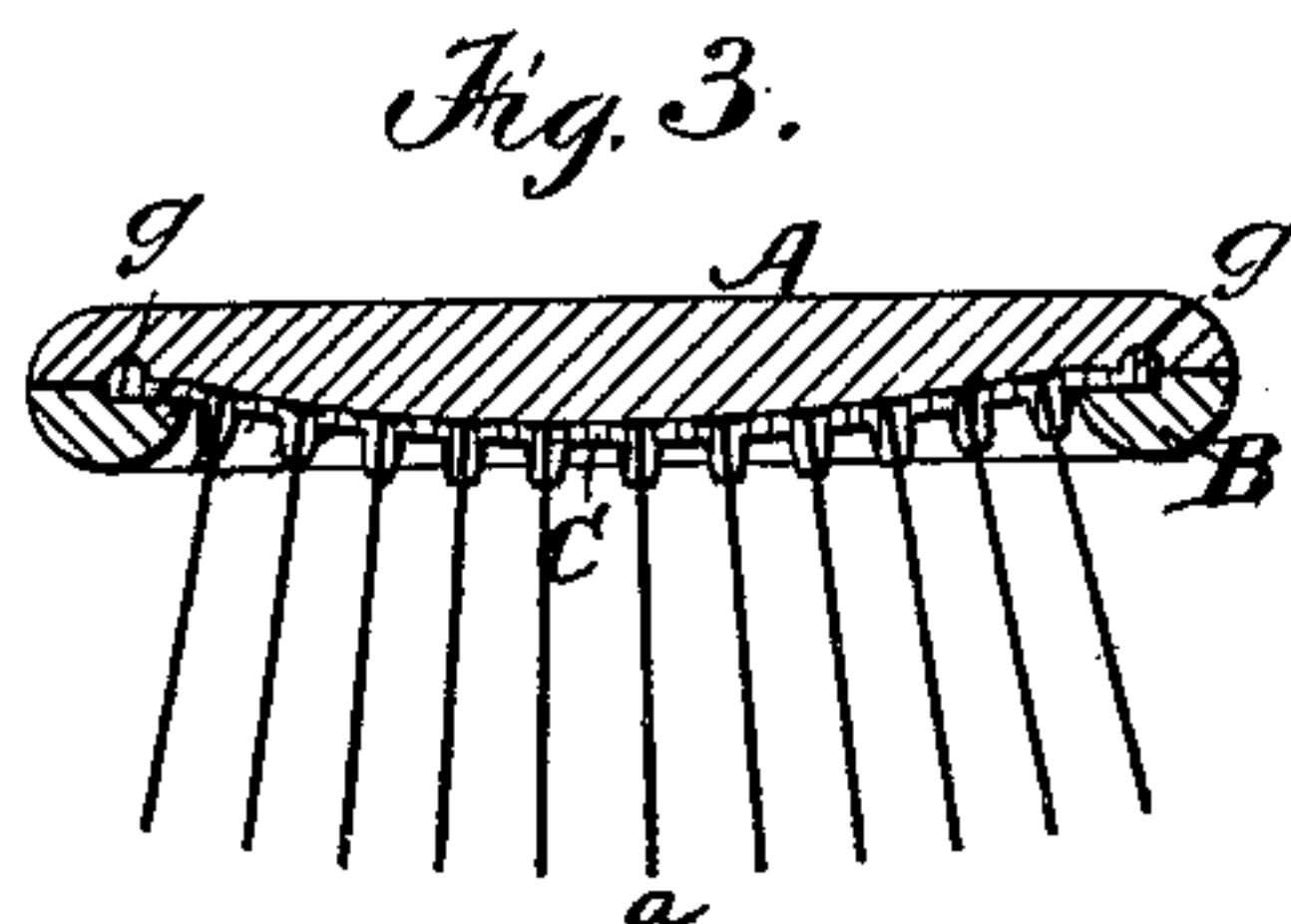
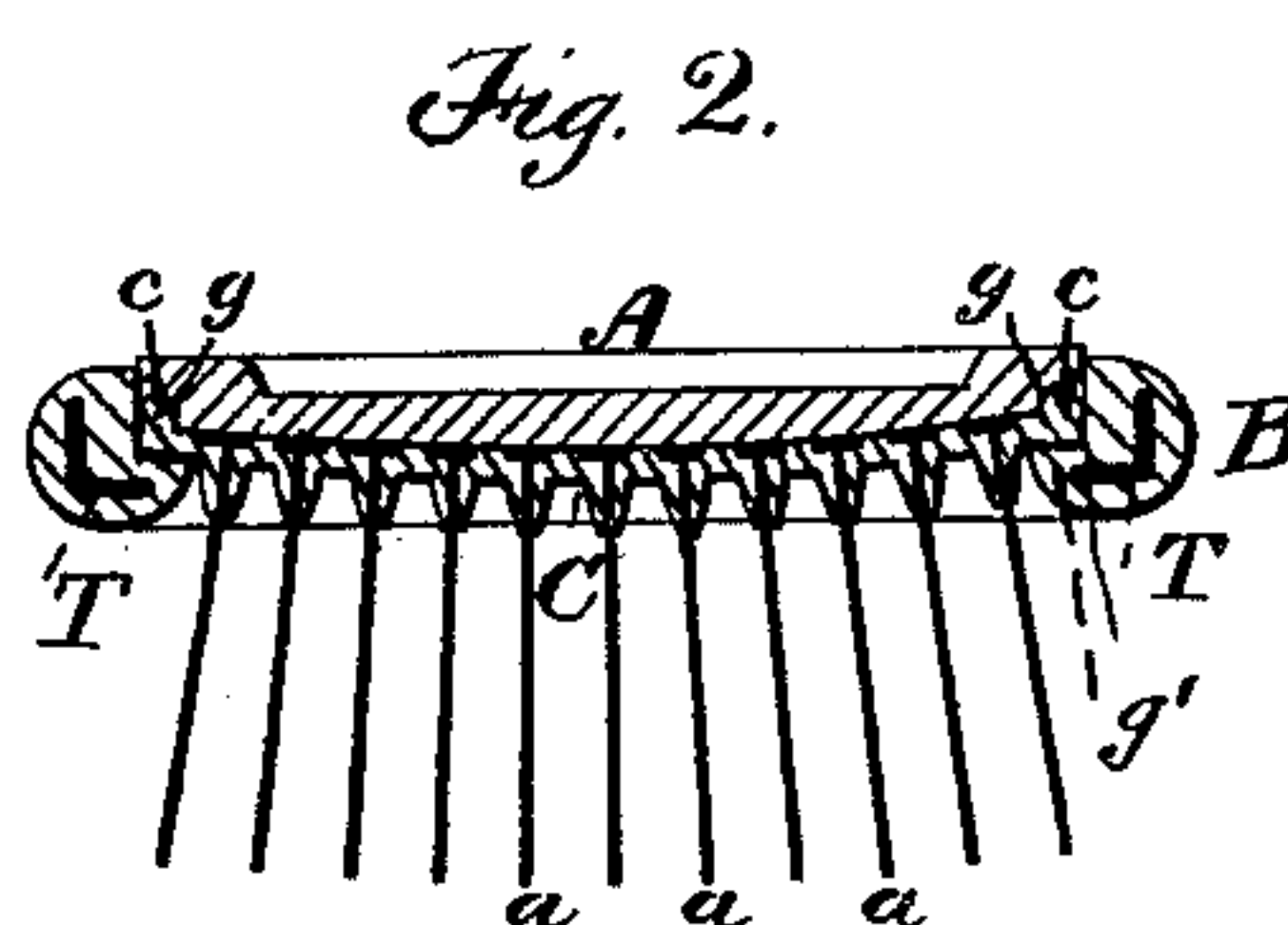
