June 9, 1953 H. F. SAUTER ET AL 2,641,014

BRUSH HAVING AN INTERNAL ANCHOR FOR SECURING THE BRISTLES WITHIN THE FERRULE

Filed April 19, 1950 3 Sheets-Sheet 1

Fig. 1

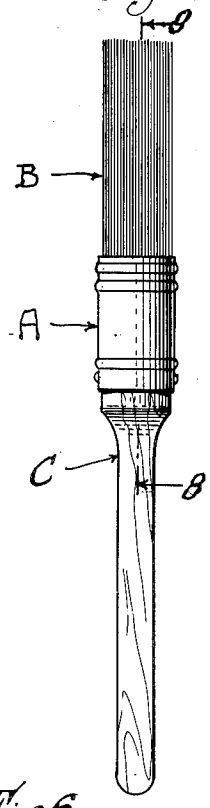


Fig. 2

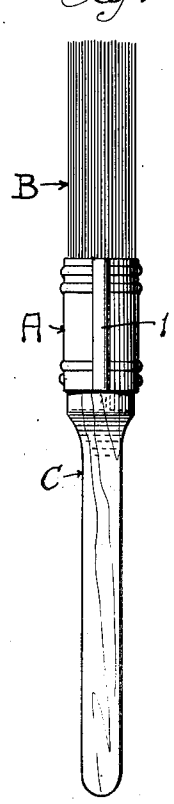


Fig. 3

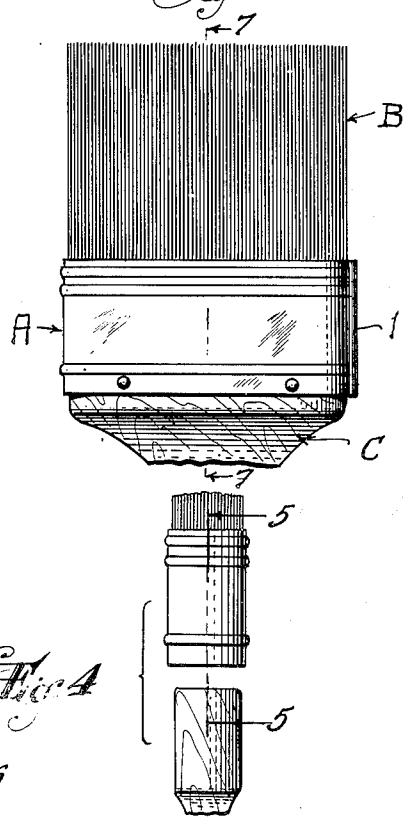


Fig. 4

Fig. 6

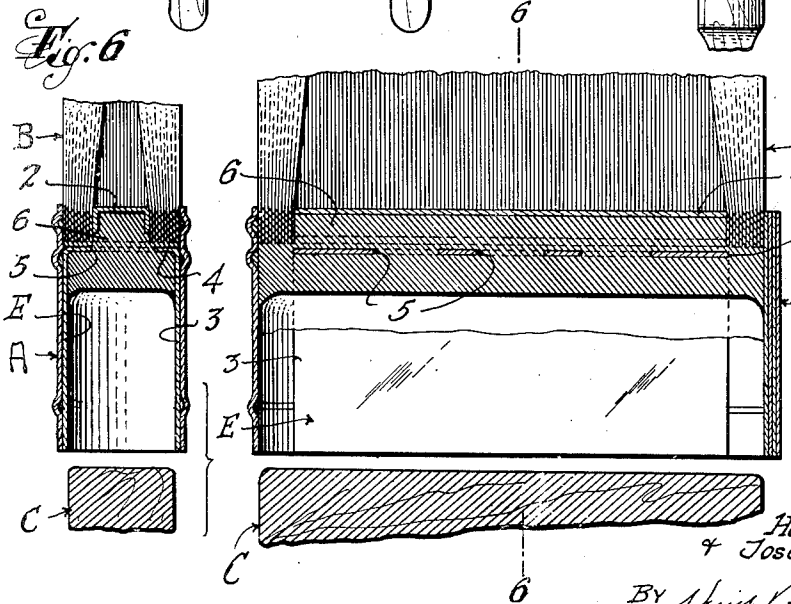


Fig. 5

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Fig. 7

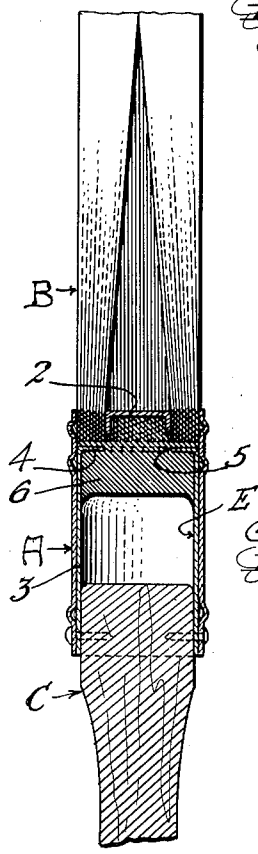


