May 25, 1943. J. W. BATE 2,319,841

BRUSH

Filed May 13, 1942

Fig. 1

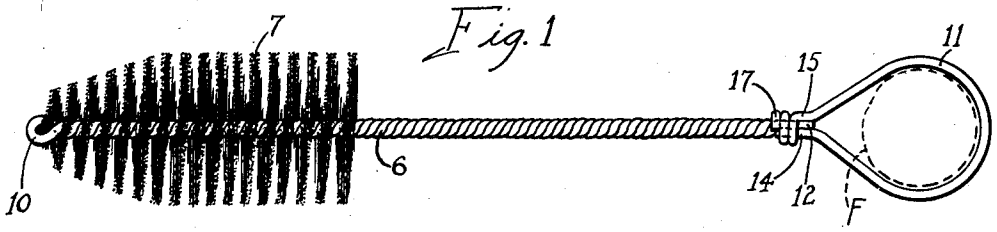


Fig. 2

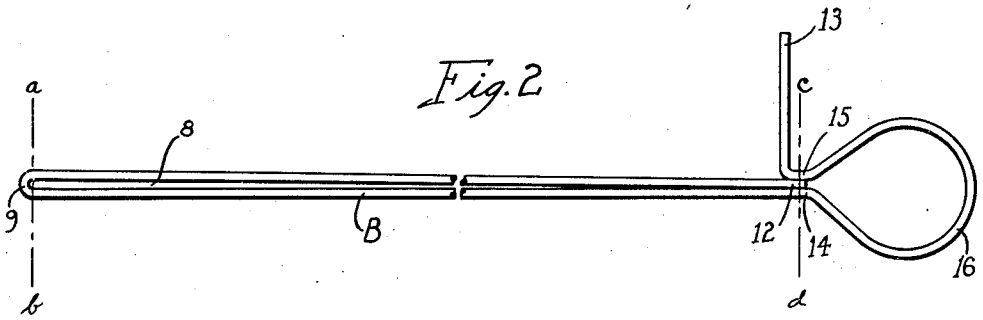


Fig. 3

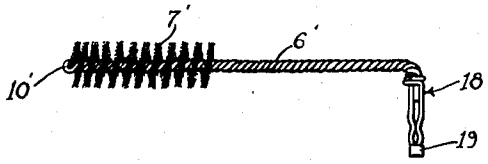


Fig. 4

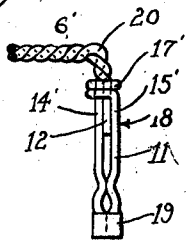
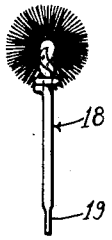


Fig. 5



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BRUSH

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4 Claims. (Cl. 15—206)

This invention relates to brushes of the twisted-in-wire type.

The raw ends of the twisted wire core have presented a problem. Where it was desired to provide a handle eye on one end, it was customary heretofore to form this eye as a closed loop on one end of the core, thus giving an objectionable sharp end on the core at the end of the brush where the end of the wire core was trimmed off. In a brush intended for use in cleaning gun barrels such a sharp end is highly objectionable because of the likelihood of scratching the bore. Typewriter brushes have for a long time been made with rubber tips covering the sharp end on the core.

The principal object of my invention is to provide a brush of the twisted-in-wire type made with the tip end of the brush finished smooth and a handle eye formed in the other end in such a way that there are no objectionable sharp ends of the wire left exposed.

Another object consists in providing a brush of the twisted-in-wire type made with the tip end of the brush finished smooth and a screw driver bit formed on the other end at right angles to the handle shank portion and in such a way that there are no objectionable sharp ends of the wire left exposed.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a side view of a cleaning brush made in accordance with my invention;

Fig. 2 is a view of the wire core blank used in the making of the brush shown in Fig. 1;

Fig. 3 is a side view of another cleaning brush made in accordance with my invention;

Fig. 4 is an enlarged view of the screw driver bit end, and

Fig. 5 is an end view of the brush on the same scale as Fig. 4.

Similar reference numerals are applied to corresponding parts.

Referring first to Figs. 1 and 2, the brush shown has a one-piece twisted wire core 6 made from a blank like that shown at B in Fig. 2, the bristles 7 being inserted in the throat 8 of the blank and secured in place by the twisting of the wire in the usual way. However, in accordance with my invention the wire for the blank B is bent upon itself, as indicated at 9, to form the throat 8 and the bristles are entered up to the bend 9 preliminary to the twisting operation, whereby to provide a smooth tip 10 on the brush instead of the objectionable sharp end usually provided in the past. A handle eye 11 is provided on the other end of the core 6 in such a way that neither of the end portions 12 and 13 of the wire blank B presents an exposed sharp end. The end portion 12 is disposed between the short straight portions 14 and 15 provided next to the loop 16 from which the handle eye 11 is formed. In the finished brush the cut end 12 is enclosed in the crotch portion connecting the eye 11 with the end of the handle shank and it cannot possibly come in contact with the operator's finger inserted in the eye 11 for manipulation of the brush. In twisting the blank B, it is held in chucks at the points indicated by the lines *a*—*b* and *c*—*d* in Fig. 2. After the twisted core 6 is formed, the end portion 13, which in the blank B is nearly at right angles to the straight portion 15, as indicated in Fig. 2, is wrapped around the portions 12 and 14, as indicated at 17 in Fig. 1, as a final step after the twisting operation while the core 6 is still held at its opposite ends in chucks. The position of a finger is indicated in dotted lines at F in the handle eye 11, to show that in the operation of the brush there is no likelihood whatsoever of either of the cut ends of the wire coming in contact with the finger.

