2 Sheets--Sheet 1.

# N. M. MILLER.

## Sawing-Machine.

No. 169,282. Patented Oct. 26, 1875.

*Fig. 1*

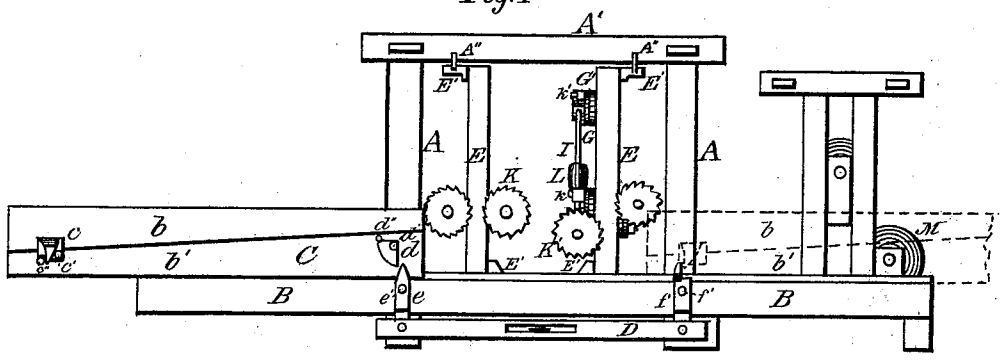
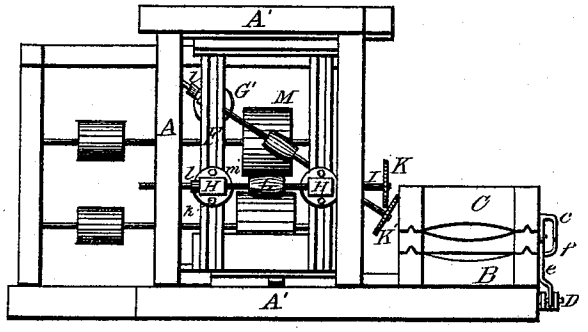



*Fig. 2*




*Attest:*

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2 Sheets--Sheet 2.

# N. M. MILLER.

## Sawing-Machine.

No. 169,282. Patented Oct. 26, 1875.

*Fig. 3*

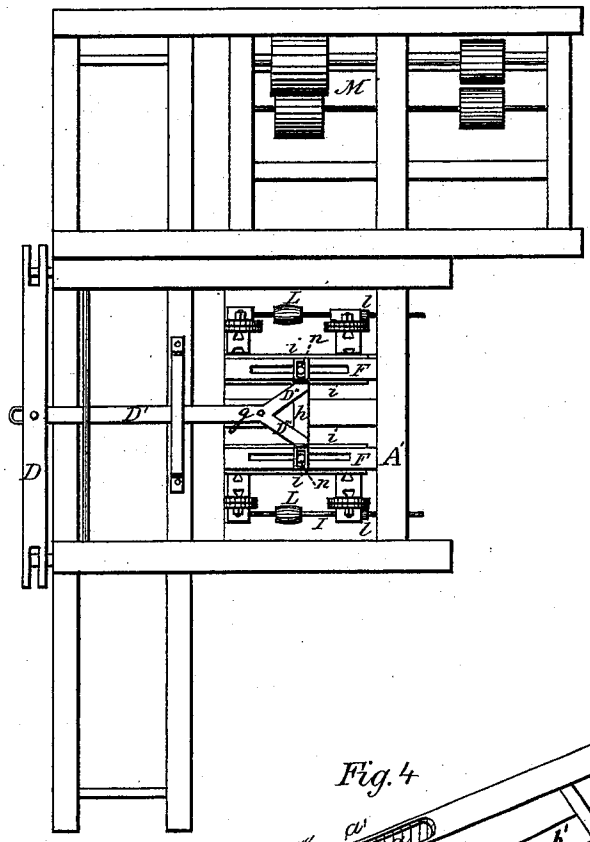
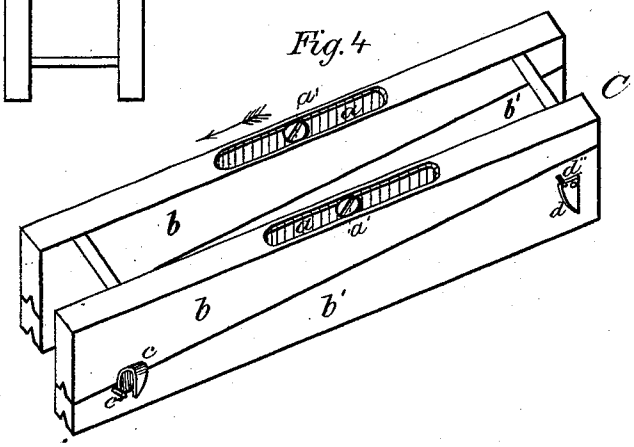



