May 12, 1942. J. L. OSBORNE 2,283,123

CAP BRUSH FOR LIQUID-CONTAINING BOTTLES

Filed July 19, 1941

FIG.1.

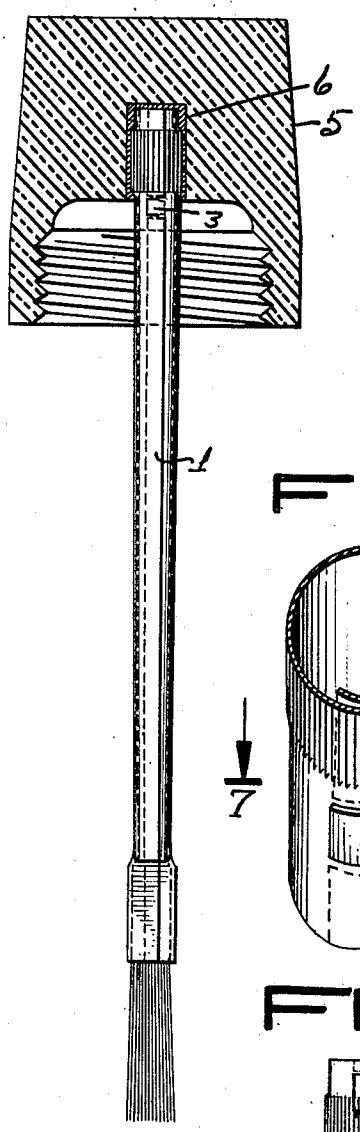


FIG.2.

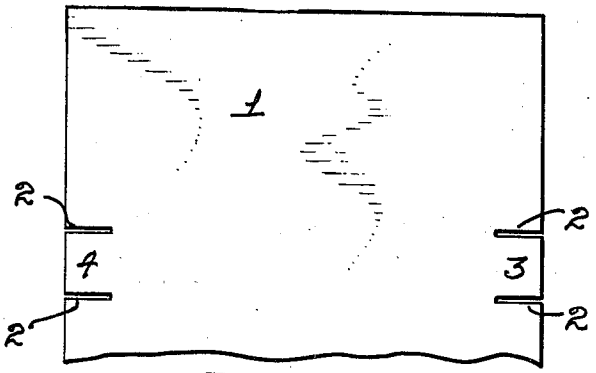


FIG.3.

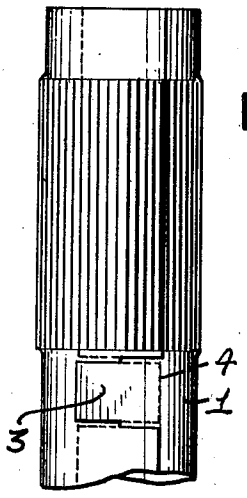


FIG.5.

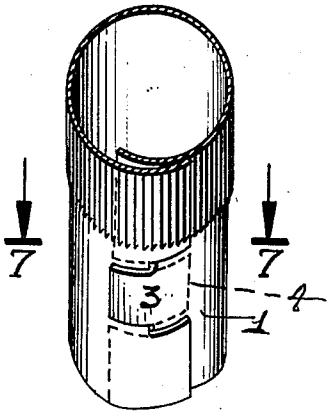


FIG.8.

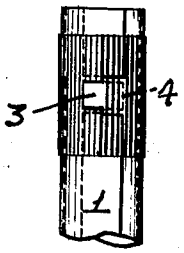


FIG.6.

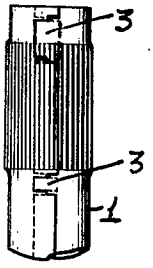


FIG.4.

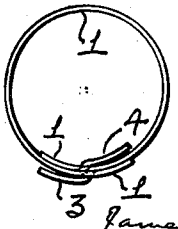


FIG.7.



