

(No Model.)

2 Sheets—Sheet 1.

J. A. READ.
MANUFACTURE OF BRUSHES.

No. 407,900.

Patented July 30, 1889.

Fig. 1

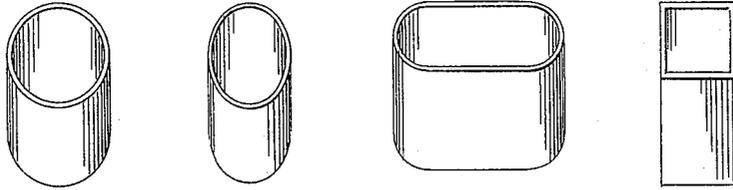


Fig. 2

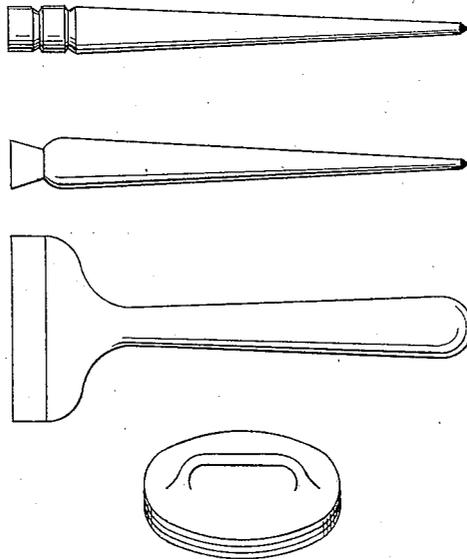


Fig. 3.

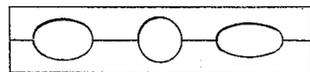
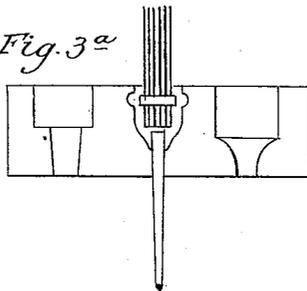


Fig. 3^a



WITNESSES,

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Robert Bartlett

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

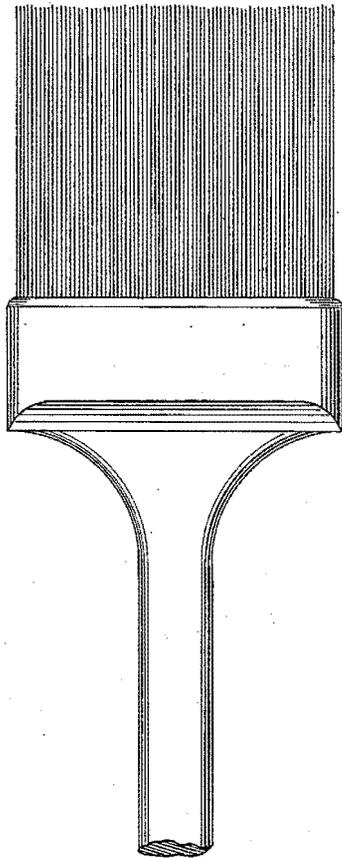
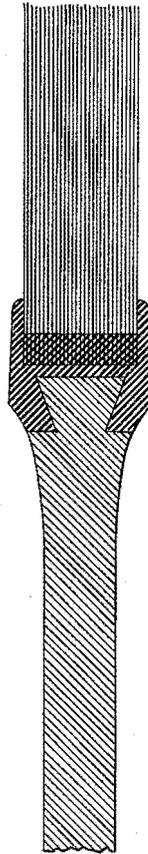


Fig. 5.



WITNESSES:

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ATTORNEYS

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. 407,900, dated July 30, 1889.

Application filed September 15, 1886. Serial No. 213,561. (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, (for which I have obtained a patent in France August 18, 1885, No. 170,689, and in England August 10, 1885, No. 9,502;) 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.

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 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 brush. 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 satu-

rated, 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-head 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
 5 duly prepared for the purpose, and wrap it
 around the adjoining ends of the brush-head
 and handle, the band of rubber being unvul-
 10 canized, 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
 15 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 suffi-
 20 ciently softened by the heat the parts of
 the mold are pressed hard together, mold-
 ing 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
 25 this time shoved up on the brush-head or re-
 moved 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
 30 pressed together by any suitable means hav-
 ing 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
 35 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
 40 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
 45 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
 rubber section uniting the brush-head and
 handle is to be hard and inflexible, the pre-
 45 paration 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 50
 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 vul- 55
 canization 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
 60 substituted which has the same essential quali-
 ties and properties.

The forming rings or ferrules are made of
 metal or of any material having the neces-
 sary firmness and strength. The handle of
 the brush may be made of wood or any other 65
 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 70
 brush-head and handle with the band of unvul-
 canized rubber it is a good plan to take a strip
 of thin strong woven fabric, preferably sat-
 urated with the said rubber cement, (or any
 other strong material to which rubber will 75
 adhere,) and wind it, after drying, around the
 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 manner of making it, I claim and de-
 sire to secure by Letters Patent—

1. A brush having the interstices between 85
 the ends of its bristles filled with vulcanite,
 and having said bristles united to a handle
 by a section of vulcanite, substantially as de-
 scribed.

2. A brush having the interstices between 90
 the ends of its bristles filled with vulcanite,
 by means of which the individual bristles are
 cemented to each other, substantially as de-
 scribed.

JAMES A. READ.

Witnesses:

J. EDGAR BULL,
 ROBERT BARTLETT.

RUBBERSET

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