JOSEPH PICKERING. 2 Sheets--Sheet 1.

Improvement in Brush Making Machines.

No. 120,164. Patented Oct. 24, 1871.

PLATE 1.

FIG 1

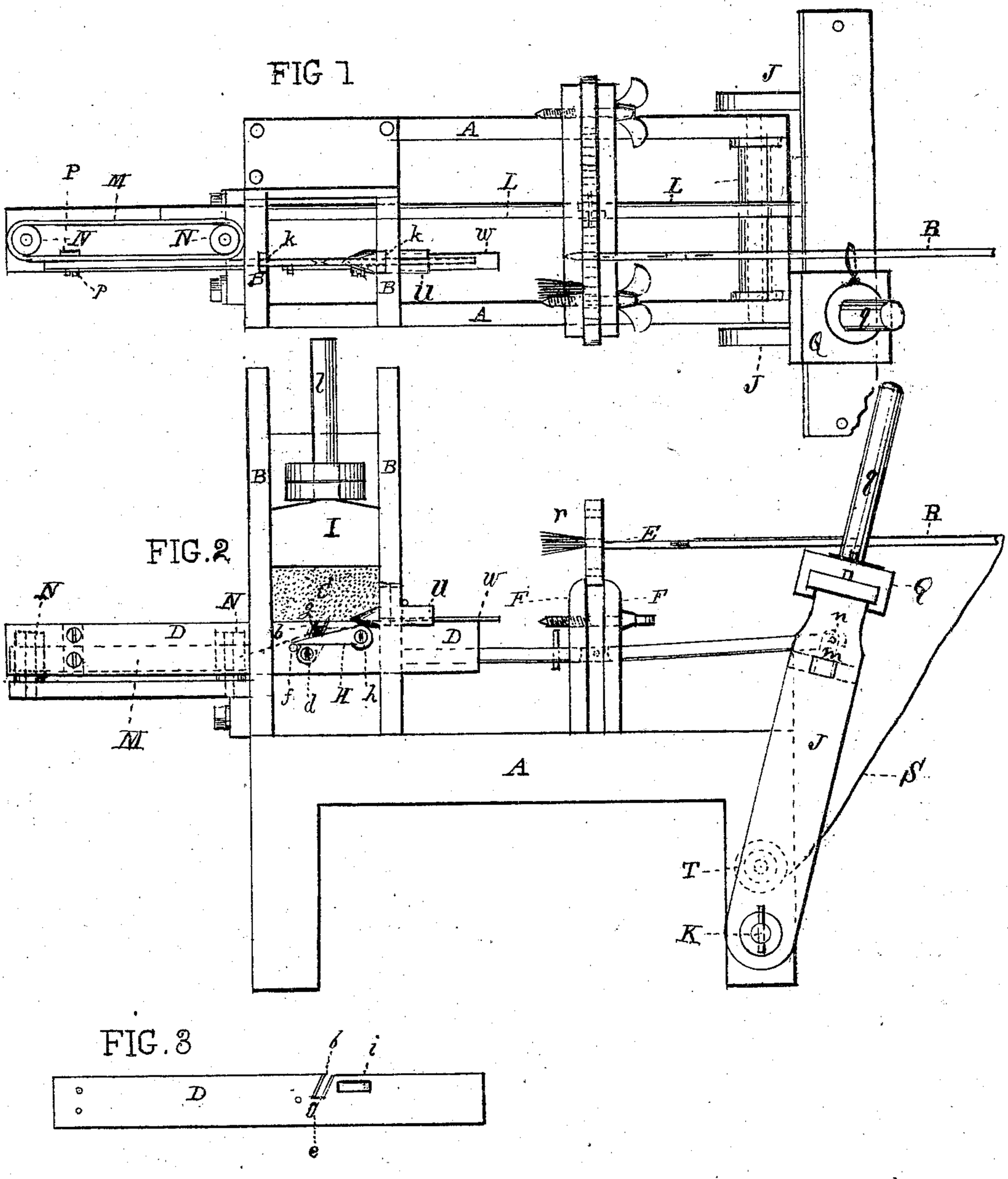


FIG. 2

FIG. 3

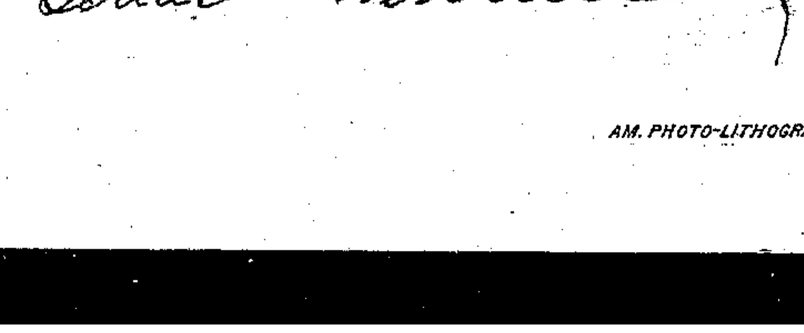


FIG. 4

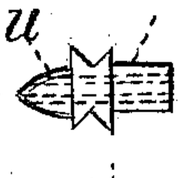


FIG 5

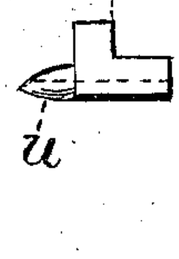


FIG. 6

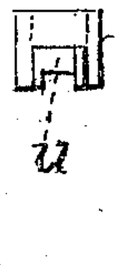
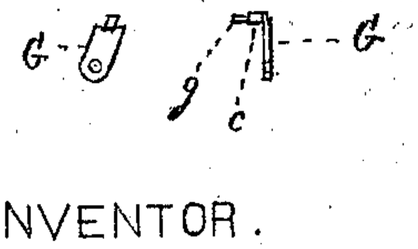


FIG. 7 FIG 8



WITNESSES

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JOSEPH PICKERING. 2 Sheets--Sheet 2.

Improvement in Brush Making Machines.

No. 120,164. Patented Oct. 24, 1871.

