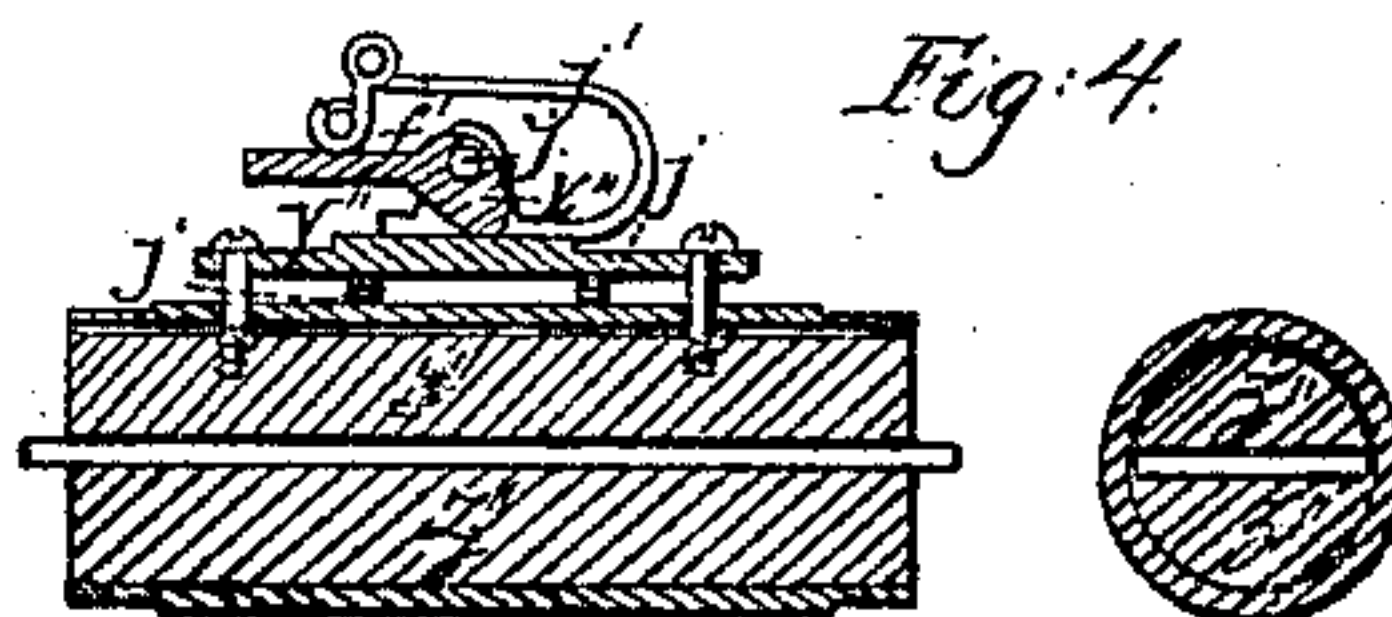


Patented Nov. 30, 1858.



UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING WINDOW-BLIND SLATS.

Specification of Letters Patent No. 22,177, dated November 30, 1858.

To all whom it may concern:

Be it known that I, ISAAC W. GERE, of South Granby, in the county of Oswego and State of New York, have invented a new and useful Machine for Making Window and Door Blind Slats; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1, represents a view of one side of the machine. Fig. 2, represents a top plan. Fig. 3, represents the machine as turned over from its position in Fig. 1, so as to show the same parts in both, immediately under each other, instead of reversing them end for end. Fig. 4, represents a section through the clamping cylinder. Fig. 5, represents a perspective view of one of the tenoning tools.

A block of wood of suitable thickness for the width of the slats is to be placed upon the table A, and pushed close up to the guard C. The operator then depresses the hand lever E, until it catches under the projection F, on rod G (as represented in the accompanying drawings) the other end of which rod is jointed to lever H.

