

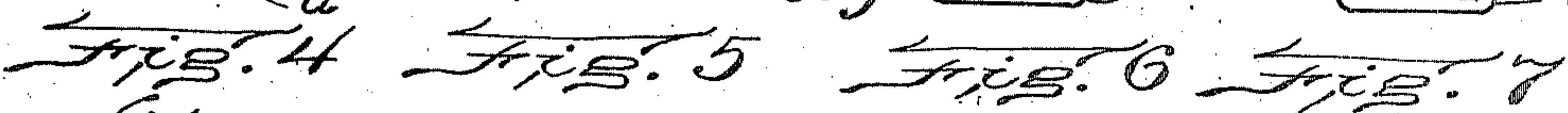
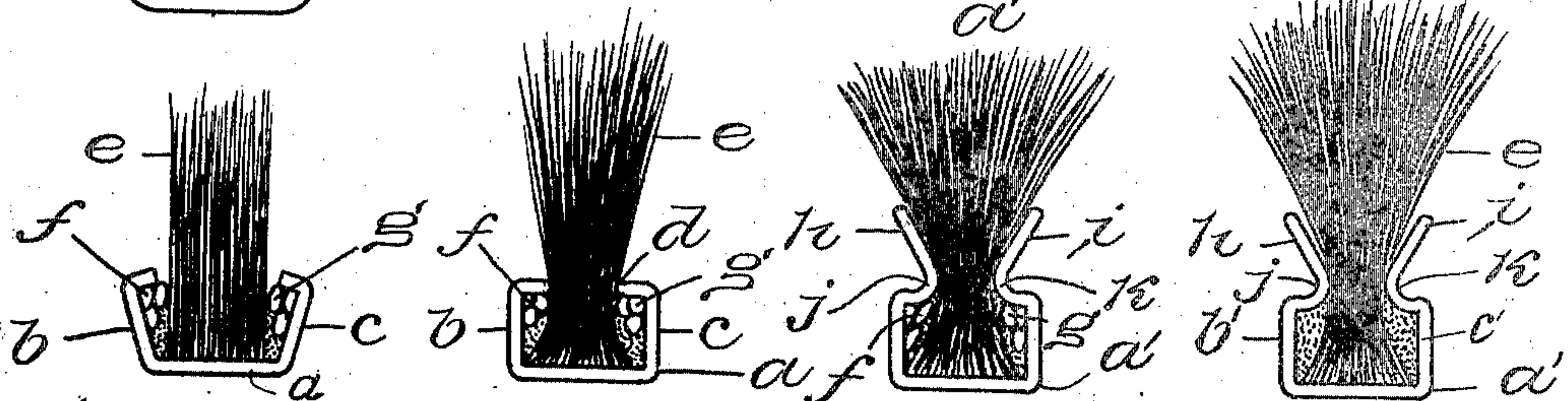