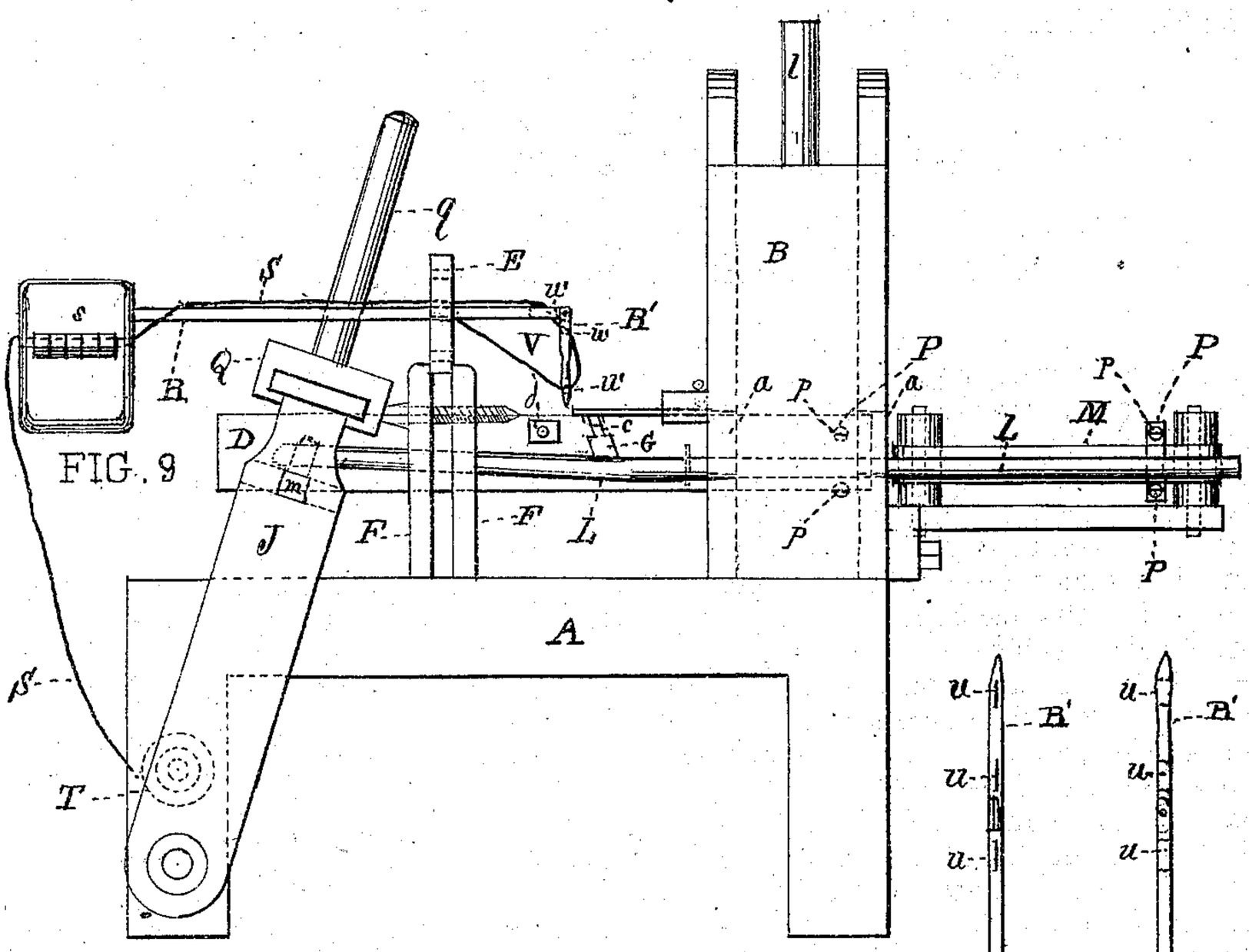

FIG. 9

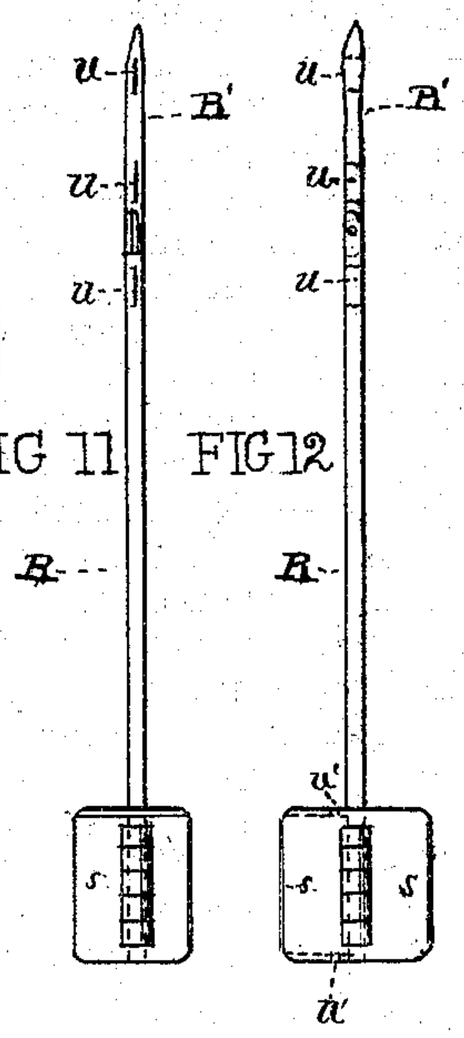

FIG 11 FIG 12

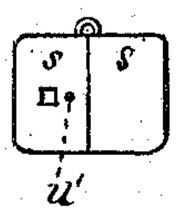

FIG. 13

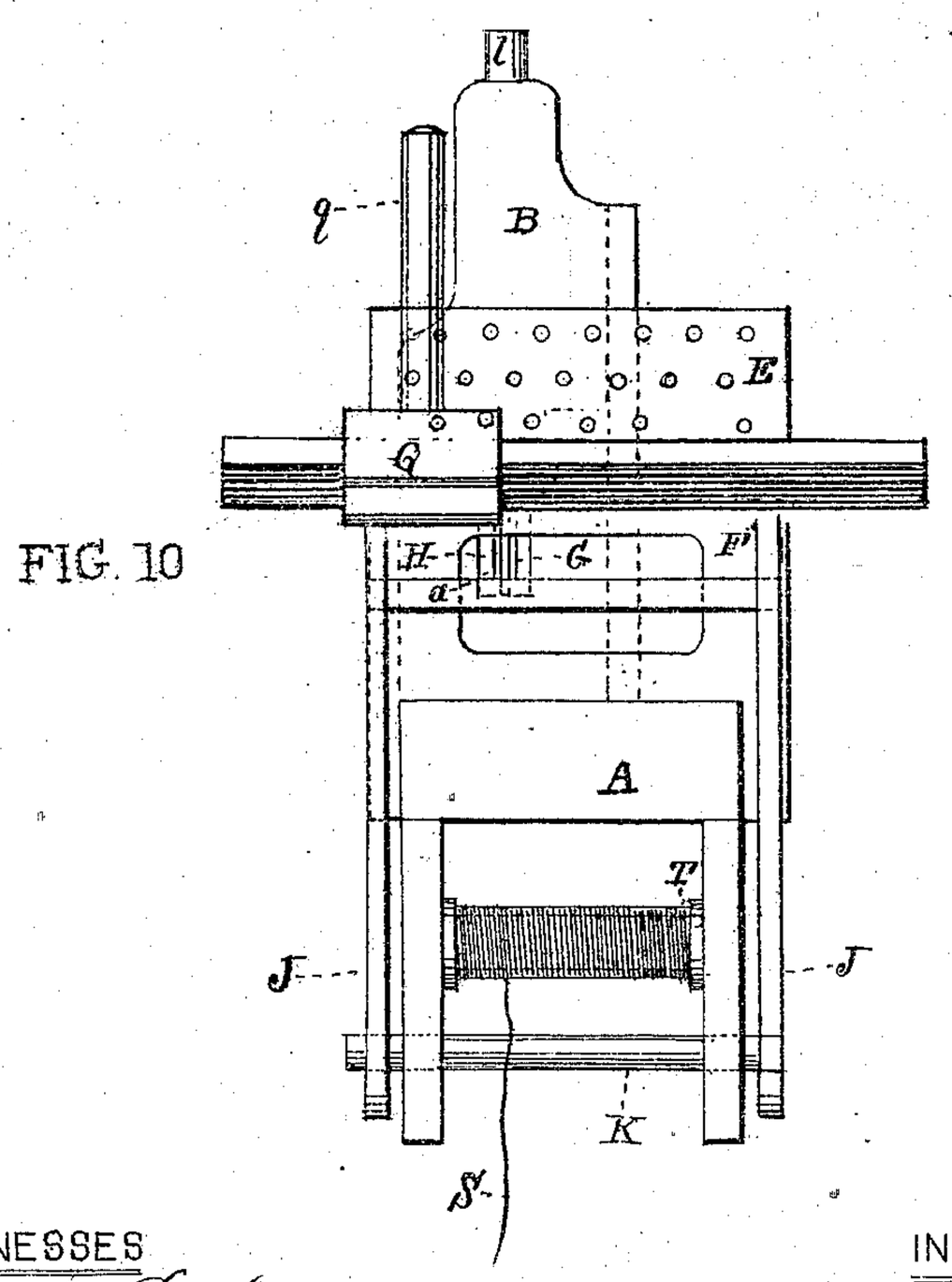

FIG. 10

WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH PICKERING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOSEPH M. PICKERING, OF SAME PLACE.