Fig. 9

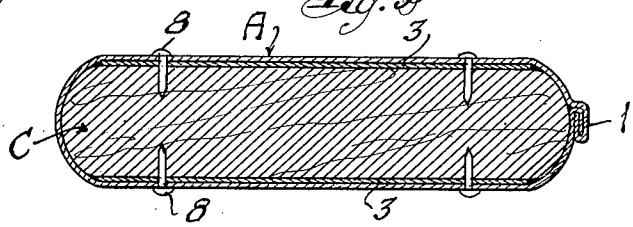


Fig. 8

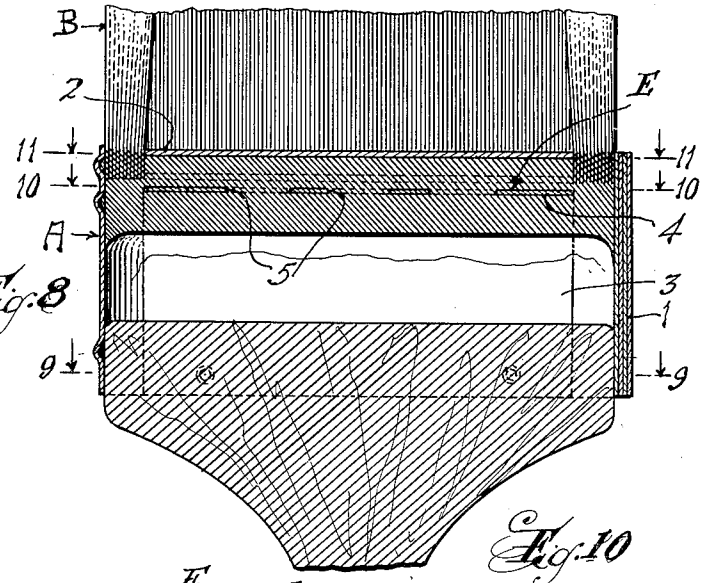


Fig. 10

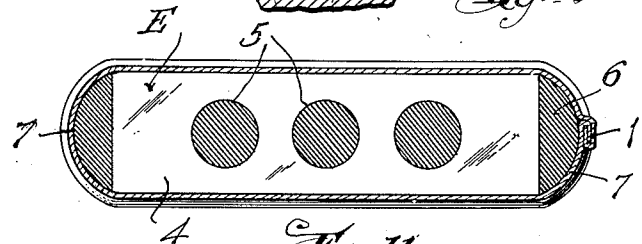


Fig. 11

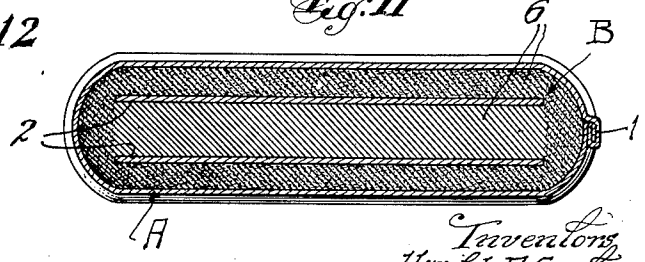
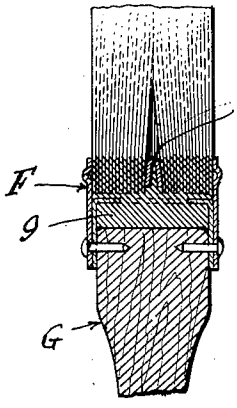


Fig. 12



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BRUSH HAVING AN INTERNAL ANCHOR FOR SECURING THE BRISTLES WITHIN THE FERRULE

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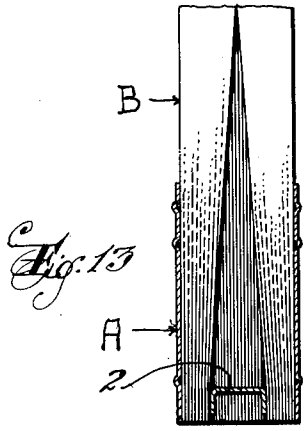


