(No Model.)

J. A. WILLIAMS.

BRUSH.

No. 360,190. Patented Mar. 29, 1887.

Fig. 1.

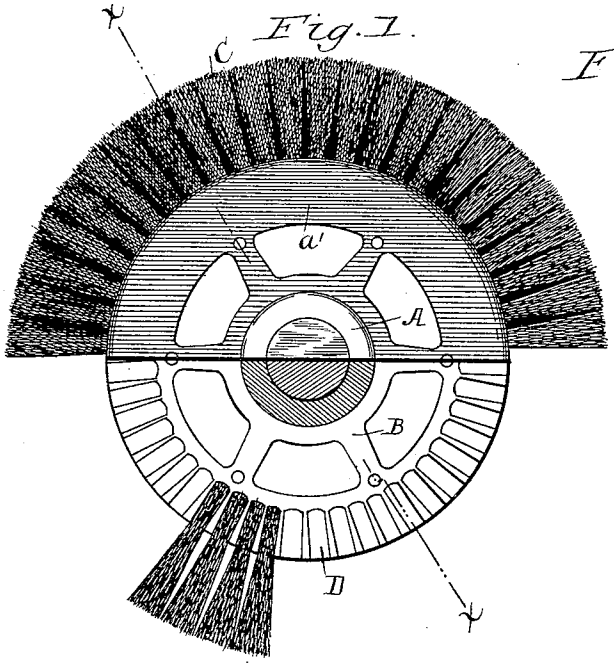
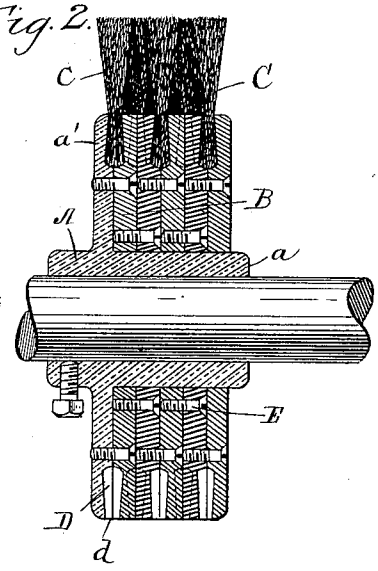


Fig. 2.



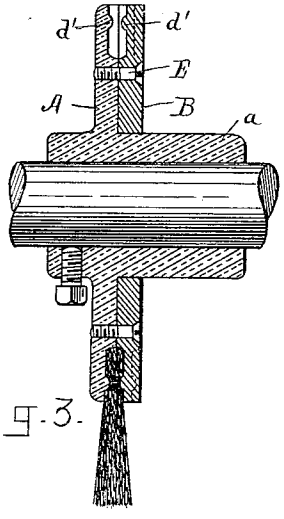


Fig. 3.

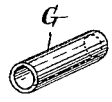


Fig. 4.

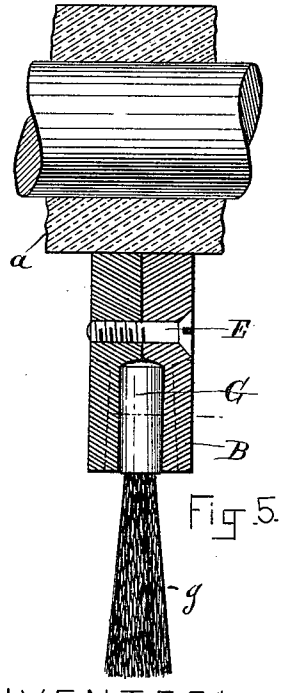


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES A. WILLIAMS, OF BOSTON, MASSACHUSETTS.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 360,190, dated March 29, 1887.

Application filed January 2, 1885. Serial No. 151,732. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WILLIAMS, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Brushes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a brush so constructed that the bristles or corresponding part of the brush when worn out can be easily removed and others substituted therefor, and it is especially adapted for brushes having several rows of bristles, such as are in general use in shoe and other factories.

Referring to the drawings, Figure 1 represents, part in elevation and part in vertical section, a brush having the features of my invention. Fig. 2 is a section upon the line *x x* of Fig. 1. Fig. 3 illustrates a slight modification in construction, reference to which is hereinafter made. Fig. 4 represents in perspective a paper case or tube for holding the ends of a tuft or bunch of bristles. Fig. 5 is a view in section illustrating the employment of this tuft in connection with two clamping-plates.