IMPROVEMENT IN BRUSH-MAKING MACHINES.

Specification forming part of Letters Patent No. 120,164, dated October 24, 1871.

To all whom it may concern:

Be it known that I, JOSEPH PICKERING, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in making Bristle-Brushes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification.

Heretofore it has been the usual practice to separate the bristles for insertion in the brush-stock and inserting them in the same by hand. By my invention it is accomplished by means of a machine, and consequently much more rapidly, and at the same time with more accuracy, and without severe labor to the workman.

The first part of my invention consists in a sliding blade having a notch to receive the requisite amount of bristles for a single insertion in the brush-stock, in combination with a vertical box or hopper, in which the bristles or other material are placed, crosswise of the blade, and a sliding vertical clamp, which holds the bristles in the hopper upon the upper edge of the blade. The blade has a reciprocating motion imparted to it by means of a swinging frame, connecting-rod, and endless band, as hereinafter described, so that the blade shall be moved forward until the notch in its upper edge passes into the hopper and receives the charge of bristles, and then moved back until the bristles are brought outside of the hopper to be transferred to the stock; and so on in succession. In the return motions of the knife a pointed shoe over its upper edge separates the charge of bristles in the receiving-notch from the body of bristles in the hopper, so as to insure a precise and definite charge. The depth of the bristles in the notch is regulated to suit different holes in the stocks by means of a slide in the notch, which is regulated by an inclined adjustable slide, which has a scale used in its adjustment. If desired, a circular plate having notches may be used instead of the sliding plate above mentioned. The second part of my invention consists in the combination of a clamp for holding the brush-stock, and a reel for holding the wire or thread, with the standing-frame of the machine, and the combination of a needle, of peculiar construction, with the said clamps, the parts being so arranged that, as the blade is drawn backward with its charge of bristles, the latter are transferred by hand to a loop formed by the needle and wire and drawn into the brush-stock, by a backward motion of the swinging frame, which at the same time gives a forward motion to the knife for a new charge of bristles by means of the mechanism above stated.

Figure 1 is a plan view of the machine, the slide I being removed. Fig. 2 is a side elevation of the same. Fig. 3 is a side view of the blade D. Figs. 4, 5, and 6 are, respectively, a top, side elevation, and end views of the shoe U. Figs. 7 and 8 are a side and edge views of the adjustable slide G. Fig. 9, Plate 2, is a side elevation of the machine, taken from the opposite point to that of Fig. 2. Fig. 10 is an end elevation. Figs. 11 and 12 are views, at right angles to each other, of the needle R. Fig. 13 is an end view of the handle *s*.

Like letters in all the figures indicate the same parts.

A is the standing-frame of the machine. B is a hopper, which contains a supply of bristles, C. D is a blade, shown in detail in Fig. 3, which is moved backward and forward in the opening *a*, at opposite sides of the hopper, to receive a charge of bristles and take them through the hopper for insertion in the brush-stock E, held by the clamping-jaws F F. The blade D has a cross slot, *b*, in its upper edge to take in the bristles. The notch inclines forward, so as to rake the bristles in readily in the forward movement of the blade. The depth of the notch is regulated so as to vary the amount of bristles as may be desired, by means of the slide G, shown in detail in Figs. 7 and 8, the lip *c* coming in the slot, and the flat part of the slide being fastened against the side of the blade D by means of the screw *d*, there being a slot, *e*, in the blade through which the screw passes to admit of the adjustment of the slide. The slide is regulated accurately in its adjustment by means of the incline slide H, seen clearly in Fig. 2, the lower edge of the wedge at the pointed end resting on the pin *f*, which projects from the side of the blade D; and the pin *g*, which projects from the lip *c* of the slide G, seen clearly in Figs. 7 and 8, resting on its upper edge. The other end of the said slide H is provided with a screw, *h*, which passes through the longitudinal slot *i*, seen in Fig. 3, of the blade D, and has a nut, *j*, on its tail end,