*Fig. 4*

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# UNITED STATES PATENT OFFICE.

NILES M. MILLER, OF EVANSVILLE, INDIANA.

## IMPROVEMENT IN SAWING-MACHINES.

Specification forming part of Letters Patent No. **169,282**, dated October 26, 1875; application filed September 9, 1875.

*To all whom it may concern:*

Be it known that I, NILES M. MILLER, of Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Sawing-Machines; 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, and in which—

Figure 1 is a front elevation. Fig. 2 is a side view. Fig. 3 is a bottom plan, and Fig. 4 is a perspective view of my improved carriage.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to certain improvements upon the sawing-machine for which Letters Patent No. 160,939 were granted to me on the 16th day of March, 1875, by which the said machine is made more useful and effective, substantially as hereinafter more fully described, and pointed out in the claims.

In the two sheets of drawings, A represents the uprights, and A′ the cross-timbers, forming the frame of the machine. B is the table, and C is the carriage. This consists of two parts, denoted by *b* and *b′*, having wedge-shaped side pieces, that slide upon each other, and are held together by set-screws *a′*, Fig. 4, passing through slots *a* in the top part, as shown.

By this arrangement the height of the carriage may be adjusted to suit the various sizes of lumber operated upon, or the position of the saws, in a very simple manner. By loosening the set-screws and sliding the top part in the direction indicated by the arrow in Fig. 4 the carriage is lowered, and by moving the top part in the opposite direction it is raised or heightened.

The front side of the lower part of the carriage *b′* has two projecting hooks or catches, *c* and *d*, pivoted to it, one at each end. *c*, which is bent, and projects outward from the frame *b′*, is pivoted at *c′*, and is kept, by a pin, *c″*, in the position shown in the drawing. The other catch, *d*, is pivoted at *d′*, and is prevented, by the pin *d″*, from turning in the direction of its beveled edge. Upon the front of the table B are pivoted two levers, *e* and *f*, having their fulcrums at *e′* and *f′*, respectively. These levers are pivoted at their lower ends to a beam, D, and are so arranged that when the carriage C is moved to the left the bent hook or catch *c* will pass over the top of *e* without touching it, and *d*, coming in contact with it by its beveled side, will simply be raised a little, and pass over, after which it falls again of itself into its original position; but when the carriage is moved in the opposite direction (to the right) the point of *d* will engage with the beveled top of lever *e*, as shown in Fig. 1, thereby impelling its long arm and beam D sidewise in the direction of the carriage, so as to permit it to pass over. On the other hand, the catch *c*, on the return trip of the carriage, will engage with lever *f* in a similar manner, as indicated by the dotted lines in Fig. 1, thereby moving the beam D in a direction opposite to that in which it was impelled by catch *d*.

By this arrangement it will be observed the position of the oscillating beam D will only be changed whenever the carriage C, having reached either end of its travel, starts on the return trip.

To the middle of the beam D is pivoted a lever, D′, Fig. 3, which has its fulcrum at *g*, and branches off into two arms, D″ D‴, connected with the main lever D′ by braces *h*. The object of this lever will be described hereinafter.

Within the main frame of the machine are arranged smaller sliding frames, consisting of grooved uprights E and grooved cross-pieces E′. Guides A″, secured crosswise to the timbers A′, fit loosely into the grooves in the top pieces E′, while the bottom pieces E′ have downward-projecting flanges, denoted by *i i* in Fig. 3, that slide on each side of the slotted timbers F, which serve as guides.

