

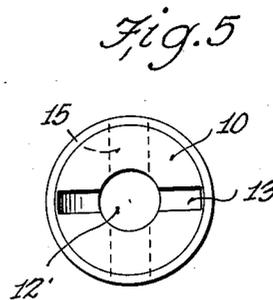
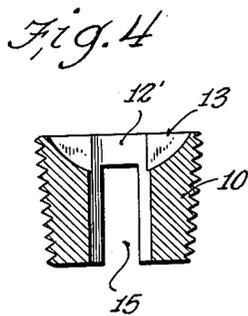
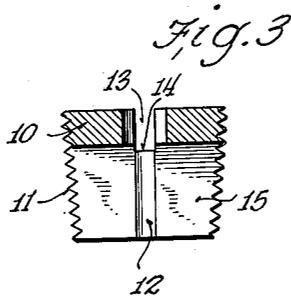
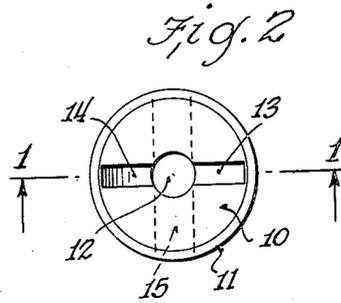
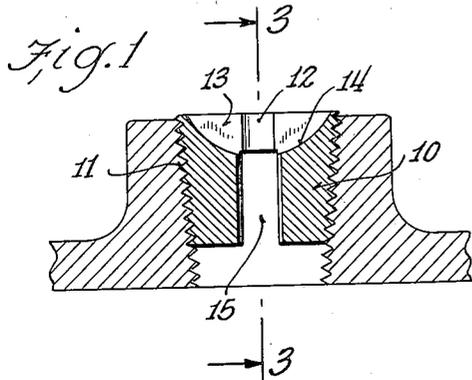
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2,325,008

SPRAY NOZZLE

Filed Aug. 19, 1940



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# UNITED STATES PATENT OFFICE

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## SPRAY NOZZLE

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1 Claim. (Cl. 299—153)

This invention relates to spray nozzles for use primarily in lubrication systems although other uses are contemplated.

An object of the present invention is to provide a simple and inexpensive spray nozzle in which both the volume and width of the spray produced may be readily predetermined by relative proportioning of interconnected ducts therein.

Other more specific objects and advantages will appear from the following description of a spray nozzle constructed in accordance with the present invention.

In the accompanying drawing:

Figure 1 is a sectional view on the line 1—1 of Fig. 2 of a spray nozzle embodying the present invention.

Fig. 2 is an end elevation of the discharge end.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Figs. 4 and 5 are views similar to Figs. 1 and 2, respectively, of a like spray nozzle having differently proportioned ducts.

The nozzle shown in Figs. 1, 2 and 3 comprises a body portion 10 comprising a tapered pipe plug of standard form adapted to be screwed into the end or side of a pipe in a well known manner and equipped with the usual external threads 11 for that purpose.

An axial duct 12 extends through the center of the plug 10 from end to end thereof. This duct may be formed by a simple drilling operation.

A narrow outlet slot 13 having an arcuate base 14 extends across the outer end face of the plug and intersects the duct 12. The slot 13 is preferably considerably narrower than the duct 12 and may be readily formed in a well known manner by a standard Woodruff key slot cutter.

An inlet slot 15 extends transversely through the inner end of the plug. Slot 15 extends at right angles to the slot 13 and through the duct 12, the longitudinal axis of the duct 12 being substantially coincident with the intersection of the mid planes of the slots 13 and 15. The inlet slot 15 is preferably wider than the outlet slot 13 but narrower than the duct 12, and slot 15 preferably extends upwardly to a point above the arcuate base 14 of the outlet slot 13 so as to provide a vertical overlap between the slots.

It has been determined by repeated tests that, with the slots and duct combined and arranged in the manner described, the rate of discharge

of oil through the nozzle is dependent to a large degree upon the size of the through duct 12, the larger the duct the greater the rate of discharge; and it has also been found that the width of the spray produced is dependent to a large degree upon the extent of overlap between the inlet slot 15 and outlet slot 13, the greater the overlap the wider the spray. The fact that an overlapping relation between the slots 15 and 13 causes a spreading of the emitted oil spray may be due to a flattening effect induced upon the oil stream in the central duct 12 by the opposed lateral pressures imposed thereon by the oil in the laterally extended slot 15 and, when such pressures occur within the zone of overlap with the slot 13, the slot 13 renders the stream free to spread thereinto as a result of the flattening tendency thus induced. Upon that theory it is not surprising that the amount of spread increases as the zone of overlap is increased.

The spray nozzle shown in Figs. 4 and 5 comprises a plug 10 of the same size and shape as in the nozzle above described and with the slots 13 and 15 of the same size and overlapping to the same extent. The duct 12 therein, however, has a diameter fifty percent greater than that of the nozzle first described and, under a given pressure, this nozzle discharges at a rate more than twice that of the nozzle first described and produces a spray of approximately the same width.

Various changes may be made in the spray nozzle hereinabove specifically described without departing from or sacrificing the advantages of the invention as defined in the appended claim.

I claim:

A spray nozzle comprising a plug having a round duct extending axially through the center thereof, a parallel sided discharge slot formed in an end face of said plug, said slot extending crosswise of said face through the center thereof and having an arcuate base, and a parallel sided entrance slot formed in the entrance end of said plug and extending transversely through the center thereof at right angles to said first named slot, said last named slot overlapping said first named slot within the intersection of the latter with said duct, said last named slot being wider than said first named slot but of less width than said duct.

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