Feb. 4, 1930. C. W. MAGUIRE 1,746,043

APPARATUS FOR MAKING BACKS FOR BRUSHES

Filed Sept. 23, 1926

Fig. 1.

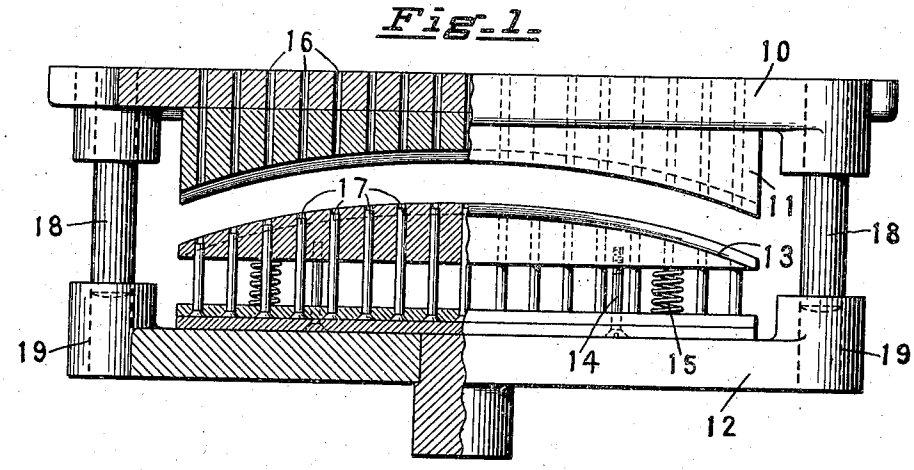


Fig. 2.

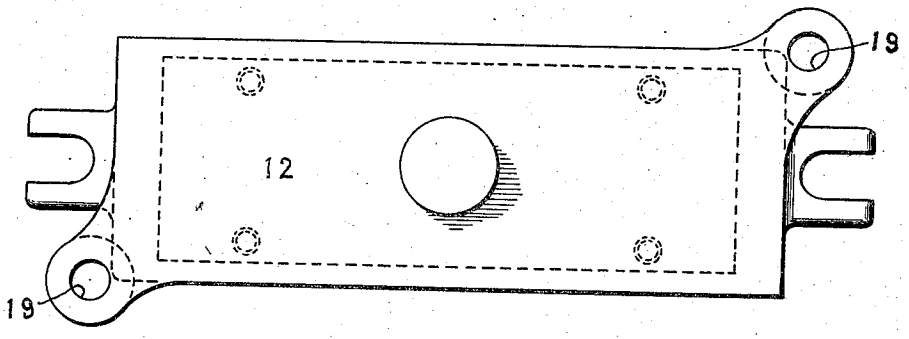


Fig. 3.

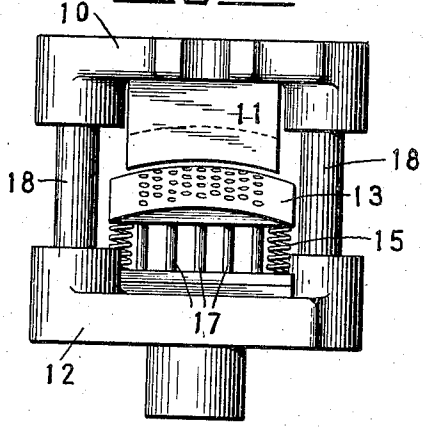


Fig. 4.

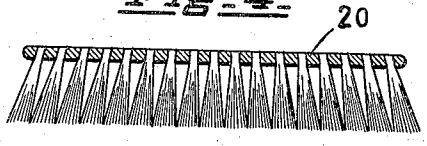
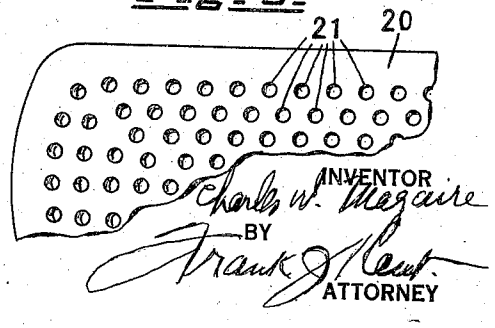


Fig. 5.