The effect of depressing lever E, is as follows: The lever E, being firmly attached to shaft K, which has its bearings at L, L, the shaft will make part of a revolution. Thus the cross-piece M, will also turn upon the axis of shaft K, said cross piece being of one piece with, or so to say, an extension of, shaft K. As the shaft N, has its bearings in the cross piece, the position of cog wheels P, and Q, upon shaft N, will be changed in relation to the cog wheels Q, and R, to wit; the wheel O, will now be raised, sufficiently high to be out of gear with wheel Q, and the wheel P, will be lowered so as to gear with wheel R, the wheels Q and R, are upon shaft W. Thus, (as N, receives motion from driving shaft W, by means of pulleys, band, and gearing U, V,) motion will be transmitted to shaft X, in consequence of the relative sizes of the wheels O, Q, P, R; now while P, gears into R, instead of O, taking into Q. The depression of lever E, serves also another purpose. It depresses the end of lever b, which is below and in contact with lever E,

which lever b, has its fulcrum at e, so as to depress the end of shaft a, and pinion T, upon this shaft, below the range of the teeth f, of propeller g, and simultaneously to raise the end of shaft X, and pinion S, upon this shaft, sufficiently to gear into the teeth f. The shafts a, and X, have their bearings at one end in the lever b; at the other end at c and d, and a, receives motion from X, by means of gear wheels Y, Z. By means of bringing pinion T, out of gear, and pinion S, into gear with the propeller rack f, the motion of the propeller g, will be reversed, and it will now commence to travel toward the saw B, and push the block of wood along in the same direction. The propeller continues to push forward the slat (when cut from the block) until received by the clamping cylinder s, hereafter to be described. Then the propeller automatically begins its return motion, as will also be hereafter described and when at the end of its return motion, commences again to move forward as soon as the operator depresses lever E, as above set forth.

The propeller is provided with two clicks h, and k, which are allowed to swing on their pivots in one direction, but are prevented from yielding the other way by means of stops i, and l; click k, is inoperative during the forward motion, of the propeller because when meeting with an obstacle it is free to swing upon its pivot, and thus to pass over the obstruction. Click h, however acts successively upon levers H, m, and n, during the forward progress of the propeller; it strikes first lever H, moving it sufficiently around its fulcrum pin to push rod G, forward far enough to release lever E, from the hold of catch F. The lever E, in obedience to the impulse of spring p, returns to the position it was in before depressed by the operator and causes shaft K, and cross piece M, to describe a partial revolution around the axis of shaft K, thus bringing wheel P, out of gear with wheel R, and wheel o, into gear with wheel Q, and thereby imparting slower motion to shaft X, to the pinion S, upon said shaft, and to the propeller itself, into whose teeth, the pinion S, gears. The object of this change of velocity is to present the slat which has now passed the saw B, to the planers g, r, at a reduced speed.

When the slat has nearly arrived at the clamping cylinder *s*, the click *h*, operates upon lever *m*, thereby pushing forward the rod *t*. The hook end of arm *u*, on rod *t*, releases the hook *v*. This hook *v*, which projects from shaft *x*, turns with the shaft, upon its axis in consequence of the action of spring *z*, which acts upon an arm *y* projecting from the other end of shaft *x*. The hook *v*, then rests against the cylindrical neck *e'* upon cylinder *s*, until the hook falls into the recess *w*, in said neck, and then stops the cylinder from continuing its revolving motion imparted to it, in a manner hereafter to be described. The recess is so arranged that the cylinder clamps (afterward to be described) stand vertically at the time the hook stops the cylinder. Thus the new slat as it issues from between the planers finds the cylinder clamps in proper position for it to enter between the clamps, and push out the previously finished slat. To facilitate this operation, the clamps are held sufficiently apart by means of the forward end of lever *f'*, being depressed in coming in contact with arm *a'*, which projects from shaft *x*, and which arm was thrown toward the cylinder simultaneously with hook *v*, for the purpose of being in position to act upon lever *f'* as already mentioned. The connection between lever *f'*, and the clamps will be hereafter explained.

When the rod *t*, moves forward as above set forth, the finger *b'* will push the upper end of the vertical lever *d'*, into the recess *g'* and thus the projection on lever *d'*, upon which the horizontal lever *c'*, has rested, will be withdrawn from underneath this lever *c'*, and the lever *c'*, being linked to the bridge *f'*, the bridge *f'* will be allowed to follow the impulse of spring *e'*, and turn upon its fulcrum *g'* sufficiently to liberate the friction disk *h'* (which has its bearings in bridge *f'*) from the pulley *i'*. Up to this moment the friction disk *h'* has been in close contact with the pulley *i'*, and has communicated revolving motion to the pulley and cylinder *s*. The disk is connected with the main driving shaft *W*, by means of bands and pulleys *l'*, *k'*, *m'*, *n'*, *o'*, *p'*.

