2 Sheets—Sheet I.

J. L. WHITING.

MACHINES FOR MAKING BRUSH-HANDLES.

No. 190,941. Patented May 15, 1877.

Fig. 2.

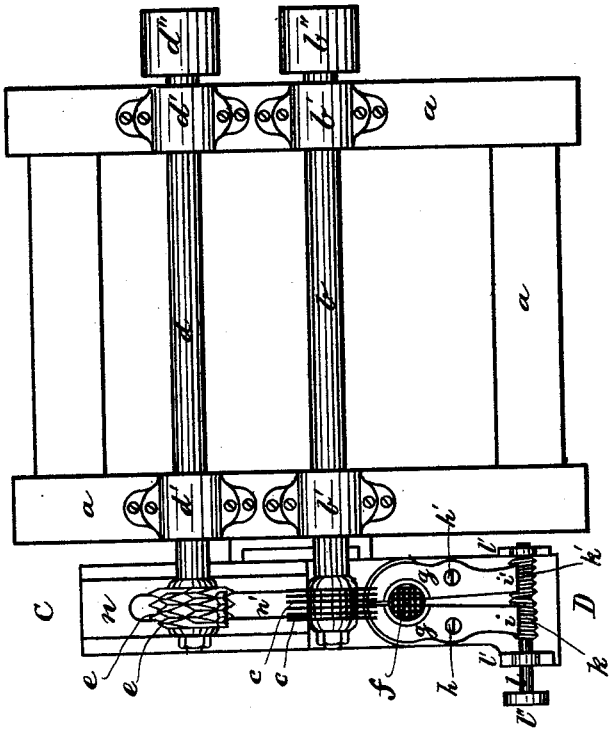
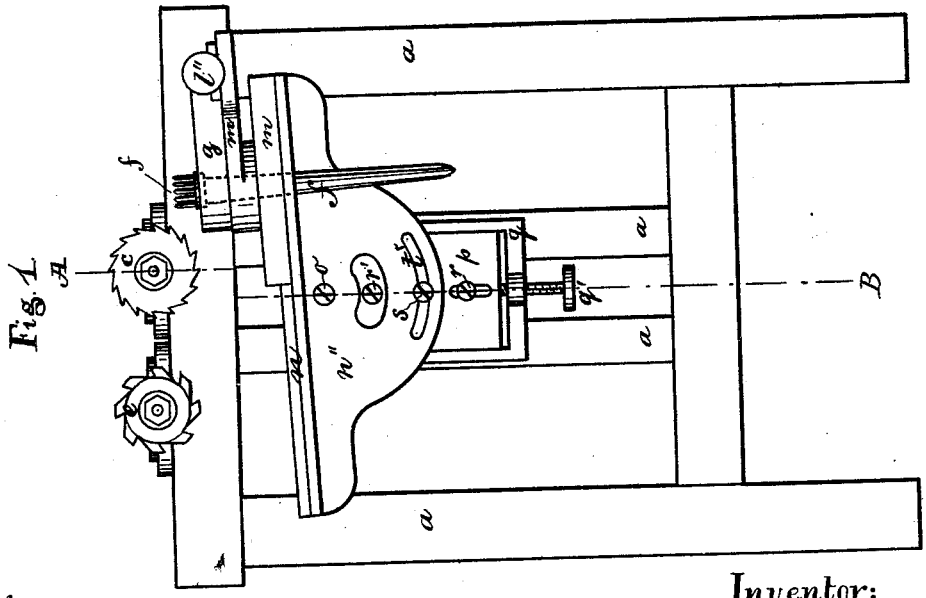


Fig. 1.



Witnesses:
Henry Chadbourn.
H. Allen.

Inventor:
John L. Whiting
by Alban Andrén.
his attys.

2 Sheets—Sheet 2.

J. L. WHITING.

MACHINES FOR MAKING BRUSH-HANDLES.

No. 190,941. Patented May 15, 1877.

Fig. 4.

