

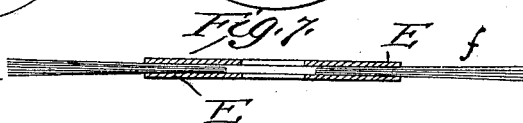
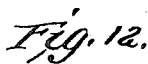
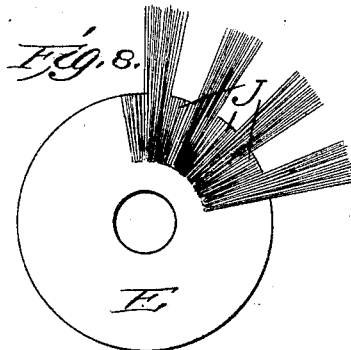
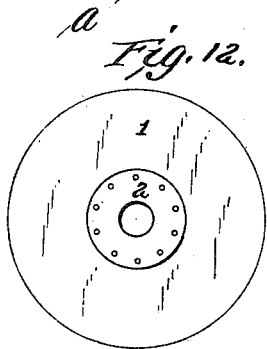
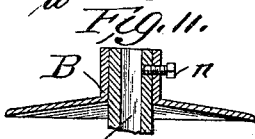
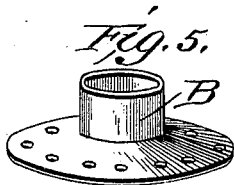
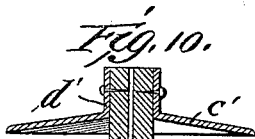
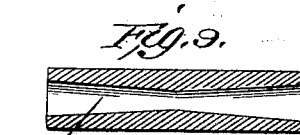
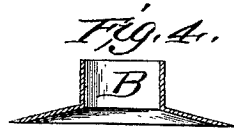
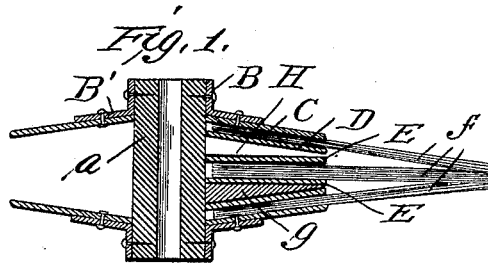
No. 649,289.

Patented May 8, 1900.

F. G. FARNHAM.
BRUSH.

(Application filed Apr. 1, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

FRANK GUNN FARNHAM, OF HONESDALE, PENNSYLVANIA.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 649,289, dated May 8, 1900.

Application filed April 1, 1899. Serial No. 711,437. (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, Pennsylvania, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

My invention relates to that class of rotary brushes adapted for the use of jewelers, dentists, and for many other purposes.

The subject of the present invention is a modification of a brush shown and described in an application filed by me December 13, 1898, Serial No. 699,151; and it consists in the details hereinafter fully described.

In the drawings, Figure 1 is a cross-section of a brush shown as completed on the right side only. Fig. 2 is a cross-section of a filler used for leveling up made from cloth or paper. Fig. 3 is a cross-section of a disk, of wood or other material, for a similar purpose, on larger sizes of brushes. Figs. 4 and 5 show a metal flanged ferrule with its flange or beveled form. Fig. 6 is an outside disk or washer, also beveled to fit Fig. 4. Fig. 7 is one of the sections used to build up brushes of varying thickness. Fig. 8 is a plan view of one of the sections of Fig. 7. Fig. 9 is a wooden hub with hole tapering both ways to the center. Figs. 10, 11, and 12 show modifications, Fig. 10 showing a flanged disk taking the place of the ferrule and Fig. 11 a modified form of ferrule, while Fig. 12 is a modification of one of the separating-disks.

A majority of the brushes used in the manufacture of jewelry and for dental and like purposes have the fiber or other polishing material thrown to a point to secure stiffness to the brushes and to keep them from spreading when in use. Such brushes are called "thrown" or "beveled," and the holes are so bored in the wooden hub that when drawn in with a wire in the ordinary way they converge at the extreme limit of the bristles.

My object is to secure a stiff brush simpler in construction and much more effective in use than those heretofore known.

In Fig. 1, *a* is a hub, made, preferably, from wood, with a central hole adapted for reaming either one or both ways, so as to fit a taper spindle, as shown in Fig. 9.

B is a metal sleeve or ferrule with a beveled flange *B'*.

C is a beveled disk of vulcanized fiber.

D is a beveled disk of cloth or paper.

E E are plain disks of cloth or paper.

The fiber, either of hair or wire, is shown at *f*, and *g* is a filler between the inclined or beveled and straight sections, made up of one or more cloth or paper disks, as in Fig. 2, or in some cases of a wooden button, Fig. 3, the filler fitting the space *H*. (Shown in Fig. 1.) The wooden filler is shown at *g* in Fig. 3, and the filler composed of layers is shown at *g'*, Fig. 2.

