2 Sheets—Sheets 1.

L. S. COLBURN.

Tenoning Blind Slats.

No. 82,802. Patented Oct. 6, 1868.

Fig. 1

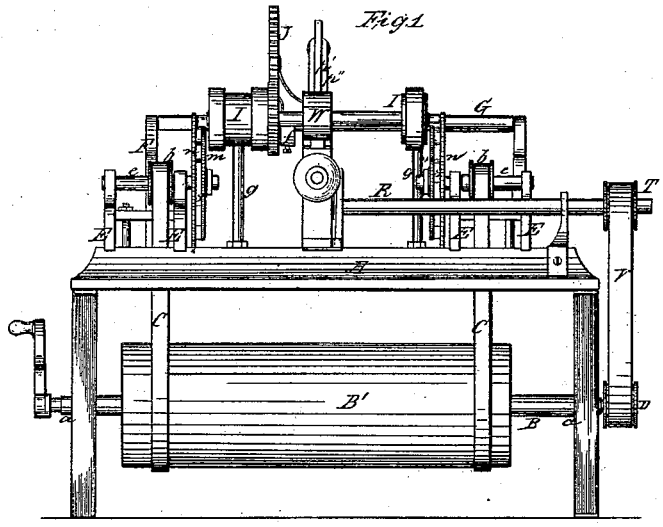
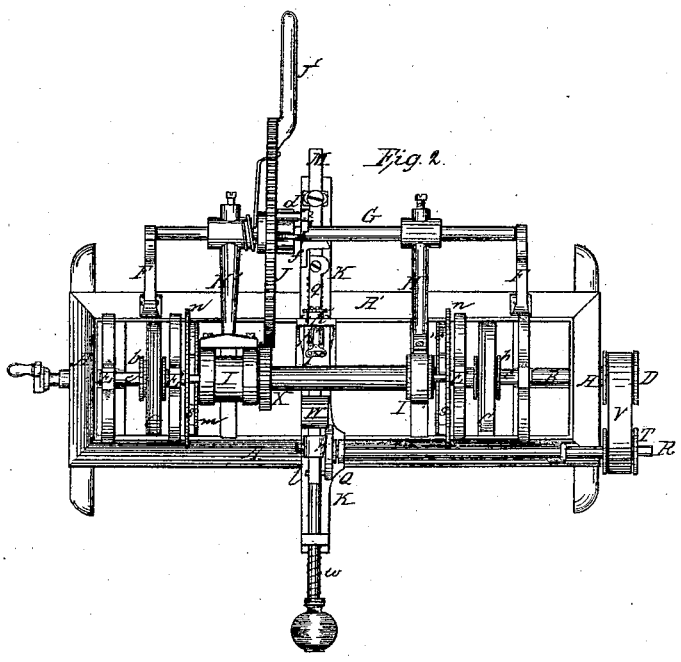


Fig. 2.



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2 Sheets—Sheets 2.

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Fig. 4.

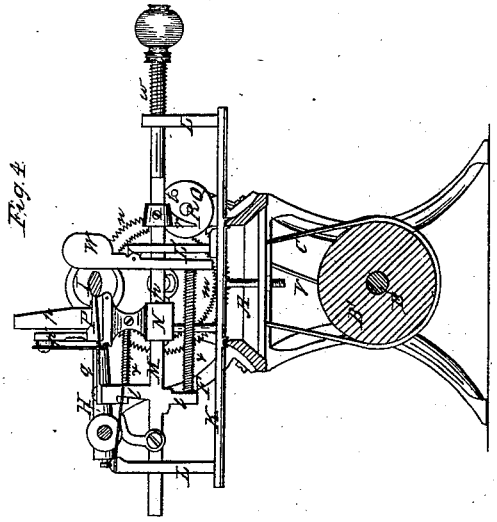
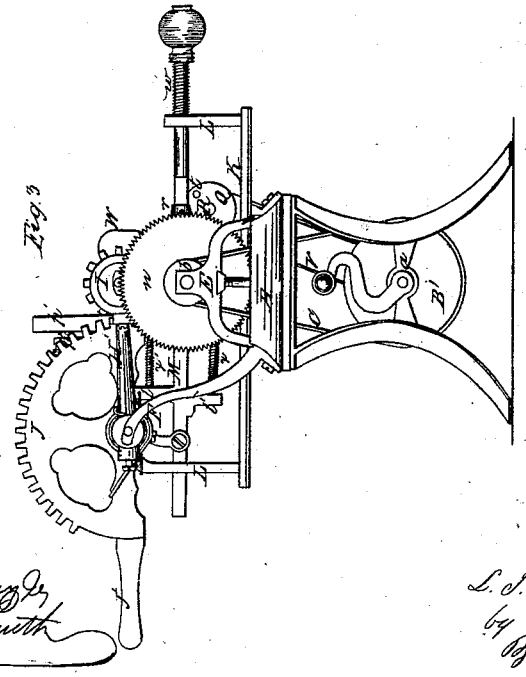


Fig. 5.



