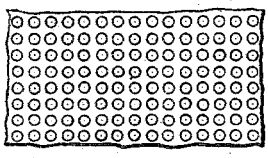
(No Model.) 2 Sheets—Sheet 1.

J. THOMPSON.

BRUSH.

No. 301,644. Patented July 8, 1884.

Fig. 1.



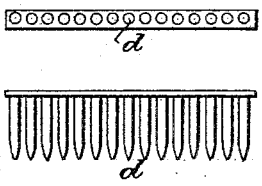


Fig. 2.

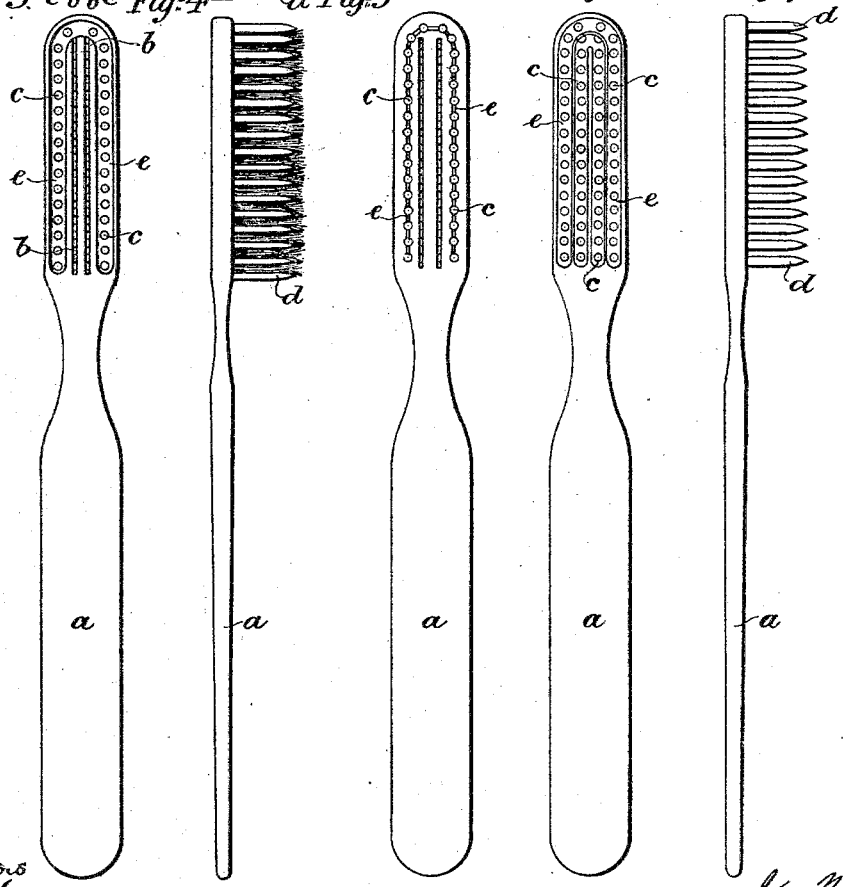
Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 8

