(No Model.) 2 Sheets—Sheet 1.

W. CROSWELL.

CLAPBOARD MACHINE.

No. 458,098. Patented Aug. 18, 1891.

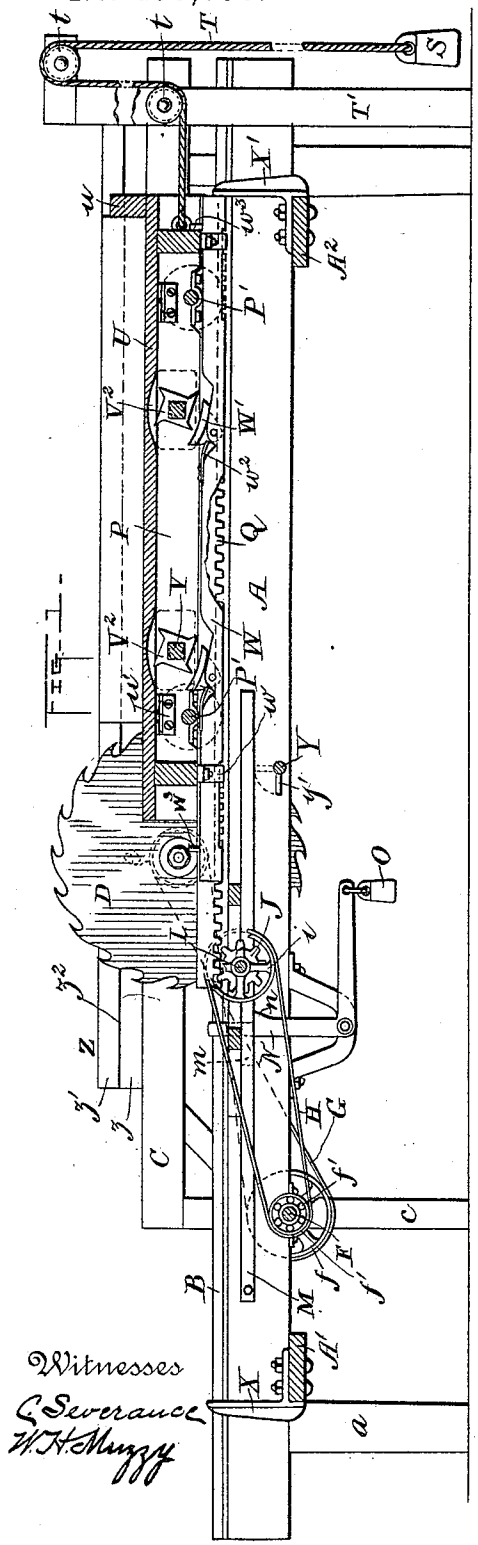


FIG. 1.

