

(No Model.)

4 Sheets—Sheet 1.

P. H. LARCHER.
BLIND STILE MORTISING MACHINE.

No. 482,849.

Patented Sept. 20, 1892.

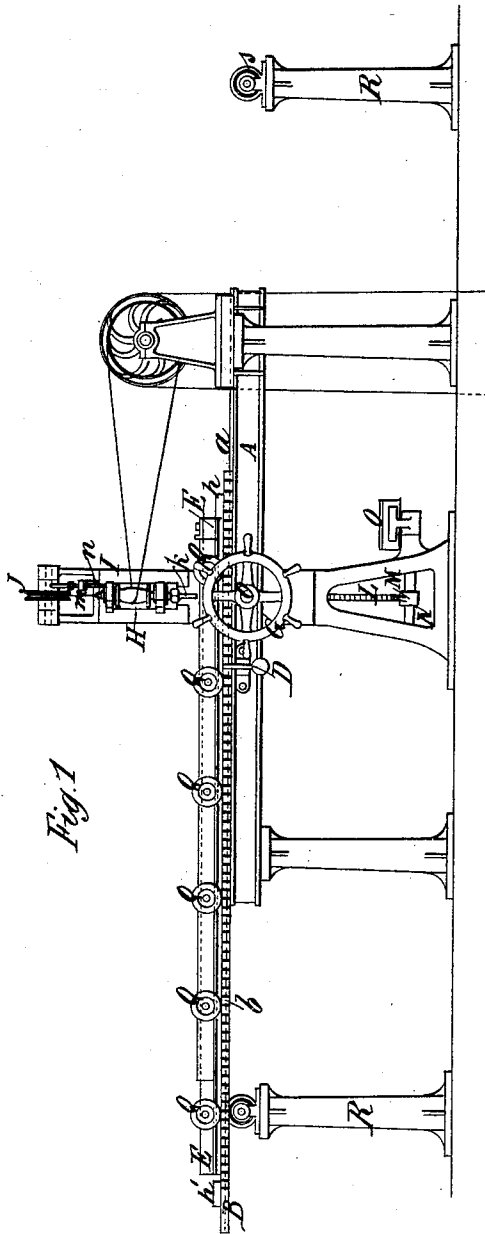


Fig. 1

