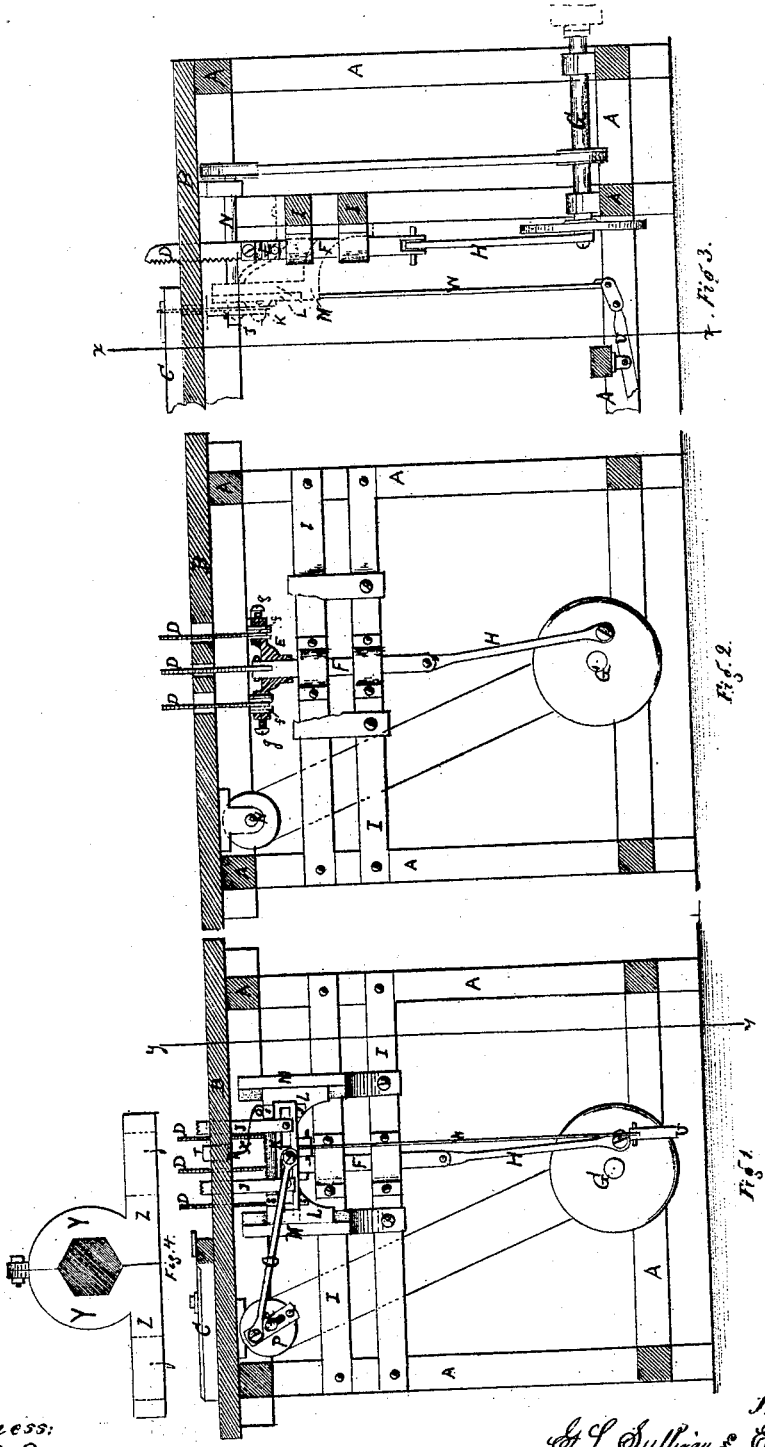
2 Sheets, Sheet 1.

Sullivan & Lippincott,

Tenoning, Sask.

No. 109,075. Patented Nov. 8, 1870.



