

John Ruegg,  
Brush Machine.

Sheet 1. 2 Sheets.

N<sup>o</sup> 30,693.

Patented Nov. 20. 1860.

Fig. 1.

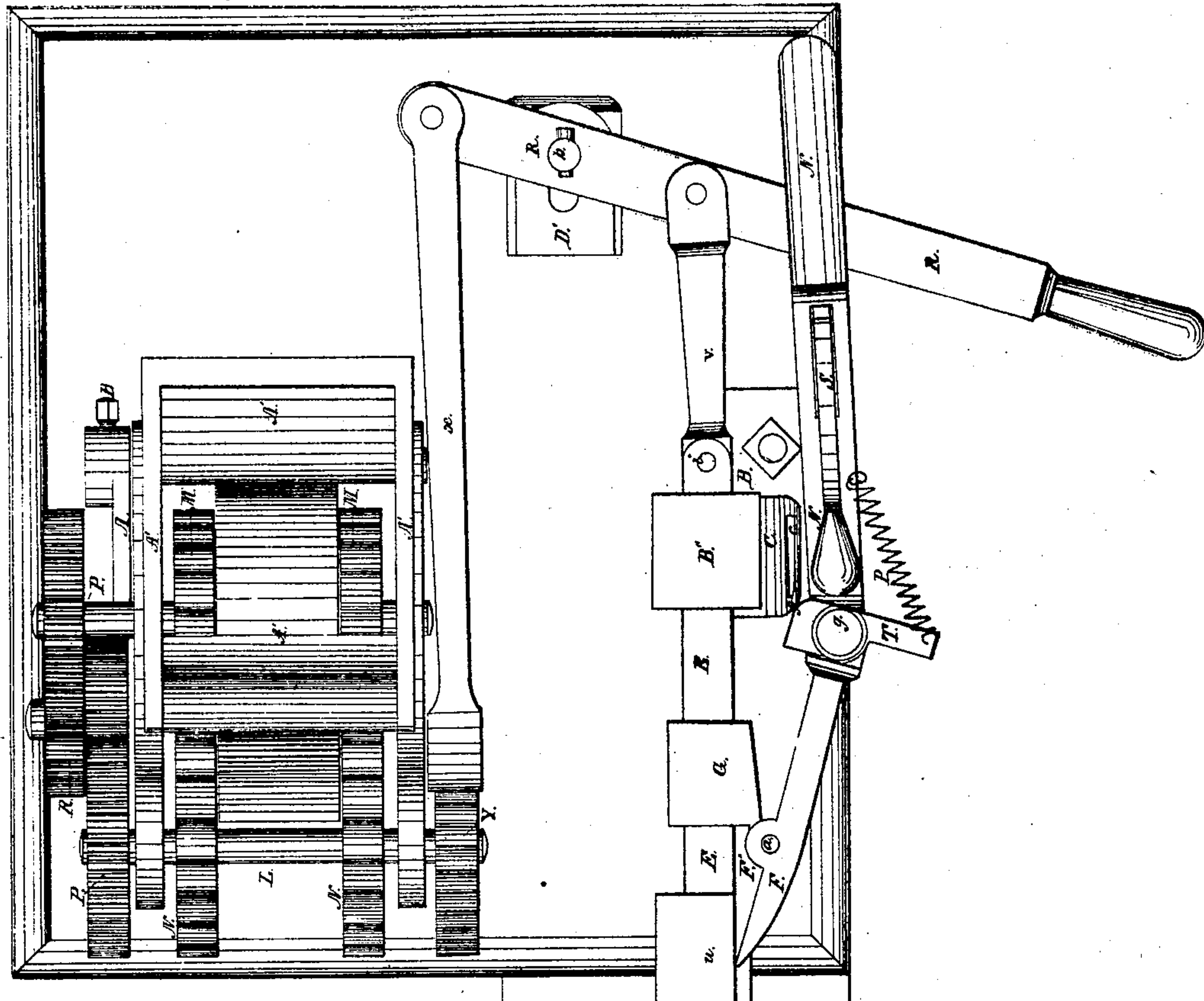
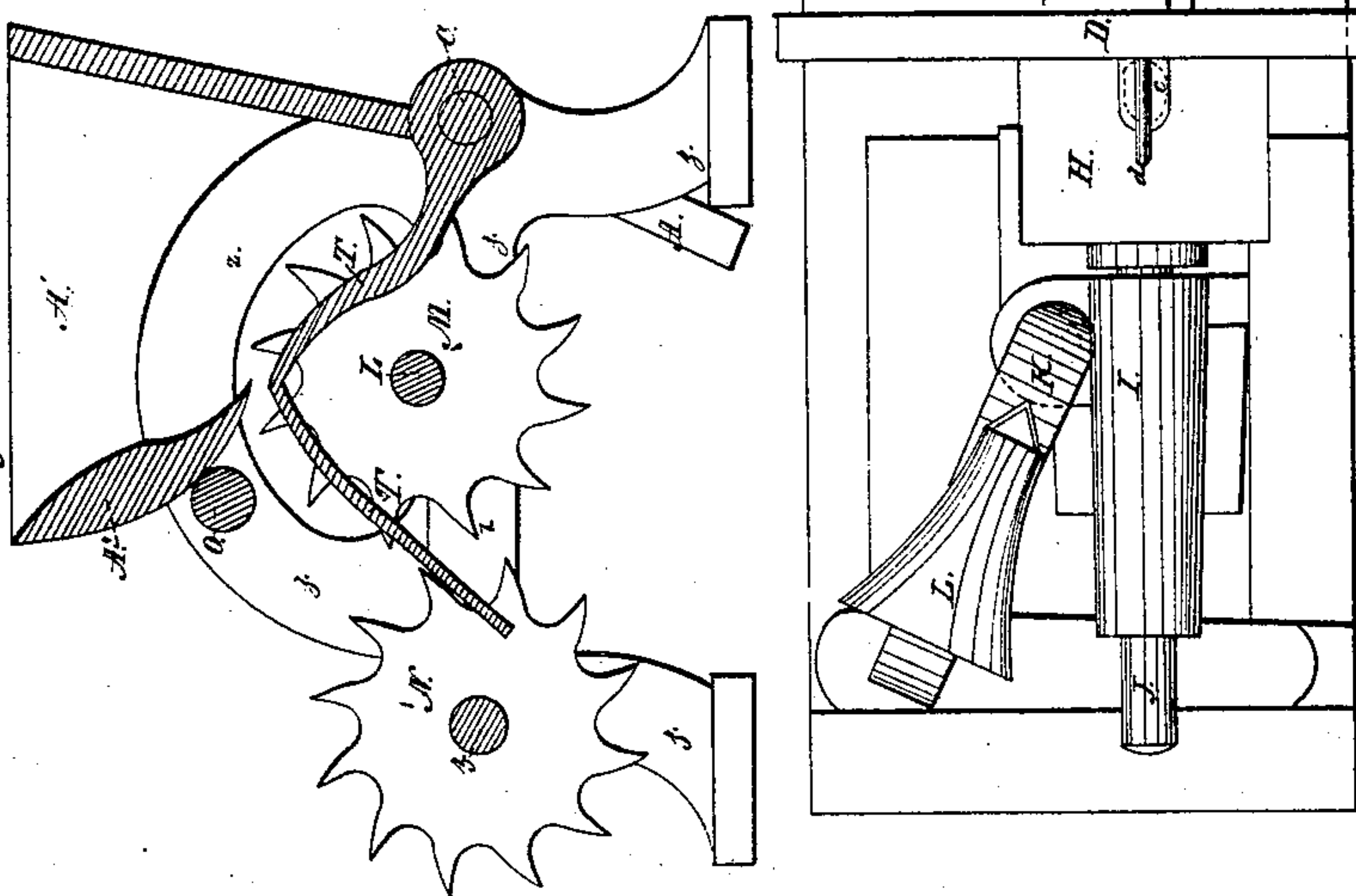


