

M. W. COLLINS.

Improvement in Machines for Mortising Blind-Stiles.

No. 130,194.

Patented Aug. 6, 1872.

Fig. 1.

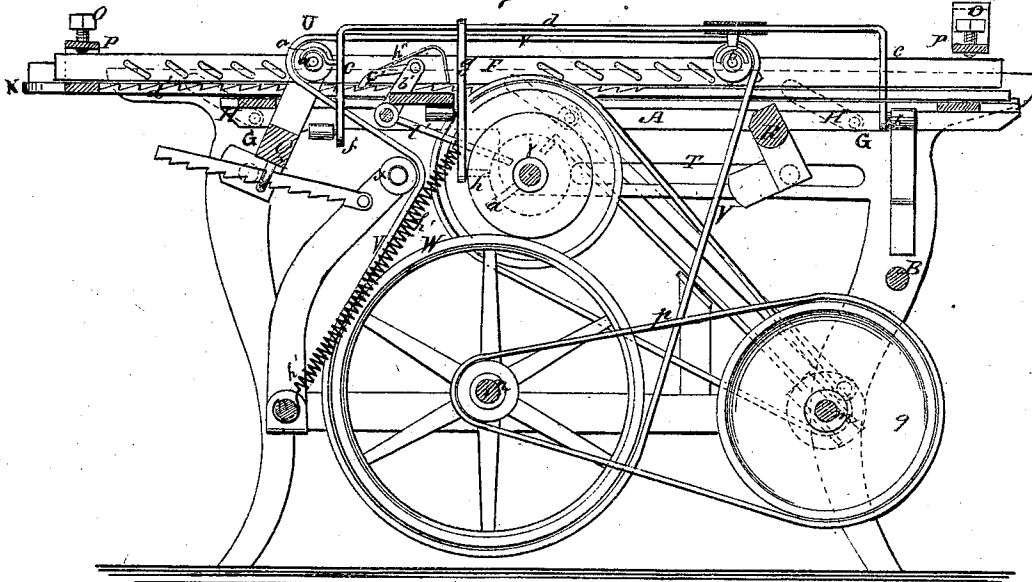


Fig. 2.

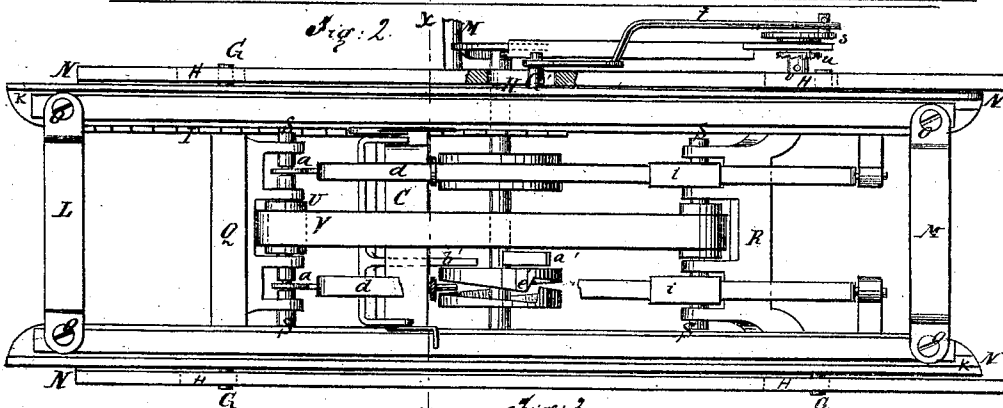
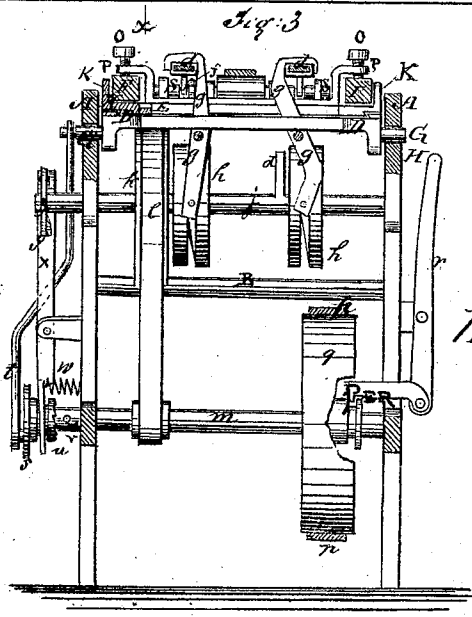


Fig. 3.



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UNITED STATES PATENT OFFICE.

MAHLON W. COLLINS, OF ENFIELD, NEW HAMPSHIRE.

IMPROVEMENT IN MACHINES FOR MORTISING BLIND-STILES.

Specification forming part of Letters Patent No. 130,194, dated August 6, 1872.

Specification describing a new and Improved Blind-Stile-Mortising Machine, invented by MAHLON W. COLLINS, of Enfield, in the county of Grafton and State of New Hampshire.

The invention consists in combining with a pair of stile-mortising tools a table and carriage, both movable longitudinally and independently, but the latter carrying the former in an obliquely forward and upward direction, as hereinafter fully described.

