Dec. 17, 1935. T. A. LOUGHLIN 2,024,936

FLUSHER TYPE SPRAY NOZZLE

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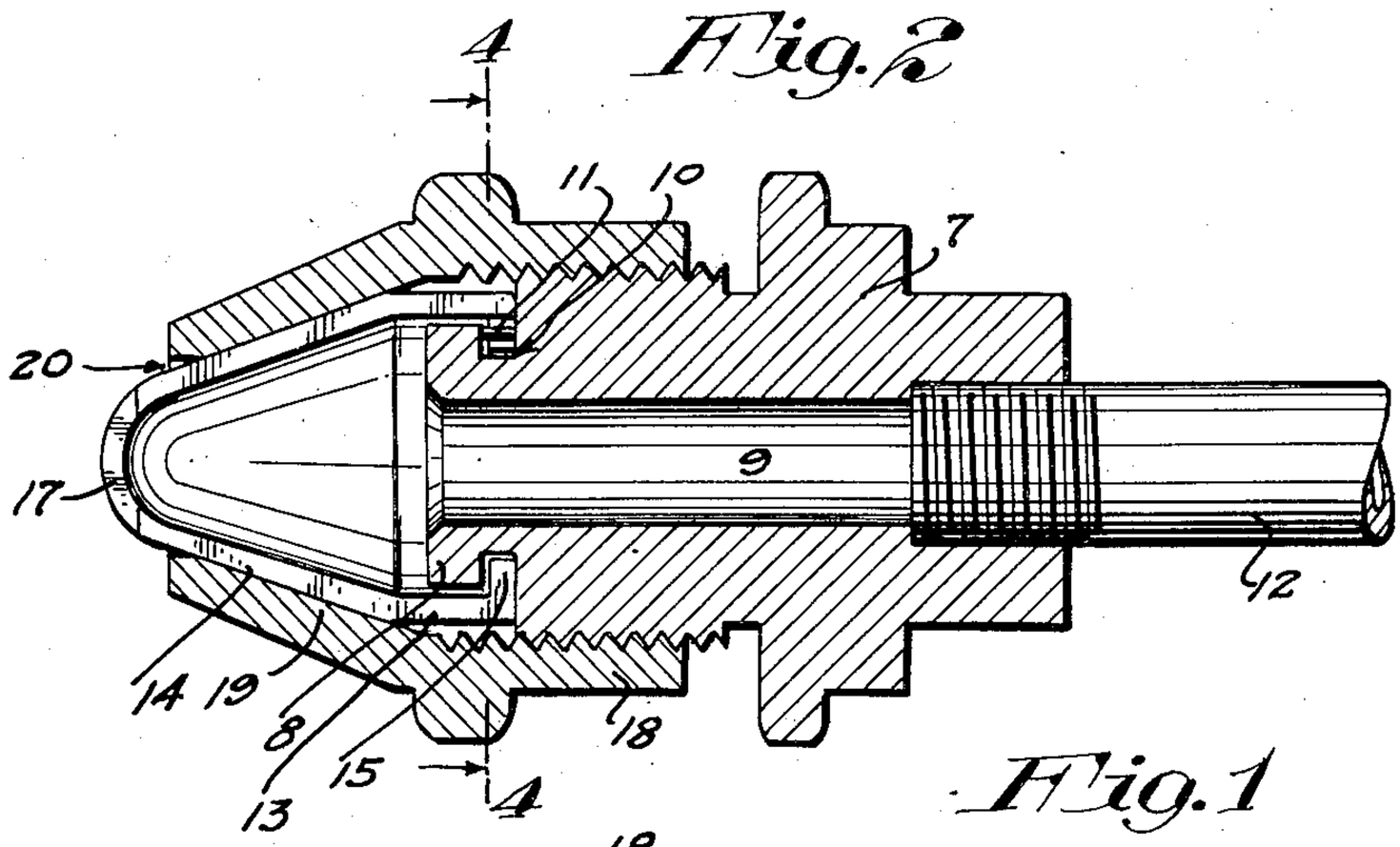


