Aug. 7, 1951 H. E. BRANDT 2,563,152

SPRAYER NOZZLE

Filed April 18, 1947

Fig.-1

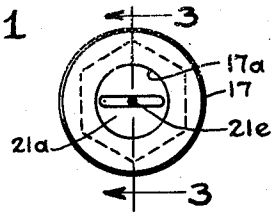
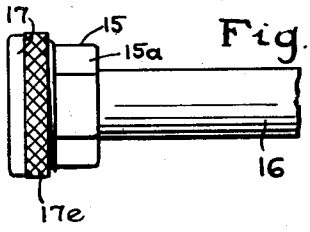


Fig.-2



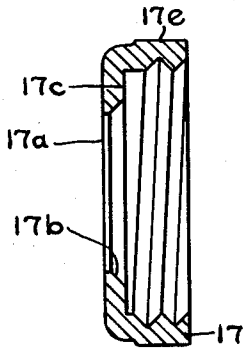


Fig.-4

Fig.-3

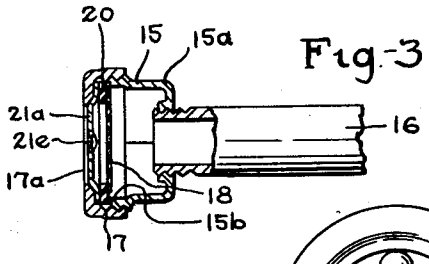
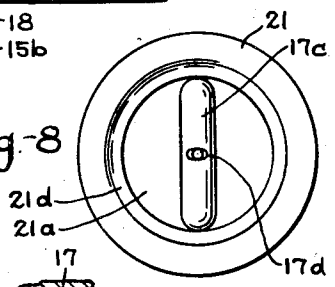


Fig.-8



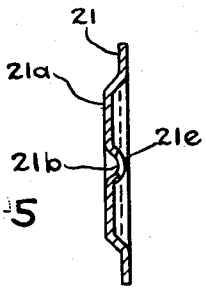


Fig.-5

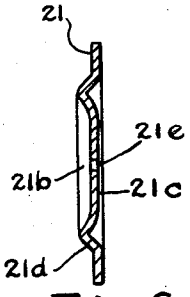


Fig.-6

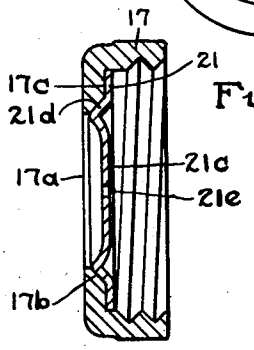


Fig.-7

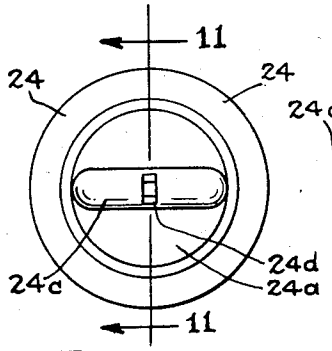


Fig.-10

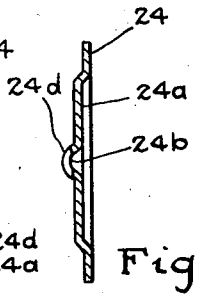


Fig.-11

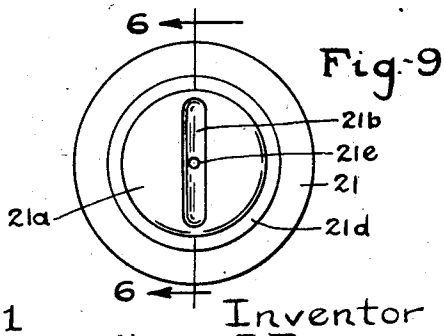


Fig.-9

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SPRAYER NOZZLE

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3 Claims. (Cl. 299—153)

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This invention relates to a spray nozzle such as used on insecticide sprayers and other sprayers.

It is desirable at times to have a spray nozzle which will direct the projected spray in a substantially flat stream or jet as it leaves the spraying nozzle.

It is an object of this invention to provide a very simple, efficient and economical form of sprayer for producing a flattened stream or jet.

It is another object of the invention to provide a disk for a spraying nozzle which can be easily, quickly and inexpensively made and which will act to give a flattened stream or jet.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in front elevation of the nozzle of this invention;

Fig. 2 is a view in side elevation of said nozzle;

Fig. 3 is for the most part a vertical section taken on line 3—3 of Fig. 1, as indicated by the arrows;

Fig. 4 is a central vertical section of the nozzle cap;

Fig. 5 is a diametral section of a disk used;

Fig. 6 is a diametral section of said disk taken at right angles to the section shown in Fig. 5 and taken on line 6—6 of Fig. 9, as indicated by the arrows;

Fig. 7 is a diametral section of the assembled disk and nozzle cap;

Fig. 8 is a face view of the inner side of said disk;

Fig. 9 is a face view of the inner side of said disk;

Fig. 10 is a face view of the inner side of a modified form of disk; and

Fig. 11 is a vertical section taken on line 11—11 of Fig. 10, as indicated by the arrows.