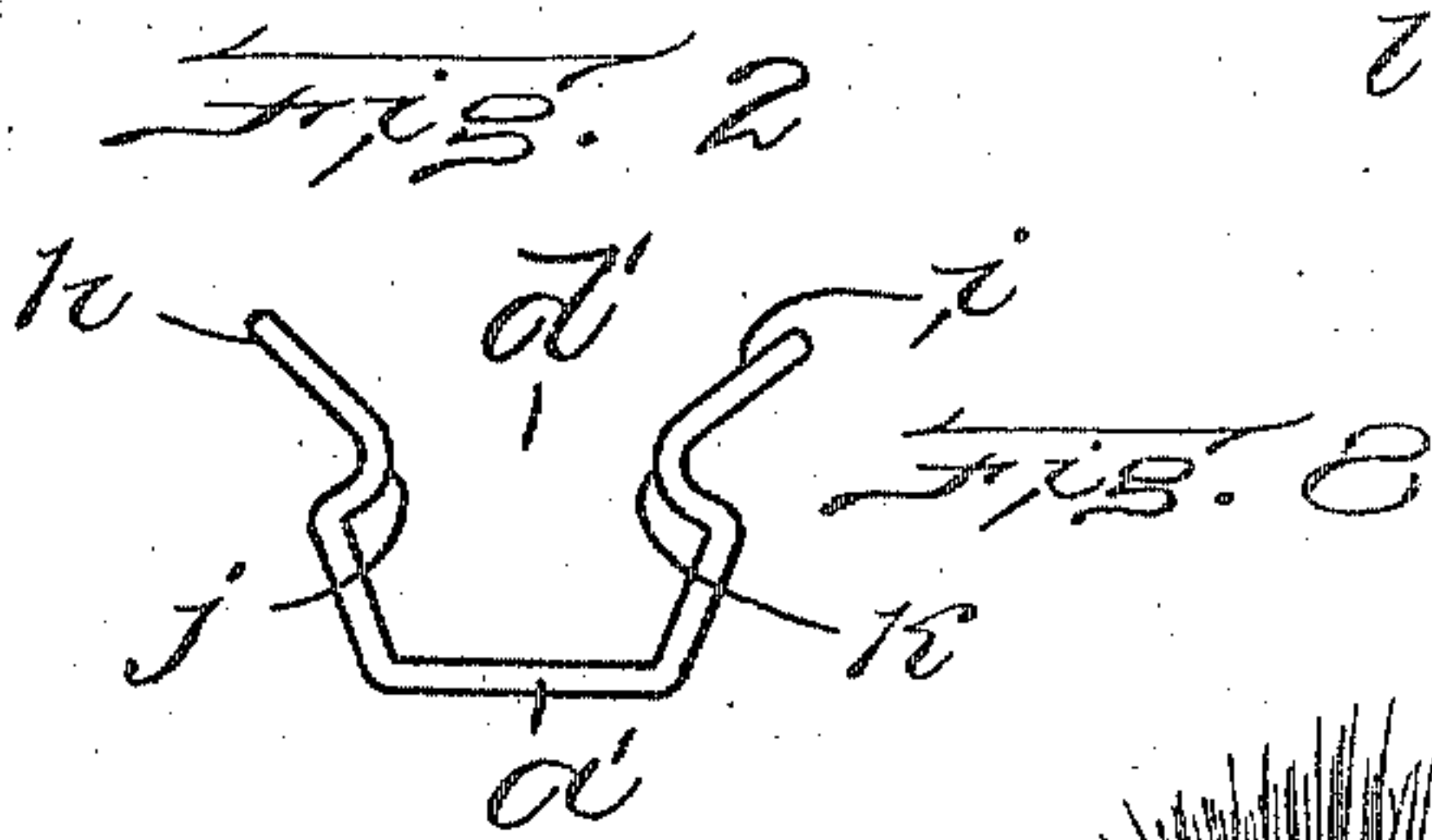