Fig. 2.



Witnesses.

Rev. W. McKim  
Chas. B. Stewart.

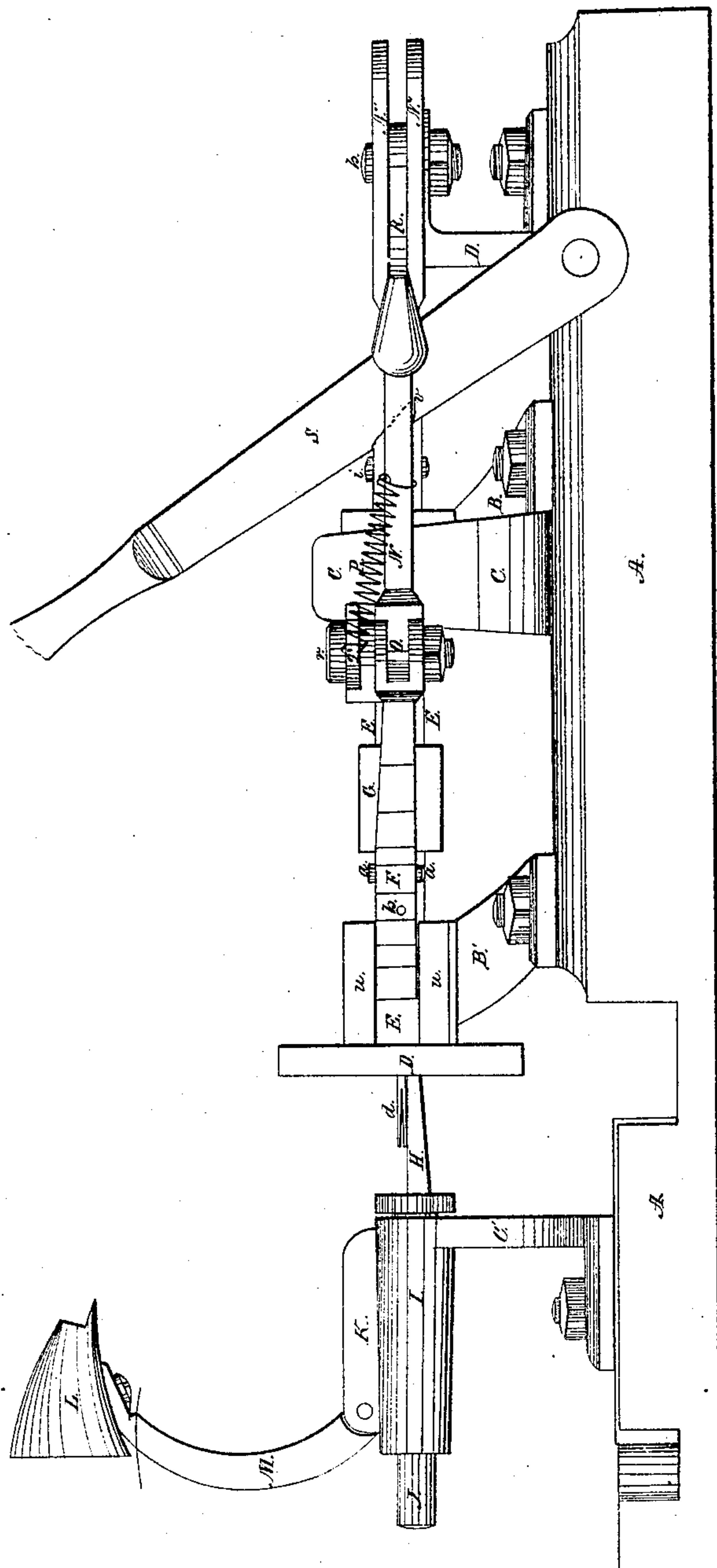
Inventor:  
John Ruegg,  
By his Atty  
Amos B. Brown.

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Fig. 2.



Witnesses.

Robt. N. McHenry  
Chas B. Stewart.

Inventor:

John Ruegg,  
By his Atty  
Amos Brundage.



# UNITED STATES PATENT OFFICE.

JOHN RUEGG, OF ST. LOUIS, MISSOURI.

## BRUSH-MAKING MACHINE.

Specification forming part of Letters Patent No. 30,693, dated November 20, 1860; Reissued July 16, 1872, No. 4,978.

*To all whom it may concern:*

Be it known that I, JOHN RUEGG, of the city of St. Louis and State of Missouri, have invented a new and Improved Machine for Making Brushes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a top view of my said invention; Fig. 2 a side elevation, and Fig. 3 a part thereof to be hereinafter explained.

To enable others skilled in the arts to which my invention appertains to make and use the same I will proceed to describe the construction and operation thereof.

Similar letters of reference represent corresponding parts of the different figures of the drawing annexed.