Figure 1 is a longitudinal sectional elevation of my improved machine. Fig. 2 is a plan view, and Fig. 3 is a transverse sectional elevation on the line *xx* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A represents the top side rails of the frame of the machine, which are connected together below the top by rods B, also by the cross-bar C, in such manner as to have an open free space between the upper ends, in which the table D, for holding and moving the carriage E and the stiles F on it, is arranged, said table being supported in this position by the trunnions G extending through the slots H in the said side pieces of the frame, slanting up and down, as shown in dotted lines in Fig. 1. The carriage, consisting of the two long parallel angle-bars K and the cross-bars L and M, is mounted on this table in under-cut ways N to slide forward and back, and has the work clamped on the top and in the angles of the said bars K by set-screws screwing through ears or projections P of the said cross-bars. The cross-bar M is bent upward considerably between the bars K to bridge over some parts of the machine, which will be presently described. Q and R represent the tool-supporting frames, and S represents the rotary tools or tool-stocks mounted in the upper parts thereof. The support Q is near one end of the frame and is permanently secured thereto, and the one R is nearer the middle of the frame and is bolted to the side bars in the long slots T, so as to be shifted forward and back, as may be required, for adjusting it to the middle of stiles of different lengths. Each of these tool-supports carries two tools, which have endwise motion for moving outward against the stiles to do the work, and then withdrawing again to allow the stiles to be moved along.

In this example the said tools are revolved

by one pulley, U, driven by a belt, V, from the large driving-wheel W, with which belt there is a tightener, X, having such a wide range of movement as to allow of the adjustment of the tool-support R as much as required and yet keep the belt tight.

In machines for practical operation I propose to have a separate driving-pulley for each tool, and two belts for driving them, which will work better than this arrangement, in which the tool-stocks have to move lengthwise in the pulleys.

The shifters *a b* for imparting the endwise movement to these tool-stocks are connected to the long horizontal bars *d*, supported on the vertical arms *e*, pivoted below the table at *f*, so as to swing properly for moving the said tool-stocks, and these bars are actuated by the levers *g* and cams *h*. The shifters *b* are connected to the said bars *d* by the sliding clips *i*, which allow them to be shifted when the tool-support R is. It is these bars *d* that the cross-bar M is elevated for, as previously described, to pass over them. These cams *h* are mounted on the shaft *j*, which is driven by wheel *k*, belt *l*, and shaft *m*, the latter being driven from the main shaft *n* by the belt *p* and wheel *q*. This wheel runs loose on shaft *m* or clutches with it, according to which way it is shifted by the shifting-lever *r*. The shaft *m* carries a disk, *s*, on the end projecting beyond the right-hand side of the machine, which disk has a crank-pin and connecting-rod, *t*, connecting it with the stud *G'* of the table, projecting through an inclined slot, similar to the one, H, for the trunnions G. Said disk has also a rose-clutch, *u*, for engaging with a pin, *v*, on the shaft, with which it is brought into connection by a spring, *w*, when not held out by the lever *x*, cam *y*, and disk *z*, the latter being on cam-shaft *j*. This cam-shaft *j* also carries a tappet, *a'*, which actuates the elbow-lever *b'*, carrying a pawl, *c'*, which engages with a toothed rack, *d'*, on one of the bars K of the carriage, to feed it forward at the proper time.

The stiles being clamped on bars K, as shown, and adjusted with the cutters for those on the support Q to begin with the mortise nearest the left-hand end, and for those on support R to begin with the mortise at the center, and the machine being set in motion, the slowly-moving shaft *m* and connecting-rod *t* will move

the table up and down the slots H, which are on the same angle the mortises are required to be; then the cams *h* move the cutters outward against the stiles while so moving, and thereby the mortises are cut; when completed the short parts *e'* of the cams come to the levers *g* and throw the tools back quickly; at the same time the cam *y* throws out the clutch *u*, which allows the table to rest; then the tappet *a'* comes against the elbow-lever *b'* and causes pawl *c'* to feed the carriage along on the table for the next mortises to be cut; then the rose-clutch *u* goes in again, setting the table in motion, and the cams *h* move the tools out, and the aforesaid operations are repeated. This table being stationary while the feeding takes place allows the pawl to work better than it otherwise would. The said pawl is thrown back by a spring, *h''*. The wheel *q* is only thrown out to stop the movements of the table and the cams which give the lengthwise movements to the tools, and actuate the feed when the stiles are finished and others are to be put in.

In practice I propose to move the adjustable tool-support R by a screw, by which it can be done more accurately and conveniently.

It will be seen that all the driving-wheels and belts likely to be injurious to the attendants are arranged inside of the frame, where they are guarded by it, so that there is but little or no danger of accident to the attendant.

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

1. The combination, in a blind-stile machine, of a table, D, movable in oblique slots H of the frame, and an independently movable carriage, E, with tool-holders Q R arranged to operate in connection therewith as and for the purpose described.

2. The combination, in a blind-stile machine with table having stud G', of the disk S on shaft *m*, having crank-pin, rod *t*, and clutch *u*, the lever *x*, cam *y*, spring *w*, the shaft having pin *v*, the lever *b'* having pawl *c'*, and the shaft *j* having cam *z*, and tappet *a'*, all arranged as and for the purpose described.

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