Fig. 13

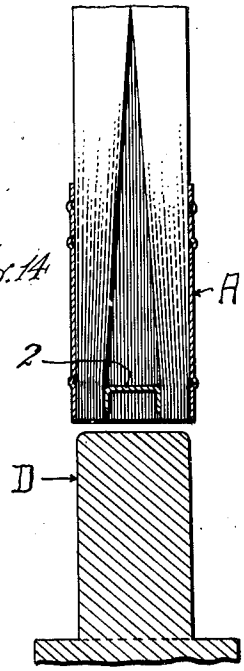


Fig. 14

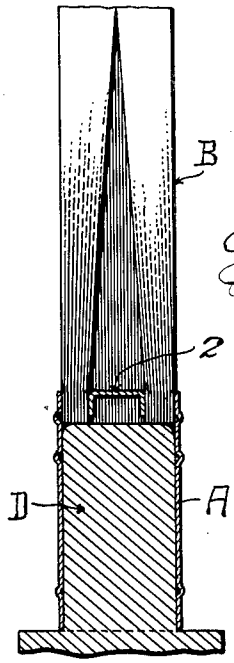


Fig. 15

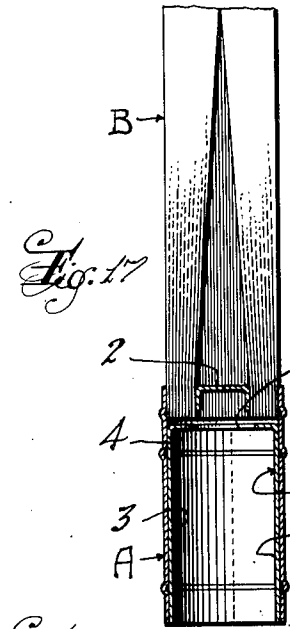


Fig. 17

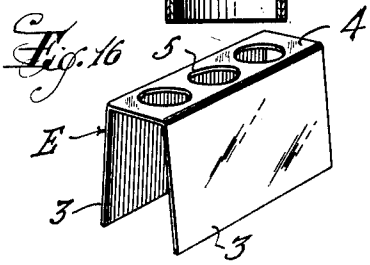


Fig. 16

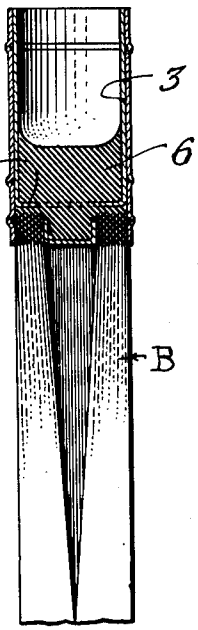


Fig. 18

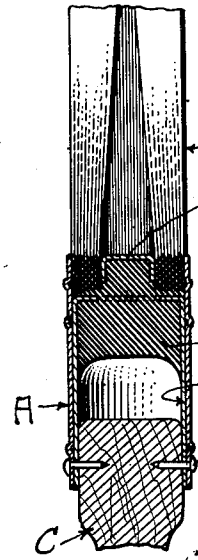


Fig. 19

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2,641,014

UNITED STATES PATENT OFFICE

2,641,014

BRUSH HAVING AN INTERNAL ANCHOR FOR SECURING THE BRISTLES WITHIN THE FERRULE

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Application April 19, 1950, Serial No. 156,848

4 Claims. (Cl. 15—193)

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This invention relates to the manufacture of brushes of the type that comprise a frame or ferrule having a socket or recess in which the root or butt ends of the bristles are secured by a plastic or setting composition, such as vulcanized rubber. In the manufacture of one form of brush of this type, the proper quantity of bristles is inserted into a ferrule, generally with a plug or separator at the root ends of the bristles, after which the brush is sized to cause the proper length of the bristles to project from the ferrule. The plastic composition is then inserted into the ferrule around the root ends of the bristles, whereupon said composition is allowed to set or harden, and where the composition is rubber, it is vulcanized in the usual manner. The brushes are then conveyed in tote trays to a drilling machine where holes are drilled through the ferrule and the plastic composition, after which the brushes are again carried to another station where pins are inserted into the drilled holes, cut off and bent over or hammered down, the brushes then being conveyed to another point for finishing.

Another form of brush of the general type described is disclosed in Patent No. 2,316,870, in manufacture of which a plate is secured in the ferrule intermediate the ends thereof to form a socket into which the plastic composition or bristle setting compound is poured, whereupon the root ends of the bristles are pressed into the plastic composition within the socket, the composition then being allowed to set and being vulcanized when it is rubber.