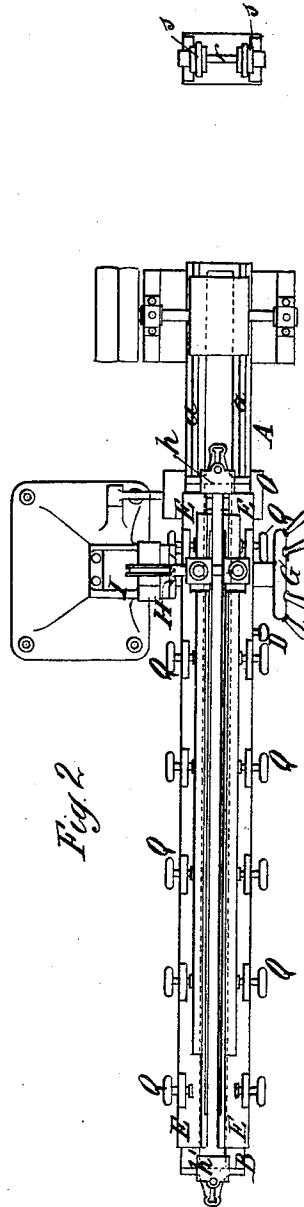


Fig. 2

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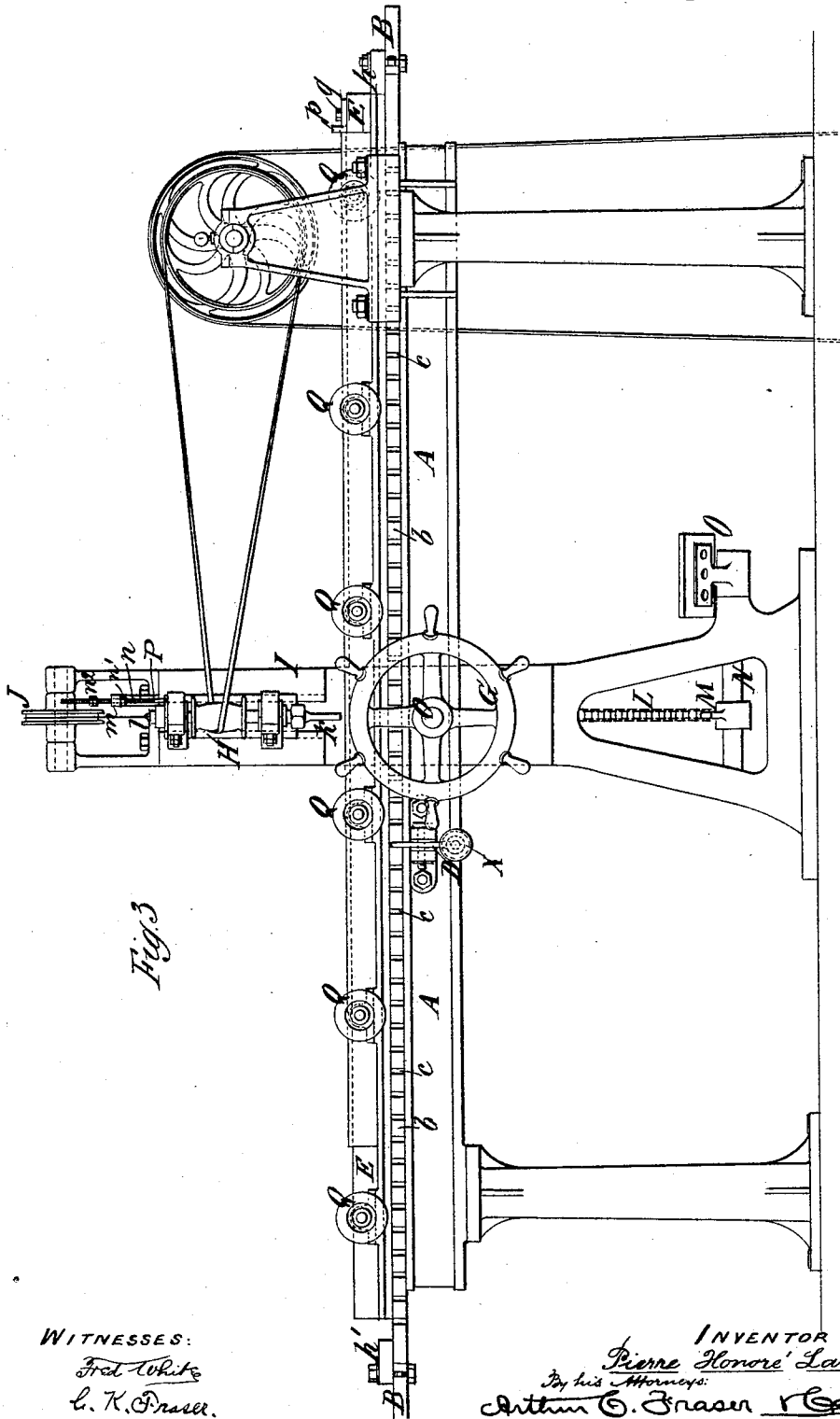
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No. 482,849.