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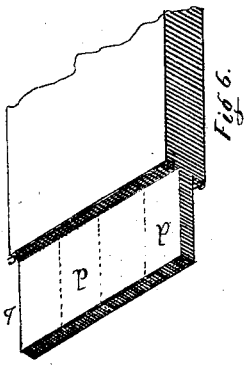
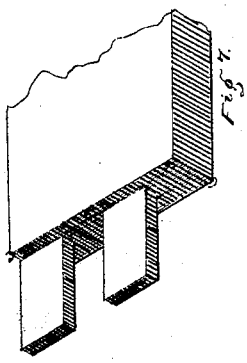
2. Sheets, Sheet 2.

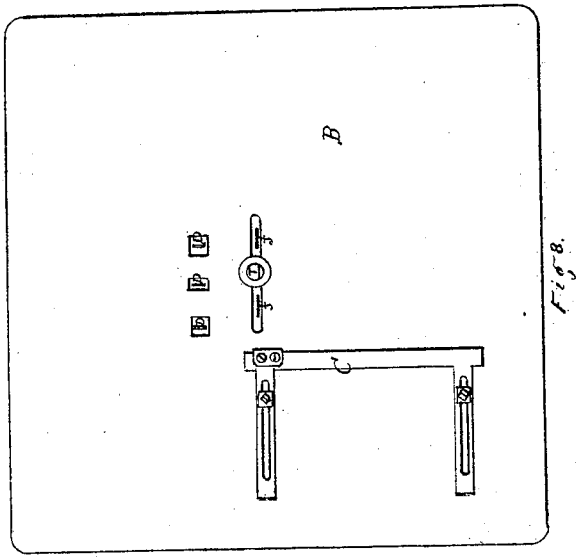
Sullivan & Lippincott,

Tenoning Stash.

No. 109,075 Patented Nov. 8, 1870.







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GEORGE L. SULLIVAN AND EDWARD LIPPINCOTT, OF CHICAGO, ILLINOIS.

Letters Patent No. 109,075, dated November 8, 1870; antedated October 29, 1870.

IMPROVEMENT IN RELISHING-MACHINES FOR TENONING SASH.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, GEORGE L. SULLIVAN and EDWARD LIPPINCOTT, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Relishing-Machine; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which our invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1, Sheet I, is a transverse vertical section of our improved relishing-machine taken in the line *x x*, fig. 3.

Figure 2, Sheet I, is a similar view with the relishing-saws removed.

Figure 3, Sheet I, is a transverse vertical section of the same, taken in the line *y y*, fig. 1.

Figure 4, Sheet I, is an elevation of an adjustable box, forming the bearing for the pitman of the vertical saws.

Figure 5, Sheet II, is a plan view of the table of the machine.

Figures 6 and 7, Sheet II, are perspective views of door-rails, to be hereinafter referred to.

Similar letters of reference indicate corresponding parts in the vertical figures of the drawing.

This invention has for its object to provide improved means for relishing the tenons of sash, door, and blind-rails; and

It consists, primarily, in the arrangement of transversely-reciprocating saws of peculiar construction, with a series of vertically-reciprocating saws, for the purpose of relishing the tenon of a rail at one operation.

It consists, further, in the means for adjusting the vertically-reciprocating and the relishing-saws, to regulate the size of the tenon and relish.

It consists, finally, in throwing the relishing-saws into operation, intermittingly, during the continual movement of the ripping-saws, and in the combination of parts of the machine, as will be hereinafter more fully described.

In the accompanying drawing—

A is the frame of the machine, supporting the operating parts.

It is quadrangular in shape, and provided with a hinged top, B, carrying the adjustable guide-frame C.

D D D are three saws, arranged parallel to each other, and working vertically through slots in the table B.

Their lower ends are clamped within the cross-head E, affixed to the operating shank F in any suitable manner, and are driven from the crank-shaft G, having its bearings in the lower part of the frame, through the medium of the pitman H and shank F.

The guide-boxes, F′, for the shank F, are arranged upon the cross-bars I of the frame, as will be presently described.

J J are the cross-cut or relishing-saws, composed of metal plates, with the saw-teeth formed upon their upper ends instead of upon the sides or edges. These saws are placed a short distance from each other in front of the saws D, and are adapted for operation in following manner:

Their lower ends are attached to a guide-bar, K, capable of longitudinal movement, upon a second guide-frame, L, the latter being arranged for vertical movement upon metal brackets M M, affixed to the cross-bars I of the frame, one upon each side of the boxes F′, as shown in fig. 1.