In constructing the brush the sections, as shown in Fig. 7, may be made separately and then dried and the brush built up from these sections, or the brush may be made and finished at the same time. In making this brush I first rivet or nail one of the beveled metal ferrules or sleeves, Fig. 4, to one of the vulcanized fiber disks, Fig. 6, which may be given its shape in any suitable manner. Of course other materials suited for the purpose may be used instead of the vulcanized fiber. After fastening the disks to the metal ferrules I insert one end of the hub in one of them and fasten it by prick-punching or nailing to the hub. I now proceed to build up a brush by using the sections, Fig. 7, previously formed by gluing or cementing the hair fibers, bristles, or wire between the disks *E E* or by laying the first tier directly on the inside face of the disk *C*. In the latter case I first dip the free ends in glue or specially-prepared cement, taking care that in the larger sizes when balancing becomes a necessity room is left between the butts of fiber and the hub for this purpose. This balancing I accomplish by running in hot lead or other material. After the first layer is placed in position I then force down upon it a disk of paper, cloth, or very thin vulcanized fiber. This disk has a hole adapted to the size of the hub, which it fits closely. In this way it not only acts as a spacing-ring, but as an anchor. I use the strong vulcanized disk only when cementing in wires to use as a scratch-brush. After placing one or more layers in position it becomes necessary to put in the central layer or section, Fig. 7, on a straight line. The space *H* between the central section and the beveled one is filled up by the filler *g*, Fig. 2. In larger brushes I use the

disk *g*, Fig. 3, as a filler. After thus leveling up I then put on another ring *E*, (unless the sections are made previously complete,) then another layer of material, also with its butts dipped in some adhesive material, and then another ring *E*. To finish the brush, the foregoing process is repeated in the reverse, and finally I put on the upper beveled disk *C*, previously prepared, and put the whole under pressure until dry. Any surplus hub extending above the upper ferrule I cut off and fasten the ferrule to the hub by nailing or prick-punching. In case an open brush is needed I either thicken the rings *D* or I form the rings and fiber as in Fig. 7 and then cut out a portion of the wire fiber or hair, as shown in Fig. 8 at *J*, leaving alternate tufts. I do this at one stroke of cutter, the cutting-dies corresponding to the number of spaces desired.

In making a scratch-brush I cement the wire, either steel or brass, in between the disks and anchors in the same manner as any other material by first dipping in specially prepared cement their free ends and laying them in tiers or layers. I have found this to be eminently practical and a very cheap effective way of making this formerly very expensive brush. The fibers or wire may be laid in in tufts each separated from the other; but the time consumed in this process would be too costly to be effective against my more-rapid process, a whole tier equaling one tuft.

In Fig. 10 instead of the disk of vulcanized fiber and the metal ferrule I may make the disk *c'* with a flange or collar *d'*, fitting the hub, and thus dispense with the separate flanged ferrule. In this case the disk and collar may be made of wood or papier-mâché in one piece.

In Fig. 11 I show the ferrule *B* heavy enough to take a thread and to receive a set-screw *n*, which is used to secure the brush to the shaft.

Instead of the disks of paper or wood as

fillers I may use other material, such as plaster-of-paris, putty, or the like.

Under some circumstances—as, for instance, when a lead filling is to be poured in to balance the brush—I find it desirable to make the anchor-disks as shown in Fig. 12—namely, by the use of a cloth or paper disk, as shown at 1, with a disk of tin or sheet metal secured thereto, as shown at 2, as I find that the reinforce of tin prevents the hot metal when poured in from burning away the part of the anchor-disks with which it comes in contact.

What I claim is—

1. A beveled brush comprising a wooden hub, a central layer of fiber, a layer of angularly-laid fiber on each side thereof, independent separating-disks between the layers, outer confining-disks independent of the separating-disks, said disks and layers being glued in place and flanged ferrules on the hub ends engaging the outer disks, substantially as described.

2. A beveled brush comprising a hub, a series of layers of fiber, the central layer extending straight and the outer layers at an angle, an independent separating-disk between each layer, the central disks extending straight and the outer disks at an angle, the layers of fiber and disks being glued together and means for holding the parts together, substantially as described.

3. A brush comprising a hub, a series of sections each composed of a layer of fiber and separating-disks, one of the sections extending straight and others at an angle, angular fillers for the angular spaces formed between the sections and confining means, substantially as described.

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

FRANK GUNN FARNHAM.

Witnesses:

W. H. STONE,
NORMAN FARNHAM.