J. P. POLAND.
Brushes.

No. 196,167. Patented Oct. 16, 1877.

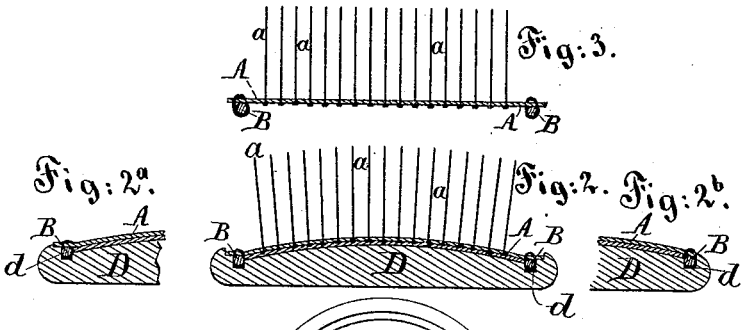

Fig: 3.

Fig: 2.

Fig: 2ª.

Fig: 2ᵇ.

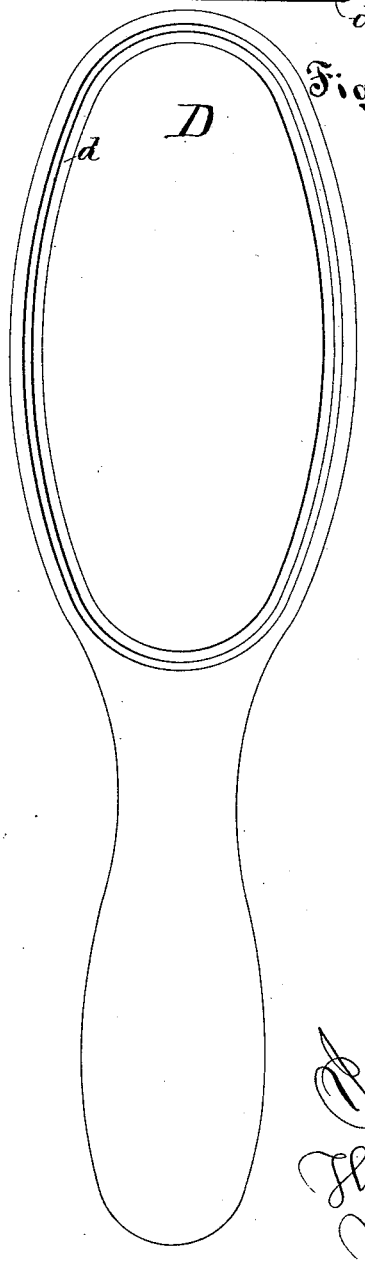

Fig: 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES P. POLAND, OF ARLINGTON, MASSACHUSETTS.

IMPROVEMENT IN BRUSHES.

Specification forming part of Letters Patent No. **196,167**, dated October 16, 1877; application filed September 5, 1877.

To all whom it may concern:

Be it known that I, JAMES P. POLAND, of Arlington, Middlesex county, in the State of Massachusetts, have invented certain new and useful Improvements relating to Metallic Brushes, of which the following is a specification:

I mount the short lengths of wire which constitute the working part of the brush in a backing of rubber or analogous material, in any suitable manner, and leaving a sufficient margin of the backing material around the area containing the wires. I stitch or otherwise firmly secure along the edge a frame of wire having a corresponding form, and then cement, or otherwise strongly secure, the whole in a back of wood or analogous rigid material, serving as a handle. The wood back being previously recessed to a just sufficient extent, and being specially grooved to match to the edging-wire, the result is a strongly-secured and fairly-supported backing, presenting a face which may, if desired, be flush with the edge of the wood, or may, if desired, be a little small, or a little projecting, but, with any of these conditions, may be smooth and even. There may be leather or any other soft material between the rubber and the wood, behind the heads of the wires, to soften the action of the brush, so long as it does not extend out so as to interfere with the recessing of the edge-wire into the wood and the strongly securing it there.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a face view, and Fig. 2 a cross-section, of the complete brush. Fig. 3 is a section through certain parts detached. The additional figures represent certain parts in section, modified.

Similar letters of reference indicate like parts in all the figures.

A is a sheet of vulcanized india-rubber, and *a a* indicate short lengths of tinned-iron wire set therein, and properly headed behind the backing. The wires are previously set, by hand or by machinery, to cover an area of the desired size and form, leaving an edge around which is vacant.

B is a metallic frame, formed of a wire of hard iron or other suitable material, carefully formed to the right contour, corresponding to the outline of the backing A, and strongly secured to A by sewing.

D is a handle of wood, papier-maché, hard rubber, or other suitable rigid material, having a groove, *d*, corresponding in form to the frame B, and adapted to receive its whole thickness. The face of the handle D is also recessed or sunk to any desired extent over the whole or any part of the area covered by the backing A, to allow for a layer of leather, felt, or the like behind the heads of the wires *a*, and to allow the edge of the backing A to lie flush, or about flush, with the face of the wood D.

Before applying the parts together, the wire or metallic frame B, and the adjacent surface of the backing A, is coated with a solution of shellac and alcohol, and the groove *d* in the handle is lined with the same, all of a proper consistency, and on pressing the parts A and B firmly down, by the hands or by a suitable die, a smooth and very strong and reliable junction is effected.

The rigid handle D *d* stiffens and supports the whole, and not only guards the edge, but also holds the brush bellied or convex to any desired extent, while the frame B holds the edge of the backing A against any ordinary or extraordinary disturbing force until the whole is worn out.

Many modifications in the details may be made by any good mechanic. There may be a series of double-pointed tacks or other suitable metallic fastenings, or even a series of stitches, additional to the cement, to hold the frame B in the groove *d*. I believe it practicable to hold these parts very strongly and reliably by such means without the cement; but I prefer the cement of shellac in alcohol, or an analogous plastic and strongly-adhesive glue, for the reason, among others, that it better shuts out water when the brush is dipped, as it frequently is in use.

Fig. 2^a is a cross-section, showing the backing A *a* let into the handle D *d* to a less extent.

Fig. 2^b is a cross-section, showing the frame B attached at the extreme edge of A *a*, while in the other figures it is attached a little within the extreme edge.

The groove *d* may be of various sections. I have shown a rectangle, but it may have a rounded bottom, if preferred.

I claim as my invention—

1. The backing material A, carrying the short wires *a*, in combination with the metal frame B, strongly connected around the edge, and adapted to serve in connecting it to a properly-recessed stiffening-handle, as specified.

2. The handle D, provided with the groove *d*, combined, as shown, with the metal frame B, and attached backing A, and brush-wires *a*, forming a complete brush, as herein specified.

In testimony whereof I have hereunto set my hand this 30th day of August, 1877, in the presence of two subscribing witnesses.

JAMES P. POLAND.

Witnesses:

J. A. HOGE,

ARTHUR POLAND.