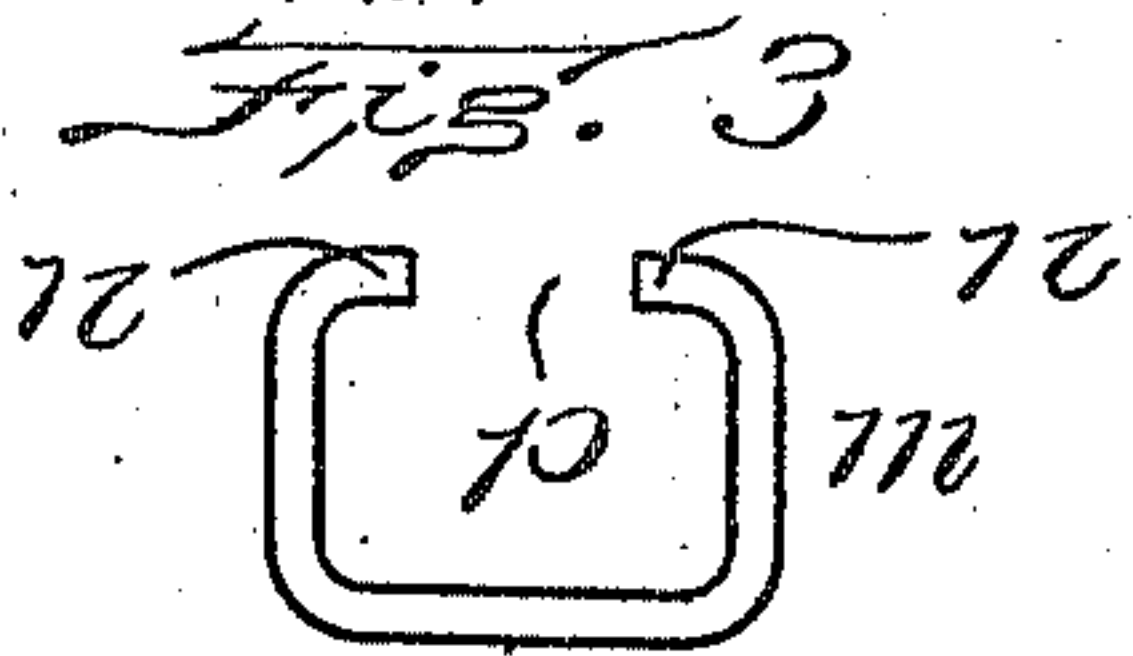
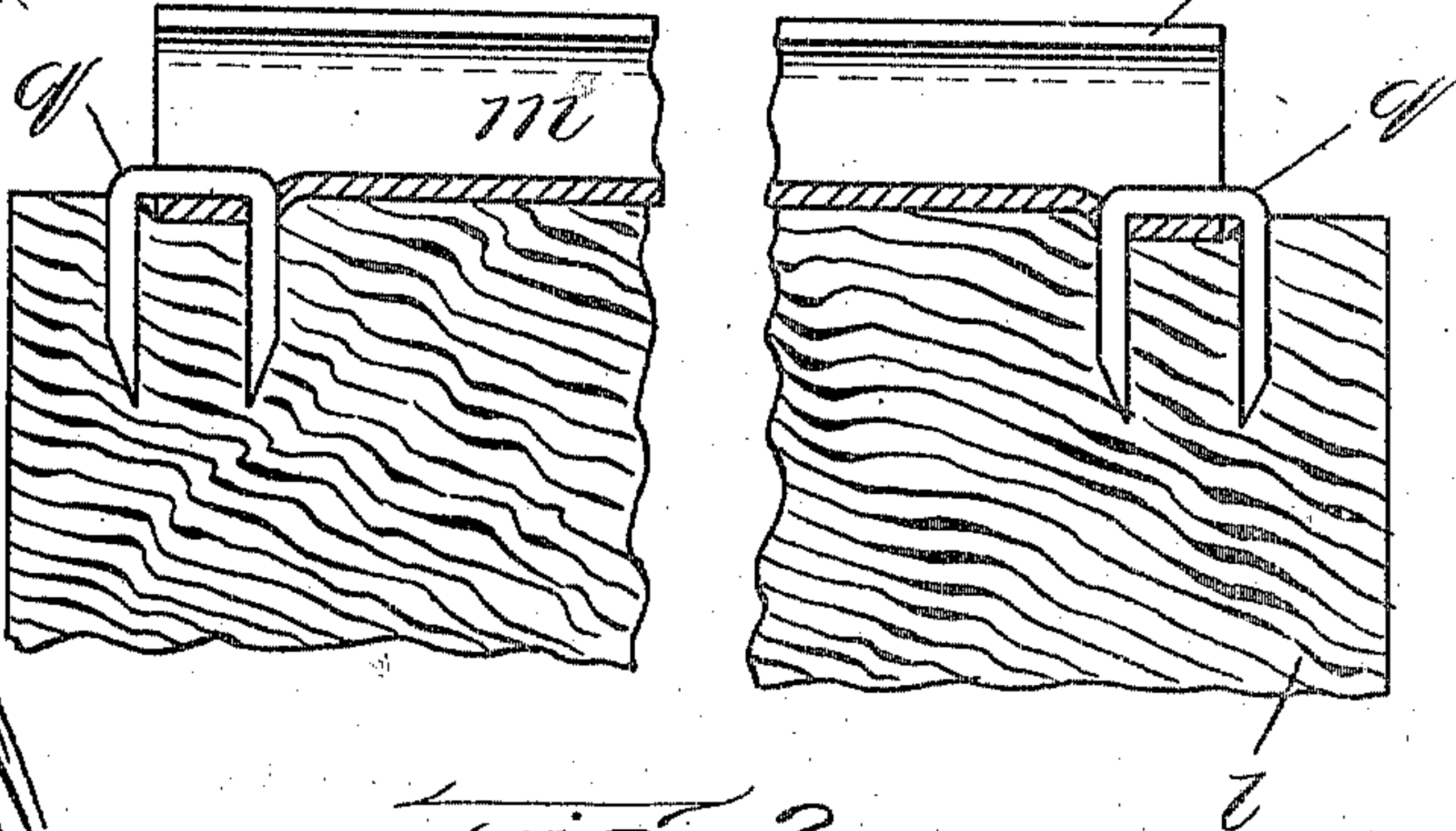
