No. 648,166. Patented Apr. 24, 1900.

F. G. FARNHAM.

BRUSH.

(Application filed Dec. 13, 1898.)

(No Model.) 2 Sheets—Sheet I.

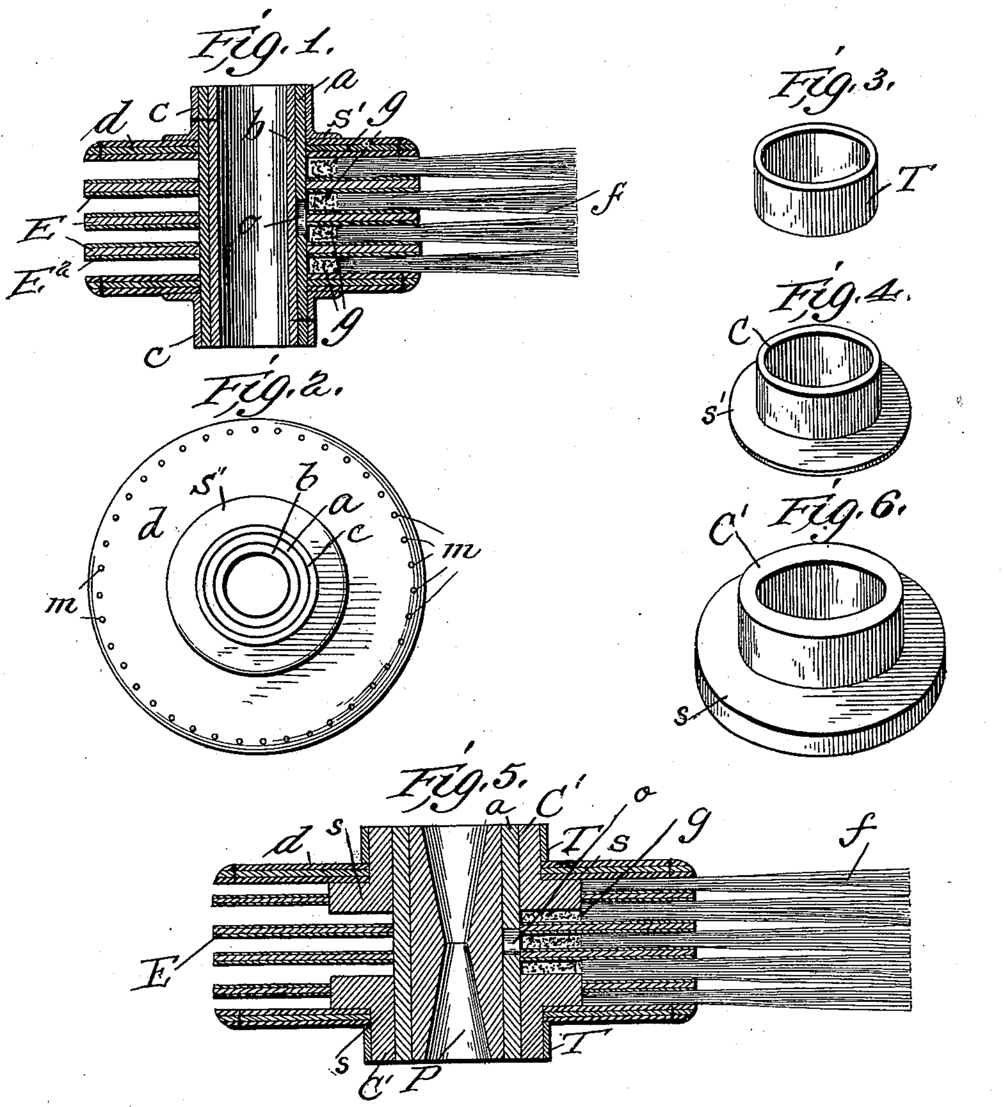

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Fig. 7.

Fig. 8.

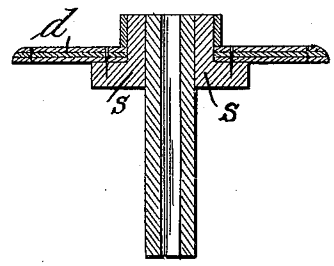


Fig. 9.

Fig. 10.

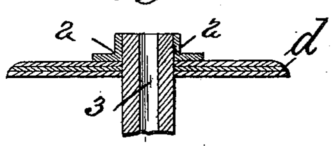
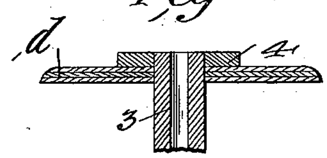


Fig. 11.



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UNITED STATES PATENT OFFICE.

FRANK GUNN FARNHAM, OF HONESDALE, PENNSYLVANIA.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 648,166, dated April 24, 1900.

Application filed December 13, 1898. Serial No. 699,151. (No model.)

To all whom it may concern:

Be it known that I, FRANK GUNN FARNHAM, a citizen of the United States, residing at Honesdale, Wayne county, Pennsylvania, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

My invention relates to what are known as "wheel-brushes," adapted for the polishing of metals, glass, &c.

