G. A. ANDERSON.

NOZZLE.

APPLICATION FILED FEB. 21, 1907.

1,002,210.

Patented Sept. 5, 1911.

2 SHEETS—SHEET 1.

Fig 1

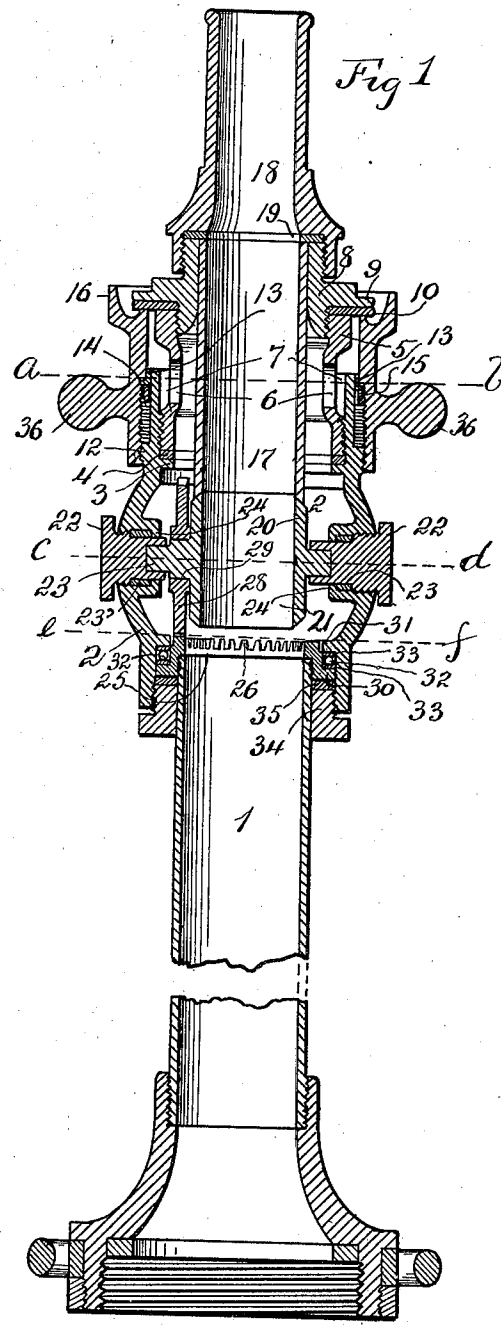
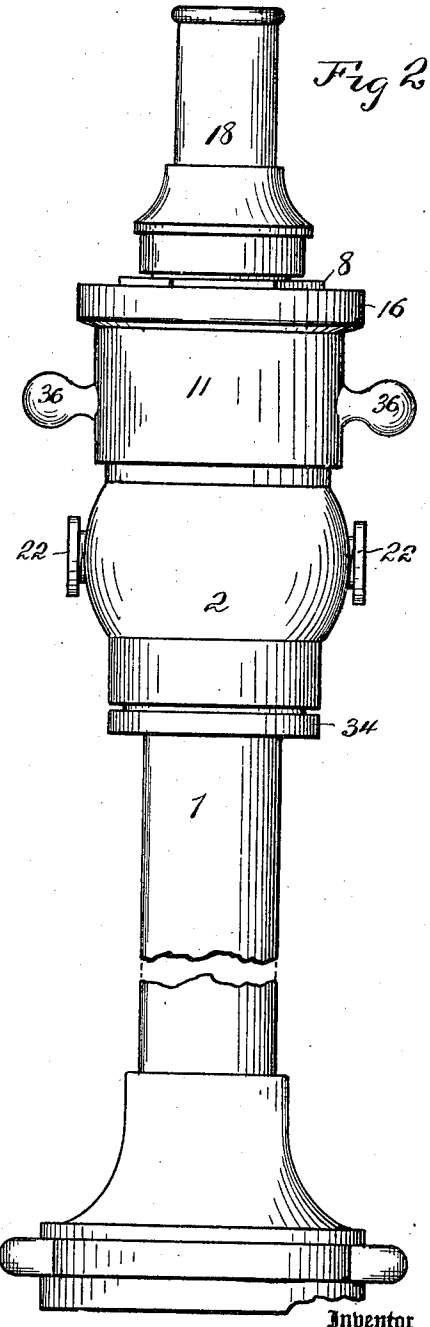


Fig 2



Witnesses:

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2 SHEETS—SHEET 2.

