

E. A. HILL.
Brush-Machines.

No. 142,913.

Patented September 16, 1873.

Fig. 1.

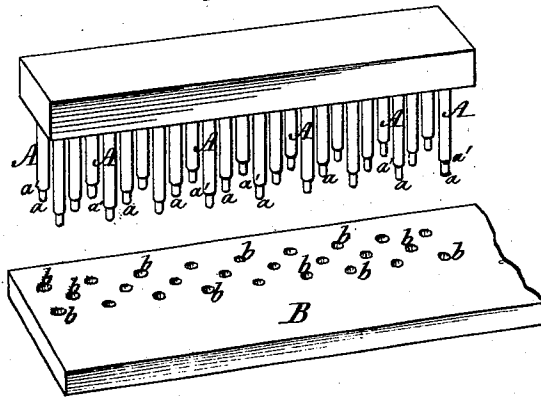


Fig. 2.



Witnesses.

Edmund Masson
John R. Young

Inventor

Edwin A. Hill, by
Orindle and Co., his Attys

UNITED STATES PATENT OFFICE.

EDWIN A. HILL, OF EAST CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN BRUSH-MACHINES.

Specification forming part of Letters Patent No. 142,913, dated September 16, 1873; application filed August 8, 1873.

To all whom it may concern:

Be it known that I, EDWIN A. HILL, of East Cambridge, Middlesex county, State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Brushes; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a perspective view of my device as arranged for operation, and Fig. 2 is a vertical section of a brush having the openings for containing bristles formed by said device.

Letters of like name and kind refer to like parts in each of the figures.

As ordinarily constructed, horse-brush backs are prepared for the reception of the bristles by means of a drill which forms a single hole at an operation, and when finished leaves the holes in a comparatively rough condition, and at unequal distances from each other.

To obviate these objections and lessen the cost of the finished article is the design of my invention, which consists in the employment of a punch provided with two cutting-faces, and capable of forming at one operation an opening having its upper and lower ends of different relative diameters, substantially as and for the purpose hereinafter specified.

In the annexed drawing, A and A represent a series of punches secured within a suitable head, which is so arranged as to give to said punches a longitudinally-reciprocating movement. At their lower ends and for a short distance upward from the same, each of the punches A is reduced to the desired size, and at the upper end of such reduced portion *a* is formed a square or concave shoulder, *a'*, which, when said punch is in use, constitutes a cutting-face. The bed-plate or die B is provided with openings *b*, which correspond in size to and receive the reduced ends *a* of the punches, so that when any suitable material is interposed between said die and punches, and the latter are forced downward, portions of the material being operated upon will be pressed through said die-openings *b*, so as to form holes in said material.

As these punches are intended more especially for use in the construction of horse-

brushes, they are relatively arranged within their head at distances which correspond to the positions of the openings *c* formed within the leather C for the reception of the bristles D, and their longitudinal motion is so adjusted as to carry the larger cutting-face *a'* nearly through to the die-plate, leaving sufficient substance only as a shoulder to prevent the bristles from being drawn through said hole when drawn into the same with the fastening wire. As thus arranged, the smaller cutting-face *a* will remove a corresponding piece of leather from the back C, while the larger cutting-face *a'* will increase the size of the opening *c*, by driving before it the chip cut from the sides of the latter, and render the interior of said opening smooth, hard, and firm. The bristles D are inserted within the openings *c*, and confined by wire in the usual manner.

The advantages obtained by this device are: First, the opening formed has smooth hard walls, which enable the bristles to be more easily inserted; second, the openings are equidistant from each other and uniform in size, so as to permit of the insertion of a like quantity of bristles in each, by which means a better and more desirable article is produced than by the usual means; third, as any desired number of punches can be used in one head, it enables manufacturers to prepare at one operation all of the openings within the back of a brush having any size, while as heretofore constructed, but one opening could be formed at a time; fourth, the cost of the brush is materially lessened, and a better article produced than has heretofore been practicable.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

In combination with a suitable die-plate and operating mechanism, a punch, A, provided with two cutting-faces, *a* and *a'*, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of January, 1873.

EDWIN A. HILL.

Witnesses:

ASA COTTRELL,
S. L. HILL.