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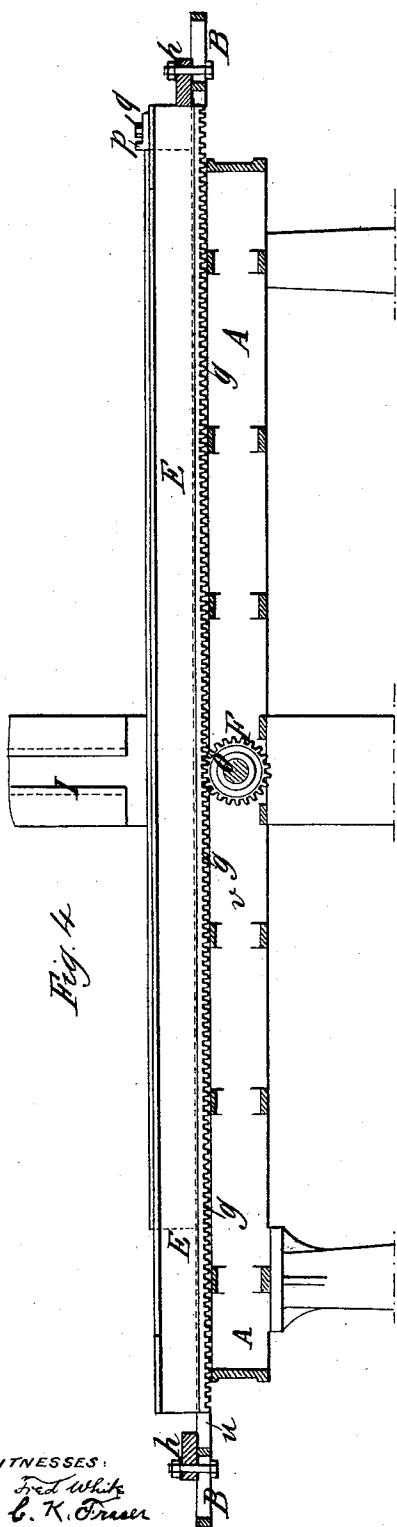
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4 Sheets—Sheet 3.

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BLIND STILE MORTISING MACHINE.