for confining the slide H to the side of the blade. The slide H has a scale of figures to guide in setting it to bring the lip *c* of the slide G the proper height in the slot *b* of the blade D in varying the quantity of bristles, so as to suit different-size holes of the brush-stocks. The bristles are kept down sufficiently tight upon the upper edge of the blade D to insure the filling in of the bristles in the slot *b* by means of the slide I, which is guided by the vertical grooves K K in the parallel sides of the hopper B, there being weights on the stem *l* of the slide. The blade D has a reciprocating motion by means of the swinging frame J, turning at its lower ends on the rod K, which passes through the frame A, the frame acting, through the jointed connecting-rod L and endless band M, on the vertical rollers N N, one end of said rod being connected to the stud *m* of the frame by means of the pin *n*, and the other end with the said band M by means of the clamping-strips P P and the screws *p p*, seen in Fig. 9. By this means the blade D is moved in the direction of the arrow seen in Fig. 1, to receive the charge of bristles, by the movement of the swinging frame J, the operator taking hold of the vertical rod *q* of the slide Q with one hand, to operate the frame, and with the same hand grasping the handle *s* of the needle R, which is moved freely on the top rail of the swinging frame, to change its position as the drawing in of the knots *r* in the brush-stock E progresses. The needle R, is represented in detail in Figs. 11 and 12 as having three eyes, *u u u*, and a jointed piece, R′, at its end. The wire S, for drawing in the knots and securing them in the stock E, is contained on the spool T connected with the end of the frame A, and is passed through the eyes *u′ u′* of the handle *s* of the needle R and the eyes *u u u* of the needle, and confined to the first knot *r*, which is drawn into a hole, as seen in Fig. 1. Then, in a reverse movement of the swinging frame, which brings it into the position shown in Fig. 9, as the needle is pushed forward, the strain of the wire S upon the joint R′ of the needle turning it as represented, and forming a loop, V, to receive a knot, *r*, which is taken by the operator from the slot *b* of the sliding blade D and held in the loop while it is drawn into a hole in the stock in the reverse movement of the swinging frame. As the blade D is drawn outward into the position represented in Fig. 9 the bristles in the slot *b* are separated from the mass in the hopper B by means of the shoe U in the forward side of the hopper. The shoe is shown in detail in Figs. 4, 5, and 6. It has a double dovetail in opposite sides for connecting it with the hopper, and a groove in its under side, in which is secured one end of the strip *w*, which extends far enough in front to cover the slot *b*, when the blade is drawn out to hold the knot in place until taken out by the operator. The needle R may, if desired, be constructed in a single strip; yet I prefer making it with a joint, as represented.

I claim as my invention—

1. The reciprocating blade D having a slot, *b*, constructed substantially as described, in combination with the hopper B, as and for the purpose above set forth.

2. The combination and arrangement of the adjustable slide G with the blade D and slot *b*, for regulating the size of the knots, substantially as set forth.

3. The shoe U, in combination with the hopper B and blade D, for separating the knots contained in the slot *b* from the body of bristles in the hopper B, as above set forth.

4. The combination and arrangement of the clamps F F for holding the stock E, with the frame A and hopper B, substantially as set forth.

5. The combination and arrangement of the swinging frame J, connecting-rod L, endless band M, and rollers N N with the frame A and reciprocating blade D for drawing the knots out of the hopper B, and after they have been transferred to the loop V, inserting them in the stock E, substantially in the manner above described.

6. The needle R having three eyes, *u u u*, constructed either in a single piece or with a jointed piece, R′, substantially in the manner and for the purpose set forth.

7. The combination and arrangement of the spool T provided with wire S, and the needle R with the standing-frame A and swinging frame J, for drawing the knots *r* into the holes of the stock E, substantially as described.

JOSEPH PICKERING.

Witnesses:
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THOMAS J. BEWLEY.

(22)