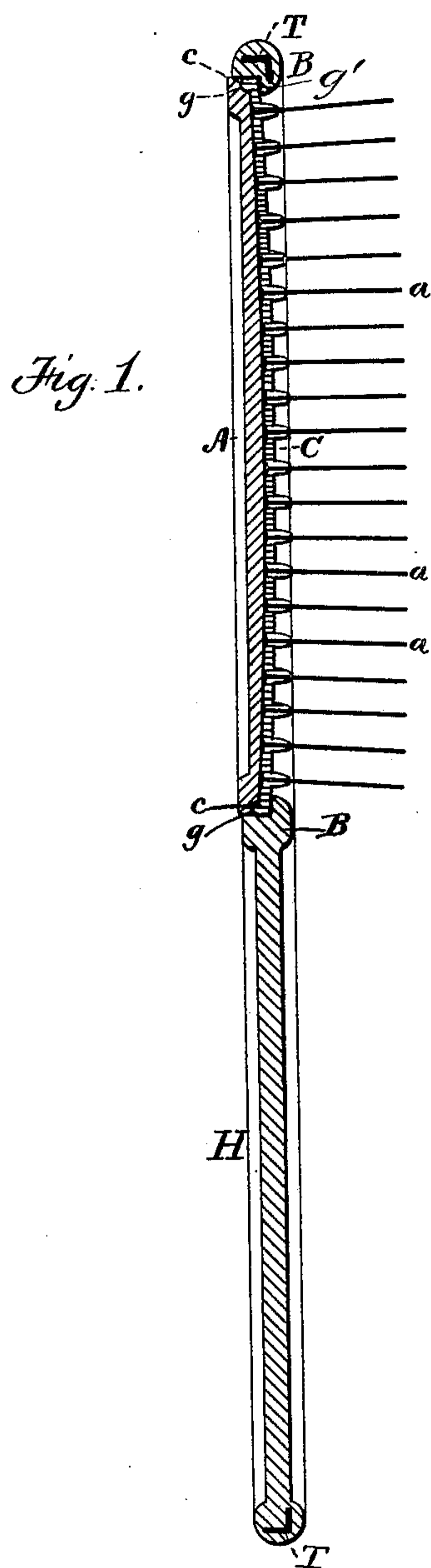