When the propeller has arrived at the end of its forward motion, the click *h*, operates the lever *n*, so as to turn it upon its fulcrum *z'*, by which means the arm *q'* will be pushed back or turned upon its pivot *s'*, so as to withdraw the projection *r'* from underneath the rear end of lever *b*. The rear end of lever *b* will now drop and its front end will rise so as to disengage pinion *S*, from the propeller rack *f*, and bring the pinion *T*, into gear with it. As pinion *T*, revolves in an opposite direction to pinion *S*, the propeller will now commence to move backward. The previously finished slat has now been pushed out from between the cylinder

clamps, and the new slat has taken its place, both ends of the slat projecting from the cylinder, preparatory to having them tenoned by the tenoning tools *t'*, *t'*. During the backward motion of the propeller, the click *h*, comes into operation. It strikes first lever *u'*, which extends from shaft *v'*. Thus the front end of arm *w'* which is also attached to shaft *v'* is raised and with it the inner end of lever *y*, which rests upon *w'*. As the lever *y*, extends from shaft *x*, (see above) this shaft, and with it the hook *v*, and arm *a'* will be caused to turn upon the axis of the shaft. The hook as it recedes from the recess *w*, will be caught and retained by the hook end of arm *u*, and the cylinder *s*, will now be free to be revolved again. At the same time the arm *a'*, recedes from the lever *f'*, and the slat will be firmly clamped. The click then strikes the lever *x'*, which projects from shaft *y'*. As the shaft is turned the arm *A'* rises, and raises the forward end, and thereby lowers the rear end of lever *B'*, drawing down the hammer rod *D'*, and causing the hammer *C'* to strike the awl knob *E'*, and operate the awls attached to it so as to make the holes in the edge of the slat. As soon as the click has passed the lever *x'*, this lever and the hammer, and the above described parts connecting the two, return to their former positions by the action of spring *F'*. The click *h*, finally strikes the lever *G'*, which projects from shaft *H'*. By pushing back the upper end of lever *G'*, the rod *I*, will be moved forward, and its front end will act upon lever *K'*, so as to cause it to turn on its pivot *Y'*, and thereby to liberate the end of lever *L'*, which has been resting upon a projection on lever *K'*. This end of the lever *L*, (its other end being pivoted at *T'*), will now drop, and with it, the inner end of bridge *V'*, because this bridge is hung to lever *L'*, by means of rod *U'*. As the inner end of the bridge (its other end having its fulcrum at *W'*) drops together with the pulley *X'*, the band *Z'* is tightened and the pulley *i'* and cylinder *s*, begin to revolve. The cylinder will now revolve at a faster rate than before, when it received motion from pulleys *k'*, *l'*, and disk *h'*. As the bridge drops, the projection on lever *d'* will slip under the lever *c'* ready to raise it, as soon as the bridge shall commence to rise again.

The motion of lever *K'*, besides liberating lever *L'*, also serves to raise the rod *N'*, by means of arm *M'*, extending from lever *K'*. The rod *N'*, raises the front end of lever *o'* (fulcrumed at *a''*). The outer end of shaft *d''* has its bearing in the front end of lever *o'*; it will rise with the lever *o'*, and with it a pinion (not visible in the drawings) upon said shaft. This pinion will thus be brought into gear with the pinion *b''*, and the motion, the first pinion receives

from the secondary driving shaft S' by means of band and pulleys Q' , R' , will be transmitted to pinion b'' . The shaft P' will revolve with pinion b'' , and the cord or chain e'' , one of its ends being fastened to shaft d'' will wind around shaft d'' . The revolutions of shaft d'' , will at the same time serve to move the tenoning tool carriage k'' , l'' , m'' , n'' by means of the screw c'' upon shaft d' passing through a screw threaded hole in the cross piece k' of the carriage. Thus the tenoning tools t' , t'' , will be advanced toward the center of the cylinder, and the tenons will be cut on the ends of the slat.