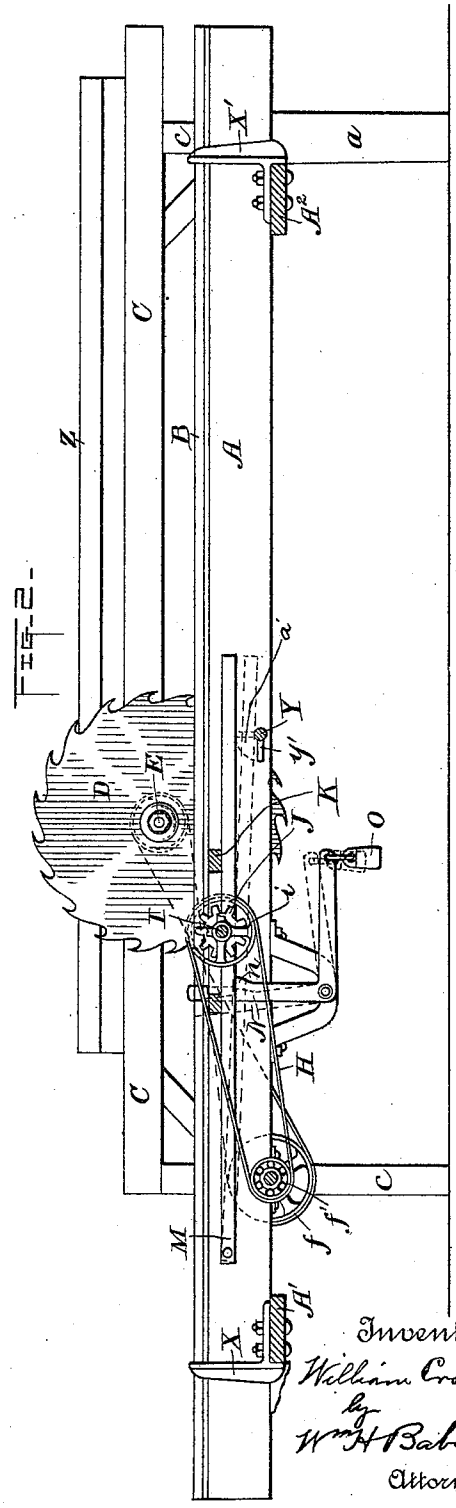


FIG. 2.

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

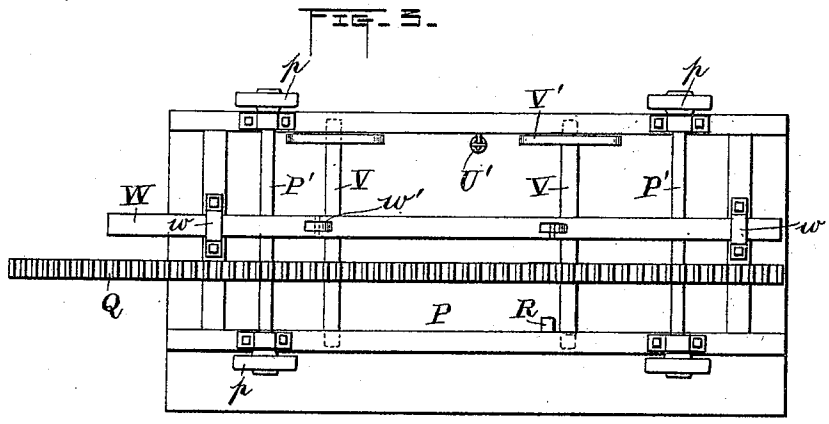


FIG. 4.

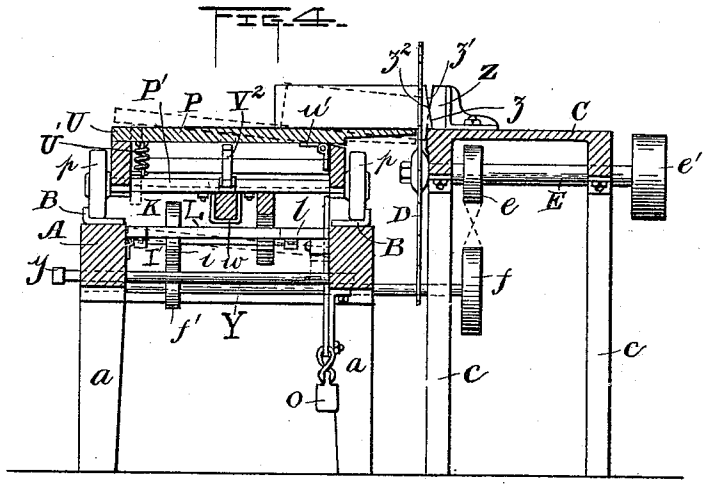
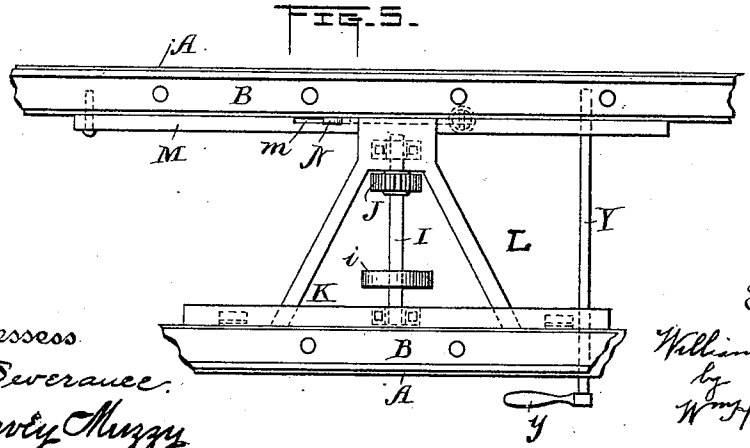