Fig 3

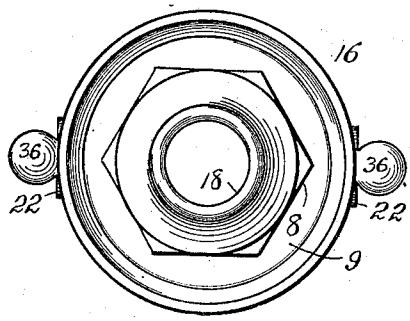


Fig 4

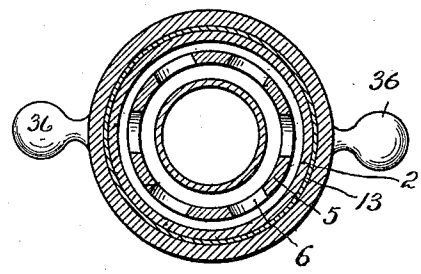


Fig 5

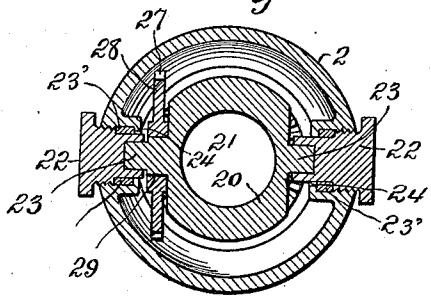


Fig 6

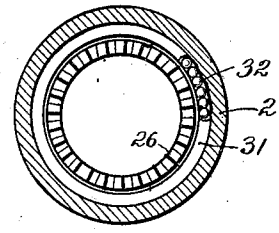


Fig 7

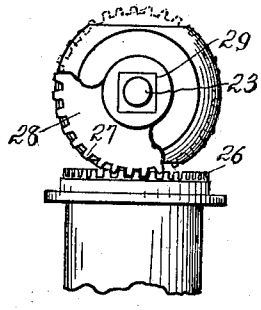


Fig 9

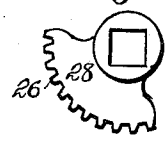
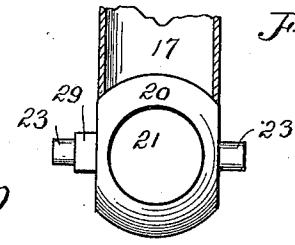


Fig 8



Witnesses:

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NOZZLE.

1,002,210. Specification of Letters Patent. Patented Sept. 5, 1911.

Application filed February 21, 1907. Serial No. 358,759.

To all whom it may concern:

Be it known that I, GUSTAF A. ANDERSON, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Hose-Nozzles, of which the following is a specification.

My invention relates to improvements in hose nozzles.

The object of my invention is to provide a hose nozzle which may be easily operated, and which is not liable to leakage.

Hereinafter I have fully described and claimed the novel features of my invention.

In the accompanying drawings illustrative of my invention, Figure 1 is a longitudinal sectional view of the nozzle, a portion of the tubular stem or shank being broken away. In this view the pivoted valve 20 is shown in the open position. Fig. 2 is a side elevation of what is shown in Fig. 1. Fig. 3 is an upper end view of the nozzle. Fig. 4 is a horizontal cross section on the line *a*—*b* of Fig. 1. Fig. 5 is a cross section taken on the dotted line *c*—*d* of Fig. 1. Fig. 6 is a horizontal sectional view taken on the dotted line *e*—*f* of Fig. 1, some of the parts being broken away so as to show the ball supports for the shell 2. Fig. 7 is an elevation view of the gearing by which the valve 20 is rotated, said valve and the upper end of the shank or stem being shown. Fig. 8 is a side elevation of the pivoted valve 20 and the lower end of the tube 17 shown in vertical section, the valve being shown in the closed position. Fig. 9 is an end view of a segment of a spur gear, which may be employed in lieu of the complete gear wheel shown in Figs. 1, 5 and 7. This form illustrated in Fig. 9 is a modification of my invention.

Similar characters of reference denote similar parts.

For the sake of clearness and convenience in the description of the parts, the apparatus is described as occupying a vertical position in Figs. 1 and 2.

1 denotes a tube which forms the lower end of the tubular shank or stem of the nozzle which at its upper end supports the tip mechanism, which will now be described.

2 is the lower shell comprising a vertical tube the upper end of which is internally screw threaded and provided with an annular internal flange 3 which supports on its upper side a packing ring 4 against which rests the lower end of the upper shell 5 the lower end of which is externally screw threaded and fitted in the threaded upper end of the shell 2. The shell 5 is provided with one or more radial holes 6 which communicate with an annular space 7 between the shells 2 and 5. The upper end of the shell 5 is internally screw threaded and has fitted thereto the externally screw threaded lower end of a horizontal ring 8 provided with a peripheral flange 9 which projects beyond the periphery of the shell 5. A packing ring 10 is clamped between the ring 8 and the upper end of the shell 5, said ring 10 extending beyond the periphery of the shell 5 and bearing at its upper side against the under side of the flange 9.

A vertical tubular valve 11 encircles the upper end of the shell 2 and the shell 5, a space being provided between the valve 11 and the shell 5 for the discharge of water entering the annular space 7. The lower end of the valve 11 is internally screw-threaded and fitted to a peripherally screw threaded portion 12 of the shell 2. The shell 2 above said threaded portion 12 is reduced in external diameter and is encircled by a resilient packing ring 13 the lower end of which is provided with a peripheral flange, the upper side of which bears against the annular shoulder 14 in the valve 11. An externally screw threaded ring 15 is fitted in the threaded portion of the valve 11, said ring 15 retaining the packing ring 13 against the shoulder 14. The upper end of the valve 11 is adapted when in the closed position to bear against the under side of the packing ring 10, thus shutting off the water at this place. The upper end of the valve 11 is provided with an annular peripheral flange 16 which encircles and projects above the packing ring 10. The inner side of said flange 16 is upwardly and outwardly curved so as to deflect the water upwardly and outwardly in a broad sheet.