When part of the cord or chain e'' , has been wound around shaft d'' the knot f'' will come in contact with, and commence to raise the sliding piece g'' . As the lever L' is connected with this sliding piece by means of rod h'' , the lever will also rise until the recess drops under the lever, and rests again upon the projection on lever K' . As the lever K' returns to its former position the parts M' , N' , O' , and P' , will of course do the same; the pinion upon shaft P' , will again be disengaged from pinion b'' and the cord or chain e'' will be free to follow the impulse of spring o'' ; it will unwind itself from the shaft, thereby turning the shaft in a direction opposite to its last motion, and screwing back the tenoning tool carriage. Together with lever L' , the bridge V' , is raised, the two being connected by rod U' , and the rising of the bridge elevates the lever c' , which rests upon the projections on the lever d' , as above described. The bridge f' , being hung to lever c' (as already set forth) the bridge f will also be caused to rise. The rising of the two bridges will slacken the band Z' and bring disk h' in contact with pulley i , thus causing the cylinder to revolve at a slower rate, until it shall be stopped by the catch hook v , as previously described. The block of wood is now again to be pushed up to the guard C , and the hand lever E , is to be depressed, thus changing the backward motion of the propeller into a forward motion, and all the operations above described will be repeated. By adjusting the tenoning tool t' , by means of adjusting screws p'' , p'' , and slots q'' , q'' , slats of any desirable length may be finished upon this machine.

The planers receive their revolving motion by means of pulleys r'' , r'' , r'' , and band s'' . The planer r , has concave knives for planing the convex sides of the slats; the other planer q has knives t'' , t'' , for planing the edges of the slat, and of such form, as it is desired to give to said edges. The tenoning tools (Fig. 5) are provided with two scoring edges u'' , v'' and one clearing edge w'' . The clamping pieces z'' , z'' , inside cylinder s , and parts connected there-

with are represented in Fig. 4; the lower clamping piece is stationary in the cylinder; the upper clamping piece is connected with the bar y'' , by means of two bolts. The lever f'' , is pivoted to the outside of the cylinder at j , and is held up by spring j' , so as to keep the upper clamping piece tightly down upon the slat, by means of eccentric x'' , bearing upon the bar y'' . Whenever the outer end of lever f'' , is pressed toward the cylinder, the eccentric will move away and the bar and upper clamping piece will be free to follow the impulse of springs j'' , j'' on which rests the bar, and move away from the center of the cylinder.

It is obvious that many changes may be made in the details of this machine without affecting its general character, as for instance other tools than those shown may be used for cutting or dressing the edges of the slabs; and weights or weighted levers may be used in place of springs; the slat may be held and advanced by other mechanical appliances; and the sawing off the slat from the bolt may even be done on a separate machine. All these evasions can, and most probably will be attempted, but as I am the first, so far as I can learn that, ever organized a machine that would take the rough strip as it comes from the bolt, and automatically pass it from one series of devices to another until it is finally completed, I shall claim that any machine effecting a similar object by substantially the same devices herein represented, would be a palpable violation of my invention.

Connected with the sliding piece g'' there is an adjusting screw on rod h'' ; by which the operating length of said rod is increased or diminished, the effect of which is as follows: As the chain e'' raises the sliding piece g'' connected with the rod h'' , it causes the lever L' , to fall into the recess as above explained, which stops the advance of the tenoning tool carriage. To increase the operating length of rod h'' , allows the carriage to travel farther toward the center of the slat in the act of tenoning and makes the tenon smaller. To shorten the operating length of rod h , or rather to lessen the distance between the sliding piece g'' and lever L' , has the contrary effect, stopping said carriage sooner, and thus making the tenon larger. Varying the length of the chain e'' , has the same effect in varying the size of the tenons, that changing the operating length of the rod h'' has, for to shorten the chain causes the lever L' , to fall into the recess sooner, which stops the carriage sooner and to lengthen it produces the reversed effect. The adjusting screws on rod h'' allow the length of the chain to be regulated, should it lengthen by use.

Having thus fully described the nature and object of my invention, and shown how

it may be successfully practiced, what I claim therein as new and desire to secure by Letters Patent is—

5 A machine that, will take a rough slat as it comes from the bolt, and automatically pass it along to, and past the series of mechanical devices that will plane, dress and form the tenons thereon, and complete

the slat, before it leaves the machine, substantially in the manner herein described in and represented.

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Witnesses:

O. O. SHUMWAY,
C. W. WADSWORTH.