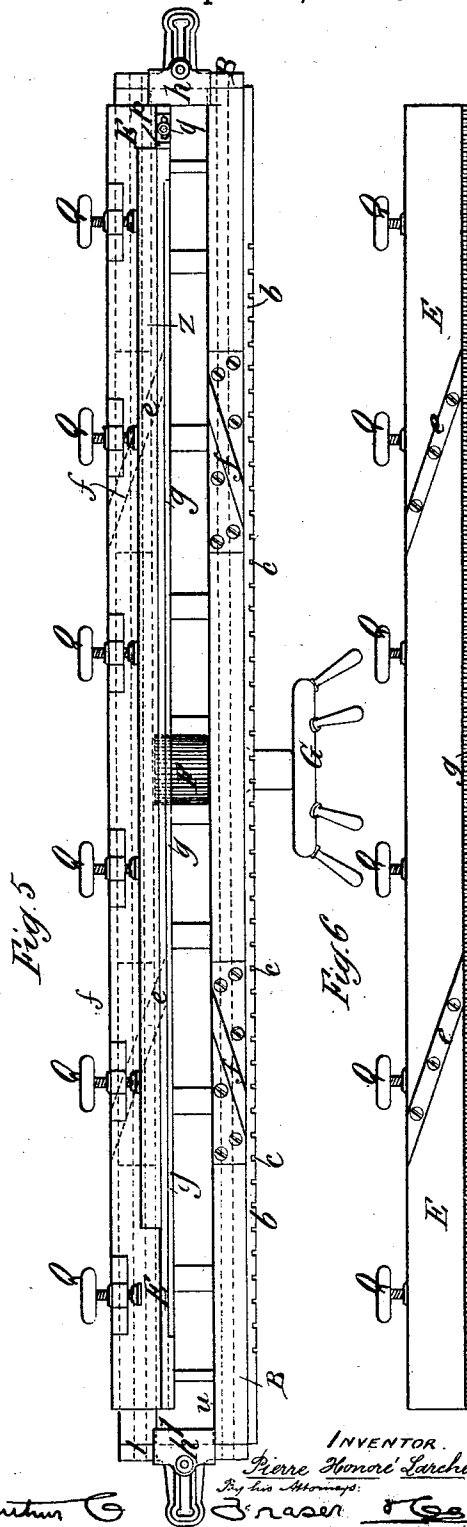
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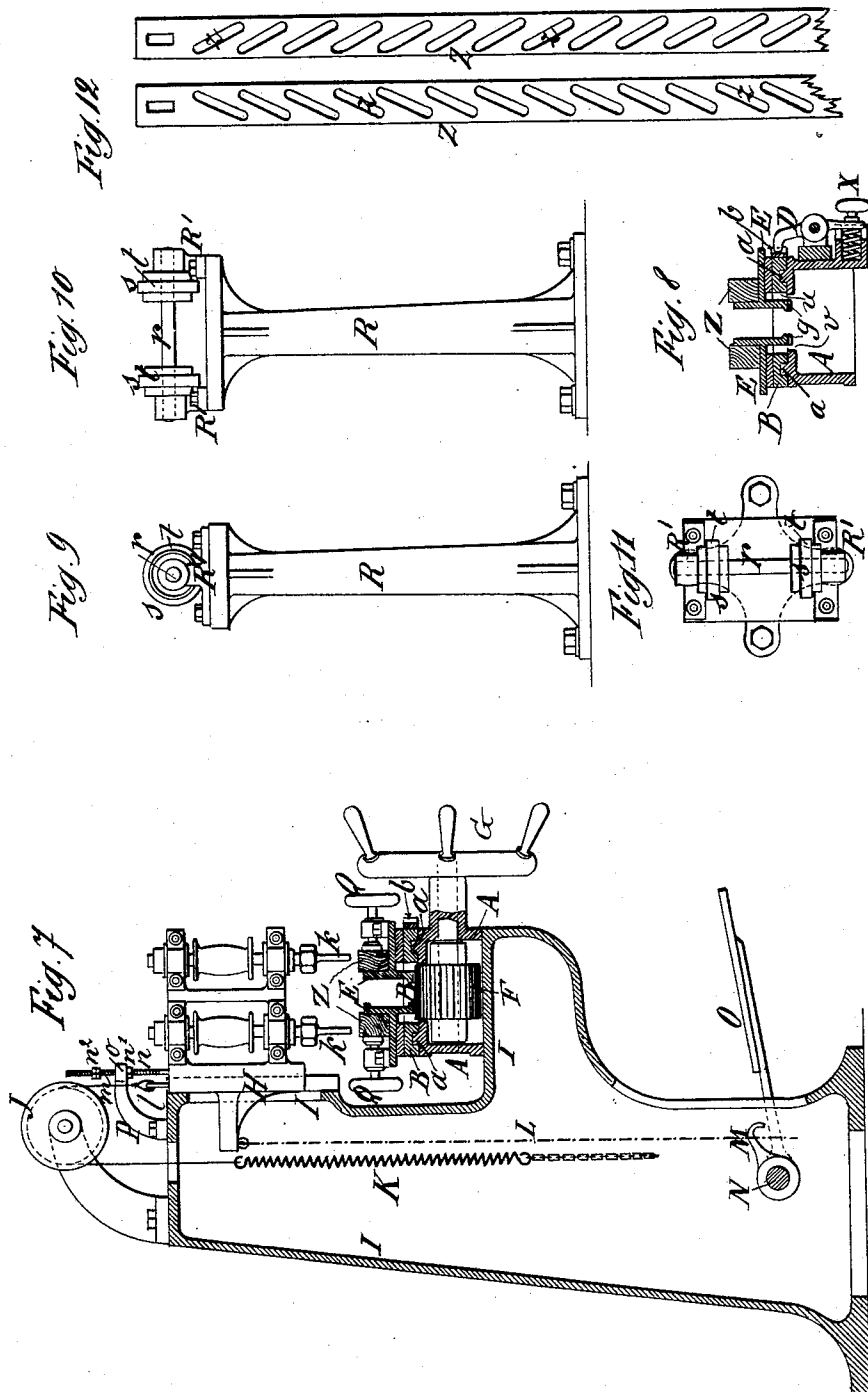
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4 Sheets—Sheet 4.

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No. 482,849.

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UNITED STATES PATENT OFFICE.

PIERRE HONORÉ LARCHER, OF PARIS, FRANCE.

BLIND-STILE-MORTISING MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,849, dated September 20, 1892.

Application filed June 28, 1892. Serial No. 438,327. (No model.) Patented in France February 2, 1891, No. 211,112; in Belgium June 12, 1891, No. 95,243; in England June 12, 1891, No. 10,003; in Germany June 15, 1891, No. 61,351; in Sweden June 17, 1891, No. 3,521; in Switzerland June 22, 1891, No. 3,631; in Italy June 25, 1891, No. 29,942; in Norway June 29, 1891, No. 2,326; in Turkey July 2, 1891, No. 233; in Tunis July 18, 1891, No. 38; in Spain July 20, 1891, No. 12,226, and in Austria-Hungary October 10, 1891, No. 28,896 and No. 50,918.