E. A. & W. S. HILL.  
Metallic Hair Brush.

No. 233,508.

Patented Oct. 19, 1880.



Witnesses.  
Fred House  
Louis, C. Hill.

Inventor,  
Edwin A. Hill  
Warren S. Hill.



# UNITED STATES PATENT OFFICE.

EDWIN A. HILL, OF READING, AND WARREN S. HILL, OF HYDE PARK, MASS.;  
SAID WARREN S. HILL ASSIGNOR TO SAID EDWIN A. HILL.

## METALLIC HAIR-BRUSH.

SPECIFICATION forming part of Letters Patent No. 233,508, dated October 19, 1880.

Application filed February 16, 1880.

*To all whom it may concern:*

Be it known that we, EDWIN A. HILL, of Reading, in the county of Middlesex, State of Massachusetts, and WARREN S. HILL, of Hyde Park, county of Norfolk, and State aforesaid, have invented a new and Improved Metallic Hair-Brush, of which the following is a specification.

This invention relates more especially to that class of hair-brushes in which the brush material is composed of wire pins set in a brush-face of vulcanized elastic rubber which is secured to a suitable back.

The invention also relates to backs and handles of hair-brushes or other like articles when made of a substance or compound which is capable of being formed in molds or dies while in a plastic state.

The first object of this invention is to provide a better or an improved method for securing together the parts of the brush of the class named, so that a strong, beautiful, and durable brush can be manufactured rapidly and cheaply.

The second object of this invention is to provide improved means for strengthening molded hair-brush backs, which, from the nature of their compound, are more or less brittle.

To this end this invention consists, first, in a back formed in two parts, one of which supports the back of the rubber brush-face, while the other clamps the margin of the brush-face against the first, the construction of the parts being such that the simple operation of placing them together firmly secures the margin of the brush-face, so that it cannot be easily displaced or drawn out from between the parts.

This invention consists, also, in providing a molded back and handle with a marginal sheet-metal strengthening-frame, composed of one or more pieces or strips of sheet metal angular or equivalently shaped in cross-section, which are to be embedded into the material or compound during the process of molding, and extending continuously from end to end of the back and handle, for the purpose of effectually strengthening the same.

Of the accompanying drawings, forming part of this specification, Figure 1 represents a longitudinal central section of the brush em-

bodiment of our invention. Fig. 2 represents a transverse section of the same. Fig. 3 represents a transverse section of a modification.

The same letters indicate the same parts in all the figures.

In carrying out this invention we provide a rubber brush-face, C, studded with metallic pins *a*, which constitutes the brush material.