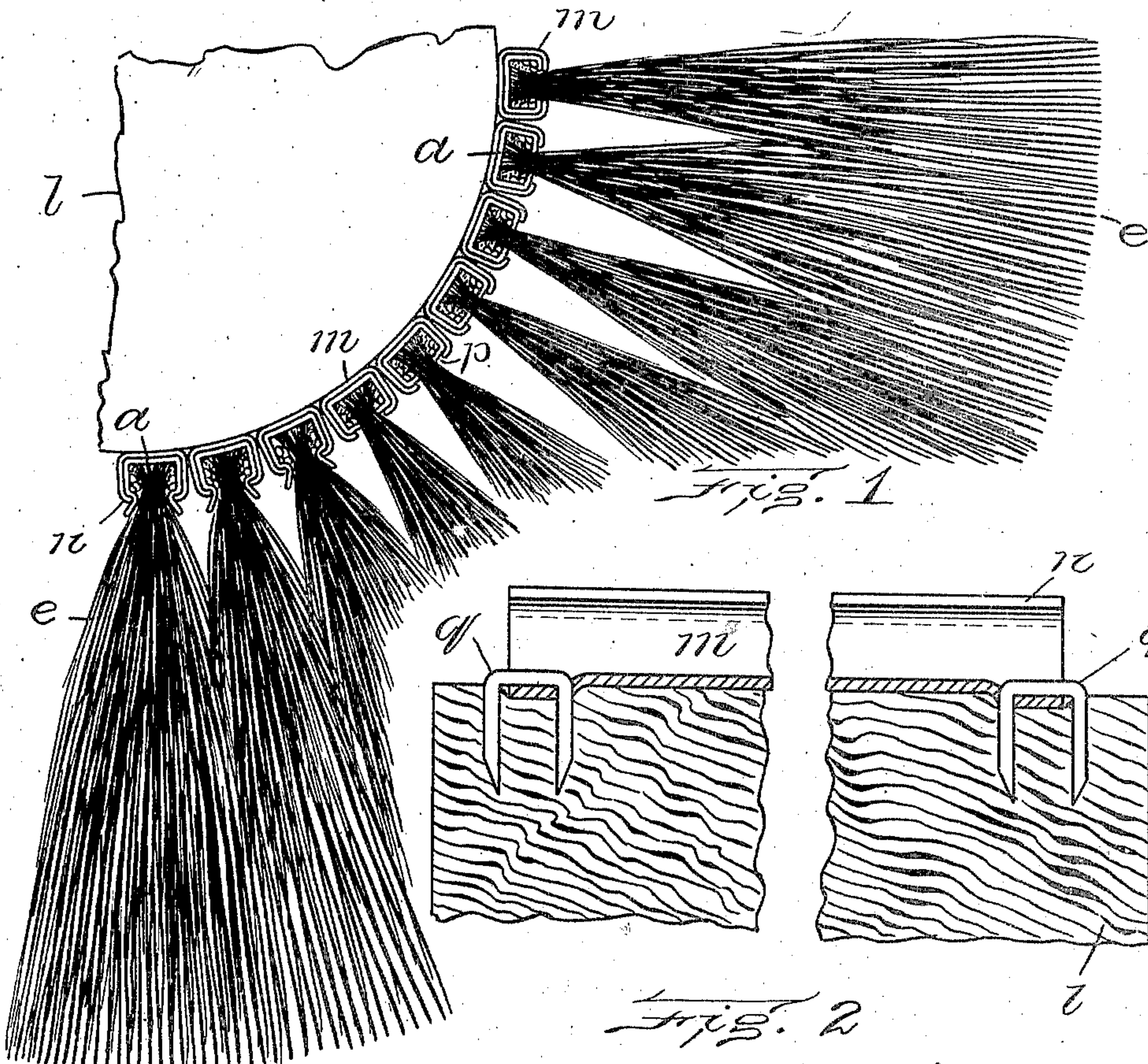
J. F. BOWDITCH.