Fig. 2

Fig. 1

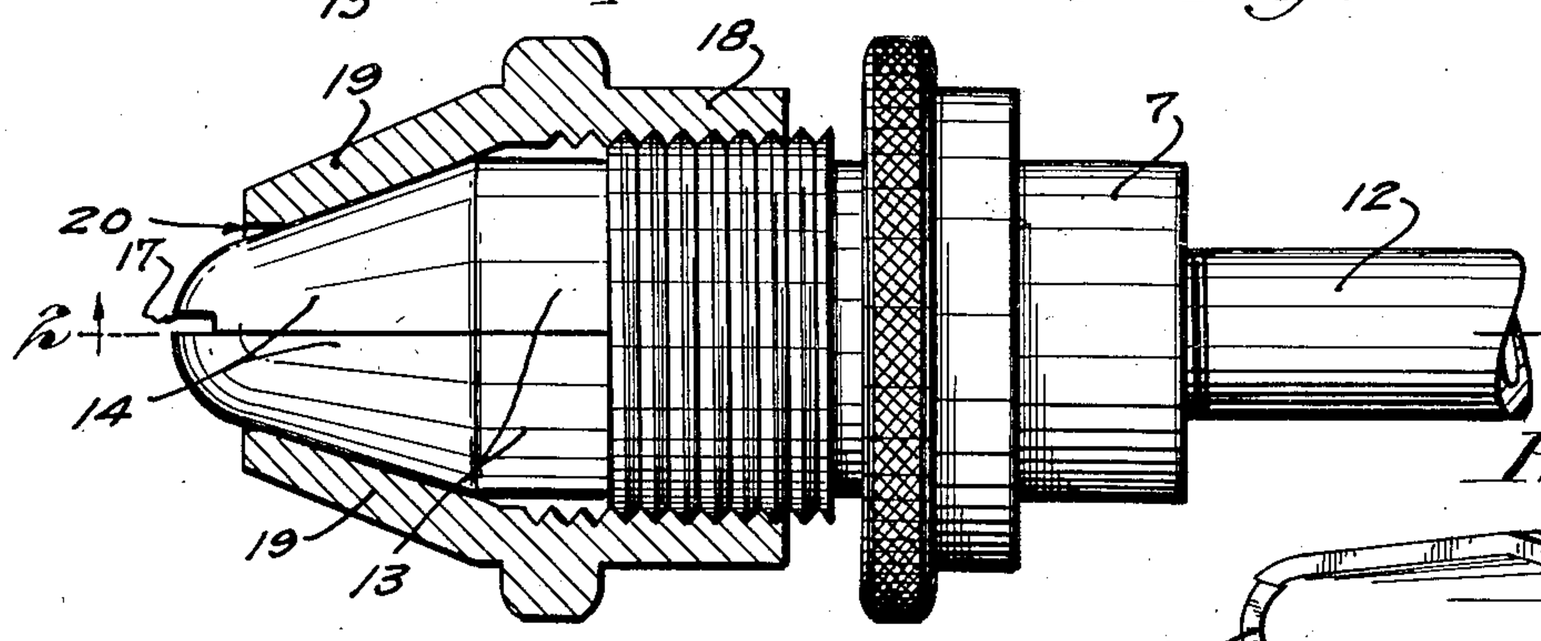


Fig. 5

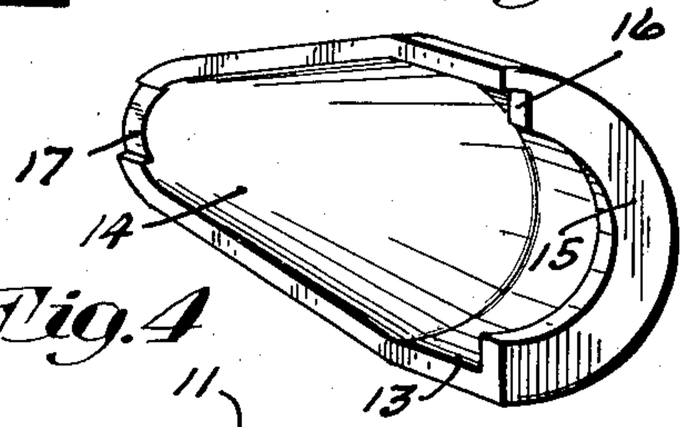
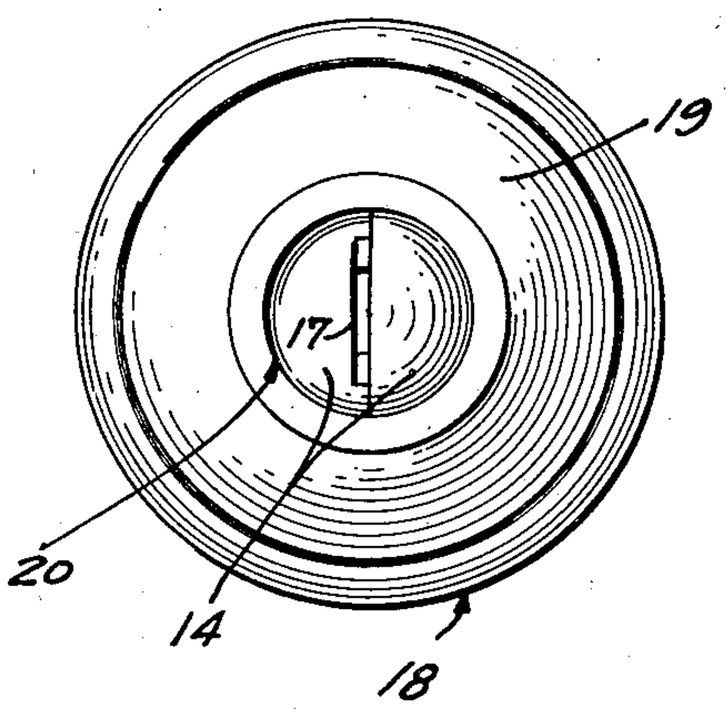
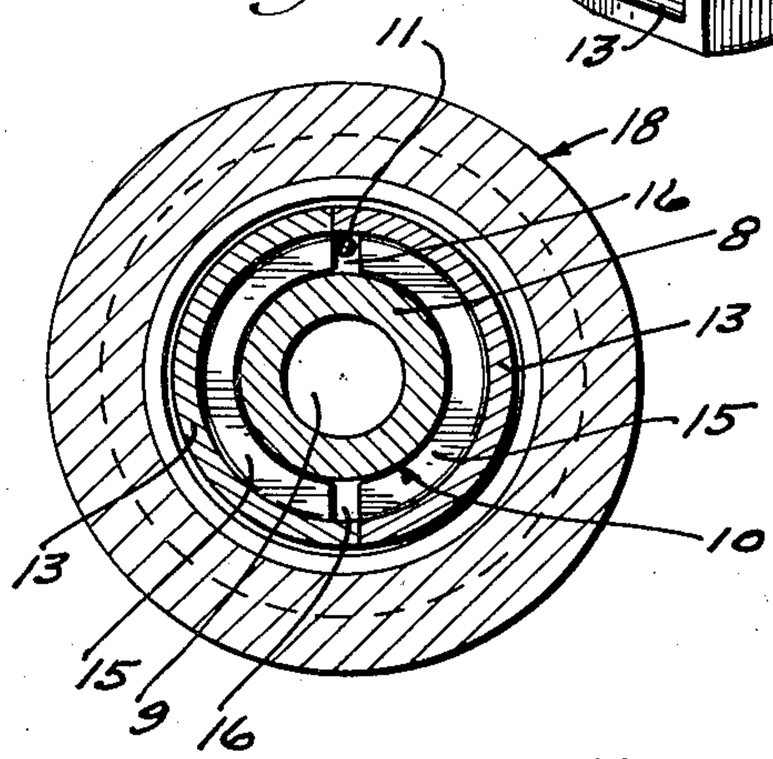


Fig. 3

Fig. 4





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FLUSHER TYPE SPRAY NOZZLE

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Application January 18, 1933, Serial No. 652,319

2 Claims. (Cl. 299—59)

My present invention relates to spray nozzles, and has for its object the provision of an extremely simple and highly efficient spray nozzle of the flusher type.