FIG. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM CROSWELL, OF NEW SHARON, MAINE.

CLAPBOARD-MACHINE.

SPECIFICATION forming part of Letters Patent No. 458,098, dated August 18, 1891.

Application filed February 20, 1891. Serial No. 382,221. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CROSWELL, a citizen of the United States, residing at New Sharon, in the county of Franklin and State of Maine, have invented certain new and useful Improvements in Clapboard-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for making clapboards and other beveled articles. Its object is to provide improved means for automatically effecting the beveling. To this end I employ a bolt-supporting table hinged for lateral tilting and mounted on a carriage which travels backward and forward, in combination with devices which automatically raise and lower the free side of said table. I also employ a stationary bolt-gage, having a face divided into a lower vertical part, by which the outer edge of the clapboard-bolt is guided while said bolt is horizontal, and an outwardly-inclined upper part, against which the outer edge of said bolt rests, being guided and supported thereby as it moves forward, while the said bolt is in an inclined position.

My invention consists in the said gage, in combination with the bolt-carriage and tilting table and their actuating devices, and also in the particular construction and combination of said lifting and lowering devices, and in the improved mechanism for feeding the carriage forward and afterward returning it to its first position, all substantially as hereinafter more particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a vertical longitudinal central section of a machine embodying my invention. Fig. 2 represents a similar view, omitting the carriage and the parts attached thereto. Fig. 3 represents a bottom view of said carriage and attached parts. Fig. 4 represents a transverse vertical section through the machine, including the carriage and the bolt thereon. Fig. 5 represents detail views of the gear-shifting devices.

A designates the bed-frame of the machine, supported on legs *a*; B, a track of two rails fast on said bed-frame; C, a supplemental frame parallel to frame A and supported by legs *c*; D, a circular saw turning in the narrow space between said frames; E, the arbor of said saw provided with belt-wheels *e e'* and journaled in said frame C; F, a shaft extending transversely through said frames and provided with belt-wheels *f f'* in said space; G, a crossed belt making gear connection between belt-wheels *e* and *f*, and H a belt extending from belt-wheel *f'* to a belt-wheel *i* on a shaft I, carrying a pinion J for feeding forward the bolt-carriage. This shaft I has one of its bearings in a plate or bar K, hinged to the bed-frame A and running longitudinally thereof, the other bearing of said shaft being in the terminal plate *l* of a triangular frame L, the diverging ends of which at the side of the machine away from the saw are fastened to said plate or bar K. The said parts I K L raise and fall on the hinges of the latter as one piece, though the shaft I is free to turn in its bearings. The broad tip or terminal plate *l* of frame L rests on a movable plate or bar M, which is similar to K in arrangement and construction, but hinged at one end to frame A for vertical motion and free at the other end. This bar M has a recess or passage *m* in its outer side from top to bottom to allow the extension up through it of the upright arm of a vertically-mounted pivoted support N, having the form of a bell-crank lever. This support is pivoted at its angle to a rigid attachment of frame A. A shoulder *n* on said support extends under the material of said bar M at the forward end of said recess to support said bar. A weight O, hung to the end of the horizontal arm of said pivoted support, has the function of holding the said shoulder in this position. The said recess is made of sufficient length to allow the backward movement of said support and to free said bar, so that the latter may fall. The recess *m* then receives the said shoulder.