To all whom it may concern:

Be it known that I, PIERRE HONORÉ LARCHER, a citizen of the French Republic, residing in Paris, France, have invented certain new and useful Improvements in Blind-Stile-Mortising Machines, of which the following is a specification.

This invention has been patented in France, No. 211,112, dated February 2, 1891; in Belgium, No. 95,243, dated June 12, 1891; in Germany, No. 61,351, dated June 15, 1891; in Sweden, No. 3,521, dated June 17, 1891; in Switzerland, No. 3,631, dated June 22, 1891; in Italy, No. 29,942, dated June 25, 1891; in Norway, No. 2,326, dated June 29, 1891; in Turkey, No. 233, dated July 2, 1891; in Tunis, No. 38, dated July 18, 1891; in Spain, No. 12,226, dated July 20, 1891; in Austria-Hungary, No. 28,896 and No. 50,918, dated October 10, 1891, and in England, No. 10,003, dated June 12, 1891.

This invention relates to machines for mortising the stiles of blinds and for similar purposes.

The invention aims to provide an improved machine which will permit the simultaneous mortising of the two opposite uprights or stiles of a blind, thereby insuring that the oblique grooves or mortises necessary for receiving the slats or blades of the blind shall be uniform and correspond in proportions and inclination.

In its preferred form my improved machine comprises a stationary framework on which is mounted a spacing-carriage, which serves to determine by its longitudinal movement the space between the respective mortises in the stiles. This carriage is preferably provided with a graduated rack engaged by a catch, whereby it may be locked in its respective positions.

On the spacing-carriage are respectively mounted two working-carriages adapted to hold the stiles or other work to be operated upon before the cutting-tools. These working-carriages are movable obliquely relatively to the spacing-carriage, this being preferably provided for by constructing interengaging guideways on the latter, which guideways are

oppositely inclined to cause the working-carriages to move obliquely relatively to the spacing-carriage, the one at one inclination and the other simultaneously at a corresponding reversed inclination.

Suitable means are provided for moving the carriages. Preferably a rack is provided on each working-carriage, and a long pinion operated by a hand-wheel engages each of these racks, whereby upon rotating the hand-wheel in one direction or the other the working-carriages may be moved on their guideways in directions oblique to the spacing-carriage, during which movement the usual cutting-bits may act on the stiles carried by the respective carriages to produce the mortises. The pinion is long enough to permit the lateral movement of the racks of the working-carriages during their oblique motions.

Adjustable stops are applied for limiting the movements of the working-carriages relatively to the spacing-carriage, and these stops preferably serve to permit the driving of the spacing-carriage from one position to the next through the driving mechanism of the working-carriages after the latter have moved to contact with one of the stops and the catch for locking the spacing-carriage in position has been freed.

The cutting-tools or mortising-bits are mounted in a vertically-moving support controlled by a treadle within reach of the operator, this support being moved upward for disengaging the bits from the work by the action of a spring or counter-weight, and moved against the work through the medium of the treadle. Adjustable stops determine the limit of movement of the tools. Preferably a pair of tools are employed, one for each stile.

In mortising stiles which are clamped on the work-carriages the hand-wheel is turned until the work-carriages contact with a stop on the spacing-carriage, whereupon the catch holding the latter is freed and the three carriages and work are moved by a further turning of the hand-wheel to the position at which the first mortises are to be started. The catch locks the spacing-carriage in this

position by entering a notch in its graduated scale. The bits are then moved against the stiles, and while acting thereon the work-carriages are moved obliquely by turning the hand-wheel. They may be reciprocated back and forth until the corresponding mortises are completely cut in the two stiles, whereupon the bits will be moved away from the stiles, the work-carriages will be moved to again abut against the stop, and then upon releasing the catch the spacing-carriage can be advanced to the position for the adjacent mortises, whereupon the catch can be again applied and the operation repeated until these are cut.