A prime object of the present invention is to provide a brush wherein the bristles shall be more securely held in the ferrule, the brush shall be devoid of unsightly nails or rivets, no drilling shall be required, no splitting of the hardened plastic composition and consequent weakening of the brush as the result of drilling or nailing shall be possible and the brush can be produced rapidly with a great saving of time over known methods and at a minimum cost consistent with highest quality.

Another object of the invention is to provide a brush of this character wnich shall include a novel and improved construction and combination of a ferrule, bristles embedded in a setting compound and an anchor therefor such that the root ends of the bristles can be inserted into one end of the ferrule, said anchor can be pushed into the other end of the ferrule, and the plastic composition can be easily poured into the second-mentioned end of the ferrule and around the root ends of the bristles and the anchor.

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Other objects, advantages and results of the invention will be brought out by the following description in conjunction with the accompanying drawings in which:

Figure 1 is a side elevational view of a paint brush constructed in accordance with the invention;

Figure 2 is a similar view of the opposite side of the brush;

Figure 3 is a front elevational view of the brush;

Figure 4 is a fragmentary composite side elevational view of a portion of the handle and the ferrule in separated relation to each other, preliminary to inserting the handle into the ferrule;

Figure 5 is a greatly enlarged fragmentary vertical sectional view approximately on the plane of the line 5—5 of Figure 4;

Figure 6 is a transverse vertical sectional view approximately on the plane of the line 6—6 of Figure 5;

Figure 7 is a fragmentary transverse vertical sectional view through the completed brush;

Figure 8 is a fragmentary longitudinal vertical sectional view through the completed brush;

Figure 9 is a horizontal sectional view approximately on the plane of the line 9—9 of Figure 8;

Figure 10 is a horizontal sectional view approximately on the plane of the line 10—10 of Figure 8;

