided with an outlet for the water; a valve adapted to close the outlet opening in the sleeve and having its stem loosely connected with the inner end of the spindle, said sleeve having an expanded portion at its inner end forming an annular recess adapted to receive a washer; a washer in said recess fitted around the spindle; the end of said expanded portion being turned inwardly to confine the washer in the recess; a spider on said valve stem within the sleeve, said sleeve having an inwardly projecting rolled corrugation between the spider and outlet of the spindle, said corrugation being of less internal diameter than the external diameter of the spider and adapted to prevent removal of the sleeve from the spindle but permit the valve to be opened.

FREDERICK HANLAN.