In the accompanying drawings, which illustrate the preferred form of my invention, Figure 1 is a front elevation of my improved machine as a whole. Fig. 2 is a plan thereof. Fig. 3 is a front elevation, on a larger scale, of the machine proper. Fig. 4 is a fragmentary longitudinal mid-section thereof. Fig. 5 is a fragmentary plan of the carriages, one of the work-carriages being removed. Fig. 6 is a detached under side plan of one of the work-carriages. Fig. 7 is a vertical cross-section of the machine. Fig. 8 is a fragmentary cross-section of the carriages and framework, showing the catch. Fig. 9 is a side elevation of one of the supporting-pillars; Fig. 10, an end view thereof; and Fig. 11 a plan thereof. Fig. 12 is a fragmentary face view of the opposite stiles of a blind, showing their opposite mortises.

Referring to the drawings, let A represent the framework; B, the spacing-carriage; E E, the work-carriages; F, the driving-pinion therefor; H, the tool-carriage; *k k*, the bits, and O the treadle for controlling the latter.

The framework comprises a table A, on which the spacing-carriage B may slide longitudinally. Preferably guide-ribs *a* on the framework engage the carriage B, and a central recess is provided in the table A. The spacing-carriage B carries, preferably, on its front face a graduated rack *b*, fixed thereto in any suitable manner and provided with notches *c*, arranged at regular intervals suitable to accord to the spacing of the mortises in the blind-stile. A catch, consisting, preferably, of a spring-pawl D, engages the notches *c* of the spacing-carriage B, and thereby locks the latter against longitudinal movement. Preferably the carriage has a central recess *u*.

The work-carriages E are preferably mounted symmetrically one on each side of the longitudinal axis of the spacing-carriage and preferably have their under faces provided with sliding blocks *e*, fixed to the work-carriages in any suitable manner and constructed as projecting ribs inclined and adapted to penetrate into corresponding inclined grooves *f*, provided in the upper surface of the spacing-carriage B. These ribs and grooves constitute interengaging guideways adapted to permit the oblique movement of the work-carriages relatively to the spacing-carriage, those

of the one carriage constructed to cause such movement corresponding to but the reverse of that followed by the other work-carriage. Preferably the carriages E E have on their inner lower edges cog-racks *g*, which enter the recesses *u* and *v* and engage with a broad pinion F therein, fixed on the shaft O of the hand-wheel G. The work-carriages E may thereby receive a reciprocating motion in horizontal direction by the rotation of the pinion F, but the blocks *e* sliding in the grooves *f* will at the same time cause the carriages to approach and recede from each other, thereby giving the said carriages an oblique motion. To limit the extent of this oblique motion, adjustable stops *h h'* are provided, preferably, at the extremities of their movements, and when thus in contact the movement of the spacing-carriage B can be effected after removing its catch D by further operating the work-carriages E through the medium of the hand-wheel G, whereupon the spacing-carriage B can be locked in the next position by again applying its catch D.

The cutting tools or bits *k* turn on vertical axes, being mounted in a support H, which slides vertically on a framework I. Said support H is provided with an eye *l*, to which is fixed a cord or strap *m*, passing over the pulley J and attached to a spring K, the other end of which is fixed within the framework I. This means is preferably adopted for moving the carriage H away from the work. For the opposite movement I prefer to provide a chain L, connected to the carriage H at one end and to a hook M, fixed on the axis N of the treadle O at its other end, whereby the motion of the treadle is communicated to the carriage H to depress it. Preferably a vertical screw-thread rod *n* is fixed on the carriage H to limit the movement of the latter. It passes through an eye *o* on an arm P, fixed on the support I and carries two nuts or contacts *n' n''* on opposite sides of the eye *o*, which are adjusted, the one to limit the extent of the downward movement of the carriage, and the other its opposite movement by respectively abutting against the sides of the eye *o*.

The pieces of wood Z to be mortised are fixed, respectively, on the work-carriages E, preferably by screw-clamps Q Q. Preferably to insure accuracy in thus mounting the work a small square *p* is fixed at one of the ends of each of the carriages E on their upper faces, against which squares the ends of the stiles may be placed. These are preferably adjustable by means of nuts *q*.

Preferably the pillars R constitute prolongations of the machine for supporting the carriages after they leave the framework A. On the upper parts of these pillars are fixed two bearings R' supporting a shaft *r*, on which are fastened two rollers *s*, provided with peripheral ribs *t*, extending in the plane of the ribs *a* on the framework A, the object being that as the spacing-carriage B passes the extremity of the framework A its grooves will

pass over the ribs *t* and the rollers *s*, and it will be thereby supported without sagging or other distortion.

