R. ASHWORTH.

# Improvement in the Manufacture of Brushes.

No. 130,270. Patented Aug. 6, 1872.

Fig. 1,

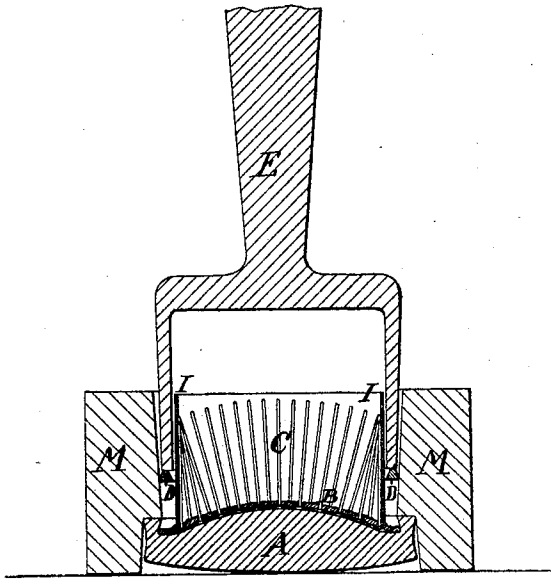
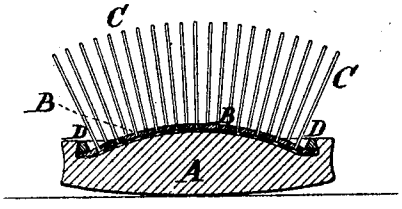



Fig. 2,




Witnesses:

Wm. C. Day

Arnold Hoermann.

Inventor:

Robert Ashworth

by his attorney F. L. Stetson

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

# UNITED STATES PATENT OFFICE.

ROBERT ASHWORTH, OF FALL RIVER, MASSACHUSETTS.

## IMPROVEMENT IN THE MANUFACTURE OF BRUSHES.

Specification forming part of Letters Patent No. **130,270**, dated August 6, 1872.

Specification describing a certain Improvement in the Manufacture of Brushes, invented by ROBERT ASHWORTH, of Fall River, in the county of Bristol and State of Massachusetts.

The improvement may be applied to brushes of various materials; but I will describe it as applied to a brush having a handle of wood, and having, instead of bristles, wires set in a soft vulcanized-rubber back so as to yield elasticity in all directions. Such brushes are well-known articles of manufacture, and may, by my improvement, be made very extensively useful. My invention is intended to cheapen and expedite the manufacture and promote the tasty appearance and the strength and durability of the brush. It relates to the means of fastening a soft backing material in which the wires or analogous bristle stuff are secured.

The advantages of my invention, in the appearance as well as in the strength, will be obvious.

The following is a description of what I consider the best means of carrying out my invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a cross-section through the brush, with the apparatus for springing in the confining-ring in position. Fig. 2 is a cross-section through the finished brush.

Similar letters of reference indicate like parts in all the figures.

A is a handle or stock, which may be of hard rubber, *papier-maché*, or various compositions, or even a thin metallic frame; but I will describe it as made of ebony or other hard wood. The recess into which the soft backing material, with the wires and the fastenting means, are pressed having been produced by machinery or other means with dovetailed edges, so that the sides shall tend to lock in the material, I place the handle in a suitable mold, and having applied by hand or by suitable machinery a slight coating of cementing material—for example, gum-shellac dissolved in alcohol—around the border and interior of the recess, and having dropped in the backing material B, in which the wires C have been previously inserted by hand or by suitable machinery, I apply and forcibly compress together and force down a ring, D, which is beveled on its outer edge to match the under-cut or dovetailing edges of the recess, and is armed with spurs or projections on the back face adapted to prick into and strongly hold in the rubber or analogous soft material B. Fig. 1 shows the means which I propose to employ, in a large way, to compress together the ring D, and to force it down, M being a rigid inclosing-piece, of cast-iron or other strong material adapted to match over the handle A, and to hold together and to guide down the ring D into its place as it is forced down by the hollow forcing-piece E. This piece E is hollow, to allow the wires C to stand freely within it, and is forced down by the motion of a treadle, or otherwise. When the ring D emerges through the guide-piece M into the recess in the handle A, it expands naturally by its elasticity, it having been previously forced together by the guide-piece M, so as to be smaller than its natural size. Its tendency thus to extend in all directions locks it firmly within the under-cut edges of the recess in the handle. Its projections puncture but part way through the soft material B, and aid to hold it firmly and prevent the material B from being drawn out by any pull on the wires C, or any accidental strain of any kind.

The cementing material, applied as described, aids to hold the whole firmly. I believe that the brush may be made successful without the application of the cementing material; but in my experiments have used the cement, and believe it contributes to insure the success of the invention.

The brushes made according to my invention may have the wire C come close to the interior of the confining-ring D. The confining-ring D may be made of any material affording sufficient strength and elasticity. I propose to use as a good material hard rubber, but believe that various other materials, including brass or brass silver-plated, may be used for the material of the ring D.

The manufacture, when finished, shows no stitches or other defacing work. The handle may be made in a single piece with all the increased durability due to that fact. It may be decorated in any ordinary or suitable manner.

The drawing represents the wires C as formed with heads analogous to solid-headed pins, and forced through the rubber from the back side. The projected ends may be cut off cleanly by

ordinary cutting machinery, and may be ground and smoothed by holding them in various directions upon emery-wheels after the brush is complete.

In order to facilitate the applying of the parts together, I believe it will be often convenient to apply a temporary casing, I, to surround and hold together the wires C until the ring D is fairly in place. The casing I (see Fig. 1) may be applied as an elastic or flexible band, open on one side and locked together by a temporary union, (not shown;) or it may be a rigid piece like a horseshoe, or like the letter U, crowded in from one side; or it may be a continuous band of the proper form applied by a dexterous movement. In either case its function is to correct temporarily the tendency of the wires C to diverge, and hold them close together while placed within the guide-piece M, and subjected to treatment therein.

I claim as my invention—

The brush herein described, having the headed wires C, or analogous brush-material, set in the soft material B, and the latter confined by the piece D, which is compressed within the stock A, and secures the parts firmly together, in the manner and for the purposes herein set forth.

In testimony whereof I have hereunto set my hand this 20th day of January, 1872, in the presence of two subscribing witnesses.

ROBERT ASHWORTH.

Witnesses:
WM. C. DEY,
ARNOLD HOERMANN.