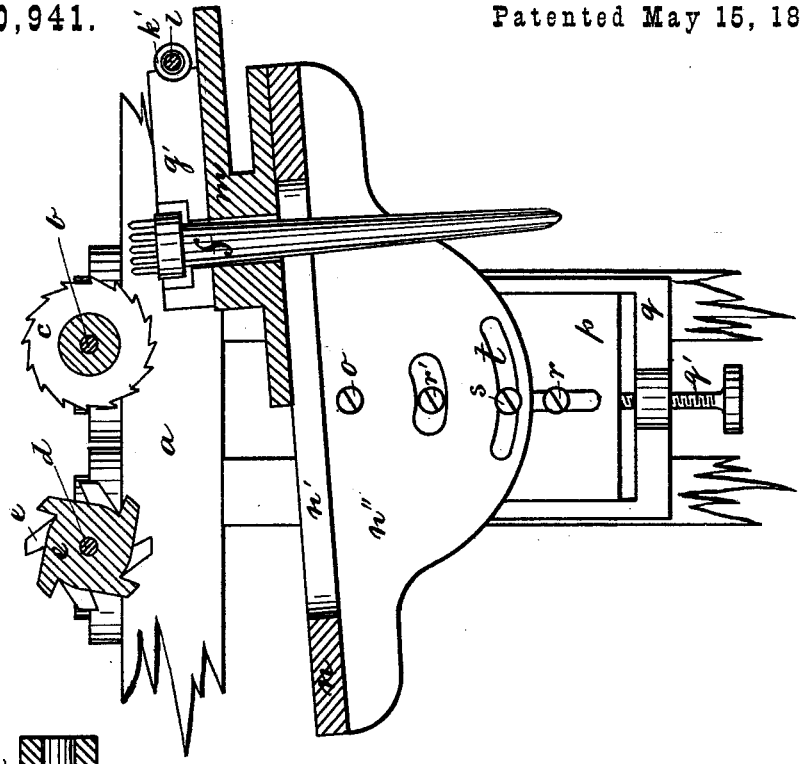
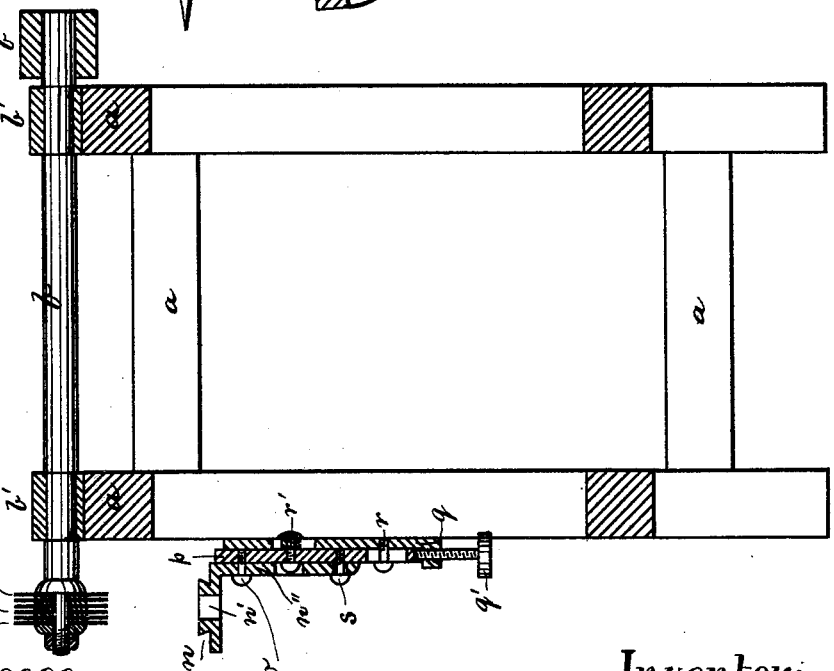


Fig. 3.



Witnesses:

Henry Chadbourn.

H. Allen.

Inventor:

John L. Whiting

by Alban Andrews

his atty.

UNITED STATES PATENT OFFICE.

JOHN L. WHITING, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING BRUSH-HANDLES.

Specification forming part of Letters Patent No. **190,941**, dated May 15, 1877; application filed January 15, 1876.

To all whom it may concern:

Be it known that I, JOHN L. WHITING, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Brush-Handles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in machines for making brush-handles or kindred articles; and consists of a rotary shaft provided with a number of circular saws placed side by side, with a suitable space between each successive saw, and another rotary shaft provided with a number of mills or cutters, in combination with a suitable holding mechanism for the handle that is to be operated upon.