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APPARATUS FOR MAKING BACKS FOR BRUSHES

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This invention relates particularly to the manufacture of brushes in which the backs are formed of leather, or of comparatively thick but deformable metal, or thick celluloid, or the like flexible material.

In brushes of this type the backs are provided with punched holes in which the bristle tufts are inserted, and it is desirable that some of the holes pass through the back at an angle in order to cause the tufts to spread beyond the edges of the back, the angle of successive rows of holes increasing toward the edge of the back.

In order to pierce the back with holes of varying angle it is the usual custom to handle the piece a number of times, changing the angle of the punches for each row, which is a time-consuming and expensive process.

In the process of the present invention the piece of material comprising the back is first placed in a press which holds it in a position in which it is bowed both longitudinally and transversely. A series of parallel punches are then passed through the material. Upon removing the blank from the press it is restored to its original flat condition, thereby changing the angle of some of the holes, and producing the desired variations of angularity. This result is obtained by a single expeditious operation.

Other objects and advantages of the invention will become apparent as the description proceeds.

In the drawings:

Figure 1 is a side elevation partly in section of the apparatus of the invention.

Figure 2 is a bottom plan view of the apparatus.

Figure 3 is an end elevation of the apparatus.

Figure 4 is a section through a brush formed according to the present invention.

Figure 5 is a fragmentary plan view of a brush back resulting from the process of the invention.

Referring to the drawings more specifically, the upper member of the press includes a backing piece 10 and a die member 11 secured thereto. The die member 11 is formed with a concave curve both longitudinally and transversely, as will be clear from an inspection of Figures 1 and 3. The lower press member comprises a base 12 upon which is mounted a movable die member 13 which is curved convexly to exactly match the curvature of the die 11. A plurality of guide screws 14 have their heads slidably mounted in the base 12 and their upper ends screwed into the die member 13. Coiled springs 15 are placed between the die 13 and the base and normally hold the die in the highest elevated position permitted by the guide screws 14. Both of the die members are traversed by a plurality of vertical parallel holes 16 arranged in the pattern desired for the holes in the brush back, and the holes in one die member alining with the holes in the other die member.

A plurality of punches 17 are rigidly mounted on the base 12 and extend into the holes of block 13, the punches being of such a length that they are just below the upper surface of the block 13 when the latter is in its normal raised position.

Guide rods 18 are secured to the ends of the upper press member and engage in slideways 19 formed on the lower press member.

In carrying out the process of the invention the piece of material 20, which is to form the back of the brush, is placed between the die members 11 and 13. When pressure is applied to the die members, which have been placed in a press of any conventional type, the blank 20 is first deformed out of its straight condition and is bent until it is curved longitudinally and transversely to conform to the curvature of the die blocks. Further application of pressure causes both die blocks to move downward against the tension of springs 15, thereby causing the punches 17 to pierce the blank, forming holes 21. Upon separating the die members the blank is removed and restored to its original flat condition, and will be found to have the holes therethrough placed at the required angles. It will be obvious that varying the curvature of the die members causes a corresponding variation in the angularity of the holes.

I claim:

1. In punching apparatus, a base, a die member slidably and resiliently mounted on said base, the upper surface of said die member being curved both longitudinally and transversely, a plurality of apertures formed in the die member, a plurality of punches mounted on the base and extending into the apertures, a second die member curved to match the curvature of said first die member and having apertures registering with the apertures of the first die member, and guide means for maintaining the apertures in register during relative movement between the die members.

2. In punching apparatus, a base, a die member slidably and resiliently mounted on said base, the upper surface of said die member being curved both longitudinally and transversely, a plurality of apertures formed in the die member, a plurality of punches mounted on the base and extending into the apertures, said punches being graduated in length to terminate equi-distant from the curved surface of said die member, a second die member curved to match the curvature of said first die member and having apertures registering with the apertures of the first die member, and guide means for maintaining the apertures in register during relative movement between said die members.

In testimony whereof I affix my signature.

CHARLES W. MAGUIRE.