BRUSH.

APPLICATION FILED JAN. 16, 1907.

951,432.

Patented Mar. 8, 1910.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN F. BOWDITCH, OF BOSTON, MASSACHUSETTS.

BRUSH.

951,432.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed January 16, 1907. Serial No. 352,512.

To all whom it may concern:

Be it known that I, JOHN F. BOWDITCH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

This invention has for its object to provide a new and more effective method of securing the bristles or other brush material in the holders, and in general to furnish a brush such that the brush material may be more readily applied and removed from the head or back than heretofore, and without requiring holes or grooves to be made in the head or otherwise injuring the same.

A more specific object is to provide a brush element capable of independent use, or of use with other similar elements on a single head, in which the brush material is arranged in a continuous line instead of in detached tufts.

Of the accompanying drawings,—Figure 1 represents in elevation, a portion of a brush constructed according to my invention. Fig. 2 represents a fragmentary sectional view of the brush head with one of the clips for holding a brush element. Fig. 3 represents a detail end view of a brush-holding clip. Figs. 4 and 5 represent a brush element, and illustrate the manner in which the same is constructed. Figs. 6 and 7 represent a somewhat differently constructed form of brush element. Fig. 8 represents an end view of the holder for the last-named variety of brush element before the brush material has been placed therein.

The same reference characters indicate the same parts in all the figures.

The brush consists of elements, each of which is a separate and distinct unit capable of being used alone or with others placed side by side upon a head or backing. The brush elements are each made of bristles which are inserted in holders, and secured therein. In Fig. 5, I show one form of brush element which I term the "converging" brush to distinguish it from another character of brush called the "flaring" brush, to be hereinafter described. The holder *a* of the brush element is made from a strip of sheet metal which is bent up into trough-like form with a bottom, and side members *b* and *c* which, when the brush is completed, extend substantially perpendicular with the bottom. At a distance from the bottom, the outer portions of the side mem-

bers are bent toward each other, to form offsets between which there is left a slot *d* of less width than the interior of the holder, through which the brush material *e* extends.

The manner in which the brush elements are constructed is as follows: When the holders *a* are first made, they are given a shape substantially like that shown in Fig. 4 wherein the edges of the side members are separated by a distance substantially as great as the width of the bottom member of the holder. Into the latter is placed a quantity of fluid adhesive, such as glue or cement, of a character that will quickly harden and become perfectly solid. The bristles are arranged regularly and evenly between two grippers, and their ends are then passed through the open side of the trough into the adhesive contained therein. Cords *f* and *g* are placed longitudinally of the holder within the angle formed by the inwardly-bent or offset edges of the side members, and thus lie on opposite sides of the mass of brush material. The sides of the holder are then compressed together, causing the cords and edges of the side members to approach each other and to grip between them a mass of bristles. This action also diminishes the interior volume of the holder and squeezes the cement up into the bristles, completely filling the interstices of the latter and of the cords. When the cement hardens, its tenacity, together with the frictional grip produced by the cords, provides a fastening for the bristles, of a power which is unsurpassed or unequaled by any other fastening means known to me. After the side members of the holder have been forced into substantial parallelism, the bent-over flanges thereof are pressed down and further crowd the cords against the butt ends of the bristles. The securing power of a holder so constructed is greater than the tensile strength of the bristles so that in many instances, a pull strong enough to break the bristles may be given without dislodging their butt ends from between the cords or pulling them out of the cement. This form of fastening the bristles causes them to extend with very little divergence from the holder, and on this account, I call the brush so formed the "convergent" brush.

