Jan. 28, 1941. W. I. WESTERVELT 2,230,126

PAINT BRUSH

Filed Nov. 12, 1937 2 Sheets-Sheet 1

Fig. 1

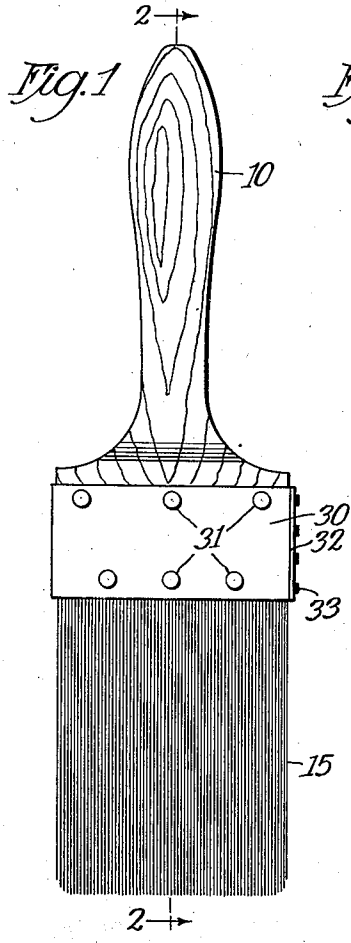


Fig. 2

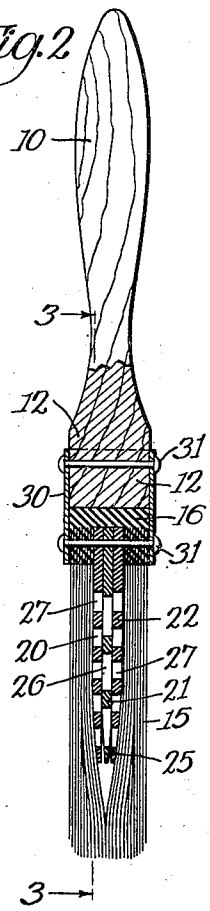


Fig. 13

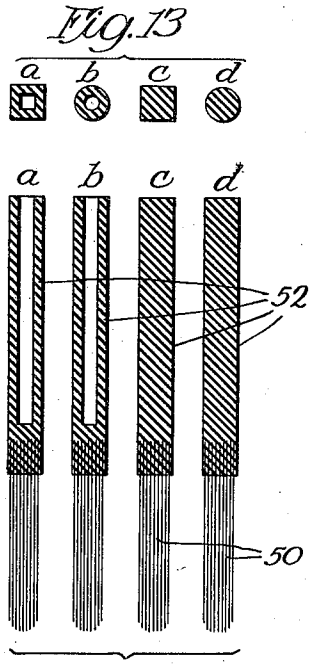


Fig. 12

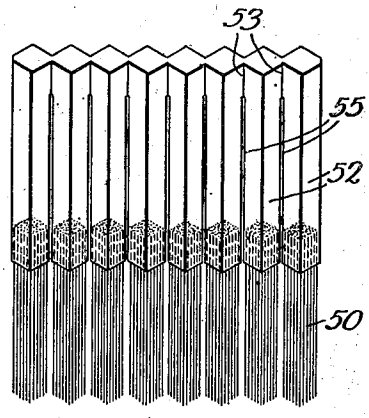


Fig. 11

Fig. 3

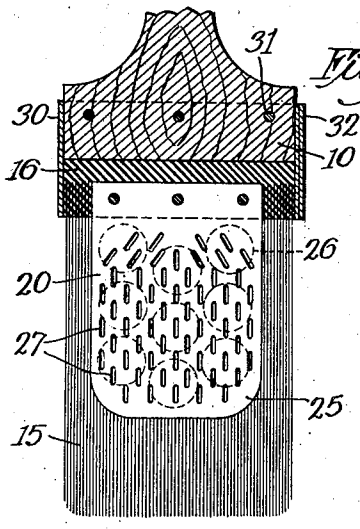
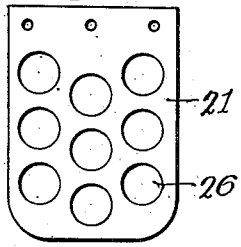