P designates the bolt-carriage provided with axles P' and wheels *p*, the latter being arranged to run on the said track B. A straight fixed rack Q, under the body of said carriage and rigid therewith, is arranged to engage the said pinion J on shaft I when the latter is in its highest position. The said carriage is also provided with a rigid lug R, arranged to strike the upper end of the pivoted

support N and force it backward, so as to release the bar M and allow the frame L, shaft I, and pinion J to fall, disengaging the said pinion from the said rack Q, so that the forward feeding of said carriage will cease. This is made to occur simultaneously with the ending of the work of the saw on the bolt or very slightly afterward. A retracting-weight S, which is attached to the rear end of a rope or chain T, passing from the rear part of said carriage over a guide-pulley *t*, supported by a standard T′ of frame A, then draws back the said carriage to its first position. The top of said carriage is a table U, provided at its rear end with a raised stop-piece *u* to prevent the saw from pushing the bolt backward off the said table. On the side or edge next the saw the table U is connected to the body of said carriage by hinges *u′*, allowing it to be tilted up toward said side. The other edge is free or may be connected to the body of said carriage under said table by an elastic strap or spring U′, as shown. Shafts V are mounted transversely in the body of said carriage under said table, each shaft being provided with a rectangular lifting block or cam V′, longer than broad, and also with a ratchet-wheel V^2, having four teeth arranged equidistantly about it. When one of these lifting-blocks is turned with its length vertical, it raises the table on its hinges, tilting it toward the saw. When turned so that its length is horizontal it lets the table fall into its horizontal position again. Each impulse given to said ratchet will change the position of said lifting-blocks from vertical to horizontal or horizontal to vertical. The said lifting-blocks act simultaneously and equally, and as the shafts V are arranged about half-way between the middle and the ends of said carriage the table is tilted very evenly and with little strain. An endwise-movable bar W, arranged longitudinally with respect to said carriage, but longer than the latter, so as necessarily to extend beyond it at one end and hung in guide-loops *w* under said carriage, is provided with pawls W′, which simultaneously engage the two ratchet-wheels V^2 when the bar W is moved forward or the carriage is moved backward and said bar held stationary. These pawls are pivoted in recesses *w′* of said bar and held in position for their work by springs w^2, which, however, yield when said bar moves backward or when it is held stationary and the carriage moves forward over it, the said pawls then effecting nothing. Stop-pins w^3 on said bar W, near its ends, prevent its detachment from the said guide-loops and carriage. It has no other connection with the latter.

The frame A is provided with two cross-bars A′ A^2, the former being arranged at the most forward point reached by the carriage and the latter at the most rearward point reached by the carriage. Each of these cross-bars has a stop X or X′ raised on it and in line with the endwise-movable bar W, the distances being so calculated that the forward end of this latter bar, then projecting beyond the carriage, will strike against this fixed stop at the same time that the lug R on the carriage strikes against the catch N and releases it from bar M, as described. The rear stop X′ is similarly arranged to be struck by the rear end of said movable bar W, then extending beyond the carriage, when the latter has nearly reached its rearward point. The attachment of these stops to the cross-bars is not essential, for they may be fastened to any other fixed part of the frame, their immovability and proper position being alone important.

For raising the bar M and the parts resting thereon after they have been lowered, as before described, a rock-shaft Y is mounted in frame A across the latter and provided with a handle *y* and lifting-crank arm *y′*, the latter extending under said bar. When the said shaft is turned by means of said handle, the said crank-arm comes in contact with the under side of said bar and raises it on its hinge into the position which allows the pinion J to gear with the rack Q, the side beam of frame A having an opening *a′* made in it above said crank-arm, as indicated by dotted lines in Fig. 4, to allow said upward movement of the latter. The weight O, hung on the pivoted support N, then turns the latter forward, bringing the shoulder *n* under the bar M in the position first described. The said bar will then be held up by said shoulder, as will also the pivoted frame L, shaft I, and pinion J, until the said support has been tilted backward against the resistance of said weight. As soon as the bar M is thus caught and held up the rock-shaft is turned into its first position, so that the crank-arm *y′* will lie horizontal in the said opening *a′* and out of the way of said bar when the latter is free to descend.