My invention also consists of a clamping device attached to a head-stock that is made to slide forward and back on an oscillating bed that is capable of vertical adjustment, by means of which I am able to regulate the depth of the grooves that are made by the rotary saws and cutters. The improved clamp consists of a pair of jaws, each provided in one end with a toothed rack that engages into a right and left handed worm secured to a shaft having a crank or hand wheel by which the said jaws are operated. Each jaw is made to swing on a fulcrum-pin located between its ends.

The operation of my improved machine is as follows: The circular-saw shaft and the mill or cutter shaft are set in a quick rotary motion, and after the handle that is to be operated upon is secured to the holding mechanism it is moved toward the circular saws, by which a number of parallel grooves are cut through the handle, after which it is moved toward the rotary mills or cutters, that are arranged in a line with each circular saw, by which the wood on each side of the grooves is tapered to an edge or point. After the handle has been acted upon once by the saws and mills it is drawn back, and the handle is turned a quarter of a revolution, more or less, around its axis, and firmly secured to the holding mechanism, when the same operation is performed, leaving the handle with a number of tapering projections, for the purpose of securing it to the bristles of brushes, in the usual manner.

If desired, the handle may be first operated upon by the rotary mills or cutters, and afterward by the circular saws; but it is preferable to move it first toward the saws, as the mills or cutters will cut with less friction through the grooved than through the solid wood of the handle.

I wish to state that I do not confine myself to the exact holding mechanism as shown in the drawings, as this can be made in a variety of ways, the gist of my invention being a number of circular saws on one shaft, in combination with a number of rotary cutters or mills on another shaft, and a holding device for the material that is operated upon.

On the accompanying drawings, Figure 1 represents a front elevation. Fig. 2 represents a plan view. Fig. 3 represents a cross-section on the line A B, (shown in Fig. 1,) and Fig. 4 represents a section on the line C D. (Shown in Fig. 2.)

Similar letters denote similar parts wherever they occur on the drawings.

a a represent the frame-work of the machine. *b* represents the circular-saw shaft, that is made to rotate in its bearings *b' b'*, and provided with a driving-pulley, *b''*, as shown. To the forward end of the shaft *b* is secured a number of circular saws, *c c c*, with an intervening space between each successive saw. The rotary mill-shaft *d* is also made to rotate in its bearings *d' d'*, and provided with a driving-pulley, *d''*, as shown.

The shafts may be set in a rotary motion by means of belt or other power, in the usual manner.

To the shaft *d* is secured a number of toothed mills or cutters, *e e e*, as shown, located in such a manner, in relation to the saws *c c c*, that each cutter is opposite each successive saw. *f* represents the handle, that is to be operated upon by the saws and cutters, and it is secured firmly between the jaws of the clamp *g g' m*, that are made to swing around their fulcrums *h h'*, and provided in their rear ends with toothed racks *i i'*, engaging into the right and

left handed screws $k\,k'$, secured to or made in one piece with the shaft l, movable in the bearings $l'\ l'$ on the head-stock m'. l'' represents the hand-wheel, by which the screw-shaft l is operated. The head-stock is made to slide in parallel ways on the bed n, that is provided with a slotted opening, n', through which the lower end of the handle f projects during its motion to and from the saws and mills aforesaid. The bed n projects downward, and is attached to a plate, n'', pivoted at o to a movable frame, p, that is movable up and down in a stationary guide, q, secured to the framework a. The frame p is adjusted up and down, according to the size of the saws and cutters that are used and the depth of the grooves required to be cut in the handle, by means of the screw q', as shown. $r\,r'$ represent screws, by means of which the frame p is held close up to the stationary guide q, which screws project through holes made in said frame and guide, or in a similar manner.

The bed n can be oscillated around the screw or pin o, so as to incline it according to the relative size of the saws and cutters aforesaid, and after being adjusted it can be firmly secured to the frame p by means of the set-screw s, projecting through the arched hole t in the plate n''.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. The combination, in a machine for making brush-handles, of the series of saws c, the series of mills or cutters e, and their shafts b d, with the clamp $g\ g'\ m$ and screw-shaft l, all constructed and arranged to operate substantially as described.

2. In combination with the series of saws c and the series of mills or cutters e, the clamp $g\ g'\ m$ and its operative gear, the slotted bed n, head-stock m', and frame p, all constructed and arranged to operate substantially as described.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

JOHN L. WHITING.

Witnesses:
ALBAN ANDRÉN,
H. CHADBOURN.