June 3, 1930. E. E. WAGNER 1,761,422

NOZZLE

Filed Dec. 17, 1927

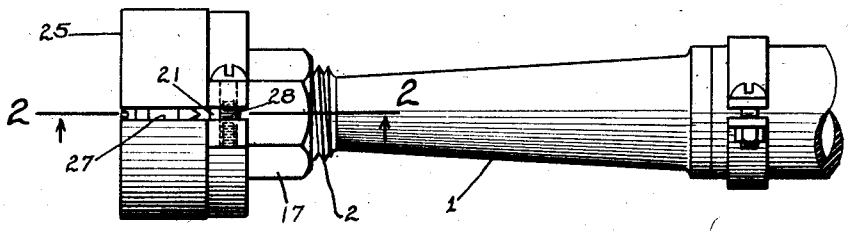


FIG. 1

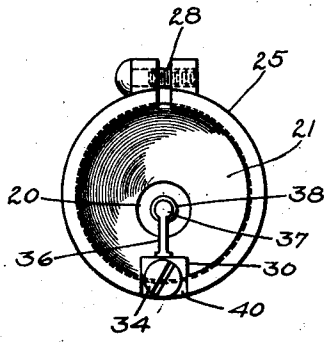


FIG. 3

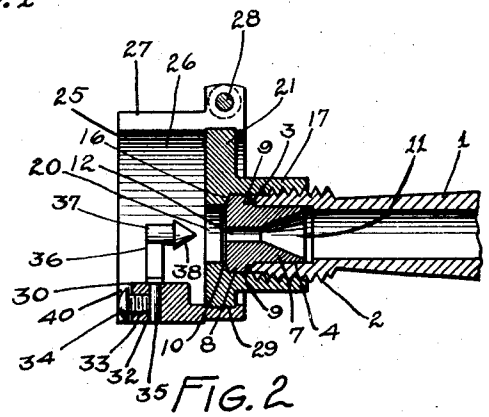


FIG. 2

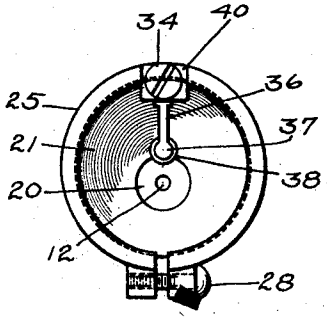


FIG. 5

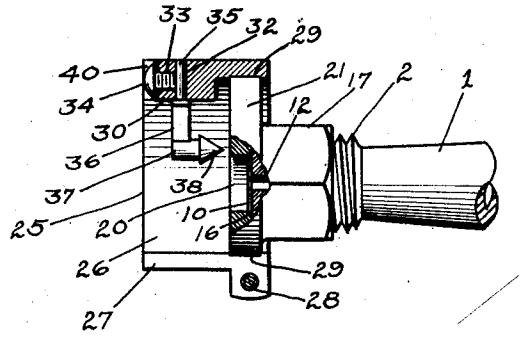


FIG. 4

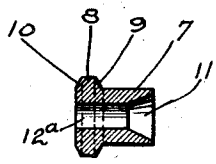


FIG. 6

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UNITED STATES PATENT OFFICE

ERNEST E. WAGNER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ROTAWASHER CORPORATION, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

NOZZLE

Application filed December 17, 1927. Serial No. 240,793.

This invention relates to improvements in nozzles and has, among its general objects, to provide a cheap and efficient device having few cheaply producible parts, capable of being easily assembled, and quickly adjusted.

Other objects are to provide means whereby a maximum pressure can be obtained at the nozzle, whatever the amount being delivered therethrough. Therefore, it is the object of the invention to provide removable nozzle tips having different size delivery bores or orifices. Other objects are to provide means for removably clamping these elements so that no leaking around them and across the path of the outgoing liquid is had; to provide these changeable nozzles and to mount them and sealingly secure them without the use of gaskets; to provide a mounting for the spray tip and cut-water which is adjustable to align or disalign the axis of the spray needle with respect to the axis of the delivery orifice of the nozzle, the means employed herein being the mounting of the holder so that by rotation a concentric or eccentric relation of these axes may be obtained. Another object is to provide a wear takeup for the adjustable needle and cut-water support. Another object is to place the spray needle and cut-water within the support so that the outer periphery of the support may be engaged with a surface to be washed without danger of injuring the elements. Another object is to provide a means for clamping the nozzle tips in position, and to have this means form the support for rotatably eccentrically mounting the spray needle and cut-water support.