In Fig. 7 is shown the other form of brush called the "flaring" brush, wherein the bristles extend from the holder with much greater divergence than in the kind previ-



ously described. They are caused to diverge in this manner by the construction of the holder, which differs from the first-described holder in that the side members  $b'$  and  $c'$  of the holder  $a'$  do not terminate in flanges turned toward each other but, after being bent inward, are reversely curved and again bent outward, forming flaring walls  $h$  and  $i$ . In other words, the sides may be described as being intermediately offset so as to form beads  $j$   $k$  which extend toward each other and leave between them a slot  $d'$  through which the bristles pass. In first forming the holder, the sides are separated as shown in Fig. 8 sufficiently to permit easy insertion of the ends of the bristles, and then upon being pressed together, the curved beads bearing against the bristles cause their protruding portions to be spread widely apart. Brush elements of this flaring variety may be made without using the cords  $f$  and  $g$ , their ends being simply held by the cement and the grip of the beads, but the cords also may be used as well, the same being shown in Fig. 6. Other members or things than cords may be used for packing the brush material within the holder, but whatever may be used for this purpose will have these characteristics of a cord, of being long and slender. Anything which is thus used serves as a packing and may be conveniently so termed.

In order to secure the brush elements upon a head or back  $l$ , the latter is furnished with clips  $m$  formed similarly to the holders so that the latter will fit closely therein. These clips have inwardly turned flanges  $n$  which extend over the outer corners of the brush holders, and are separated by a slot  $p$  of sufficient width to admit the brush material. In holders formed for the reception of the flaring brush elements, the width of the slot  $p$  is sufficient to receive not only the brush material, but also the side members of the holder at the inwardly deflected portions  $j$  and  $k$  of the latter. These clips are open at their ends and are secured to the brush head by fastenings  $q$  which pass through the bottoms of the clips and are counter-sunk to the level of the internal surface thereof. Preferably such fastenings have the form of double pointed tacks or small staples, one of the points of the staple being driven into the brush-head outside of the clip. The brush sections can be readily slipped endwise through the clips and fit therein with such closeness as to be held frictionally with sufficient firmness to prevent accidental dislodgment. As soon as the brush material becomes worn out, the section can be very readily removed and a fresh one substituted. By my present invention I have provided

a very simple method of constructing a brush and most secure means for retaining the brush material in place.

In order to insert the bristles, they are laid regularly and evenly to the required thickness upon a strip or bar, and a second similar piece is laid upon the bristles. These pieces or clamps are then pressed together firmly, gripping the bristles, and are transferred so as to insert the ends of the latter into the holder, wherein they are permanently secured in the manner already described.

I claim:—

1. A brush element consisting of a holder formed from a sheet metal strip bent so as to provide a bottom and side members, the latter being offset toward each other at a distance from the bottom, leaving a relatively narrow slot between their offset portions; brush material extending through said slot into the interior of the holder; and a fibrous cord confined between the side member, the offset portion thereof, and the brush material, on each side of the brush material clamping and frictionally holding the latter.

2. A brush element consisting of a holder formed from a sheet-metal strip bent so as to provide a bottom and side members, the latter being offset toward each other at a distance from the bottom, leaving a relatively narrow slot between their offset portions; bristles extending perpendicular to the length of the holder with their ends passing through said slot; and cords compressed between the sides of the holder and the bristles, the cords and bristle ends being filled with a hardening cement.

3. A brush comprising a backing, clips secured to said backing, and brush elements contained in said clips, said elements each consisting of a trough-like holder, brush material extending through the longitudinal side openings of said holder, and packing pieces interposed between the brush material and the adjacent sides of the holder.

4. A brush element consisting of a holder having a longitudinal opening in one side of less width than the body of the holder, brush material extending through such opening, and packing pieces contained between the sides of the holder and the brush material.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN F. BOWDITCH.

Witnesses:

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ARTHUR H. BROWN.