By this arrangement the saw-frames are held firmly in a vertical position within the main frame of the machine, and yet allowed to slide freely forward and back, or toward and from the table B and carriage C.

G represents metallic disks, that slide upon the uprights E by bolts *k*, the heads of which enter the dovetailed grooves in said uprights.

By tightening the nuts *k'* any one of the plates G may be secured in any suitable position upon its upright, while by loosening said nuts it is readily moved upward or downward. Each of the plates G has secured upon it another circular plate, G', having segmental slots *m*, through which pass the bolts *k*, two for each pair of plates. On the outer plates G' are secured the bearings H for the arbors I, carrying saws K K' and clamping-nuts *l*, by which the arbors are retained in any given position in their relation to the bearings H.

The object of this arrangement is to enable the arbors to be adjusted at any desired angle relative to the lumber operated upon.

Each of the saw-frames E E' carries two saws, one on each side of the grooved uprights E, whose arbors may be placed parallel to each other, but one saw projecting beyond its neighbor, if desired; or they may be adjusted at any given angle to each other, or to the arbors of the other set of saws in the adjoining frame. This is accomplished by the combination of the sliding plates G with the slotted plates G', which can be turned, with their respective bearings, upon the former, so as to accommodate said plates to any position that the plates G may have upon the uprights E. L are the pulleys, adjustably secured upon the arbors I. These are operated by endless bands, in the usual manner, over belt-drums M, arranged, preferably, in a separate frame, as shown.

Each of the bottom cross-pieces E', which slide upon the slotted beams F, as already described, has a perforation, in which a downward-projecting bolt or pin, *n*, is secured. This pin passes through the slot in F and engages with one of the lever-arms D'' D''', so that, by moving said lever, it, with the saw-frame to which it belongs, is either made to approach, or to retreat from, the table or carriage.

The motion of the lever D' and of the saw-frames is governed by the motions of the carriage C, in the manner hereinbefore described, so that when the carriage C moves to the left from its starting-point (indicated by the dotted lines in Fig. 1) the saws K' K', with the frame to which they belong, are removed from the table and thrown out of operation, while the other set of saws K K is brought into play. This will last until the carriage has reached the end of its course and begins the return trip. The beam D and lever D' will then be moved in the opposite direction, and the saws K' K' will be brought into play, while the saws K K, with the frame to which they belong, will be pushed back from the table.

It will be observed that by this arrangement the positions of the saws are automatically adjusted and controlled by the motions of the carriage, so that there is no delay whatever in the adjustment of the saws.

This machine is designed, principally, for the sawing of V- shaped eaves-troughing, battens, &c., as the lumber may be sawed into troughs of any angle by my improved method of adjusting the saw-arbors in the frames; but it may be used with advantage as an ordinary saw-mill, as the arbors may be set level, or for edging timber of any kind. In fact, my machine will answer all general purposes for sawing, edging, and trimming lumber, and will save much time and labor, owing to the self-adjusting mechanism of the saw-frames.

By my improved carriage, which may be used in combination with any ordinary sawing-machine, much time and labor is also saved, as it may be adjusted to suit any thickness of lumber or the position of the saws much quicker than the adjustment of the latter could be effected.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The improved carriage herein described, consisting of two parts, having wedge-shaped sides *b b'*, that slide upon each other, and secured to each other by set-screws *a'*, affixed to the under part *b'*, and projecting up through slots *a* in the upper part *b*, substantially as and for the purpose hereinbefore set forth.

2. The combination of the carriage C, having laterally-projecting hooks or catches *c d*, with the levers *e* and *f* and connecting-beam D, substantially as and for the purpose hereinbefore set forth.

3. The combination of the beam D, branched lever D', pins *n*, and saw-frames E E', substantially as and for the purpose hereinbefore set forth.

4. The combination of the grooved uprights E with the sliding plates G, having bolts or set-screws *k*, substantially as and for the purpose hereinbefore set forth.

5. The combination of the sets of saws K K and K' K', having adjustable arbors I, with the sliding frames E E', lever D', beam D, levers *e f*, and carriage C, all arranged and operating substantially in the manner and for the purpose hereinbefore set forth.

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

NILES M. MILLER.

Witnesses:
JOSEPH SHAW,
GEO. R. THOMSON.