Features of the invention include all the details of construction, along with the broad ideas of arrangement.

Advantages of the invention will be set forth in the description of the drawings forming a part of this application and in said drawings

Figure 1 is an elevation showing the invention applied;

Figure 2 is a longitudinal sectional view on line 2—2 of Figure 1, showing the spray needle aligned with the axis of discharge;

Figure 3 is an end view of Figure 2;

Figure 4 is a view showing the mounting adjusted, and with the axis of the spray needle eccentric to the axis of discharge;

Figure 5 is an end view of Figure 4; and

Figure 6 is a sectional view of one of a series of nozzle tips, which has a discharge bore differing in size from that shown in Figure 1.

The numeral 1 represents the nozzle body threaded terminally and exteriorly as at 2 having a terminal conical seat represented at 3. This seat lies at the outer terminal of an enlarged or counter-bored portion 4. This enlarged portion is for socketing a shank portion of a nozzle tip, the construction of which is best shown in Figure 2. The tip sets loosely within the cavity formed by the counter bore 4 and comprises a tubular shank portion 7, and an enlarged head portion 8 circumferentially beveled at opposite sides in opposite directions respectively as at 9—10. The shank portion is conically bored as at 11, and the apex of the bore leads into a cylindrical delivery bore 12. The beveled portion 9 seats against the bevel portion 3 as shown and forms a seal. The bevel portion 10 is engaged by a corresponding bevel portion 16 of a nozzle tip retaining and clamping nut 17 which has threads engageable with the threads 2 of the nozzle body 1. A series of these tips are provided, each having a different bore diameter. One of the extra tips is shown in Figure 6 and the bore is indicated at 12^a. Communicating with the conical or beveled portion 16 of a nut 17 is an opening 20 which is substantially larger than the delivery opening 12 of the tip. The nut 17 is provided with an enlarged cylindrical head portion 21, the axis of which is eccentric to the axis of the delivery orifice 12 of the tip. Detachably and adjustably secured to this head portion 21 is a cut-water and spray-needle holder 25, comprising a tubular element forming a chamber 26 at the outer side of the head 21. This tubular member which may be considered a sleeve, is split as at 27, and a clamping screw 28 traverses lugs at opposite sides of the split portion and is threaded into one of the lugs. The member 25 is grooved as at 29 to have a rotatable, frictional

fit with the periphery of the head 21. The element 25 is thus rotatably mounted, and the proper degree of the frictional contact between the element and the head can be maintained and varied by means of the screw. The element 25 is further provided interiorly with a radially disposed lug 30 which has bores 32—33 respectively to receive the shank of the cut-water and tip holder, and a set screw 34. The cut water and spray needle are formed in one piece as shown in Figures 2 and 4, and has substantially the configuration shown. This element has a cylindrical shank portion 35, a cut-water portion 36 having its knife edge facing inwardly, and a cylindrical right-angular extension 37 as a spray needle having a conical head 38. As shown in Figure 2, the axis of the conical portion is aligned with the axis of the discharge orifice 12 so that a full spraying action is obtained when the elements are thus positioned. However, when no spray is desired, the eccentrically disposed mounting 25 is rotated either through an arc of 180° or a lesser distance to disalign the axis of the conical portion 38 with respect to the axis of discharge. Figure 4 illustrates that position in which the conical portion of the spray needle is at its greatest distance from the discharge orifice.

In order that the front face of the support 25 may be placed directly against the surface to be washed the edge of the support is inwardly notched as at 40, so that the outermost surface of the set screw lies inwardly from the outer surface of the support. This is a valuable feature of the invention, as is also the means of adjusting the spray needle with reference to the axis of discharge.

It will be noticed that the tubular support 25 is of substantially greater diameter than the discharge orifice 12 of the tip, and it will be further noted that the conical portion of the spray needle, the angular relation of the sides of the conical portion, and the position of the needle relative to the outer rim of the holder, are such that the water will not impinge the outer, as it is discharged.

I claim as my invention:

A spray nozzle comprising a tubular nozzle body having threads on the exterior of the discharge end thereof, a removable nozzle tip within the discharge end of the nozzle body, a nut adapted to screw on the nozzle body and to hold the nozzle tip in place, said nut having a head eccentric to the axis of discharge of the nozzle tip, a split tubular support rotatable on said nut, a screw on said support adapted to clamp it in position, and a spray needle carried by said support.

In witness whereof, I have hereunto set my hand this 13th day of December, 1927.

ERNEST E. WAGNER.