To produce the required shape of the clapboard it is necessary that one edge should be beveled, while the other is perpendicular to the face of the clapboard, as the beveling fits the boards to overlap each other in the usual way. As the saw always remains vertical, the only means whereby this variation in the angle of the cut can be effected is to change the position of the clapboard bolt or blank, which is done by the tilting table and its mechanism; but the tilting and the strain of the saw against the bolt have a tendency to dislodge the latter. I therefore make use of a gage Z, which is supported by and fixed on the supplemental frame C just outside of the saw and parallel to it and to the track B. The face of this gage toward the saw has a double bevel, the lower half *z* inclining downward and outward and the upper half *z′* inclining upward and outward, these two half-faces meeting in a central ridge z^2, running from end to end of the said gage. When the table and bolt are horizontal, the outer edge of the latter is against the lower half-face *z*,

which not only guides it, but by the slant of said half-face *z* prevents it from rising out of its level position on said table. When the latter is tilted, the bolt is necessarily tilted also, and its upper and outer corner rests on and is guided by the upper half-face *z'* of said gage. It is thus in position to be evenly sheared away by the beveling cut of the saw.

The operation is as follows: The carriage being in its rearward position, the feed-pinion and rack in gear, and the table horizontal, a clapboard bolt or blank is placed on said table with its end against the piece *u* and its outer edge against the gage. Power is then applied from any suitable source to the saw-shaft, preferably through belt-wheel *e'*, and the pinion J, by means of the connections hereinbefore described, is rotated, feeding the rack Q, the carriage, and the bolt all forward together, while the saw cuts a straight vertical edge on said bolt from end to end. When the bolt passes beyond the saw, the lug R strikes the pivoted support N and allows the pinion J to be ungeared from the rack Q, as before stated. Just previous to this the bar W strikes the stop X and is held thereby, while the carriage moves forward a little without the said bar carrying the ratchet-wheels farther forward with regard to the pawls. The weight S then pulls the carriage backward to its first position. On said carriage nearly reaching the latter, the bar W strikes the rear stop X and is held stationary, while the carriage moves over it independently far enough for the ratchet-wheels to receive an impulse from the pawls, turning the lifting-blocks through one-fourth of a revolution, so that they will tilt the table U upward on its hinges, as described, with the inclination toward the gage and saw. The clapboard-bolt is then turned with its other edge outward and leaning at the upper corner against the upper half-face *z'* of said gage, as described. The rock-shaft Y is then turned, raising the bar M and the parts resting thereon, so that the pinion J is again thrown into gear with the rack Q, and the pivoted support N is moved on its pivot by the weight O to hold it thus, while the rock-shaft is turned back out of the way. The feeding operation is then repeated, the tilted position of the bolt causing the saw to shear away its upper corner, leaving from end to end the beveled face desired. The clapboard is then removed as complete. The automatic ungearing of the feed-pinion and the replacing of bar W in position to operate the ratchet-wheels take place, as before described, and the carriage runs back once more, this time for a new bolt. The same gage and other devices may be used in the same way for cutting a vertical half-face and a beveled half-face in the same edge of the bolt, the feasibility of this operation depending in such a case on the thickness of the bolt and the degree of its inclination. Although this machine is described as in use for clapboard-manufacture, it may also be employed for making shingles and many other articles. Of course a knife or other cutting device might be substituted for the saw, although the latter is generally the best tool for such purposes. The tilting table may be used on a stationary support, the saw being made to travel instead of being stationary, as shown.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a stationary cutting device, a carriage provided with a bolt-supporting table adapted to be tilted toward said cutting device or made horizontal at will, feeding mechanism for said carriage, mechanism for automatically tilting the said table and lowering it into horizontal position alternately, and a gage having a lower half-face arranged to be partly in contact with the outer edge of the bolt when the latter is horizontal, and an inclined upper half-face arranged to support and guide the outer edge of the bolt when the latter is tilted, for the purpose set forth.