Figure 11 is a similar view approximately on the plane of the line 11—11 of Figure 8;

Figure 12 is a view similar to Figure 7 showing a modified form of the brush;

Figure 13 is a transverse vertical sectional view through a bunch of bristles inserted into a ferrule and having a plug or separator at the root ends as the result of one step of the method of making the brush;

Figure 14 is a view similar to Figure 13 showing also in transverse vertical section a sizing block at the beginning of the sizing operation;

Figure 15 is a view like Figure 14 but showing the parts in the position assumed at the end of the sizing operation;

Figure 16 is a detached perspective view of the anchor for the setting compound and the bristles;

Figure 17 is a transverse vertical sectional view through the ferrule, the bristles and the anchor assembled therein;

Figure 18 is a transverse vertical sectional view showing the brush inverted from its position illustrated in Figure 17 and having the plastic composition poured into the ferrule; and

Figure 19 is a fragmentary transverse vertical sectional view showing the assembled bristles,

plug, or spacer, ferrule and anchor in assembled relation to the brush handle.

Specifically describing the illustrated embodiment of the invention, the reference character A designates a ferrule that is made of a strip of suitable material, for example sheet metal, shaped into annular or tubular form with its ends infolded or otherwise secured together at 1. The ferrule may be made of any suitable shape or dimensions, depending upon the type of brush desired. In one end of the ferrule are secured the usual bristles B, and the other end of the ferrule has a handle C secured therein.

In the manufacture of the brush, the proper quantity of bristles B to form the desired brush is bunched in the usual way with their root or butt ends surrounding a plug or spacer 2 in the usual way. This plug may be formed of any suitable material and of any desired shape, but is illustrated as formed of sheet metal, channel shaped in cross section with its channel facing toward the butt end of the bristles and the edges of its flanges spaced slightly inwardly from the bristle ends.

The tip ends of the bristles are slipped into the handle end of the ferrule A and the bristle assembly is slid through the ferrule until the butt ends of the bristles are approximately flush with the edge of the handle end of the ferrule as best shown in Figure 13.

Then the ferrule with the bristles therein is slipped downwardly over a sizing block D in the usual way as shown in Figure 15 so that the bristles are pushed through the ferrule toward the other end thereof until the bristles are projected from the second-mentioned end of the ferrule the desired distance. Preferably the base of the plug 2 will be approximately flush with the edge of the ferrule as shown in Figure 15. This leaves portions of the bristles adjacent the butt ends within the ferrule to be embedded in the plastic composition as will be later described. In accordance with the invention a shorter portion of the length of the bristles will be required to be located within the ferrule, and therefore the manufacturer has the choice of either using shorter bristles and thereby reducing the cost of the brush, or supplying the customer with longer bristles at the same cost as shorter bristles.

The ferrule is then removed from the sizing block D and the anchor E for the bristle setting compound and the bristles is pushed into the ferrule from the end thereof opposite the bristles as best shown in Figure 17. This anchor is illustrated as channel-shaped and formed of sheet metal, preferably aluminum, the flanges 3 of the anchor being slightly resilient and the base 4 of the anchor having a plurality of holes 5 therethrough. The anchor is pushed into the ferrule with its base portion foremost and generally disposed in closely spaced relation to the butt ends of the bristles and with its flanges in loose or unconnected contact with the inner surface of the ferrule.

The assembly is then inverted and the bristle setting compound or plastic composition 6, for example rubber, is poured into the ferrule and flows through the holes 5 of the anchor downwardly around the bristle butts as shown in Figure 18. It will be observed that the ends of the anchor E terminate short of the end walls 7 of the ferrule A as shown in Figure 10 so that the plastic composition may freely flow and entirely surround the anchor. The flanges 3 of the anchor are preferably of a length so that their edges are flush with the edges of the ferrule at its handle end when the anchor is finally located within the ferrule; and after the plastic composition has been poured as shown in Figure 18, it is allowed to harden or set, and vulcanized when it is rubber, after which the assembly is secured to the handle D as shown in Figure 19. The end of the handle is slipped into the ferrule and between the flanges 3 of the anchor, after which both the ferrule and said flanges are fastened to the handle by any suitable means such as nails 8.

