July 17, 1956 C. H. HUGHF 2,755,137

LIQUID SPRAY JETS

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FIG. 1.

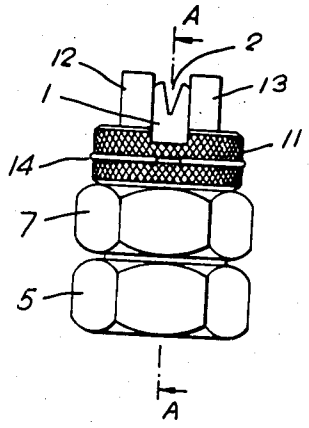


FIG. 2.

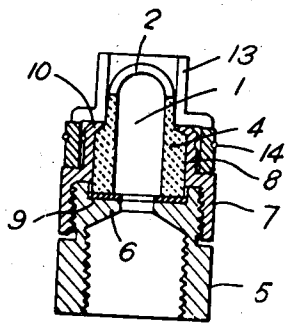


FIG. 3.

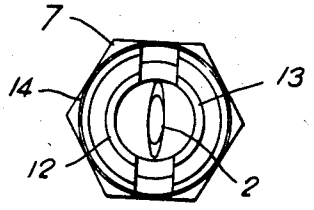


FIG. 4.

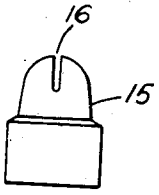
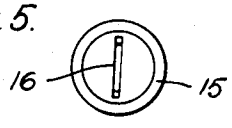


FIG. 5.



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LIQUID SPRAY JETS

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7 Claims. (Cl. 299—153)

This invention relates to liquid spray jets and has for its object the provision of a jet which gives a spray of more uniform distribution over a wider angle than has been possible hitherto.

According to the present invention a liquid spray jet comprises a member having a rounded end with a slot orifice and a feed passage leading thereto and a guard member in which the member is housed, the guard member being slotted to provide clearance for liquid emerging from the slot orifice.

The member is preferably made of a material such as porcelain and is housed in the guard member which protects it from damage. The slot orifice may have parallel sides or the sides may be inclined to one another to produce an angular slot.

As an example of the invention a spray jet constructed in accordance therewith will now be described in greater detail with reference to the accompanying drawings of which—

Fig. 1 is an elevation of the assembled jet;

Fig. 2 is a cross section on the line A—A of Fig. 1;

Fig. 3 is a plan view of the assembled jet;

Fig. 4 is an elevation of an alternative jet member; and

Fig. 5 is a plan view of the jet of Fig. 4.

The spray jet includes a jet member **1**, which is of porcelain, is of cylindrical shape having one end rounded with an angular slot orifice **2** which extends diametrically over the rounded end and a short distance down the walls of the cylinder. The angular divergence of the slot is about 30° and the orifice communicates with a central longitudinal passage **3** of substantially circular cross section which forms the feed passage. The interior contour of the porcelain jet member **1** in the vicinity of the orifice is hemispherical to ensure a uniform spread of true fan shape. For convenience of mounting a peripheral shoulder **4** is formed mid-way of the ends of the member by increasing the thickness of the wall of the lower part of the member with the latter held so that the orifice is uppermost.

The porcelain jet member **1** is mounted in a holder consisting of a union type nut fitting which ensures that the jet member is held firmly and that there is no leakage of liquid during spraying. The fitting is in two parts, the first **5** of which provides a seating **6** for the jet member and screws into the second part **7** which has a central apertured boss **8** adapted to receive a guard member surrounding the slotted end of the jet member which projects through the boss when the fitting is assembled. The jet member **1** rests on a metal washer of soft metal or other resilient material **9** which is placed on the seating **6**. The second part of the fitting has an internally projecting shoulder **10** which co-acts with a shoulder in the porcelain jet to hold the latter firmly into position when the parts of the fitting are assembled.

The guard member has a knurled ring **11** which slips over a central boss in the second member and which has two guards **12, 13** of approximately arc-shaped cross section which protect the porcelain jet. The guards extend slightly beyond the end of the jet member **1** when mounted in the fitting and the separation between the guards ensures that liquid emerging from the slot orifice does not come into contact with them. The knurled ring has a circumferential groove which accommodates a ring **14** of springy wire one end of which extends through the ring and into a shallow groove in the central boss in the second part. The base of the shallow groove is serrated so whilst the guard member can be rotated with respect to the fitting into a position in which the gaps between the guards are in alignment with the slotted orifice in the jet member it will subsequently remain in that position.

The angular slotted jet member shown in Figs. 1, 2 and 3 may be replaced by a jet member **15** shown in Figs. 4 and 5 having a parallel sided slot **16** but the distribution of the spray produced by the latter is not completely uniform over the length of the slot. With a parallel sided slot the degree of atomisation of the liquid being sprayed can be varied by altering the width of the slot, decreasing the width producing a greater degree of atomisation and a finer spray.

With an angular slot uniform distribution is achieved provided that the slot angle i. e. the angle of divergence of the sides of the slot is of the order of 30°. Any substantial variation from that value produces a non-uniform distribution.

In use, the porcelain jet member is mounted on the fitting to which the guard member has been attached and the assembly is attached to a supply pipe along which liquid to be sprayed is fitted. The liquid passes into the feed passage of the spray and is formed by the interior contour of the jet member into impinging streams which produce the flat spray at the orifice.

The angle of the spray produced is controlled by the depth of the slot orifice i. e. by the amount of the extension down the sides of the jet member. The deeper the slot i. e. the greater the extension the wider is the angle of the spray, a shallow slot producing a narrow angle spray. The walls of the feed passage may taper towards the slot orifice instead of being parallel as in the embodiment described above. The use of porcelain or similar material ensures that the sides of the orifice are quite "clean" and free from burrs which lead to the formation of a ragged spray.

I claim:

1. A liquid spray jet comprising a porcelain member having a rounded end with an angular slot orifice extending across the end, a feed passage leading to the slot orifice, a guard member in which the member is housed and which is slotted to provide clearance for liquid emerging from the slot orifice, a two part mounting for the member, the guard being mounted on one of those parts and being rotatable relative thereto.

2. A liquid spray jet according to claim 1 in which the other part of the two part mounting has an internal shoulder which supports the porcelain member.

3. A liquid spray jet according to claim 1 in which the angular divergence of the slot is of the order of 30°.

4. A liquid spray jet according to claim 1 in which the guard member is formed with a knurled portion with a peripheral groove in which a resilient ring is accommodated one end of the ring passing through the guard member to engage one of a plurality of recesses in said one part of the two part housing.

5. A liquid spray jet comprising a porcelain member with an angular slot orifice extending across the end thereof, the internal contour of the end being circular in the vicinity of the orifice, a feed passage of constant circular cross section leading to the orifice, a guard

member in which the porcelain member is housed and which is slotted to provide clearance for liquid issuing from the orifice, a two part mounting for the porcelain member, the guard member being rotatably mounted on one of said parts.

6. A liquid spray jet comprising a porcelain member having a rounded end with an angular slot orifice extending across that end, a feed passage leading to the slot orifice, a first mounting member having a seating for the porcelain member, a second mounting member having an internal shoulder said second member screwing into the first member so that the shoulder holds the procelain member on the seating, and a slotted guard member rotatably mounted on the second member and surrounding the porcelain member.

7. A liquid spray jet according to claim 6 in which the porcelain member seats in a resilient washer fitted into the seating.

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