Preferably the work is executed in the following manner: The pawl or catch *D* is disengaged by pressing on the button *X*, the hand-wheel *G* is turned to the right, thus displacing the work-carriages *E* until they abut against the stop *h* at the right-hand end of the carriage *B*. The farther turning of the hand-wheel will now cause the carriage *B* to move to the right with the work-carriages *E* until it is stopped by the catch *D* entering the adjoining notch *c* of the graduated rack *b*. The catch will snap into the adjoining notch by reason of the spring acting against its end. The carriage *B* is thus stopped, and the work carried by the carriages *E* occupies a position removed from that previously occupied a distance equal to the space desired between the neighboring mortises. The operator presses on the treadle *O*, thereby through the hook *M* and chain *l* lowering the tool-carriage *H*, which causes the bits *k* to come against the work, whereupon the one will make a hole in the one stile *Z* and the other simultaneously cut the corresponding mortise *z* in the other stile. The tools will then be raised and the hand-wheel *G* turned in opposite direction until the work-carriages *E* are shifted to the other extremity of their oblique movements, when they will abut against the stop *h'* and be again stopped. During this motion the blocks *e* on the work-carriages *E*, penetrating into the grooves *f*, will oblige the work-carriages to separate uniformly as they are moved to the reverse position, thereby causing them to execute oblique motions, the extent of which is equal to that of the mortises to be made. The tools are again lowered, and each cuts a hole at the other extremity of the mortise. To cut out the intervening portion of the mortise, the tools may be kept in action during the oblique motion of the carriages or may be intermittently applied to the work during the various intermediate positions of the work-carriages, as desired. The depth of the mortises will be determined by the tappet-nut *n*² coming in contact with the arm *P*, while the other tappet-nut *n'* will limit the outward movement of the tools. When the corresponding mortises have been cut by the foregoing operation, the work-carriages *E* will be shifted to contact with the stop *h*, the catch *D* again freed, and the three carriages shifted to the next position of the spacing-carriage *B*, whereupon the operation will be repeated for the next mortise.

Fig. 12 shows fragmentary face views of a pair of stiles *Z* and their corresponding mortises *z*.

It will be seen that my invention provides a mortising-machine which can be operated with facility, which will be effective and correct in its work, and by which the corresponding mortises in the stiles of blinds can be si-

multaneously cut of uniform inclination, depth, and location.

It will be understood that my invention is not limited to the specific details of construction and arrangement hereinbefore set forth as constituting the preferred form of my invention, as these may be varied in some respects without departing from its essential features.

What I claim is, in machines for mortising blind-stiles and for other analogous uses, the following-defined novel features and combinations, substantially as hereinbefore set forth:

1. In a machine for mortising blind-stiles, the framework and the cutting-tool, in combination with a spacing-carriage movable longitudinally intermittently to space the mortises, and a work-carriage for carrying the stile before the tool movably carried by said spacing-carriage, said carriages constructed with interengaging guideways adapted to permit the oblique movement of the work-carriage relatively to the other, stops for limiting such movement, a catch for locking the spacing-carriage in its respective positions, and means for moving said work-carriage whereby the latter can move obliquely before the tool to cut one mortise, and then the spacing-carriage can be shifted to adjust the work-carriage for the adjacent mortise.

2. In a machine for mortising blind-stiles and other similar uses, the framework and the cutting-tool, in combination with a spacing-carriage, as *B*, movable longitudinally intermittently to space the mortises, a work-carriage, as *E*, for carrying the stile before the tool carried movably by said spacing-carriage, interengaging guideways, as *e f*, on said carriages adapted to permit the oblique movement of the work-carriage relatively to the other stops, as *h h'*, for limiting such movement, said work-carriage constructed with a cog-rack, as *g*, pinion *F*, meshing with the latter for driving said work-carriage, and a catch between said spacing-carriage and said framework for locking the former in its respective positions, and consisting of a pawl on the one part and a graduated rack on the other part, whereby while said spacing-carriage is locked by said catch said work-carriage may be moved obliquely by said pinion to cut the mortise, and by adjusting said spacing-carriage the several mortises to be cut can be spaced, substantially as and for the purpose set forth.