Fig. 4



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Fig. 5

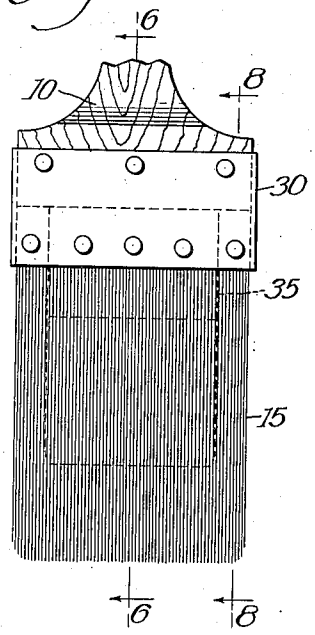


Fig. 6

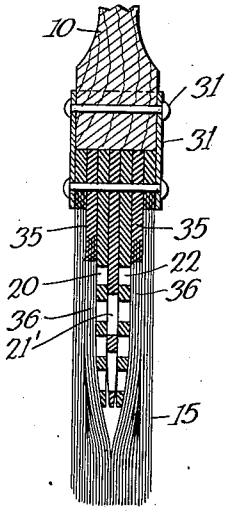


Fig. 7

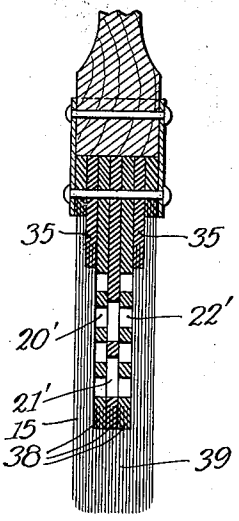


Fig. 9

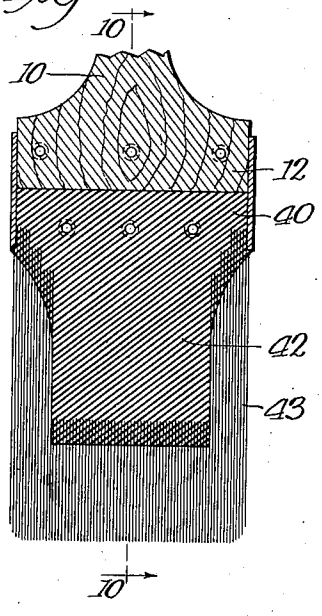


Fig. 10

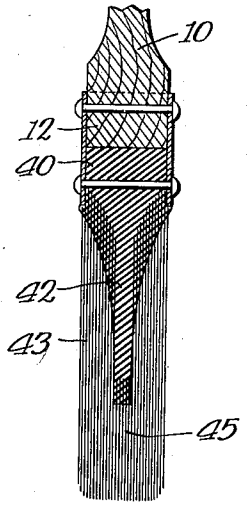
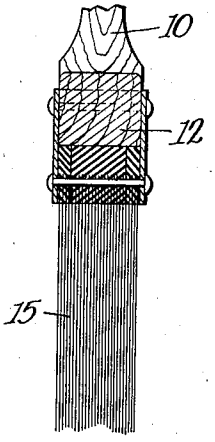


Fig. 8



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Patented Jan. 28, 1941 2,230,126

UNITED STATES PATENT OFFICE

2,230,126

PAINT BRUSH

William I. Westervelt, Winnetka, Ill.

Application November 12, 1937, Serial No. 174,133

14 Claims. (Cl. 15—204)

This application is, in part, a continuation of my copending application, S. N. 114,396, filed December 5, 1936 (later abandoned).

My invention relates to paint brushes, and has to do more particularly with an improved brush which will be less expensive to fabricate and more satisfactory in operation than the ordinary type of brush.

In a paint brush of good quality, the bristles constitute the major source of expense. Attempts to economize in the bristles themselves have been unsuccessful because only a particular type of split bristle from certain types of hogs has been found to give the desired results. Efforts have been made to design brushes in such a manner that the number of bristles may be reduced without seriously reducing the bulk of the brush and the fluid-carrying capacity thereof, but, so far as I am aware, such attempts have not been entirely successful. I know that brushes have been suggested which have embedded reservoirs of spongy material. Such articles have serious disadvantages, however.

An object of my invention is to provide an improved brush construction which will permit the use of a smaller number of bristles than a standard brush without detracting from the bulk or fluid-carrying capacity of the brush.

A further object is to provide a brush with an improved fluid reservoir within the mass of bristles, which reservoir will retain fluid by capillarity and will gradually feed the fluid to the bristles as required.

Another object of my invention is to provide a brush wherein short bristles are to a substantial extent substituted for longer bristles without detracting from the efficiency of the brush.

Still another object is to provide in a paint brush a bristle mounting arrangement whereby relatively short unsplit bristles may be substituted for long split bristles with substantially the same advantages as the latter.

Another object is to provide such a device which will be economical to fabricate, long lived, and generally satisfactory for the desired purposes.

Various other objects and advantages will become apparent as the description proceeds.