In the operation of this brush, as, for example, in cleaning a gun barrel, the smooth end 10 obviates the likelihood of scratching the bore. A similar construction as applied to a typewriter brush obviates the necessity for providing rubber tips to cover the sharp end, the end 10 being smooth enough to avoid likelihood of scratching or marring any typewriter parts. The smooth finished end is, of course, of more or less advantage in brushes of all kinds. The fact that a handle eye is provided as a part of the core without leaving either of the cut ends of the wire exposed is of great advantage, because it saves the expense of providing a separate handle and, for most purposes, the eye end is preferred because it affords a convenient means for hanging up the brush, whereas a wooden handle applied to the core would require the attachment of a hook or eye for that purpose. Then, too, the integral handle eye is of distinct advantage from the standpoint of its strength and durability, whereas a wooden handle applied with a press fit is always apt to get loose or crack.

The smaller brush shown in Figs. 3 to 5 is one intended for use as a cleaning brush for electric razors. This brush is of the twisted-in-wire type and has a twisted core 6′ in which the bristles 7′ are secured in the twisting of the wire. At

10' is indicated the smooth finished tip end of the brush, which is of distinct advantage in a cleaning brush of this kind because it eliminates the danger of scratching the finely machined parts of the razor. 18 designates the right angled end which serves the double purpose of a handle and screw driver, the tip 19 being flattened between dies to serve as a screw driver bit. The end portion 18 is formed in a generally similar manner as the handle eye end on the other brush, 12' designating the one end of the wire of the core 6', which is disposed between the portions 14' and 15' of the other end which are bent into parallelism, and 17' designating the extreme end portion which is wrapped around the portions 12' and 14', similarly as in the other construction. In other words, the end portion 18 is formed by a closed eye portion 11' instead of an open eye portion like the portion 11 first described. The bend at 20 is not made until the brush is otherwise completed, so that this brush can be made substantially the same way as the other. The swedging of the end 19 can be taken care of either before or after the bending operation.

In operation, the end 18 is used as a handle in the use of the brush for cleaning. On the other hand, when the screw driver bit 19 is to be used for tightening or loosening a screw on the razor, the handle shank 6' of the brush serves as a handle for the screw driver.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. A brush as herein described, comprising a single continuous wire bent upon itself to provide an elongated core adapted to hold bristles therein adjacent the bend, bristles for said brush, the core being twisted to retain the bristles and form a brush head portion in which the bristles project radially from the core, the aforesaid bend forming a smooth finished tip on the end of the brush head portion, the core being twisted further to form a handle shank portion, one of the end portions of said wire terminating at the outer end of the twisted handle shank, the other end portion of said wire extending from the outer end of said shank and being formed to define a loop and extending back to said shank, said loop lying substantially in the longitudinal plane of the core and being of a diameter to freely receive a human finger for manual operation of the brush, said other end portion of said wire also defining a crotch portion connecting the finger receiving loop with the outer end of said shank and spacing the loop proper from the outer end of said shank, the free end of said other end portion being wound tightly around the outer end portion of said shank in a direction away from the loop toward the brush head portion, said first end portion being enclosed in said crotch portion and terminating so that the extremity is spaced in relation to a finger disposed in said loop for manual operation of the brush.

2. A brush as herein described, comprising a single continuous wire bent upon itself to provide an elongated core adapted to hold bristles therein adjacent the bend, bristles for said brush, the core being twisted to retain the bristles and form a brush head portion in which the bristles project radially from the core, the aforesaid bend forming a smooth finished tip on the end of the brush head portion, the core being twisted further to form a handle shank portion, one of the end portions of said wire terminating at the outer end of the twisted handle shank, the other end portion of said wire extending alone from the outer end of said twisted handle shank to form a smooth handle portion in which the wire is bent to extend back to the outer end of said shank, the free end of said other end portion being wound tightly around the outer end portion of said shank in a direction toward the brush head portion to enclose the first mentioned end portion.

3. A brush as herein described, comprising a single continuous wire bent upon itself to provide an elongated core adapted to hold bristles therein adjacent the bend, bristles for said brush, the core being twisted to retain the bristles and form a brush head portion in which the bristles project radially from the core, the aforesaid bend forming a smooth finished tip on the end of the brush head portion, the core being twisted further to form a handle shank portion, one of the end portions of said wire terminating at the outer end of the twisted handle shank, the other end portion of said wire extending alone from the outer end of said twisted handle shank to form a smooth handle portion in which the wire is bent to extend back to the outer end of said shank, the free end of said other end portion being wound tightly around the outer end portion of said shank in a direction toward the brush head portion to enclose the first mentioned end portion, the said shank portion being bent substantially at right angles near the outer end portion thereof, substantially as and for the purpose described.

4. As an article of manufacture, a wire blank for a twisted wire brush formed from a single piece of wire bent upon itself to provide a core portion that is adapted to be twisted and hold bristles therein, the one end portion of the wire extending beyond the other end portion and being formed to provide a loop substantially in the longitudinal plane of the core portion, the free end of the looped portion extending to a junction point alongside the other end portion and being bent substantially at right angles to said other end portion but so as to lie substantially in the plane of the core portion and loop portion.

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