While the invention is intended for general use in spraying all kinds of fluids, it is especially well adapted for spraying fluids containing solids or other foreign matter that would tend to clog the discharge orifice and thus reduce the efficiency of the nozzle.

The invention is also especially well adapted for spraying oil on coal to allay dust, and in which use, it will break up the oil stream into a fine spray at low fluid pressure.

To the above end, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawing, which illustrates the invention, like characters indicate like parts throughout the several views.

Referring to the drawing:

Fig. 1 is a view partly in side elevation and partly in longitudinal central section;

Fig. 2 is a view principally in section taken on the line 2—2 of Fig. 1;

Fig. 3 is a front elevation of the improved nozzle;

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

Fig. 5 is a perspective view of one of the sections of the nozzle member.

The improved spray nozzle includes an annular body member 7, the front end portion of which is reduced in diameter to form an annular neck 8 that is axially aligned therewith. A passage 9 extends axially through the body member 7 and the neck 8. Formed in the neck 8 is an external annular seat 10 that is channel-shaped in cross-section. Extending transversely through the seat 10 is a key 11 in the form of a pin, the end portions of which are fitted in a bore in the body member 7 and thereby rigidly hold said key in place.

As shown, the improved spray nozzle is secured to the delivery end of a fixed pipe 12 that leads from a suitable source of fluid supply, not shown. This pipe 12 extends into the passage 9, from the inner end of the body member 7, and is secured by screw-threads to said member.

The improved spray nozzle further includes a sectional nozzle member 13 in the form of a cylindrical shell having a conical outer end portion 14. The two sections of the nozzle member 13 are semi-cylindrical in cross-section and the neck 8 extends into the shell from the inner end thereof. It will be noted that there is clearance between the neck 8 and internal walls of the nozzle member 13 to permit the edges of the sides of the sections of said member to contact and to be tightly pressed together, as will hereinafter appear.

Formed with the inner ends of the sections of the nozzle member 13 is an annular flange 15 that projects into the seat 10 and detachably interlocks the nozzle member 13 with the neck 8, and thereby holds said member against removal from the neck 8 and hence the body member 7, except by radial movements. It will be noted that the free edge of the flange 15 is spaced from the bottom of the seat 10 so as not to interfere with the pressing of the sections of the nozzle member 13 together. It will also be noted that there is clearance between the sides of the seat 10 and the sides of the flange 15 to permit slight axial movement of the nozzle member 13 with respect to the body member 7.

A pair of notches 16 are formed one in one of the ends of each section of the flange 15 and diametrically arranged to receive the key 11 and thereby prevent rotation of the nozzle member 13 with respect to the body member 7. In assembling the sections of the nozzle 13 around the neck 8, either notch 16 may be brought into registration with the key 11.

In the apex of the conical portion 14 of the nozzle member 13 is a discharge orifice 17 in the form of a narrow slot. This orifice 17, as shown, is formed entirely in one of the sections of the nozzle member 13 and will produce a very fine spray. If a wider orifice 17 is required, for a heavy spray, the same may be formed in both of the sections of the nozzle member 13.

The two sections of the nozzle member 13 are held in assembled relation with the flange 15 in the seat 10 by a clamping member or sleeve 18, the base or inner end portion of which surrounds the outer end portion of the body member 7 and has screw-threaded engagement therewith for axial adjustment thereon. The outer end portion of the clamping sleeve 18 is in the form of a truncated cone 19 that cages the nozzle member 13. The opening in the outer end portion of the clamping sleeve 18 is indicated by the numeral 20.