2. In combination with a rotary saw or other stationary cutting device, a carriage provided with a table adapted to be tilted toward said saw, feeding mechanism for said carriage, a shaft and cams for raising and lowering said table, and a gage having a lower half-face arranged to be in contact with the outer edge of the bolt on the said table when the latter is horizontal, and an inclined upper half-face arranged to support and guide the outer edge of the bolt when the table is tilted, substantially as set forth.

3. In combination with a bolt-supporting table and devices for tilting the same laterally at will, a saw or its equivalent, mechanism for causing it to cut the bolt, and a fixed gage having two-part faces, one of which is arranged to be in contact with the bolt when the carriage is horizontal and the other when it is tilted, substantially as described.

4. In combination with the frame and cutting device of a wood-working machine, a carriage provided with a tilting table, a shaft provided with a cam or lifting-block for raising and lowering said table and with a ratchet-wheel, an endwise-movable bar carrying a pawl for engaging said ratchet-wheel, and fixed stops arranged in the line of motion of said bar at the forward end and rear end of its journey, substantially as and for the purpose set forth.

5. In combination with a cutting device, a bolt-carriage having a rack attached thereto, a feed-pinion adapted to engage the said rack, the shaft of the said pinion, a hinged bar in which one end of the said shaft is journaled, a frame L, attached to the said bar and provided with a terminal plate *l*, in which the other end of the said shaft is journaled, devices for raising and a device for supporting the free end of the said frame, and an attachment of the said carriage arranged to trip the

said supporting device and allow the said frame to fall, substantially as set forth.

6. In combination with a cutting device, a bolt-carriage having a rack fixed to it, a pinion for engaging the said rack to feed the said carriage and bolt toward the said cutting device, a hinged bar and frame provided with bearings for the said shaft, a movable bar on which the free end of the said frame rests, a rock-shaft for raising the said movable bar, gearing for rotating the said pinion, and an attachment of the said carriage arranged to trip the said supporting-lever and cause the said pinion to drop out of engagement with the said rack, substantially as set forth.

7. In combination with the feed-pinion and its shaft, the hinged frame L, in which the said shaft has its bearings, the bar M, on which one end of said frame rests, the said bar being provided with recess *m*, the pivoted support N, having its upper end extended up through said recess weighted at its other end and provided with a shoulder *n* for supporting the said bar, a lug R on the carriage for striking against the upper end of said pivoted support to free the bar therefrom, and the rack Q, carried by said carriage and engaging the said pinion, substantially as set forth.

8. In combination with a traveling bolt-carriage and its feeding mechanism, a table hinged to the body of said carriage and forming a bolt-supporting top therefor, shafts provided with lifting-blocks and ratchet-wheels and mounted in said carriage under said table, an endwise-movable bar hung in guides attached to said carriage and provided with pawls for engaging said ratchet-wheels, and stationary stops arranged in the line of travel of said bar and at each end thereof, so as to be struck thereby before the travel of the carriage is quite ended, the ratchet-wheels, pawls, and lifting-blocks being so arranged with respect to each other that each impulse of said bar and pawls as the carriage nearly reaches the rear end of its travel will tilt the said table if it is horizontal or lower it if tilted, substantially as set forth.

9. A bolt-gage for a clapboard-machine having a doubly-inclined guiding-face, the lower half of said face inclining downwardly and outwardly and the upper half of said face inclining upwardly and outwardly, in combination with a carriage having a bolt-supporting tilting table mounted thereon, feeding mechanism for the said carriage, and devices for tilting and lowering the said table, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM CROSWELL.

Witnesses:

WINNIE F. DUTTON,

A. W. DUTTON.