Reciprocating motion is imparted to the guide-bar K, for the purpose of moving the relishing-saws transversely of the frame, by means of the shaft N affixed to the under side of the table B, as shown, and the pitman O.

The inner end of the shaft N is provided with a disk, P, through which is formed, diametrically, a groove, containing the adjustable wrist-pin block Q, to which the pitman O is attached.

By adjusting the block Q, through the medium of the slot and set-screw R, as shown, the transverse movement or stroke of the relishing-saws is regulated.

The bar K is guided in its movements between the beveled lugs S formed upon the guide-frame L, and the relishing-saws are adjusted, with relation to each other, by the slots formed in said bar and the set-screws in the ends of the same. Motion is communicated to the shaft N by belting upon the main driving-shaft G.

The operation is as follows:

The sash or door-rail to be relished, having first been tenoned at its ends, as shown at *b*, fig. 6, is laid upon the table B, against the guide-frame C, with one of the tenons toward the saws D. It is then forced against the saws which form the kerf, shown by dotted lines, fig. 6, extending to the shoulder *c* of the tenon. It is then withdrawn from the saws, and the shoulder of the tenon placed against a stop, T, resting loosely within the table B, between the relishing-saws. The relishing-saws are then projected through the table, by depressing the treadle U, arranged at the bottom of the frame, and connected to the guide-frame L by the rod W, when the relishing-saws, reciprocating transversely of the frame, as previously described, relish or cut out the portions *d* of the tenon, leaving the latter in the form shown in fig. 7.

The width of the relish or distance between the saws D is adjusted by means of the loose blocks *f* and set-screws *g* in the cross-head E, and the transverse cut of the saws J is adjusted to conform to the width of the

relishes by the slots and set-screws in the guide-bar K, previously mentioned.

X is a spring-dog, secured, at one end, to the top of the guide-frame L, with its free end, *h*, immediately beneath the loose stop T, so that, when the guide-frame is moved up, by depressing the treadle U, it shall raise the stop sufficiently above the table to form a rest for the shoulder of the tenon. The stop is thrown up its whole length before the relishing-saws begin to cut.

This arrangement is necessary, as the rail to be relished must move over the stop when it is fed to the saws D, and rest against the same while being operated upon by the saws J. As the saws D move at a high rate of speed, the guide-boxes of the shank F are liable to become worn, and cause the same to vibrate to such an extent as to render its operation very imperfect and unreliable.

To compensate for this wear without supplying new boxes, we construct an adjustable box, which can be tightened or loosened upon the shank, at pleasure. It is composed of two halves Y Y', which, when secured together by the bolt *i*, form a hexagonal opening for the passage of the shank F, of similar form transversely.

The plates Z Z of the box are slotted, as shown at *j*, for the passage of screws, by which the box is attached to cross-bars of the frame, this method of attachment permitting the ready adjustment of the box upon the shank.

Our improved machine can be easily converted into a scroll-saw, by removing the two outer saws of the series D, and throwing off the belt by which motion is connected to the cross-cut saws. The outer saws are removed by loosening the set-screws in the cross-head.

Having thus described our invention,

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

1. In a relishing-machine, the arrangement of transversely-reciprocating saws with vertically-reciprocating saws, substantially as described, for the purpose specified.

2. The series of vertically-reciprocating saws D, adapted for adjustment, with relation to each other, within the cross-head E, by means of the blocks *f* and set-screws *g*, substantially as described.

3. A series of cross-cut saws, J, adapted for adjustment, with relation to each other, to regulate the width of the relish in the tenon of a sash, door, or blind-rail, substantially as herein described.

4. The combination of the movable stop T with the relishing-saws J, for the purpose specified.

5. A relishing-machine for the tenons of sash, door, and blind-rails, in which the relishing-saws are thrown into operation intermittingly during the continued movement of the ripping-saws, for the purpose specified.

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