Referring to the drawings, a spray nozzle is shown comprising a cup-like nozzle body or casing 15. While casing 15 might be variously made, in the embodiment of the invention illustrated it is shown as having its rear portion 15*a* of polygonal form, said portion being shown specifically as hexagonal. Portion 15*a* is thus adapted to receive a wrench or other turning tool. The outer portion of casing 15 is of enlarged diameter and is threaded to receive a nozzle cap 17. A shoulder 15*b* is formed in casing 15 at the outer end of portion 15*a* and a screen 18 of circular form fits in casing 15 and seats against

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shoulder 15*b*. A gasket or packing washer 20 overlies the outer edge portion of screen 18. Casing 15 is open at its outer side and cap 17 also has a circular opening 17*a* at its outer side, said cap having a beveled portion 17*b* diverging inwardly from opening 17*a* to the interiorly threaded portion of cap 17. Cap 17 preferably has a knurled portion 17*e* on its periphery. A disk 21 is provided, the same being illustrated as made of comparatively thin metal, said disk being shown as circular in form. The central portion 21*a* of disk 21 is pressed outwardly toward the discharge side of said disk and is thus offset outwardly from the outer edge portion of said disk. As shown in Figs. 1 to 9*a* groove 21*b* is pressed inwardly from portion 21*a*, said groove being shown as of substantially uniform width and as having rounded or semi-circular ends. Groove 21*b* has parallel sides and its surface comprises longitudinally extending parallel elements. Groove 21*b* thus has a rectilinear bottom. Pressing groove 21*b* inwardly forms a rib 21*c* at the inner side of said disk. Said groove and rib are substantially semi-cylindrical in transverse cross section. The elements making up the groove and rib are rectilinear and the bottom element of said groove is rectilinear. The groove therefore has a rectilinear bottom. The outer ends of ribs 21*c* are rounded and substantially semi-circular. As shown in Figs. 1 to 4, 6, 8 and 9, a comparatively small opening 21*e* is formed centrally of disk 21 and of groove 21*b*, said opening being circular as seen from the outer side of disk 21 as shown in Fig. 9.

As shown in Figs. 5 and 8, a small narrow opening 21*ee* is formed by cutting or forming a small slot transversely in rib 21*c*.

Said disk 21 seats on or fits against the washer or gasket 20, as shown in Fig. 3, and is held against said member 20 when cap 17 is screwed on casing 15 by the inner surface 17*c* of cap 17. The converging surface 21*d* formed by the outer side of portion 21*a* substantially seats against the beveled surface 17*b* of cap 17, as shown in Figs. 3 and 7.

In operation the liquid to be sprayed is supplied to the nozzle through conduit 16 under considerable pressure. This liquid passes through screen 18 which will prevent any particles of solid matter passing therethrough and the liquid then passes through opening 17*d*, the cross sectional curve of the groove deflects all but the main body of the stream thus preventing substantially all of the cross currents from passing through the opening 21*e*. Therefore only the current

elements of the stream which are substantially parallel to groove **21***b* are able to pass through the opening. These form the wide portion of the jet. The current elements approaching opening **21***e* transversely of groove **21***b* or rib **21***c* cannot pass through opening **21***e* as they are blocked by the sides of rib **21***c*. This causes the jet to have a small transverse dimension or to be flattened. The fluid issues in the form of a flattened cone.

In Figs. 10 and 11 a disk **24** is shown having an outwardly pressed central portion **24***a* and an outwardly pressed groove **24***b* which forms an outwardly pressed rib **24***c*. Except that groove **24***b* is pressed outwardly these parts are the same as already described in connection with disk **21**. Disk **24** is provided with an opening **24***d* centrally thereof and centrally of groove **24***b* and this is made by forming a small slot **24***e* which extends transversely across rib **24***c*.

From the above description it will be seen that I have provided a very simple structure of spray nozzle and one which can be easily, quickly and inexpensively made. The form of spray desired is secured by disk **21** and this disk can be easily and quickly pressed into form. Disks **21** or **24**, gasket **20** and screen **18** can be readily removed for cleaning by removal of cap **17**. Disks **21** or **24** can thus be easily removed if another form of disk is to be used. The nozzle has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A spray nozzle construction having in combination, a thin disk, means engaging said disk adjacent its periphery at both sides thereof for holding it in position, a conduit for directing fluid toward said disk and disposed substantially coaxially therewith, said disk having a groove pressed inwardly therein toward said conduit and extending thereacross, said groove being substantially semi-cylindrical in transverse cross section and having a rectilinear bottom element, said disk having a small opening therein substantially at the center of said groove.

2. A spray nozzle structure having in combination, a disk of thin material having its central portion offset laterally from the plane of its periphery and having a groove pressed therein extending across said central portion, said groove being pressed in the opposite direction to said offset portion and having a rectilinear bottom element disposed substantially in the plane of said peripheral portion, said groove having parallel sides and curved end portions and being substantially semi-circular in transverse cross section and of the same dimension in cross section throughout its length between its curved end portions, said disk having a small opening extending therethrough substantially at the center of said groove.

3. A sprayer nozzle for an insecticide sprayer having in combination, a nozzle casing, a conduit connected to one end of said casing, said casing being open at its opposite end, a cap secured to said latter end having an opening therethrough, a disk held in place by said cap and extending across the opening therein, said disk having the central portion thereof pressed outwardly toward the discharge side of said nozzle, said portion having a groove of substantially uniform width pressed inwardly therein and extending diametrically thereacross, said disk having a small central opening extending therethrough centrally of said groove, said groove being substanitally semi-cylindrical in transverse cross section and having a rectilinear bottom element.

HENRY E. BRANDT.

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