With this construction, it will be observed that the bristles, ferrule, anchor and plug constitute a unitary structure and that the bristles are firmly embedded in the setting compound which is in turn firmly held by the anchor E, so that the brush is stronger than known brushes of this general type. Moreover, no drilling, nails or rivets are required for attaching the bristles to the ferrule, which avoids the splitting or fingering and consequent weakening of the block of composition and at the same time saves the cost of the nails or rivets and provides a neater appearance for the brush.

It has been found that a saving up to seventy-five per-cent (75%) of time is made possible by our methods over earlier methods, it being possible to insert the anchors E into the ferrules at the rate of around six hundred (600) per hour.

It will be understood by those skilled in the art that the sizes of the brushes may be widely varied and Figure 12 shows a modification of the brush wherein a smaller quantity of the plastic composition 9 is utilized and the ferrule F is substantially shorter than the ferrule A so that the handle G may be inserted into the ferrule and substantially into contact with the plastic composition. Also a different type of plug or separator 10 is utilized, permitting a larger quantity of bristles to be mounted in the ferrule. In all forms of the invention, the ferrule may be formed with integral grooves 12 to provide additional bonding of the plastic material with the walls of the ferrule. As shown, these grooves are made by pressing the material of the ferrule outwardly, thereby forming exterior ribs which also reinforce the ferrule.

While we have shown and described the invention as embodied in certain method steps and structural details, it should be understood that the method may be modified and the construction of the brush may be changed within the spirit and scope of the invention.

We claim:

1. A brush comprising a tubular ferrule, an anchor for a bristle setting compound and bristles within said ferrule and having a portion disposed transversely and intermediate the length of said ferrule, a bunch of bristles having one end extending into one end of said ferrule, a mass of hardened bristle setting compound in said ferrule in which said portion of said anchor and said ends of the bristles are embedded, said portion of the anchor having projections extending beyond said setting compound toward the other end of said ferrule and in loose contact with the inner surface of the ferrule, and a handle having one end inserted into the second-mentioned end of the ferrule and secured to the ferrule and to said projections.

2. A brush comprising a tubular ferrule, an anchor for a bristle setting compound and bristles within said ferrule and having a portion disposed transversely and intermediate the length

of said ferrule, a bunch of bristles having one end extending into one end of said ferrule, a mass of hardened setting compound in said ferrule in which said portion of said anchor and said ends of the bristles are embedded, said portion of the anchor having projections extending beyond said setting compound toward the other end of said ferrule and in loose contact with the inner surface of the ferrule, a handle having one end inserted into the second-mentioned end of the ferrule between said projections, and fastening members passing through the walls of said ferrule and through said projections into said handle to secure the ferrule and said anchor to said handle.

3. A brush as defined in claim 1 wherein said anchor is channel-shaped with its base portion disposed transversely of said ferrule in closely spaced relation to said ends of the bristles and with its flanges constituting said projections, and said base portion has holes through which said plastic material has flowed to embed the anchor in said plastic material.

4. A brush as defined in claim 2 wherein said anchor is channel-shaped with its base portion disposed transversely of said ferrule and with its flanges constituting said projections, and said base portion has holes through which said plastic material has flowed to embed the anchor in said plastic material, and wherein said fastening members are nails driven through said ferrule walls and said flanges into said handle.

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JOSEPH J. WEINBERGER, JR.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,040,407	Pushee	Oct. 8, 1912
1,847,668	Reh	Mar. 1, 1932
2,316,870	Jacob	Apr. 20, 1943
2,508,931	Simms	May 23, 1950