The invention made the subject of this present case is an improvement on the form of a brush shown in an application filed by me March 19, 1898, Serial No. 674,508, and is designed particularly to improve the details of construction of that brush.

In the application above referred to my principal form shows a two-part core made up preferably of veneered sections glued together, these cores being carried by a hub and the cores in turn carrying outer veneer rings, which are adapted to bear against the fibers or brush material, this material being laid in layers with interposing rings dividing the layers. In the smaller sizes of brushes in particular I find it important to change the form of the cores and make them in the shape of a sleeve with an enlargement or shoulder, the outer disk fitting upon the sleeve part and against the shoulder, which acts as a support for the disk in one direction. After the disk is fitted and glued to the small extension of the sleeve and against the shoulder I pin a metal ferrule on the smaller part of the sleeve, which prevents it from splitting when screwing onto a taper spindle and assists in keeping the disk in place. In some cases instead of the sleeve and ferrule I make the sleeve of metal and dispense with a ferrule.

In the accompanying drawings, Figure 1 is a sectional view showing a completed brush on the right and partly completed on the left. Fig. 2 is a plan view of the same. Fig. 3 is a plain ferrule. Fig. 4 is a detail view of the metal sleeve. Fig. 5 is a cross-section of a completed brush on one side only, the construction being slightly modified. Fig. 6 is a perspective view of a sleeve. Figs. 7 to 11 are sectional views of a number of modifications, showing different arrangements of the outer disks, sleeves, and the ferrule.

Referring to Fig. 1, *a* is a central hub, and *b* a bushing, the outer and inner diameters varying as necessity requires.

c is a metal sleeve with a flange *s'* at one end for supporting the disk *d* and adapted to fit on the hub *a*.

E is an anchor and at the same time a spacing-ring and has a hole the same diameter as the hub *a*, and its outer diameter is the same as that of disk *d*. I prefer to make these anchor-rings of thin strawboard reinforced on each side by a corresponding ring of cloth glued to the paper, although thin wood or other material will answer. For some cases I prefer to make them of thin tin soldered where fine wire is used in so-called "scratch-brushes." The fiber *f* is treated the same as in my former application, one end being dipped in hot glue or other adhesive material and laid on in layers; but it is so laid that open spaces *g g* are left between the butts and hub *a*. The effect of this is to allow for balancing the brush, which I do by running in hot lead through the opening *o* or by removing hub *a* after the brush is seasoned, then balancing by the use of the lead, and then replacing the hub. The sleeves *c c* are put on in finishing after the brush is seasoned. They are forced down upon the disks *d d* and secured by prick-punching or nailing through into hub *a*.

The disks *d* are preferably made up of odd layers of veneers glued together to prevent warping, and since hot glue when applied in laying the fiber has a tendency to make the layers loosen from each other I provide against this by clench-nailing around the edge of the disks, as at *m m*, Fig. 2. In Fig. 5 I show a brush having a construction somewhat similar, excepting that I use a wooden sleeve C' instead of the metal sleeve of Fig. 1 and with it a straight ferrule T, Fig. 3. In this case also the flange *s* may be covered by the disk *d*. In Fig. 5 I also show a bushing which has its hole tapering to the center from both ends, as at P, to allow the bushing to be reversed when worn beveling on one side in some kinds of work. The sleeve C', Fig. 5, is glued to the hub and the bushing is glued in last.

Fig. 6 is a perspective of a sleeve prefer

ably turned from wood; but it may be made from other material or compressed from wood-pulp.

The metal sleeve shown in Fig. 1 is adapted for very small sizes of brushes, as in some cases the flange *s* on sleeve C′, Fig. 5, would not permit the two sections to come close enough together when only one or two layers of fiber are used for a thin brush. In order to secure a flush face to either of the brushes shown in Fig. 1 or Fig. 5, the hub may be cut off flush with the faces of the disks *d d*, in particular for straight spindles. The brush shown in Fig. 1, however, would be weakened to such a degree that the gluing-surface would not be sufficient to make a strong connection. I secure the desired result in such cases by increasing the thickness of the disk *d* at the hub, as at *w*, Fig. 7, which shows added thickness applied to the disks *d* on the outside.

When a brush is so small—say three inches in diameter—that a bushing cannot be used, the hub acts as a bushing, or rather there is no bushing, as shown in Fig. 8. It is not necessary to use the rings or anchors E E all the way through the layers of fiber.

Where thin brushes are used, I may use a sleeve reversed in position, as at 1, Fig. 9, or I may use a metal sleeve 2, Fig. 10, with the hub 3 acting as a core, or, as in Fig. 11, I may use a simple annular washer around the end of the hub, as at 4.

What I claim is—

1. In a brush, a tubular hub, outer disks, brush fibers glued between the disks and a flanged sleeve fitted to each end of the hub, the flange being in contact with the outer disks while the sleeve encircles the hub, substantially as described.

2. A brush comprising a tubular wooden hub, outer disks, layers of fiber glued between the disks and metal-flanged sleeves fitted to the hub at each end, the flanges engaging the outer disks, substantially as described.

3. In a brush, a hub, outer disks, brush fibers between the disks and a balancing-filling between the disks, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK GUNN FARNHAM.

Witnesses:

ROBT. A. SMITH,

N. E. BIGELOW.