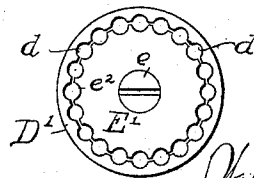
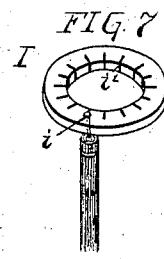
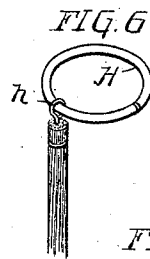
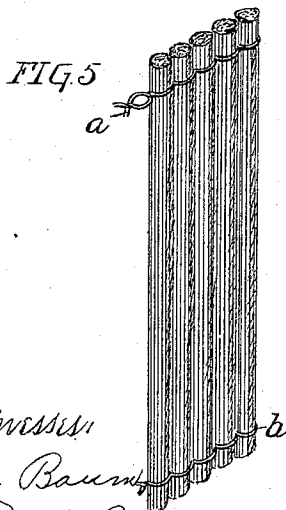
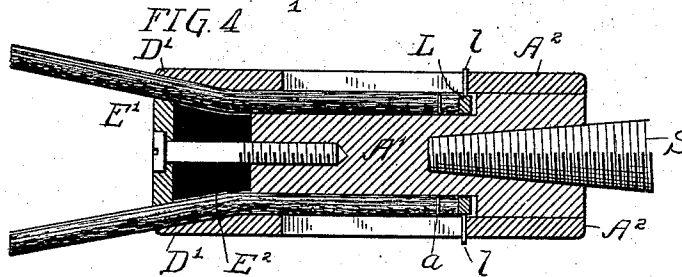
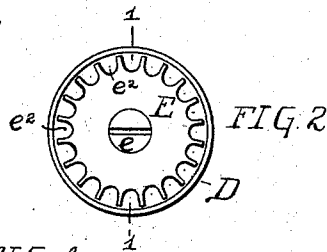
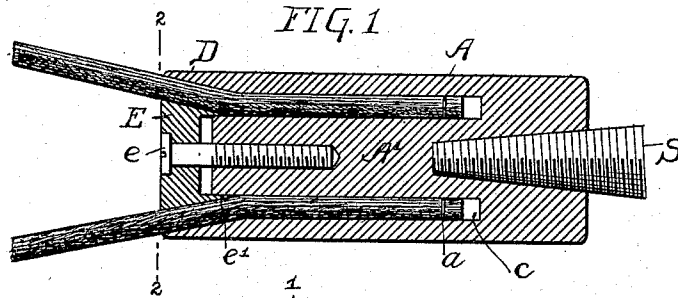


(No Model.)

W. F. ZIEHLER.
BRUSH.

No. 537,954.

Patented Apr. 23, 1895.



Witnesses:
H. W. Baumgardner
Chas. J. Pike

Inventor:
William F. Ziehler
By his Attorney,
J. W. Parker

UNITED STATES PATENT OFFICE.

WILLIAM F. ZIEHLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-FOURTH TO JOHN E. PARKER, OF SAME PLACE.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 537,954, dated April 23, 1895.

Application filed May 31, 1894. Serial No. 513,076. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. ZIEHLER, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Polishing-Brushes, of which the following is a specification.

My invention relates to certain improvements in that class of brushes used for polishing metal surfaces, &c., although it is also applicable to brushes of various types used for other purposes.

The object of my invention is to provide a brush of the "cup" type in which the bristles may be adjusted to a greater or less distance from the stock or handle in which they are held either to increase or decrease the resiliency of the brush or to compensate for wear, as the bristles, through constant use, become shorter, as more fully set forth hereinafter.

In the accompanying drawings:—Figure 1 is a longitudinal sectional elevation, on the line 1—1, Fig. 2, of a polishing brush constructed in accordance with my invention. Fig. 2 is a transverse sectional view of the same on the line 2—2, Fig. 1. Fig. 3 is a similar view illustrating a modification. Fig. 4 is a longitudinal sectional elevation, illustrating some further modifications of the invention. Fig. 5 is a perspective view of a number of bunches of bristles tied together in readiness to be placed in position in the stock or handle; and Figs. 6 and 7 illustrate different methods of holding the bunches of bristles in ring form when in the stock or handle.

The brush herein shown is one of that class known to the trade as cup polishing brushes, and are extensively employed in the polishing of small metal articles, such as watch cases and the like.

In carrying out my invention, I bunch the bristles in their full length, only cutting away sufficient of the softer ends to insure uniformity in length, and then bind a series of bunches together by uniting them near their softer ends by a stitching of wire or cord, *a*, as shown in Fig. 5, enough bunches being bound together in this manner to form a single brush. For convenience in handling or in transporting, I may also bind the lower ends of the bunches of bristles together by a cord, *b*, which

may be slipped off before the bristles are placed in the stock.