Referring now to the drawings forming a part of this specification and illustrating a preferred embodiment of my invention,

Fig. 1 is a plan view of one form of paint brush embodying my invention,

Fig. 2 is a sectional view taken substantially along the line 2—2 of Fig. 1,

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 2,

Fig. 4 is a plan view of a reservoir member forming an element of the device shown in Figs. 1–3,

Fig. 5 is a plan view of another embodiment of my invention,

Fig. 6 is a sectional view taken substantially along the line 6—6 of Fig. 5,

Fig. 7 is a view similar to Fig. 6 and showing another embodiment of my invention,

Fig. 8 is a sectional view taken substantially along the line 8—8 of Fig. 5,

Fig. 9 is a sectional view similar to Fig. 3 and showing still another embodiment of my invention.

Fig. 10 is a sectional view taken substantially along the line 10—10 of Fig. 9,

Fig. 11 is a perspective view showing a bristle mounting arrangement,

Fig. 12 is a series of longitudinal sectional views through a plurality of rod-like bristle mountings embodying still another embodiment of my invention, and

Fig. 13 is a plurality of transverse sectional views taken through the respective mountings of Fig. 12.

Referring first to Figs. 1–4, inclusive, the brush therein shown comprises a handle 10 terminating in a stock portion 12, said handle being formed of any suitable material, such as wood or the like. Bristles 15 have their ends molded into a block 16 of suitable plastic material, for which I preferably use a synthetic rubber sold at the present time under the trade-mark Duprene. Said material is distinguished by the characteristic of being practically insoluble in ordinary paint solvents. Although rubber could be used for this purpose, said material does not have said quality of low solubility. Other plastics could be used. The block 16 is provided with a cavity into which are fitted one or more flexible plate like reservoir members 20, 21 and 22. Said members may be tapered adjacent their lower edges as indicated at 25. These reservoir members are also preferably molded or otherwise fabricated from Duprene. I preferably provide a plurality of the flexible plates or reservoir members as shown.

The inner reservoir member 21 is provided with a plurality of relatively large perforations 26 which may be circular, as shown, or otherwise shaped, while the reservoir members 20 and 22 between which the member 21 is disposed have perforations 27 which are relatively smaller in

area than the perforations 26. As seen best in Fig. 2, the reservoir members are substantially surrounded on all sides by the bristles and by the molded material carrying the latter. The various parts are bound together in a unitary structure by means of a metal plate 30 secured to the stock 12 and block 16, as by rivets 31. The ends of the plate 30 overlap as at 32 and are secured by rivets 33.

In the use of the brush just described, the reservoir member 21 retains a relatively large quantity of paint which is fed gradually to the reservoir members 20 and 22, which, in turn, feed the paint slowly through their apertures 27 to the adjacent bristles. Hence these reservoir members give to the brush the bulk which would normally be provided by bristles and at the same time serve the same function of bristles as paint reservoirs. In this way I am able to provide a brush having all the advantages of an all bristle brush while saving the cost of a large proportion of the bristles, since the molded reservoir members may be fabricated at a very low cost. When the brush is used, the reservoirs tend to slide over each other in the same manner as bristles, thus giving the workman the same "feel" as a full bristled brush, while serving to feed the paint outwardly into the bristles.

Figs. 5 and 6 illustrate a modified form of my invention. In this embodiment I provide for the utilization of a substantial proportion of short bristles and thus effect a substantial economy. Thus it will be seen from an inspection of Fig. 6 that disposed on the outside of the reservoir members 20 and 22 I provide a base member 35 into which are molded a plurality of bristles 36 which are shorter than the outside bristles 15. The base members 35 are formed of moldable material, preferably Duprene. Otherwise this embodiment of the invention is substantially similar to that described above.

The embodiment shown in Fig. 7 is similar to the embodiment of Figs. 5 and 6, excepting that I further increase the bulk of the brush by utilizing even shorter bristles than embodied in Figs. 5 and 6. Thus the reservoir members 20', 21', and 22' instead of being tapered, are thickened adjacent the ends as indicated at 38 and said thickened portions have molded therein relatively short bristles 39. This expedient substantially adds to the bulk of the brush adjacent the end thereof.

In the embodiment of Figs. 9 and 10 there is clamped immediately below the stock portion 12 of the handle a molded core member 40, preferably of Duprene or the like, having a tapered extremity 42. It will be seen that in accordance with this embodiment of the invention I am able to utilize bristles of a wide variety of lengths, certain of said bristles 43 being embedded in the sides of the molded member 40 and other relatively short bristles 45 being embedded in the end of the molded member 40. It will be seen that this embodiment provides all of the desired bulk by reason of the presence of the molded core 40 within the bristles, while at the same time the cost of the brush is greatly reduced by reason of the fact that said embodiment requires only a relatively small number of long bristles, a large number of the bristles being either of graduated length, less than the longest bristles, or else of very short length, as in the case of bristles 45.