The brush is made up of three elements: first, the section A, which consists of a long hub, *a*, and an end plate, *a'*; second, the clamping disks or partitions B; and, third, the bunches or tufts of bristles C. The parts A B, preferably, are made of iron or other metal, although of course wood or other suitable material may be employed.

The brush is built in sections—that is, the first row, *c*, of bristles is held between the first clamping plate or partition and the end plate, the second row between the second and first clamping-plates, the third row between the third and second clamping or partition plates, the fourth between the fourth and third, and the fifth between the fifth and fourth, and so on, as many rows being used as may be desired.

In Figs. 1 and 2 I have shown the plates or clamping-disks B provided with holes D, having their openings *d* contracted so as to clamp or nip the tufts of bristles inserted therein. It will be observed that the holes D are formed one half in one plate and the other half in the plate next adjoining, and that each plate is screwed to the one immediately adjoining it on one side with the screws E; and in loading the block I prefer to enlarge the holes D somewhat by not screwing the clamping-plate way up, so that after the bunches of bristles have been inserted in all the holes of one row their outer holding-plate may be pressed down upon the adjoining plate of the series with enough pressure to tightly confine the bunches in their respective holes, and then be secured by the screws E. Of course there may be used in addition any suitable glue, cement, or material for enlarging the inner ends of the bunches of bristles, so as to throw them out and make them larger in diameter than the portions at the entrance *d* to the holes, as well as to secure them together. In lieu of this construction, I show in Fig. 3 one that is somewhat similar. The holes D are shown as straight, with the exception of the projections *d'*, arranged to be opposite each other, so as to pinch or nip the bunches of bristles.

Figs. 4 and 5 show still another form of fastening the tufts of bristles in place, and I think, upon the whole, it is preferable. It includes the preparation of the bristles. Each bunch of bristles is secured by glue, cement, pressure, or by sewing or being folded at the center of their lengths, so as to form an enlarged end in a shell of paper or other material. The object of this preparation of the bristles is to provide for the uniform size of the ends, or those portions of each tuft by which the bristles are held, and also a ready means of securing all the bristles together and to the casing in a permanent form before they are inserted into their respective holes. In Fig. 4, G represents a shell or casing, which preferably is made of paper and is adapted to receive and hold the end of a tuft of bristles, and in Fig. 5 I show a tuft of bristles thus furnished with a sleeve in place in a hole between the clamping-plates. Aside from the uniformity in the ends of the bunches of bristles attained by using the sleeve, and the facility which is provided for securing them together, this method of finishing the bunches is of advantage, in that it enables the manufacturers to put up the

bristles in a convenient form for transportation and ready use. The clamping-plates may be solid throughout, or they may have sections removed in making a skeleton or spoked plate, as represented in Fig. 1. It will be seen that this construction provides a firm and solid brush, and means whereby its length may be varied and also whereby the bristles or other brush material when worn out can be easily removed and others substituted.

For holding the ends of the bristles together in their tufts or bunches, and also to the surface which incloses them, it will be found desirable to dip the ends in pitch, glue, or other adhesive substance before they are placed within the holes; also, to pour pitch, glue, or other similar material in said holes before the bristles are inserted. It will also be desirable to partially fill the case or shell with pitch, glue, or other material before the end of the tuft or bunch of bristles is inserted therein, and it will be found desirable to make the holes D rather oblong in shape, so that a better binding or clamping action upon the ends of the tufts or bunches may be obtained.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A sectional brush-block comprising the long hub *a*, having the end plate or flange, *a'*, and the bristle-clamping plates B, adapted to fit said hub, to be fastened rigidly thereto or thereon, and provided with recesses for receiving and holding the ends of the tufts of bristles, all substantially as and for the purposes described.

2. The sectional brush-block having two or more clamping-plates provided with holes for receiving and holding bunches or tufts of bristles, which holes are enlarged or increased in size back of or within their openings, all substantially as and for the purposes described.

3. The combination, in a brush-block, of the long hub *a*, having the clamping-plates B fastened rigidly to the hub and provided with recesses for receiving and holding the end of the tufts of bristles, with said tufts of bristles, and shells G, for receiving and holding the inner ends thereof, substantially as described.

4. In a sectional brush, a clamping-plate having a portion of the holes for the reception of the tufts or bunches of bristles formed in each side thereof, all substantially as and for the purposes described.

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