H. R. CARMANY.

SPOKE-TENONING MACHINE.

No. 169,414. Patented Nov. 2, 1875.

Fig. 1.

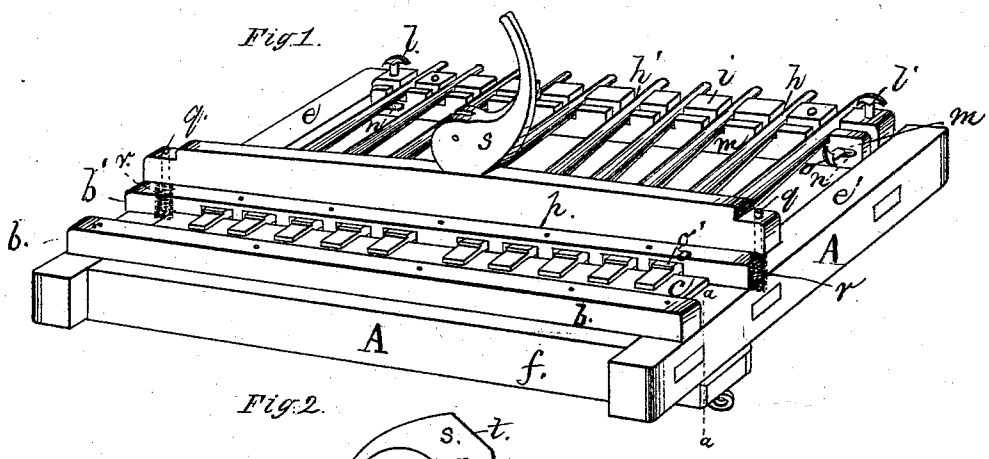


Fig. 2.

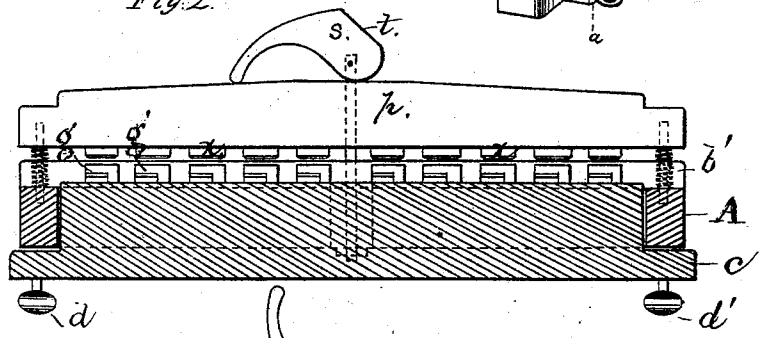


Fig. 3.

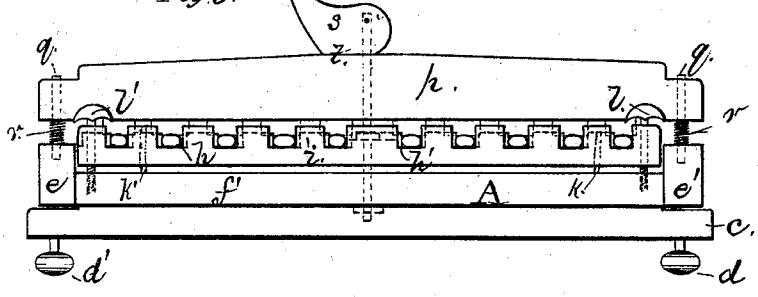
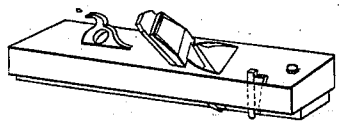


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY R. CARMANY, OF SHIPPENSBURG, PENNSYLVANIA.

IMPROVEMENT IN SPOKE-TENONING MACHINES.

Specification forming part of Letters Patent No. **169,414**, dated November 2, 1875; application filed September 23, 1874.

To all whom it may concern:

Be it known that I, HENRY R. CARMANY, of Shippensburg, Cumberland county, Pennsylvania, have invented Improvements in Spoke-Tenoning Machines, of which the following is a specification:

The object of my invention is a machine for tenoning any desired number of spokes at the same time, to insure the making all of the tenons of uniform size and perfectly true, to vary that size at pleasure, and to cut the tenon either straight or tapering, at will; and to accomplish these ends, my improvements consist in a means for clamping the whole series of spokes by a clamp having elastic pads, adapted for fastening them all tightly, notwithstanding they may vary in thickness; in a means for holding the outer ends of the series of spokes against liability to lateral movement or play; in the devices for releasing the series of spokes from the pressure of the clamp; and in other details hereinafter mentioned.