The frame of my machine is shown upon the drawing by A. It consists of a flat piece of plank, upon which the different parts of the machine, are fixed. The machine aforesaid consists of two principal parts, viz, one for dividing the bristles, or other material out of which the brush is to be made, into small tufts, and one for fixing these tufts in the brush back and thus form the brush. The part which divides the bristles, is shown by Figs. 1 and 3. These parts however do not constitute separate machines, the one being an essential part of the other. I have divided the machine in parts only, that I may the better describe it, and that the mind may be easily brought to understand the mode of operation, first, as to the part which divides the bristles into tufts. This part is composed of a frame, shown by *h*, Fig. 3, and the said frame consists of two flat pieces of metal, made in form, as shown in Fig. 3, and are united, by means of bolts, or braces, one of which is shown by *a*. The said frame after being united as aforesaid, is fixed to the bed plate or main frame, A, after which a hopper box is fixed upon it, shown by A', for the purpose of receiving the bristles. But before the hopper box is fixed on the frame, there are three shafts arranged across it, about in the relation shown by L', L, C. Upon two of these shafts, viz, L L', there are four wheels, N, N, and M, M, fixed in the peripheries of which are cut a series of notches, in the nature of claws. There are two wheels on each shaft, and the said

wheels are so arranged as to bring the claws, cut in their peripheries, directly opposite each other, and on a line with the center or axis of the shaft. The said shafts are made to revolve both in the same direction, and they are so arranged with respect to each other as to cause, the claws cut in the peripheries of the wheels M and N, to just clear each other as they rotate about their respective axis.

Upon the shaft C a gage T is fixed, the position of which is regulated by means of a lever (A), which is fixed upon the same shaft with the gage, and which is secured in any given position by means of a set screw B. Now the object of these wheels with claws in their peripheries is to divide the bristles into tufts, and the object of the gage T is to regulate the size of the said tufts. The bristles are put in the receiver or hopper box A' parallel with the shafts L L' and they rest upon the gage T, so that the claws in the periphery of the wheels (M M) fill as the wheels revolve, and carry a given number of bristles in each claw, forward, under the lower edge of the front part A'' of the hopper box, A'. From the claws of the wheels M M the tufts are delivered in the claws of the wheels N N, which carry them forward to the hand of the workman. The tufts are made large or small, by raising or lowering the gage, as by raising the said gage the claws in the wheels M M, can only partly fill, which will make the tufts small. But by lowering the said gage the claws are allowed to fill and the tufts are enlarged accordingly.

The two wheels M, M, and N, N, are both made to revolve in the same direction by means of the two cog wheels, P, P, both of which mesh into the pinion, R, the motion being conveyed through the ratchet wheel Y, in which a ratchet H is made to work, which ratchet is actuated by the lever R, as will be hereinafter more fully explained. The pinion R, is loose on its center pin, and is a mere intermediate wheel to convey motion from one of the wheels P to the other. The drawing shows the two wheels P P both of the same size, but their relative size may be altered, which will alter the operation of the machine. Thus, by making the wheel P on the shaft L smaller, the tufts would be made smaller because the relative motion of the wheels M and N would be changed. By



these means the machine, that is one machine, can be made to make brushes of different sizes. This finishes the explanation or description of that part of the invention which is for dividing the bristles, into tufts.

5 The part of the machine which is to put the tufts in the brush back, is constructed and operated as follows: There is first a square parallel rod made as shown in the drawing by E. This rod I shall call the  
10 needle rod. It is supported in two brackets B' B, which are bolted to the bed plate A. The head of the bracket B' has an open side, so as to form a groove in which the rod is made to work, between the top and bottom  
15 sides U, U, which thus exposes the front part of the end of the needle rod. This needle rod is operated by means of a lever R, which has its fulcrum at *b* in a bracket D' bolted to the bed plate, the rod E being con-  
20 nected to the lever by means of a link V, so that the said rod can move on a right line without being influenced by the vibrations of the lever. Upon the said needle rod a slide G is placed, so as to slide freely on  
25 the said rod and between the two brackets. This slide has an extension on one end of it (shown by F'), which constitutes one of the jaws of a pair of pincers, the other jaw F' being hinged to this by means of a pin *a*.  
30 The tail end of the jaw F of the said pincers is joined to a rod N at O, by means of a pin as shown.