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United States Patent Office.

LYMAN S. COLBURN, OF OBERLIN, OHIO.

Letters Patent No. 82,802, *dated October* 6, 1868.

IMPROVEMENT IN SLAT-MACHINES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LYMAN S. COLBURN, of Oberlin, in Lorain county, and State of Ohio, have invented certain new and useful Improvements in "Slat-Machines;" and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, through letters of reference marked thereon, forming part of this specification, and in which—

Figure 1 represents a front elevation of a machine embracing my improvements.

Figure 2 is a plan or top view of the same.

Figure 3 an end elevation, and

Figure 4 a vertical transverse section thereof, taken on the line *x x* of fig. 1.

The same letters of reference occurring on the several figures, indicate corresponding parts.

My invention relates to that class of machines used for cutting to a given length, and shaping or forming, the tenons on the ends of slats for window-blinds, and for inserting the staple therein; and it consists in the construction of the heads for holding the slat to be operated on; in the manner of presenting the work to the machine, so as to first saw off the ends, and then by rotating it against the cutters to form the pivots on its ends by a novel combination of devices; in the means for operating the staple-inserting mechanism automatically and in concert with said cutting and tenoning-mechanism; in the peculiar construction of the feed-staple holder; and in the device for supporting the stuff against the lateral force of the staple-driver.

To enable others to make and use my invention, I will proceed to describe its construction and operation by referring to the drawings, in which A represents the main frame of the machine. The upper portion somewhat resembles the bed-frame of an ordinary lathe, supported on suitable legs, and is provided with journal-bearings, *a*, in which the driving-shaft B is supported and rotates. On this shaft is a long cylindrical drum, B′, or, it may be, two separate drums suitably located to operate the belts C. On one end of this shaft is a smaller band-wheel D, the object of which will hereinafter appear.

On the upper portion of this frame A are situated two heads, E, each carrying a mandrel, *e*, provided with a band-wheel or pulley, *b*, by which they are rotated through the bands C, passing around the drum B′. On each of these mandrels *e* are hung two circular saws, *m n*, of different diameters, and having a plate, *s*, of steel, between them, the periphery of which is formed into a series of chisel-edges, and is of equal diameter with the smaller saw, *m*, and of suitable thickness to form, with the said saw, the length of the tenons. These saws *m n*, and the chisel-plate *s*, are firmly attached to their respective mandrels, and are rotated therewith, and all in the same direction, by means before described.

Extending upwardly and outwardly from the rail A′ of the frame A are two brackets or supports F, in bearings in the upper ends of which, about on a level with the upper portion of the saws *n*, is pivoted the shaft G, on which are firmly secured two arms, H H′, carrying at their extremity revolving holders I, the one connected with the arm H′, having a pinion-wheel, X, attached to it, by which it is rotated, by gearing into the segmental rack J, which has a partial rotation on the shaft G, and is restrained from turning out of gear with the pinion by the pin *d* bearing against either end of the notched portion of the hub *f*, which is rigidly keyed on the shaft G on one side of said segmental rack J; the pin *d* in the side of the rack, near its axis of motion, bearing against the notched portion of the hub *f*, also serving, by turning the shaft G, to raise the arms H H′ by depressing the handle J′, and thus to lift the work away from the saws and hold the arms in a suitable position for removing the finished slat and inserting a blank to be next operated on.

g g are two standards supported on the frame A, on which rest the arms H H′. They are made adjustable vertically, by which means the diameter of the pivots on the ends of the slats is regulated.