The apex of the nozzle member 13, in which the orifice 17 is formed, normally projects through the opening 20 and at which time said orifice is entirely outwardly of said member. The internal surface of the conical member 19 normally engages the external surface of the conical

member 14 and which surfaces have substantially the same pitch.

When the clamping sleeve 18 is screwed onto the body member 7, a cam action between the conical members 13 and 19 takes place which presses the nozzle member 13 axially rearward into a position in which the flange 15 engages the body member 7 as a base of resistance and prevents the nozzle member 13 from being moved rearwardly with the clamping sleeve 18. This same cam action also clamps the two sections of said nozzle member together.

When the two sections of the nozzle member 13 are pressed radially toward each other, by the clamping sleeve 18, the edges of their sides contact and form closed joints therebetween. The contacting surfaces of the conical members 14 and 19 also form a tight joint which prevents leakage of the fluid outwardly of the nozzle member 13.

To flush the nozzle, it is only necessary to unscrew the clamping sleeve 18 to release the nozzle member 13 to allow the sections thereof to be separated radially by the pressure of the fluid stream passing therethrough. As the sections of the nozzle member 13 are opened, all sediment or foreign matter collected in said member will be carried out of the nozzle with the fluid stream.

The interlocking engagement between the neck 8 and nozzle member 13, to wit: the flange 15 and seat 10, holds said member against axial movement with the fluid stream. Obviously, if nozzle member 13 were not held against axial movement from the body member 7, at the time the clamping sleeve 18 is unscrewed, the pressure of the fluid stream would cause the nozzle member 13 to follow the clamping sleeve 18 and thereby prevent the sections of said nozzle member 13 from opening.

The object of the key 11 is to prevent turning movement of the nozzle member 13 about its axis with respect to the body member 7 during the screwing and unscrewing of the clamping sleeve 18 and the flushing of the nozzle. By thus holding the nozzle member 13 against rotation, the orifice 17 always remains in a definite and predetermined position so that the spray therefrom will always be in the same plane after each flushing of the nozzle.

From the above description, it is evident that to flush the nozzle, it is only necessary to unscrew the clamping sleeve 18 sufficiently to permit the sections of the nozzle member 13 to open. The flushing of the nozzle only takes an instant, and thereafter, the clamping sleeve 18 is again screwed onto the body member 7 which automatically clamps the sections of the nozzle member 13 together.

From the above description, it is evident that the flushing of the nozzle takes place without interfering with the flow of fluid to the nozzle, without the use of a tool, and without changing the adjustment or position of the nozzle and its discharge orifice 17.

The two sections of the nozzle member 13 are duplicates and each thereof is pressed or stamped, preferably from sheet metal, and the internal edges thereof at the orifice 17 are relatively sharp and divide the oil at the spray. Also the narrow orifice 17 and the relatively thick walls thereof will assist in cutting the oil and producing a finely divided spray.

What I claim is:

1. In a device of the class described, a body member having a neck and a fluid passage extending through said member and neck, said neck having an annular seat, a nozzle member comprising a shell made up of individual semi-cylindrical sections surrounding the neck and having on their inner ends internal flanges extending into the seat for holding the nozzle member against axial movement away from the body member but permitting its sections to separate radially, said nozzle member having a conical outer end portion and a discharge orifice in said end, and a clamping sleeve adjustable on the body member, surrounding the nozzle member, normally engaging the conical end thereof and holding the sections of the nozzle member pressed together, said clamping sleeve being operative to release said sections by an axial movement therefrom and permit the same to separate radially.

2. In a device of the class described, a body member having a fluid passage, a nozzle member having a discharge orifice, said member being completely longitudinally divided through its discharge orifice, interlocking means connecting the sections of the nozzle member to the body member and holding the same against axial movement away from said body member but permitting lateral separation of said sections, and a clamping member applied to the body member and normally holding the sections of the nozzle member pressed together, said clamping member being operable to release the sections of the nozzle member and permit complete lateral separation thereof.

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