W. S. MAYO.

Tonguing and Grooving Machine.

No. 208,323. **Patented Sept. 24, 1878.**

Fig. 1.

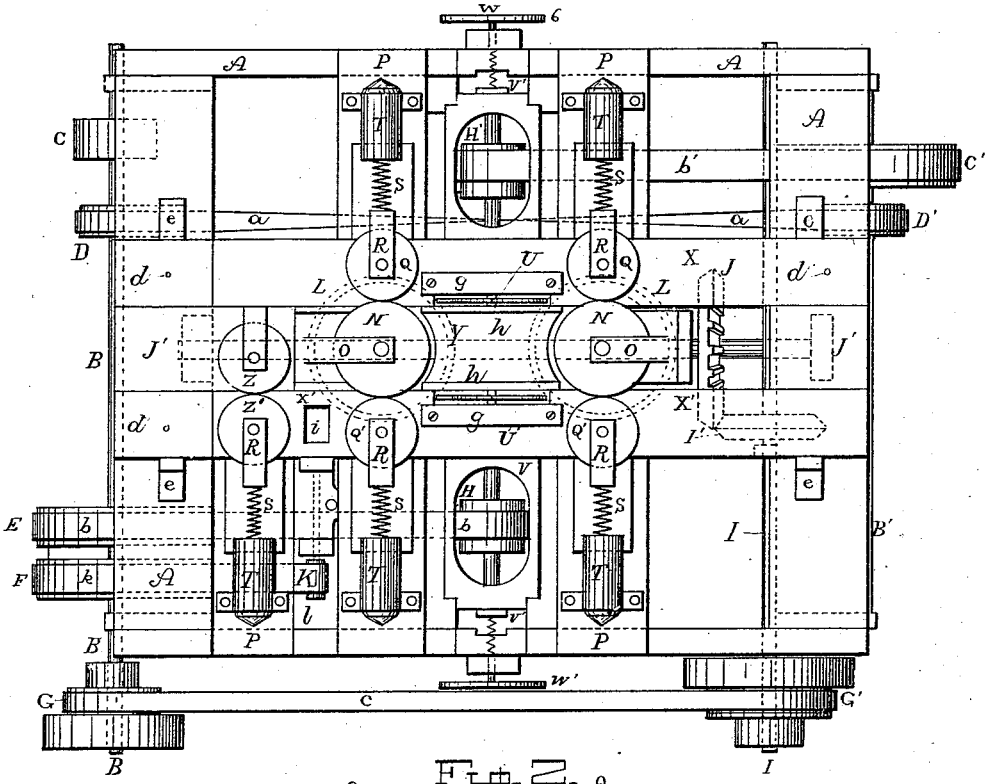
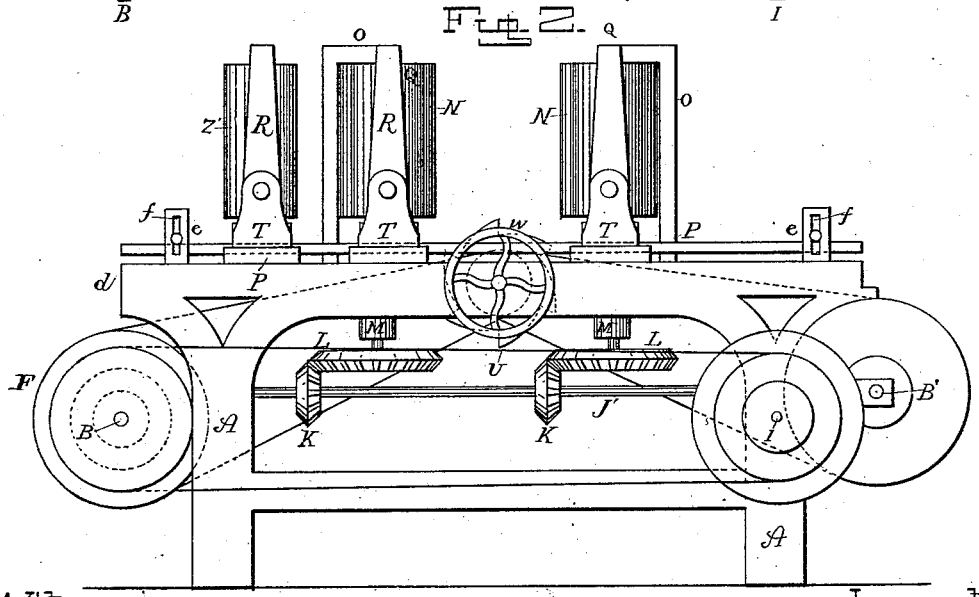


Fig. 2.