In the present instance the brush-face is molded and vulcanized, with perforations to receive the pins, and with teats or projections of rubber surrounding the pins, as shown in patent issued to E. A. Hill, June 10, 1879. The brush-face may be molded and shaped to any pattern preferred.

The rigid back, which holds the rubber face in the present instance, is made in two parts, A and B. The part A, which in this description we will call the "back," is formed to support and cover the entire surface of the back of the brush-face C, and gives to the same a convex outer surface, as shown. The part B, which we will call the "rim-piece," is in the form of a frame adapted to cover the margin of the rubber face C and clamp said margin against the back A when said parts are secured together.

The rim-piece B is preferably recessed at *g'*, as shown in Figs. 1 and 2, to receive the back A, the latter constituting a panel; but, if desired, the parts A and B may be formed so as to be placed together with their outer edges flush, as shown in Fig. 3, the object of this part of our invention being to firmly secure the margin of the rubber brush-face in its position by the simple operation of putting the parts A and B together and avoiding the expense of metallic bands and other costly appliances, and improving the construction and appearance of the brush as a whole. The surfaces between which the margin of the brush-face is clamped are designed and formed to prevent the clamped portion of the rubber from slipping or moving laterally between the surfaces so clamped. To this end we form a groove, *g*, in the back A, said groove presenting a shoulder which acts as a stop to the lateral or edgewise movement of the clamped portion of the brush-face, the latter being provided with a bead, *c*, formed or molded to register with the groove.

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From the foregoing it will be readily seen that the operation of putting together the parts of this improved brush consists simply in placing the brush-face C in position on the flange upon the rim-piece B, applying the glue or cement upon the edges to be joined, and then the part A or panel is laid in place, when all are put under pressure in a hand-screw until the glue becomes hardened; then the screw is removed and the brush is complete.

When the back A and the rim-piece B are in the form shown in Fig. 3 they may be made of wood, in whole or in part, if desired; but the forms shown in Figs. 1 and 2 are preferably composed of a compound which can be made plastic and is capable of being formed in molds while in a plastic state, and subsequently solidifies and becomes rigid. When the parts are so molded the rim-piece B is extended to form a handle, H, both being formed in one piece.

The best compositions now used for brush and mirror handles, jewelry, and other like articles are brittle and liable to break in ordinary use. To remedy this liability to break we insert or embed one or more strengthening-strips of sheet metal L-shaped or equivalently formed in cross-section, as shown at T in Figs. 1 and 2, and forming a marginal strengthening-frame extending continuously from end to end of the back and handle close to the margin thereof. This angle or L-shaped iron is embedded into the composition while it is in a plastic state during the process of molding. This stiffening-iron may be cut from any suitable sheet metal and struck up in one or more parts, and formed to fit the pattern of handle and back of any brush, mirror, or other article where such strengthening may be useful.

If preferred, the strengthening-strip may be made semicircular in cross-section, this form being considered equivalent to the L shape or angular shape in regard to strength.

We are aware that brush and mirror handles have been made with flat and round wire and common nails embedded therein for stiffening purposes, and that patents have been issued therefor; but the flat and round wires easily bend and spring and allow the composition to crack and break off, while nails and large wire are objectionable on account of the weight. We do not, therefore, claim the use of the round or flat wire or nails or like articles; but our invention is confined to the struck-up angular or equivalently shaped rigid metal, as shown at T, securely embedded into the handles and backs, as set forth. The form of this stiffening-strip, as shown, is light and unobjectionable in weight, and when properly embedded is very stiff and strong and valuable for the purpose. Besides, it gives strength and stiffness to the margin, where it is most needed.

No ordinary use can spring or break the composition.

What we claim as our invention, and wish to secure by Letters Patent, is—

1. In a brush, the combination of a rim rabbeted around its inner edge and a brush-face beaded, as described, placed on said rabbet, with a back having a groove fitted upon and over the brush-face and rim, whereby the parts are secured together, substantially in the manner described.

2. A molded back or handle provided with a marginal sheet-metal strengthening-frame composed of one or more pieces or strips angular or equivalently shaped in cross-section, as specified, embedded in the material and extending continuously from end to end of the back and handle, close to the margin thereof, as set forth.

EDWIN A. HILL.  
WARREN S. HILL.

Witnesses:

SARAH L. HILL,  
LOUIS E. HILL.