3. In a machine for mortising blind-stiles and other similar uses, the framework and a pair of cutting-tools, in combination with a spacing-carriage movable longitudinally intermittently to space the mortises, and a pair of work-carriages for carrying the stiles before the tools movably carried by said spacing-carriage, the latter constructed with oppositely-inclined guideways, corresponding guideways provided on said work-carriages and adapted those of the one to engage one set of guideways on said spacing-carriage and

those of the other the oppositely-inclined set thereon, whereby said work-carriages when moved relatively to said spacing-carriage travel obliquely relatively thereto, the one at one inclination and the other at a reverse inclination, stops for limiting said movements of said work-carriages relatively to said spacing-carriage, a catch for locking the latter in its respective positions, and means for simultaneously moving said work-carriages, whereby the opposing stiles of a blind can be carried, the one by each work-carriage, and be thus simultaneously mortised to produce the opposite mortises for the one slat of a blind, substantially as set forth.

4. In a machine for mortising blind-stiles and for similar uses, the framework and the mortising-tool, in combination with a spacing-carriage, as B, having a graduated rack, as *b*, of two work-carriages, as E E, for carrying the stiles before the mortising-tools, said spacing-carriage constructed with oblique guideways *ff*, the one for one work-carriage and the other for the other, and the one extending obliquely at one inclination and the other at a reverse inclination, and said work-carriages constructed with guideways, as *e e*, adapted to engage said guideways on said spacing-carriage, whereby said work-carriages can move obliquely relatively to said spacing-carriage and when so moved will alternately approach and recede from each other, said work-carriages having cog-racks, as *g g*, a pinion F, engaging the latter for driving said work-carriages simultaneously, means for locking said spacing-carriage in its respective positions, whereby when so locked the work-carriages can be moved to cut the mortises, and means for locking the work-carriages to the spacing-carriage, whereby the latter can be moved through the work-carriages to adjust its position, substantially as and for the purpose set forth.

5. In a machine for mortising blind-stiles and for similar uses, the framework, and the mortising-tools, in combination with a spacing-carriage B, having a central recess *u* and reverse inclined guideways, as *ff*, two work-carriages E E for carrying the stiles to be mortised having guideways, as *e e*, engaging those of said spacing-carriage constructed with cog-racks *g g* on their inner sides depending from said recess in the spacing-carriage, said guideways constructed to permit

oblique movement of said work-carriages relatively to said spacing-carriage, the one at one inclination and the other at a reversed inclination, whereby when reciprocated said work-carriages approach and recede from each other, and a long pinion F beneath said spacing-carriage and meshing with said cog-racks for simultaneously driving said work-carriages, substantially as and for the purpose set forth, whereby as said work-carriages approach and recede from each other in operation their cog-racks traverse said pinion and said recess *u*.

6. A machine for mortising blind stiles and for similar uses, the framework and the mortising-tools, in combination with a spacing-carriage B, two work-carriages E E, movable obliquely thereon, means for driving said work-carriages, and adjustable stops, as *h h'*, for limiting the movement of said work-carriages relatively to said spacing-carriage, said stops constructed when said work-carriages contact with either of them to lock said work-carriages to said spacing-carriage and thereby permit the movement of the latter by the continued action of the driving means for said work-carriages, substantially as and for the purpose set forth.

7. In a machine for mortising blind-stiles, the frame A and a pair of cutting-tools *k k*, adjustably mounted to be movable toward the work for cutting the mortises, in combination with the spacing-carriage B, carried on said frame, movable intermittently, constructed with opposed oblique guideways and having a graduated rack, as *b*, a pair of work-carriages E E, adapted to carry the two stiles of a blind having guideways engaging, respectively, those of said spacing-carriage and adapted to cause the work-carriages to simultaneously move in reversed angles, means for simultaneously moving said work-carriages, means for manipulating said tools, and the catch D on said frame and engaging said graduated rack for locking said spacing-carriage in its respective positions, substantially as and for the purposes set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PIERRE HONORÉ LARCHER.

Witnesses:

ROBT. M. HOOPER,
AUGUSTE MATHIER.