The upper end of a vertical discharge tube 17 is fitted in the central opening through the ring 8. A vertical tubular discharge tip 18 is internally screw threaded at its lower end, said threaded end being fitted to the externally screw threaded upper end of

the ring 8. The tip 18 clamps a horizontal packing ring 19 against the upper side of the ring 8 and the upper end of the tube 17. The lower end of the tube 18 is provided with a rotary valve 20, preferably of a spherical shape and provided with a large hole extending therethrough transversely to the axis of the valve, said hole being denoted by 21. Means are provided by which when the shell 2 is rotated relatively to the tube 1 the valve 20 will be operated. I will now describe the preferable means employed for actuating the valve 20 and for supporting the shell 2 on the tube 1.

Opposite walls of the shell 2 are provided with means for rotatively and axially supporting the valve 20, said means comprising preferably two diametrically opposite horizontal externally screw threaded pivot pins 22 fitted respectively in threaded holes provided therefor in opposite walls of the shell 2. The inner ends of the pivot pins 22 are provided with axial holes in which are respectively rotatively mounted axial trunnions 23 provided at opposite sides of the valve 20. The inner ends of the pivot pins 22 are smaller in diameter than the threaded portions thereof and have mounted on such reduced inner ends packing rings 23′ which at their inner ends rest against annular flanges 24 fitted to the peripheries respectively of the pivot pins 22, and through which flanges the said pins project. The stem or shank includes also a tube 25 having a screw threaded connection with the upper end of the tube 1. The upper end of the tube 25 is provided with an annular row of teeth 26 in which engage the teeth 27 of a spur gear 28 having an axial square hole fitted to a squared portion of one of the trunnions 23, said squared portion being denoted by 29. The tube 25 at its lower end is provided with an annular peripheral flange 30 disposed in the lower end of the shell 2 below an internal annular flange 31 disposed on the inner side of the shell 2. Intermediate the flanges 30 and 31 is a series of rollers, preferably balls, denoted by 32, said series of balls being disposed between two horizontal steel rings 33 disposed one above the other and bearing respectively against the flanges 30 and 31.

Rotatively mounted on the tube 1 below the tube 25 is a ring 34 having an externally screw threaded upper end fitted to the internally screw threaded lower end of the shell 2. The ring 34 serves to clamp a resilient packing ring 35 against the under end of the tube 25, said packing ring 35 encircling the tube 1 below the tube 25 and within the shell 2. The balls 32 serve to support the shell 2 and to reduce the friction when the shell is rotated.

When it is desired to discharge water through the central tube 17, the parts are disposed as shown in Fig. 1. If now it be desired to close the valve 20, the shell 2 is rotated in either direction thus rotating the spur gear 28 through the intermediacy of the teeth 26 on the upper end of the tube 25 around which the shell is rotated. Rotation of the shell is continued until the hole 21 is disposed at right angles to the position shown in Fig. 1, at which time the discharge tube will be closed by the valve 20. If it is desired to employ the water discharged by the nozzle in the form of a broad sheet, the annular valve 11 is rotated by grasping the peripheral projections 36 provided on the exterior of said valve, and rotating said valve in a direction such that by reason of its threaded engagement with the shell 2 it will move downward, thus permitting the water to pass out below the ring 10. The water thus passing out will strike the curved wall of the flange 16 and be thrown thereby upwardly and outwardly in a broad annular sheet. To shut the water off from passing out below the ring 10, the valve 11 is rotated in the opposite direction until the upper end of said valve strikes against the ring 10. The water may then be again discharged through the tube 17 by rotating the shell 2 until the valve 20 is again disposed as shown in Fig. 1.

My invention may be modified in different ways within the scope of the appended claims without departing from its spirit. For instance, as shown in Fig. 9, the gear 28 may be in the form of a segment instead of a complete circle as shown in Figs. 1 and 7. When but a segment of a gear is employed, the shell 2 is rotated in opposite directions when it is desired to open and close the tube 17. Otherwise the operation of the two forms is the same.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a hose nozzle, the combination with a tubular body having an outlet opening and an annular bearing surface, of a stem rotative in the body and having a row of teeth and a peripheral flange, one or more bearing rollers between the flange and said bearing surface, clamping means engaging the body and bearing against the flange for holding the stem and body operatively engaged, a valve controlling said outlet opening, and a toothed member movable with the valve and engaging the teeth of the stem for operating the valve when the body is rotated relatively to the stem.

2. In a hose nozzle, the combination with a tubular body having an outlet opening and an annular flange, of a stem rotative in said body and extending through said annular flange and having a peripheral flange, a series of bearing rollers between the two flanges, a packing ring bearing against said

peripheral flange, a clamping ring adjustable on the body toward and from said peripheral flange and adapted to bear against the packing ring, a valve controlling said outlet opening, and means by which when the body is rotated relatively to the stem, the valve is opened or closed.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

GUSTAF A. ANDERSON.

Witnesses:

WARREN D. HOUSE,

E. B. HOUSE.