The molded core member 40 may, of course, have its tapered extremity 42 split longitudinally into elongated strips (not shown) which are adapted to slide upon each other in the same manner as the reservoir members 20, 21 and 22.

Fig. 11 shows another arrangement for mounting brush bristles whereby I am enabled to use relatively short and inexpensive bristles in lieu of the longer and more expensive ones, while retaining most of the advantages of the longer bristles. Thus the relatively short bristles indicated by the numeral 50 are molded into rod-like members 52 of Duprene or other suitable flexible plastic. Said rods may take any desired cross-sectional shape, such as square, as shown in Figs. 12—C and 13—C, round, 12—D and 13—D, and may be either solid or hollow, as shown in Figs. 12 and 13. Where hollow rods are used, the portion in which the bristles are embedded is, of course, solid.

The rods may be entirely separated and secured at their bases or may be molded integrally with a suitable base member. In the embodiment shown in Fig. 12, the rods are connected adjacent their base portions by a thin, integral web 53 and sheared apart, as indicated at 55, for the major portion of their length, thus giving the rods high flexibility. It will be understood, of course, that several series of rods of the type shown in Fig. 12 may be secured together in parallel relation.

The portion of the bristle which extends from the ends of the rods may, of course, vary considerably and the rod may vary largely in its cross-sectional dimension. Thus, for example, a single rod may be used for the mounting of two or three bristles, if desired. In any event such an arrangement gives practically the same advantages as the expensive split bristles, although using the relatively inexpensive unsplit and short bristles.

Various other modifications coming within the spirit of my invention may suggest themselves to those skilled in the art, and hence I do not wish to be limited to the specific forms shown or uses mentioned except to the extent indicated in the appended claims, which are to be interpreted as broadly as the state of the art will permit.

I claim:

1. A brush having a body of bristles, and a core disposed within said body, said core comprising a plurality of perforated flexible sheet members serving as liquid reservoirs, one of said members having relatively large perforations and being interposed between a pair of said sheet members having relatively small perforations, whereby the liquid will be fed gradually out to the bristles.

2. A brush having a body of bristles and a flexible molded and tapered core disposed within said body, said core having a plurality of bristles of graduated length embedded therein.

3. A brush having a body of bristles, and a core disposed within said body, said core comprising a plurality of perforated flexible molded sheet members serving as liquid reservoirs, said members having a plurality of relatively short bristles molded therein.

4. A brush having a relatively thin flexible core formed of plastic material, and bristles substantially surrounding said core, at least certain of said bristles being embedded in said core.

5. A brush having a relatively thin flexible core formed of plastic material which is relatively insoluble in paint solvents, and bristles substantially surrounding said core, at least certain of said bristles being embedded in said core.

6. A brush having a relatively thin flexible core formed of plastic material, and bristles em-

bedded in the sides of said core, said sides being tapered to receive bristles of varying lengths.

7. A brush having a relatively thin flexible core formed of plastic material, relatively short bristles embedded in the end of said core, and other bristles embedded in the sides of said core, said sides being tapered to receive bristles of varying lengths.

8. In a brush, a handle, an elongated flexible member secured at its base portion to said handle, said member being formed of plastic material and having relatively short bristles embedded therein.

9. In a brush, a plurality of rod-like flexible members formed of plastic material secured at their base portion, and relatively short bristles embedded in the free ends of said members.

10. In a brush, a handle, a plurality of flexible tubular members formed of plastic material, and relatively short bristles embedded in the free ends of said members.

11. In a brush, a handle, a relatively slender flexible member secured at one end to said handle, and relatively short bristles having their ends embedded in said member and extending longitudinally thereof.

12. In a brush, a handle, a plurality of relatively slender flexible members secured at one end to said handle, and relatively short bristles having their ends embedded in said members and extending longitudinally thereof, said flexible members being spaced relatively closely together, so that liquid will be retained in said spaces by capillarity.

13. A brush having a body of bristles and a core disposed within said body, said core comprising a thin, resilient plate like member of a plastic material non-absorbent and impervious to paint, fixed at one end along with said bristles and freely movable at its other end during brushing movement, said member having a plurality of cavities therein opening to the surfaces thereof and forming a plurality of individual reservoirs extending transversely of the main plane thereof for the reception and retention of liquid by capillarity and gradual supply of liquid to said bristles during brushing.

14. A brush having a body of bristles and a core disposed within said body, said core comprising a plurality of superposed perforated, flexible, sheet members fixed at one end and freely movable at the other with said bristles so that flexing of said body of bristles will cause the said members to slide one on the other, said perforations in said sheet members being constructed and arranged to form a plurality of individual reservoirs capable of storing liquid by capillarity and discharging the same during sliding movement of said members.

WILLIAM I. WESTERVELT.