Witnesses:

J. W. Garner.

W. S. D. Haines.

Inventor:

Warren S. Mayo

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2 Sheets—Sheet 2.

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Fig. 3.

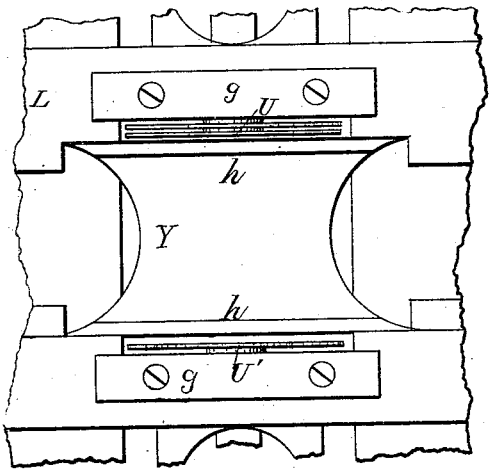


Fig. 4.

Fig. 5.

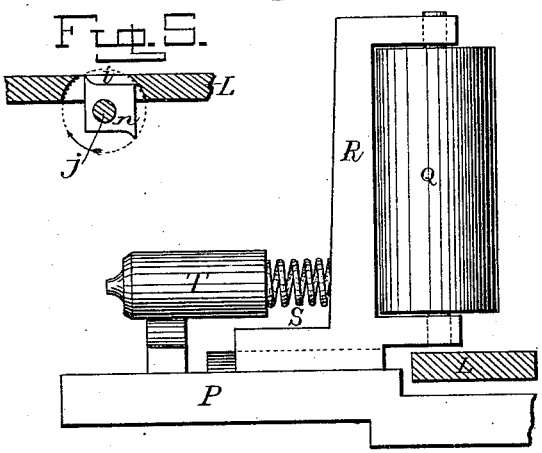
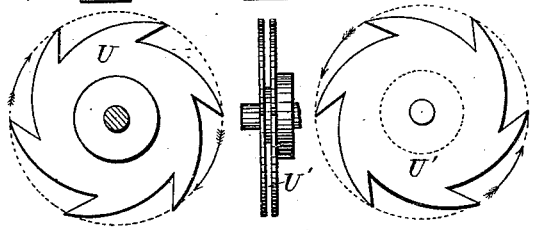


Fig. 6. Fig. 7. Fig. 8.



Witnesses.

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UNITED STATES PATENT OFFICE

WARREN S. MAYO, OF OTTAWA, ONTARIO, CANADA.

IMPROVEMENT IN TONGUING AND GROOVING MACHINES.

Specification forming part of Letters Patent No. **208,323**, dated September 24, 1878; application filed August 20, 1878.

To all whom it may concern:

Be it known that I, WARREN S. MAYO, of Ottawa, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Tonguing and Grooving Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to combine with mechanism for tonguing and grooving an automatic adjustable feed-movement and edge-trimming machine, operated by suitable gearing, so that the material, when passed through the machine, is perfectly tongued, grooved, and trimmed.

In the drawings, Figure 1 is a top view of my improved machine. Fig. 2 is a side view of the same. Figs. 3, 4, 5, 6, 7, and 8 are detail views of the operating parts.

A is the main frame of the machine. B is the main shaft, on which are the pulleys C, D, E, F, and G, power being communicated to the machine through the belt-pulley C. B′ is the shaft at the opposite side of the machine, on which are the pulleys C′, D′, and G′. It is revolved by means of the belt *a*, which connects the pulley D′ with the pulley D on the main shaft B.

