(No Model.) 2 Sheets—Sheet 1.

J. A. READ.

MANUFACTURE OF BRUSHES.

No. 372,385. Patented Nov. 1, 1887.

Fig. 1.

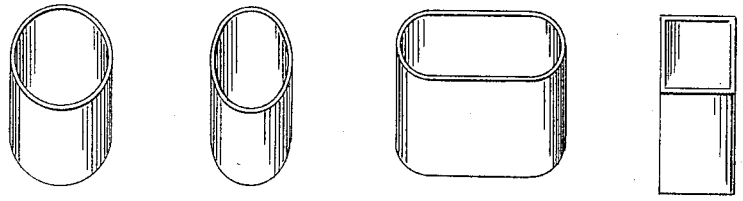


Fig. 2.

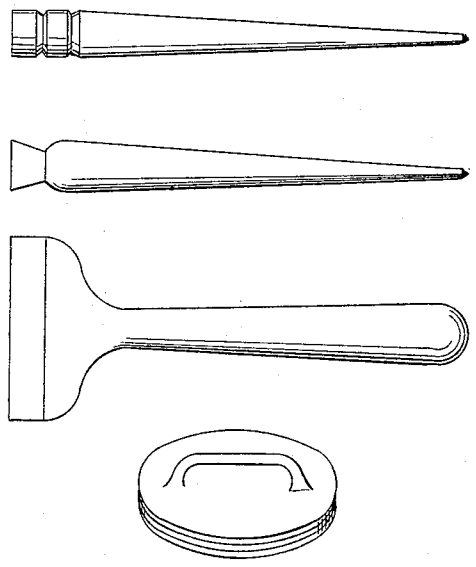


Fig. 3.

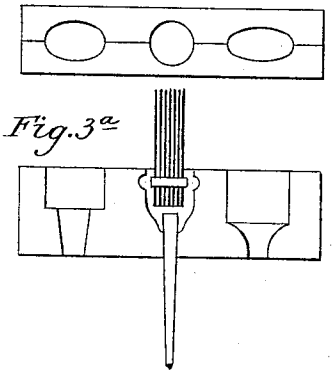


Fig. 3a

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(No Model.) 2 Sheets—Sheet 2.

J. A. READ.

MANUFACTURE OF BRUSHES.

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Fig. 4.

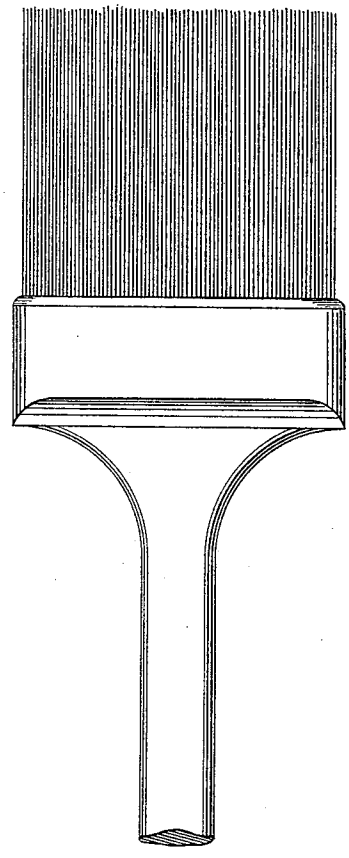
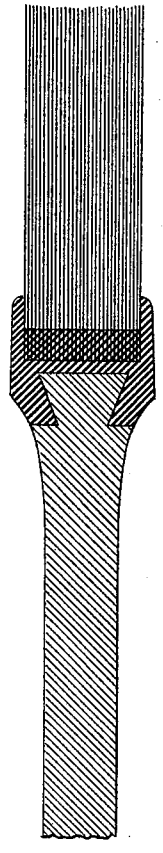


Fig 5.



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UNITED STATES PATENT OFFICE.

JAMES A. READ, OF ARLINGTON, NEW JERSEY, ASSIGNOR TO THE RUBBER AND CELLULOID HARNESS TRIMMING COMPANY, OF NEW JERSEY.

MANUFACTURE OF BRUSHES.

SPECIFICATION forming part of Letters Patent No. 372,385, dated November 1, 1887.

Application filed September 15, 1886. Serial No. 213,560. (No model.) Patented in England August 10, 1885, No. 9,502, and in France August 18, 1885, No. 170,689.

To all whom it may concern:

Be it known that I, JAMES A. READ, of Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Brushes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

I do not claim in this application the brush made by the method herein described, as such brush forms the subject-matter of application No. 231,561, filed by me September 15, 1886.

In the accompanying drawings, Figure 1 represents a series of forming rings or ferrules, in which the bristles are stacked; Fig. 2, a series of handles made of the desired shape; Fig. 3, a top view; and Fig. 3ª, a longitudinal sectional view of a series of molds, one of said molds containing a brush, into which the union between the brush-head and handles is perfected. Fig. 4 illustrates the completed brush in elevation, and Fig. 5 is a view in cross-section of the completed brush.

My present invention consists of a novel and improved method of making brushes. The method which I prefer to employ in making my improved brush consists, substantially, of the following steps in succession, although equivalent means may be substituted for those here described without departing from the spirit of my invention.