In the drawings accompanying this specification and making part thereof, Figure 1 is a perspective view of a machine embodying my invention; Fig. 2, a section through the line *a a* of Fig. 1, the spokes not being clamped; Fig. 3, a rear elevation, the spokes being clamped. Fig. 4 is a perspective view of a plane adapted for use in the machine.

A is the frame-work of the machine, having two fixed parallel guide-bars, *b b'*, between which the adjustable bed *c* is located, and which is arranged to be raised or lowered at option by means of the adjusting-screws *d d'*, this bed being also held otherwise firmly in place by fitting snugly between the end pieces *e e'* and cross-pieces *f f'* of the frame A. This bed *c* is lodged in the space beneath where the plane travels, filling that space snugly; and it has beneath the frame projecting ends, through holes in which the screws *d d'* pass, these screws entering the under side of the beams of the frame. This allows a good fit of the bed in the frame, and at the same time affords perfect facility for lowering and raising it from the under side without any risk of displacing the spokes, and without their offering any impediment to such adjustment; and as the bed extends all across the frame, the two adjusting-screws are all that are required to adjust simultaneously the whole series of spokes, so as to cut heavy or light tenons, and to make any size of tenon, which shall be the same in the whole of the series contained in the machine.

The guide-bar *b'* is provided with a series of openings, *g g'*, &c., to receive the larger ends of the spokes, these openings being of sufficient size to permit any needed adjustment or change of position. The rear or smaller ends of the spokes rest in notches *h h'* in a vertically-adjustable bar, *i*, this bar being arranged to be raised or lowered on pins or guide-posts *k k'*, fixed in the frame, and being steadied at its ends by the end pieces *f f'*. The notches *h h'* are made wider than the spokes, that the latter may be readily dropped in and removed therefrom. The vertical adjustment of bar *i* is effected by means of the thumb-screws *l l'*, whose lower ends bear upon the upper surface of the cross-piece *f'*. The lateral adjustment and tightening of the smaller ends of the spokes are accomplished by means of the slide-bar *m*, which is provided with notches corresponding to the notches *h h'*, and also with a longitudinal slot, *n n*, at each end, whereby it may be adjusted endwise to gripe and hold the spokes firmly, thumb-screws *o o*, which pass through these slots and enter the bar *i*, serving to hold the slide steadily to its adjusted position.

The clamping device is as follows: It consists of a strong cross-bar, *p*, arranged to play vertically on pins or posts *q*, spiral or other equivalent springs *r* tending to lift this bar free from the spokes whenever it is not locked down to clamp them tightly. In order to insure that this bar shall positively bear down upon and tightly hold each individual spoke, however much they may differ in thickness, it is provided on its under face with elastic pads *x*, formed of rubber or other appropriate material, each pad acting independently upon the spoke beneath it. In order to force down this clamp-bar and its pads, I pivot to the top of the central post *q* a cam-lever, *s*, the cam or eccentric portion of which terminates in a straight portion, *t*, so that when the lever shall be turned to bear down the cross-bar *p* to its lowest limit, this straight portion shall

come in line with, and bear for a considerable distance upon, the top of the bar, thus steadying against rising or falling at either end when the plane is moving across the machine in the act of cutting the tenons.

It will now be seen that when the spokes are inserted and clamped to place by the cross-bar *p* and its pads *x*, and the ends are secured by the slide-bar *m*, the cutters of the plane (shown in figure) will cut vertically and horizontally just so far as the vertically-adjusted position of the bed *c* will permit, and no farther, thus reducing all equally, it being understood that side ledges on the plane prevent the under surface of the plane reaching below a given point. The raising or lowering of the bed *c*, therefore, determines how much material shall be cut away to form the tenon, all being so cut precisely alike.

To vary or determine the shape of the tenon, as to making it straight or tapering, as the case may be, or to graduate the degree of such taper, it is only necessary to raise or lower the notched bar *i* by means of the thumb-screws *l l'*.

I claim—

1. In combination with the frame of the machine, the clamping cross-bar *p*, provided with the series of elastic pads, the central tightening-lever *s*, and the releasing-springs, substantially as and for the purpose set forth.

2. In combination with the frame, the vertically-adjustable notched bar *i*, extending across the frame, and operating to adjust all the spokes by one adjustment, as and for the purpose set forth.

3. In combination with the frame A, the vertically-adjustable notched bar *i*, extending across the frame, and operating to adjust all the spokes by one adjustment, and the laterally-adjustable notched slide-bar *m*, operating to tighten all the spokes by one adjustment.

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Witnesses:
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