On the pin *r* which forms the nucleus of  
35 the joint O a small cam lever T is fixed, the cam end of which acts against a stiff spring C C, fixed to the bed plate, and the lever end of which is attached to a small coil spring P, one end of which is fixed to  
40 the rod N. The out end of this rod N is made to straddle the lever R as shown by N' N', and the lever S is made to pass through a slot, made in the said rod. The lever S has a notch cut in its edge as shown  
45 at *v*, (in dotted lines,) so as to hold the pincers F forward while the needle rod is drawn back, as will be hereinafter described. The object of the cam lever is to throw out  
50 the tail of the pincer jaw F, so as to close the jaw, and hold it closed, from the time it is pressed forward until it is drawn back clear of the spring C, which relaxes the jaws of the pincers and allows the spring P to draw the cam lever back to its prime position.  
55 In the end of the needle rod the needle *d* is fixed, in the end of which a groove is made, which groove is extended longitudinally in the periphery of the needle, up to the needle bar or nearly there,  
60 and in the face of the needle rod, a groove is cut, which extends back from the end to the jaws of the pincers, and in the jaw F of the pincers, a hole is bored (shown by Fig. 2). Through this hole the wire for  
65 securing the tufts is passed, and carried for-

ward along the groove in the needle rod, and also in the needle, the end thus carried forward being then fastened in the brush back, which is clamped against the head of the bracket B' by means of a wedge-like  
70 clamp H, which is pressed forward by means of a spiral spring which is coiled around the tail J of the clamp, and in the head I, through which the said tail passes, and which is bolted to the bed plate. This  
75 head has also a lug cast on one side of it, in which an arm K is fixed, to which is hinged the arm M, on the end of which the feed nozzle L is fixed. This feed nozzle has an angular point on its lower side for  
80 the purpose of opening the loop formed by the wire, and to guide the tuft of bristles down through the loop. Now let the back of the brush be introduced between the head B' and the clamp H, and let the end of  
85 the wire be passed through the hole *h* and through the groove in the needle and needle rod, and fixed in the back of the brush, and let the pincers F F' be thrown forward by the lever S in the position shown in the  
90 drawing. Then by means of the lever R throw the needle bar and needle forward, which will draw the wire through the hole in the brush back, where the tuft is to be put, the needle passing through the hole.  
95 Then draw back the needle, which will leave the wire in the form of a loop on the front side of the brush back. Then bring down the feed nozzle, and the angular point thereof will strike in the loop and open it. Now  
100 put the end of the tuft down in the nozzle and through the loop. Then slightly raise the feed nozzle and draw back on the lever S, which will bring the cam lever T against the spring C, which will close the jaw of the  
105 pincers on the wire and thus draw the loop tight around the tuft and draw the double of the tuft through the hole in the brush back, which is then moved forward so as to bring the succeeding hole in the said back  
110 in front of the needle, which is then shoved forward again and the above operation repeated until the brush is finished, or rather until the bristles are all in. The oval red line *b'*, Fig. 1, shows the loop when the  
115 needle is drawn back while the tufts are thus put in the brush back so as to form the brush. The tufts themselves are formed by the action of the ratchet H on the wheel *y*, which gives motion to the dividing part  
120 of the machine, as before described.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. The use of the nozzle constructed substantially as described, in combination with  
125 the needle for the double purpose of opening the loop and feeding the bristles through.

2. The combination of the spring clamp H with the head U, whereby the brush  
130



block is held up against the said head, while the needle operates through it.

3. The combination of the pincers with the needle bar substantially in the manner  
5 described for the purpose specified.

4. Opening and closing the pincers by means of a cam lever T and springs C, as set forth.

5. The combination of the levers S and R  
10 with the needle bar and the pincers, whereby those two devices are made to operate as described.

6. The combined use of the hopper or feed box and the claw wheels M, and also  
15 the combined use of the gage T, with the said claw wheels, and the use of the claw

wheels, in combination with each other, all for the purpose specified.

7. The lever R in connection with the claw wheels and the needle bar, whereby 20 the bristles are divided into tufts and the tufts put into the brush back simultaneously.

In testimony that the foregoing is a true description of the construction and opera- 25 tion of my improved brush making machine, I have hereunto set my hand.

JOHN RUEGG.

Witnesses:

ROLLIN B. GRAY,  
MORITZ RISIMANN.