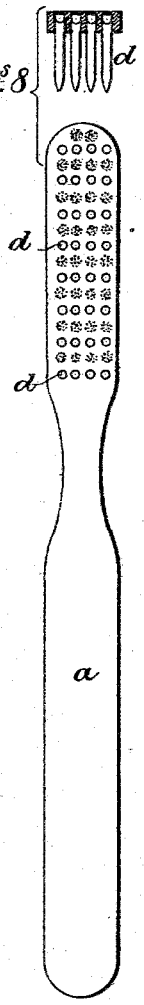


Fig. 9

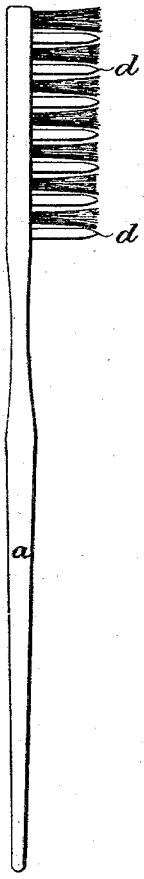


Fig. 10

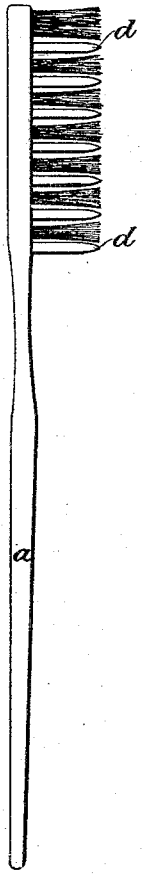
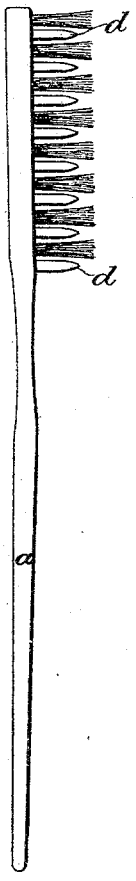


Fig. 11



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UNITED STATES PATENT OFFICE.

JOHN THOMPSON, OF LONDON, ENGLAND.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 301,644, dated July 8, 1884.

Application filed December 13, 1883. (No model.) Patented in England August 25, 1883, No. 4,121, and in France January 24, 1884, No. 159,903.

To all whom it may concern:

Be it known that I, JOHN THOMPSON, a subject of the Queen of Great Britain, residing at Aldersgate Street, in the city of London, England, have invented certain new and useful Improvements in Brushes, (for which I have received Letters Patent in Great Britain, No. 4,121, dated August 25, 1883, and in France, No. 159,903, dated January 24, 1884,) of which the following is a specification.

This invention has more especially for its object to improve the construction of tooth-brushes; but the improvements are also applicable to other forms of brushes. In tooth-brushes as ordinarily formed the outer bristles along the sides of the brush, being unsupported on their outer sides, frequently get bent outward, which renders the brushes unpleasant to use, and the bristles are also more likely to be then broken off or dragged out from the back. To remedy this I form the central part of the brush of bristles as heretofore, and around the outside of the brush I fix tongues of vulcanized india-rubber. These tongues I insert into the outer row of holes in the back of the brush, instead of filling these holes with tufts of bristles, as in ordinary brushes. The tongues may be made to project out from the handle or back to the same extent as the bristles, or nearly so. There is a hole in the back for each rubber tongue, and the tongues are of pin-like form. Strips connecting the rubber tongues and secured in grooves at the backs of the rows of holes serve to suitably attach the tongues to the brush-back. The bristles at the sides and ends of other brushes might in a similar way be supported by an outer row of tongues of vulcanized india-rubber. For some purposes, also—as, for example, for nail-brushes, plate-brushes, and brushes for other such like purposes—the brushes may be formed entirely of tongues of vulcanized india-rubber secured into holes in a back or handle; or brushes might be formed partly of bristles and partly of flexible tongues intermixed in various ways with the bristles, and secured to the back by being passed through their respective securing-holes, as explained above.

Having thus described the nature of my invention, I will proceed to describe more fully the manner of performing the same.

In the drawings, Figure 1 is a face view of an assemblage of india-rubber tongues suitable for being used in the manufacture of brushes, as above described. Figs. 2 show a face view, a side view, and an end view of a narrow strip cut from the fabric shown at Fig. 1, and having upon it a single row of tongues. Figs. 3 show a back view and cross-section of a brush-handle, having holes bored through it ready for receiving rows of bristles and an outer row of india-rubber tongues. Figs. 4 show a side view and cross-section of a finished tooth-brush with the bristles and india-rubber tongues secured to the back. Figs. 5 show a back view and cross-section of a brush-handle somewhat modified in form from the one shown at Fig. 3. Fig. 6 shows a back view of a brush-handle having holes bored through it for receiving only tongues of india-rubber. Fig. 7 shows a side view of a brush having a handle such as shown at Fig. 6, and having its rubbing-surface composed entirely of tongues of vulcanized india-rubber. Figs. 8 show a face view and cross-section of a brush made with alternate rows of bristles and india-rubber tongues. Figs. 9, 10, and 11 show side views of brushes so made with alternate rows of bristles and india-rubber tongues.