I first take the forming rings or ferrules illustrated in Fig. 1. Into these forms I stack the brush fibers, hair bristles, or other material used in the manufacture of brushes as full, tight, and hard as I desire the brush to be, leaving the ends of the fibers projecting a short distance through the forming ring or band. I then have the brush fibers bunched together in the form I want to make the brush. The next step is to cement together the ends of the fibers forming the brush-head. This I do by means of a liquid cement composed of a solution of india-rubber prepared by any of the well-known methods, and adapted for vulcanization to form what is known as "hard rubber" or "vulcanite." This cement is put into a suitable containing-pan, and with it the ends of the fibers projecting beyond the forming-ring are saturated, so as to thoroughly permeate between the bristles and cement them to each other, the ends of the fiber being dipped or set into the cement contained in said pan. When this is done, the brush-head is taken out of the pan and preferably set on a steam-heated table until the rubber has become sufficiently vulcanized.

Hard rubber or vulcanite is a material well known in the arts, and a further description of its composition is not considered necessary. It may, however, be added that the essential characteristics which make it especially valuable in the present manufacture is the fact that it is not softened, rotted, or in any way injuriously affected in the presence of water, turpentine, paints, oils, shellac, or any of the other compositions and materials into which brushes are usually immersed and saturated.

The brush-head having been thus formed and the bristles cemented to each other, the next step is to unite it to the handle. This may be done by any of the ordinary means now employed; but I prefer to use the following: A handle is made of any desired form, corresponding to the shape of the brush-head, substantially as shown in the several forms of Fig. 2, varying the form of the handle-head to suit the contour of the brush-head and making a groove at the end adjoining the brush-head. The handle being thus prepared, a mold is made having the exact contour of the handle-head and finished brush, as shown in Fig. 3, the mold being made in sections divided longitudinally, as shown. Preferably I now take the handle thus prepared, and after dipping its grooved end into the aforesaid cement, stick it to the cemented end of the brush, the two being thus cemented together. If desirable, this step may be dispensed with and the succeeding steps alone relied upon for fastening the bristles and the brush-handle together. Whether the end of the handle has been dipped in said cement and stuck to the end of the brush or not, as above described, is immaterial as far as the succeeding steps of my improved method of making brushes is concerned. In either case I then take a strip of unvulcanized india-rubber of the desired

length, width, and thickness, having been first duly prepared for the purpose, and wrap it around the adjoining ends of the brush head and handle, the band of rubber being unvulcanized, so as to soften under the influence of heat, and being thick enough to fill the mold, into which the handle, with the brush-head attached and duly wrapped with the rubber band, is then laid. The parts of the mold are then put together and subjected to heat—steam heat, preferably—and as soon as the band of unvulcanized rubber is sufficiently softened by the heat the parts of the mold are pressed hard together, molding and forcing the rubber close and hard upon and around the butts of the brush fibers and also into the grooves and around the head of the handle, the ferrule being at this time shoved up on the brush-head or removed out of the way of the mold. By these means the brush-head is firmly united to its handle by a molded head or section of rubber. The said molds may be heated and the parts pressed together by any suitable means having sufficient force to press the rubber close around the butt of the brush-head and the head of the handle, so as to impart a neat finish to the rubber forming the socket around the butt of the brush-head and upon the head of the handle. The rubber section or head uniting the handle and the brush-head is now vulcanized either by heat or by any of the well-known means of vulcanizing rubber, and at the same time and by the same means the rubber cement uniting the ends of the bristles is also vulcanized, if it has not already been completely vulcanized, as described.

The interior of the mold may of course be made plain or ornamental, making the exterior of the molded head or connecting section of corresponding form.

In all cases where the back of the brush or rubber section uniting the brush head and handle is to be hard and inflexible the preparation of which the rubber band is made should upon vulcanization form what is known as "hard rubber" or "vulcanite," or some suitable substitute therefor; but in cases requiring a flexible back to the brush or molded head between the handle and the brush-head the preparation of rubber used may upon vulcanization be soft or flexible vulcanized rubber or some suitable substitute therefor.

I have described rubber which upon vulcanization forms hard rubber or vulcanite as best adapted to unite the brush to the handle and the bristles together; but in the place of this material any suitable cement may be substituted which has the same essential qualities and properties.

The forming rings or ferrules are made of metal or of any material having the necessary firmness and strength. The handle of the brush may be made of wood or any other suitable material, and my invention includes a brush with its back or handle composed wholly of india-rubber or cement applied to the brush-head, substantially as described.

Before wrapping the adjacent ends of the brush head and handle with the band of unvulcanized rubber it is a good plan to take a strip of thin strong woven fabric, preferably saturated with the said rubber cement (or any other strong material to which rubber will adhere) and wind it, after drying, around the adjacent ends of the brush and handle, and upon such fabric wrap the band of unvulcanized rubber. By these means the union between the brush and handle is considerably strengthened.

Having now described my improved brush and the method of making it, I claim and desire to secure by Letters Patent—

1. The method of making brushes, which consists of bunching the bristles together in the desired form, of saturating one end of said bristles with liquid rubber, of vulcanizing the rubber, of wrapping the united ends of the handle and brush-head with a strip of unvulcanized rubber, and of then vulcanizing the whole, substantially as described.

2. An improvement in the art of making brushes, consisting of bunching the bristles together in the desired form, saturating one end of said bristles with liquid rubber, and subsequently vulcanizing the rubber, substantially as described.

3. The method of making brushes, consisting of bunching the bristles together in the desired form, immersing one end of said bristles in liquid rubber, vulcanizing said rubber, and attaching said bristles to a handle, substantially as described.

JAMES A. READ.

Witnesses:
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ROBERT BARTLETT.