E and C′ are pulleys, driving the cutter-arbors H and H′ by the belts *b* and *b′*, respectively. G is a speed-pulley, driving, by belt *c*, the pulley G′ on the shaft I, thereby carrying a beveled pinion, I′, which meshes with a gear-wheel, J, on the shaft J′, having beveled gear-pinions K K, which mesh with beveled cog-wheels L L on the arbors M M of the feed-rollers N N. These arbors are journaled in fixed frames O O above and in suitable bearings below the bars P P.

The frictional rollers Q Q Q′ Q′ Z′ are journaled in frames R, which slide upon ways attached to the bars P. Their surfaces yield to irregular pressure by means of springs S, which are inserted between the frames R and the fixed stops T, the extremities of which are hollow to receive the ends of the springs S.

U U′ are cutters located between the central series of sets of rollers. They rotate in parallel planes and in opposite directions upon the ends of their respective and independent arbors H and H′. These arbors are journaled in adjustable frames V, which slide longitudinally on the bearings V′, their lateral motion being controlled by a set-screw or hand-wheel, W and W′.

X and X′ are the bed-pieces, on which slide the material fed to the cutters U and U′. They are vertically adjustable by means of hand-screws *d*, moved from beneath by a crank-wheel or similar device, so that they may be upwardly inclined from the direction of the feed, in order to compel the stock to hug their surfaces as it is forced over them. When raised or lowered to the height desired they are firmly held in position, and secured from lateral movement by clamps *e*, working in vertical slots *f*.

Attached to the bed-pieces X and X′, and between the rollers Q Q and Q′ Q′, are longitudinal guide-strips *g*, which are laterally adjustable to conform to the thickness of the stock passing between the feed and friction rollers.

Between the sets of cutters is a floor, Y, provided with projecting adjustable sides *h*, to assist in guiding the stock to the cutters U U′. This floor is removable to allow more convenient access to the cutters when desired.

An opening, *i*, is made in the bed-piece X′, to receive a series of trimming-knives, *n*, rotating on the arbor *j*, which is revolved by means of the belt *k*, connecting the pulley F with the arbor-head *l*.

In operation, the board is placed upon its edge on the bed-piece X, which has first been upwardly inclined from the direction of the feed by means of the adjusting-screw *d*, according to the depth of the tongue to be cut. It is then automatically carried between the feed and friction rollers, which are operated mechanically, the pressure of the latter retaining it in constant and uniform contact with the former; thence, guided between the adjustable side *h* and the longitudinal guide-strip *g*, adjusted laterally, according to the thickness of the stock, the board is forced without handling along the path of the cutter

U, which has previously been adjusted laterally in its horizontal plane by the set-screw or hand-wheel W, thus cutting the tongue in the center of the edge of the board; thence, carried forward, it is griped by the second set of feed and friction rollers, which hold it firmly until the tongue is cut automatically through the entire length of the board.

The other edge of the board is grooved by returning it upon the adjustable bed-piece X′, between the corresponding feed and friction rollers N and Q′, the edges being meanwhile trimmed and straightened by the knives *n*, rotating in the opening *i*, an additional set of friction-rollers, Z and Z′, being placed near that extremity of the bed-piece to assist in holding the stock more firmly as it is automatically forced through by the feed-rollers N.

What I claim as new, and desire to secure by Letters Patent, is—

1. The saws or cutters U U′, revolving in opposite directions on independent arbors, in combination with the upright feed-rollers N and automatically-adjustable friction-rollers Q Q′, arranged substantially as described, and for the purpose set forth.

2. The combination of the single feed-rollers N with duplicate sets of adjustable frictional rollers Q Q′, operated by suitable gearing, the said rollers being placed vertically upon the top of the frame and in lines with each other, substantially as described.

3. In a grooving-and-tonguing machine, the combination of the adjustable bed-pieces X X′ with the cutters U U′ and feed and friction rollers N Q Q′ Z Z′, substantially as and for the purpose described.

4. In a machine for grooving and tonguing lumber, the combination of the rotating cutters U U′, rollers N, friction-rollers, knives *n*, gear-wheels, and shafting, substantially as described, and for the purposes set forth.

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

WARREN S. MAYO.

Witnesses:
S. S. CUSHMAN,
WILLIAM RICE.