Combined with this machine is an apparatus for inserting the staple in the finished slat automatically, and before it is taken out of the holders before described, the frame, K, of which is supported on the upper portion of the main frame A, transversely thereto, and about midway between the heads E. It is constructed with suitable uprights, L L′, through apertures in which a sliding bar, M, is supported. Said bar is provided with two arms, *l l′*, the one extending upwardly, the other downwardly, forming a cross. It also carries a sliding head,

N, which is limited in its motion in one direction by a pin, *p*, passing through the bar M, and is supported in the opposite direction by a coil-spring, *x'*, around an arm, which has freedom to slide through an aperture in arm *l*. To the upper end of this head N is hinged the staple-feeder P, which is so constructed as to hold the staples one above another, which, by their own weight, are fed downward, so that the lowest one is opposite a guiding-aperture in the front of said feeder, and resting against the driver *q* in its rear.

To the bar M is also attached a tappet, *r*, extending downwardly, and which is operated on by the eccentric-pin, *t*, on the head, Q, of the shaft R, which shaft has a rotary motion communicated to it through its pulley, T, and band, V, passing around the pulley D on the end of the main driving-shaft B, and through which devices a sliding motion, intermittently, is communicated to the bar M, the receding motion of said bar being controlled in part by a spiral spring, *w*, around it, and in part by the spiral spring *x*, which latter encompasses a rod parallel with the bar M attached to its arm *l'*. The opposite end of this rod is supported and guided in apertures in range therewith in the upright, L', and in the lower end or tail portion of the supporting or riveting-block W, which is hinged to the upright, L', above the bar M.

It will thus be seen that the spring *x* performs a twofold function, viz, to bear up the block W against the edge of the slat while the staple is being driven, and to assist in carrying the bar M to its normal position when the tappet *r* is released from gear with the eccentric-pin *t*.

In operating this machine, the stuff having been first dressed to the desired width and thickness in convenient lengths, the handle J' is depressed, so as to elevate the holders I clear of the saws. One end of the strip is passed through the aperture in said holders, (which apertures are of corresponding shape and size with the cross-section of the slat, so that it may fit snugly therein,) until the extreme end protrudes sufficiently therethrough to form the tenon or pivot. The mandrels *e* are then rotated by any suitable motor through the drum B' and belts C, and the lever J' is allowed to rise gradually, when the weight of the arms H H' will cause the slat to come in contact with the saws *n*, by one of which the extreme end will be trimmed off, and by the other the required length severed from the strip. The arms H H' now resting on the standards *g*, by a further elevation of the lever J', the rack J gearing into the pinion X, the stuff will be rotated against the saws *m* and chisel-plates *s*, whereby the shoulders are cut, and the tenon on each end rounded, simultaneously.

During this operation, the shaft R has been revolving slowly until the eccentric-pin *t* on the head Q has come in contact with the tappet *r*, by the continuance of which revolution the sliding bar M is moved endwise, so as to bring the head N in contact with the edge of the slat, which has now ceased to revolve, and, by the pressure of the spring *x* on the lower portion of the block W, it (the block) is caused to bear against the opposite side of the slat, when, by the continued motion of the bar M, the driver *q*, attached to its arm, *l*, is forced through the aperture in the lower portion of the staple-feeder P, at top of the head N, carrying with it a staple, which is thereby pressed into the edge of the slat to a proper depth. The tappet *r* is then released from the eccentric-pin *t* by the continued revolution of the head Q, and the bar M is carried back, by the force of the springs *w* and *x*, to its normal position, by which the driver *q* is withdrawn from the staple-feeder P, and another staple falls in position to be next operated on. The lever J' may then be depressed, and the finished slat be withdrawn from the holders I for a repetition of the operation in like manner.

It should here be observed that a small groove is cut in one of the revolving holders, I, along the aperture occupied by the slat, to allow the staple in the edge of the slat to pass through said aperture.

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

1. The revolving heads I, constructed with apertures therethrough, corresponding with the form of the cross-section of the slat, for its insertion therein endwise, substantially as set forth.

2. The combination of the arms H H', carrying the revolving heads I, the wheel X, segmental rack J, and notched hub *f*, all supported on the rock-shaft G, for operation substantially as described.

3. The arrangement and combination of the sliding bar M and head N with the holding-block W, operating together by means of the wrist *t*, toe *r*, and springs *x x'*, substantially as shown and described.

4. The staple-holder, supported on the sliding head N, consisting of two vertical standards, *p' p''*, provided with a lower outlet at right angles to their position, for the passage of and to guide a single staple, when propelled by the driver *q*, substantially as set forth.

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Witnesses:

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