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UNITED STATES PATENT OFFICE

2,283,123

CAP BRUSH FOR LIQUID-CONTAINING BOTTLES

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Application July 19, 1941, Serial No. 403,160

1 Claim. (Cl. 15—140.4)

The present invention relates to brushes customarily carried by the closure caps of bottles for holding liquids such as nail enamel, in which the brush shaft is formed by a unitary sheet of metal bent longitudinally to form a tube-like structure and compressed and flattened at the bristle-holding lower end. It is customary to use a relatively soft metal alloy, which is non-springy, and a problem has arisen, and, in fact, has been present for a number of years, in the holding of the top area of the brush within the customary cap socket. Although adhesives intermediate the socket and the brush end have been employed, there is a tendency for the shaft to contract and yield within the socket so that a large number of brushes in a given lot are only loosely held in the caps and come loose.

It is the specific object of the invention to provdie a brush shaft construction enabling the use of relatively soft metal alloys, and enabling a tight fit between the upper end of the brush shaft and the cap socket without contraction and yielding of the shaft at such point, so that the brushes will remain firmly bonded to the caps.

The invention will be described with reference to the accompanying drawing, in which:

Figure 1 is a view in elevation showing an embodiment of the invention applied to a cap, the latter being shown in longitudinal section, the view being greatly enlarged.

Figure 2 is a plan view showing the upper portion of a shaft blank prior to rolling the latter into shaft form.

Figure 3 is a fragmentary view showing the upper end of the brush shank in Figure 1, but substantially enlarged.

Figure 4 is a plan view of the structure shown in Figure 3.

Figure 5 is a sectional isometric view of the structure shown in Figure 3, the section being taken intermediate the knurled portion of the shank.

Figure 6 is a fragmentary view showing interlocking lips at opposite areas of the knurled portion of the brush.

Figure 7 is a fragmentary section taken on the line 7—7, Figure 5.

Figure 8 is a view similar to Figure 6 showing the interlocking lips positioned centrally of the knurled area of the brush shank.

Referring to the blank shown in Figure 2, which figure shows only the upper end of the blank, it will be seen that at each side thereof the blank has been cut with two spaced slots at right angles to the longitudinal axis of the blank. When the blank is rolled so that the longitudinal margins overlap, the position of the lips formed intermediate the slots is reversed, i. e., the lip between the slots on the left side of the blank will overlap the right side and the lip between the slots on the right side will overlap the left side or margin of the blank. The blank is indicated at 1, the slots at 2, the right-hand lip is shown at 3, the left-hand lip at 4, as will be more readily seen by reference to Figures 7 and 4.

It is customary to knurl the blank near the upper end thereof, and the lips 3 and 4 may be formed either immediately below the knurling, as shown in Figures 1, 3 and 5, or at opposite sides of the knurl as shown in Figure 6, or within the knurled area as shown in Figure 8. For the sake of clarity the numeral 1 has been employed in the drawing to designate both the blank and formed brush shank.

By means of the invention an area of each margin of the brush shank is displaced so that as to a margin which would normally lie exteriorly the brush shank an area thereof has been displaced to extend interiorly and an area of the brush shank which would normally lie interiorly has been displaced to lie exteriorly, and when the brush shank is rolled into final formation, the shoulders of the lips will interengage and provide firm abutments which will maintain the annular form and final diameter of the brush shank at the area which is inserted into the cavity of the cap 5; and the brush shank will have no tendency to contract and be pulled away from the cementing agents. In fact, by pressing the upper end of the brush shank into the cap cavity, a permanent bond may be provided which will eliminate the necessity for a cementing agent. In some cases, one of the lips 3 or 4 may be eliminated by cutting away the metal forming the lip, but I prefer to employ the two lips in conjunction.

Having described my invention, what I claim and desire to secure by Letters Patent, is as follows:

In a cap brush for liquid-containing bottles, a brush shank formed by rolling a sheet blank into marginally overlapped formation throughout its length, one margin being provided with spaced transversely extending slots, and the second margin being provided with colinear spaced transversely extending slots co-linear with the first named slots, the slots at each margin providing a lip between them, and the lips being reversely bent, each lip having a lapped relationship to the margin of the shank which it engages opposite to that of the margin carrying the lip.

JAMES L. OSBORNE.