

(No Model.)

2 Sheets—Sheet 1.

J. A. READ.

MANUFACTURE OF BRUSHES.

No. 372,385.

Patented Nov. 1, 1887.

Fig. 1.

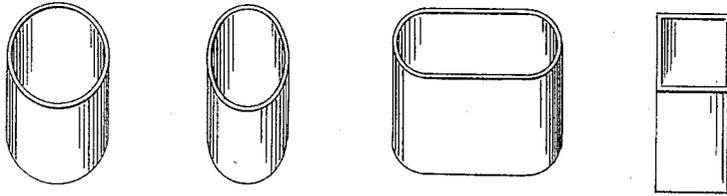


Fig. 2.

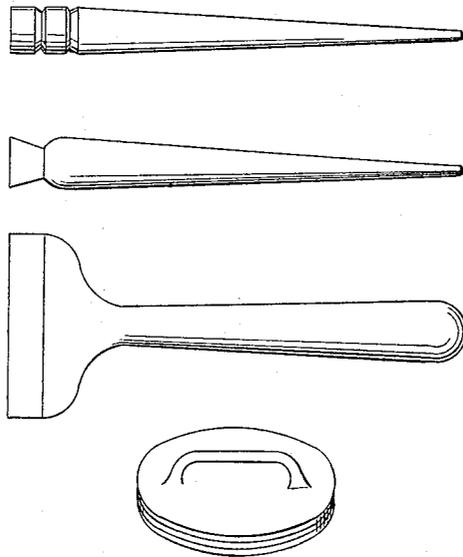


Fig. 3.

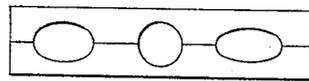
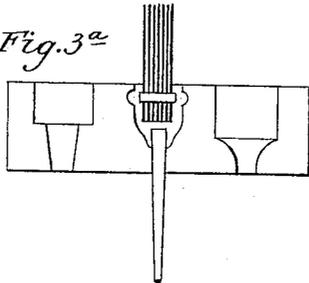


Fig. 3^a



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

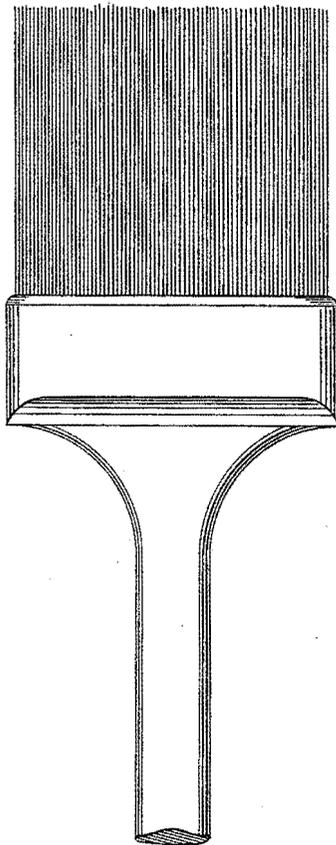
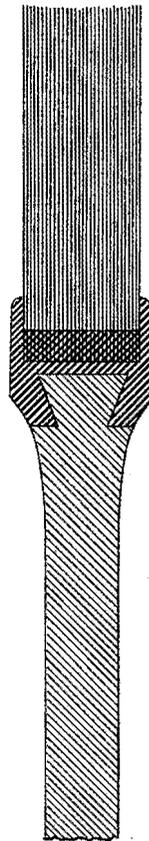


Fig. 5.



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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
5 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
10 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.

15 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. 3^a, a longitudinal sectional
20 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
25 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
30 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
35 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
40 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
45 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
55 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
60 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
65 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.
70

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:
75 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
80 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
85 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,
90 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
95 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
100

length, width, and thickness, having been first
 5 duly prepared for the purpose, and wrap it
 around the adjoining ends of the brush head
 and handle, the band of rubber being un-
 10 vulcanized, 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
 15 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
 20 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
 25 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
 30 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
 35 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 im-
 part a neat finish to the rubber forming the
 40 socket around the butt of the brush-head and
 upon the head of the handle. The rubber sec-
 tion 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
 45 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 al-
 50 ready been completely vulcanized, as de-
 scribed.

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

In all cases where the back of the brush or
 45 rubber section uniting the brush head and
 handle is to be hard and inflexible the prepa-
 ration of which the rubber band is made should
 upon vulcanization form what is known as
 50 "hard rubber" or "vulcanite," or some suit-
 able substitute therefor; but in cases requir-
 ing a flexible back to the brush or molded
 head between the handle and the brush-head
 the preparation of rubber used may upon vul-
 canization be soft or flexible vulcanized rub-
 ber or some suitable substitute therefor.

I have described rubber which upon vul-

canization forms hard rubber or vulcanite as
 55 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 sub-
 stituted which has the same essential quali-
 60 ties 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 suit-
 65 able 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 un-
 70 vulcanized 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 ad-
 here) and wind it, after drying, around the
 75 adjacent ends of the brush and handle, and
 upon such fabric wrap the band of unvulcan-
 ized rubber. By these means the union be-
 tween the brush and handle is considerably
 80 strengthened.

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

1. The method of making brushes, which
 consists of bunching the bristles together in the
 85 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 unvul-
 canized rubber, and of then vulcanizing the
 90 whole, substantially as described.

2. An improvement in the art of making
 brushes, consisting of bunching the bristles to-
 95 gether in the desired form, saturating one end
 of said bristles with liquid rubber, and subse-
 quently vulcanizing the rubber, substantially
 as described.

3. The method of making brushes, consist-
 ing of bunching the bristles together in the de-
 100 sired form, immersing one end of said bristles
 in liquid rubber, vulcanizing said rubber, and
 attaching said bristles to a handle, substan-
 tially as described.

JAMES A. READ.

Witnesses:

J. EDGAR BULL,
 ROBERT BARTLETT.

RUBBERSET

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