The stock, *A*, is cylindrical in form and is provided with a deep annular groove, *c*, concentric with the periphery of the stock, while the outer end of the latter projects for some distance in the form of a tapered flange, *D*, having its inner surface smooth, or as shown in Fig. 3, provided with a series of longitudinal grooves, *d*. The central tongue *A'* of the stock, terminates at some little distance from the extreme end of the latter, and to it a cap piece, *E*, is adapted to be secured by means of a screw, *e*. The stock, as shown in Fig. 4, may be made in two pieces, comprising the central or tongue portion, *A'*, and an outer metallic sleeve or ring, *A''*, the outer flange in this case being designated by the letter *D'*.

The cap, *E*, has a tapered periphery, inclined at an angle corresponding to that of the flange, *D*, of the stock, and at its inner end has an annular flange, *e'*, adapted to fit over the end of the tongue, *A'*.

The outer peripheral surface of the cap, *E'*, has a series of longitudinal grooves, *e''*, and these, with the grooves, *d*, serve to hold the various bunches of bristles in proper position, or in the construction shown in Figs. 1 and 2, the grooves, *e''*, are made somewhat deeper, and the grooves, *d*, may then be dispensed with.

In use, a series of bunches of bristles, corresponding in number to the grooves, *e''*, and preferably tied together as in Fig. 5, is placed in position in the groove, *c*, the cap, *E*, having been previously removed. The cap is then forced into position, spreading the outer ends of the bristles and forcing the various bunches to assume their proper positions in the grooves. The further turning of the screw, *e*, will then firmly clamp the bristles in position against the flange, *D*, and the brush is ready for use. Ordinarily the stock is held on a lathe spindle, *S*, but it may be otherwise mounted and rotated.

After being in use for a short time the exposed ends of the bristles wear away, and the brush becomes too short for work. The screw, *e*, is then loosened, the bristles drawn out to the required length and the screw again tight-

ened to hold them in position. By this means the bristles may be adjusted from time to time, and be adjusted either into or out of the stock according to the resiliency required, and the bristles may be used for almost their entire length, the only portion wasted being the softer inner ends, which are of little or no use for polishing purposes.

If desired, the various bunches of bristles may each be provided with a projecting ring, *h*, as shown in Fig. 6, and these rings be all strung upon a heavier ring, *H*, which may be inserted in the groove, *c*, or, as shown in Fig. 7, a headed pin, *i*, may be employed which may be placed one in each of a series of radial slots, *i'*, in a metallic ring, *I*. These devices may be used to advantage when the bunches are made up in large quantities and are afterward secured to the rings to be placed in the stock.

In Fig. 4, I have illustrated a modified construction in which the stock is the same as shown in Fig. 1, save that it is made in two separate pieces. The cap piece in this case is made up of an outer plate, *E'*, having its periphery grooved to receive the bristles, while the body portion, *E²*, is formed of rubber or similar yielding material, which, when the screw, *e*, is forced in, will be so compressed between the tongue, *A'*, and the plate, *E'*, that it will expand laterally and force the bristles into engagement with the grooves, *d*, in the flange, *D*, the latter in this construction being preferably grooved as is the flange, *D'*, in Fig. 4.

In lieu of pulling the bristles outwardly when adjusting, various mechanical means may be employed, as for instance, a ring, *L*, may be placed back of the bristles and be manipulated by radial pins, *l*, projecting through longitudinal grooves in the stock, as shown in Fig. 4.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A brush comprising a stock having an annular groove therein, bristles adjustably disposed in a circular line in said groove, and means for locking said bristles in position.

2. A brush comprising a stock having an annular groove therein, a series of bunches of bristles tied together near their inner ends, in a continuous circular line, and adapted to said groove, and a locking cap adapted to spread the bunches of bristles and to lock said bristles in position.

3. The combination in a brush, of a flanged stock having an annular groove, a series of bunches of bristles in said groove, a locking cap between which and the flange of the stock the bristles are held, and means for tightening and loosening said cap.

4. The combination in a brush, of a stock having an annular groove therein, a tapered flange on said stock, a locking cap having a grooved periphery, and a series of bunches of bristles confined between the cap and the tapered flange of the stock.

5. The combination in a brush, of the stock, *A*, having an annular groove, *c*, and a central tongue, *A'*, a tapered flange, *D*, on the outer end of said stock, a cap, *E*, having an inclined periphery, a screw, *e*, passing through said cap into the tongue, *A'*, and bristles confined between the tapered flange, *D*, and the periphery of the cap, *e*, substantially as described.

6. The combination in a brush, of the stock, *A*, having an annular groove, *c*, and a central tongue, *A'*, a tapered flange *D*, on the outer end of said stock, a cap, *E*, having a tapered periphery provided with longitudinal grooves, *e²*, a screw, *e*, passing through said cap into the tongue, *A'*, and a series of bunches of bristles adapted to the grooves *e²*, and confined in said grooves by the tapered flange, *D*, substantially as described.

7. The combination of the stock having an annular groove therein, bristles adapted to said groove, locking devices for said bristles, and an adjustable ring situated in said groove and adapted to act against the ends of the bristles to adjust the same longitudinally, substantially as described.

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

WILLIAM F. ZIEHLER.

Witnesses:

JNO. E. PARKER,

FREDK. S. FOX.