Wherever tufts of bristles are to be secured into the handle the handle has holes bored in it, and the tufts of bristles are secured into the holes by means of wires in the ordinary way. Where the tongues of india-rubber are to be secured to the handle, holes are bored through the handle—one for each tongue—and in the back of the handle a groove is also formed along each of these rows of holes.

In the several figures, *a* is a rigid handle, of bone, ivory, or other suitable rigid material. *b b* are rows of holes for receiving the tufts of bristles. *c c* are rows of holes for receiving the pin-like tongues *d*, of vulcanized india-rubber. *e* are grooves formed at the backs of the rows of holes *c*.

The vulcanized india-rubber tongues to be used in the construction of the brushes are

formed in molds. The molds have rows of holes formed in them of the shape to which the tongues are required to be molded, and also at a distance apart equal to the distance that the tongues are required to be one from the other. The holes of the mold are first filled with india-rubber composition; then a thin layer of the composition is spread over the whole face of the mold, and over this is placed a strong fabric. When the mold has been closed and submitted to heat, to effect the vulcanization of the india-rubber compound, the tongues and canvas or other woven back become securely united together. Such an assemblage of vulcanized india-rubber tongues may be made of any desired width and length. When it has been removed from the mold, it is cut into strips—such as shown at Figs. 2—each containing a single row of tongues. The strips may be made of any desired length, either to go entirely or partly around the outside edge of a brush, or of the same or less length than the rows of holes which are to receive them. One of the strips of fabrics—such as shown at Figs. 2—is then taken, and its separate tongues are drawn through the holes which are to receive them. The narrow strip of fabric by which the several tongues are held together is made to lie in the groove *e* in the back of the handle. Afterward the groove is filled in with cement to form a smooth surface to the back of the brush. If the groove *e* is a narrow groove, such as shown at Figs. 5, then the strip of fabric which carries the tongues will have to be cut narrower than when a broader groove is used, such as shown at Figs. 3.

When the brush is to be made up entirely of tongues of india-rubber, the handle may, as shown at Fig. 6, have any desired number of rows of holes bored in it, and a separate strip of the vulcanized india-rubber fabric be drawn into the holes of each row, and the brush be afterward finished by filling up the grooves *e* with cement, to form a smooth surface at the back.

In the brushes shown at Figs. 8, 9, 10, and 11 the rows of bristles and the rows of india-rubber tongues are set alternately and crosswise of the back. I do not, however, limit myself to this way of making up a brush—partly of bristles and partly of tongues of vulcanized india-rubber—as the rows of tufts of bristles and of tongues of india-rubber may be arranged in other ways. The tufts of bristles and the tongues of india-rubber may also, as shown, be made either of the same length, or either of them may be made shorter than the other. In any event the back has a hole for each of the pin-like rubber tongues.

Having thus described the nature of my invention and the manner of performing the same, I would have it understood that although in the drawings I have only shown various forms of brushes suitable for being used as tooth-brushes, yet I do not limit myself to the construction of this class of brush, as a great variety of brushes suitable for being used for many other purposes may be constructed in a similar manner, and the shape of their backs or handles be varied accordingly.

What I claim is—

1. A brush constructed with a rigid back or handle pierced with holes, some of which are made to hold tufts or bristles, while others are made to hold pin-like tongues of vulcanized india-rubber, each of said tongues being secured in a separate hole in the back, substantially as set forth.

2. The brush constructed with a rigid handle having holes *c* bored through it, and with a groove or grooves, *e*, at the back of these holes, and having the rubber tongues *d* secured in these holes by means of a strip or strips connecting the tongues and occupying the groove or grooves, substantially as set forth.

3. The brush constructed with the rigid handle carrying rows of bristles, and with a row of pin-like tongues of vulcanized india-rubber around the outside of these rows of bristles, each of said tongues passing through a separate hole in the handle, substantially as and for the purpose set forth.

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