

(No Model.)

3 Sheets—Sheet 1.

T. H. LEWIS.

MACHINE FOR CUTTING MORTISES FOR HINGES IN DOORS AND DOOR JAMBS.

No. 577,868.

Patented Mar. 2, 1897.

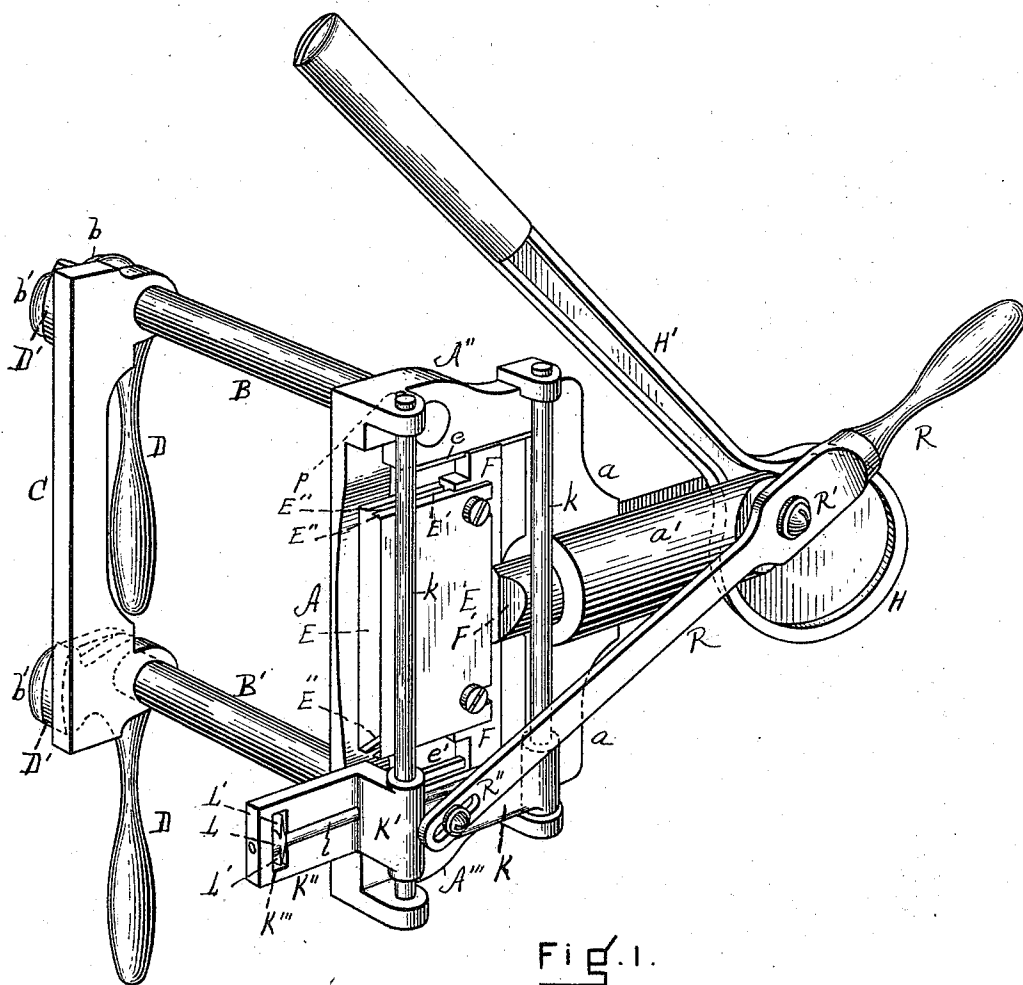


Fig. 1.

WITNESSES

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C. G. Graydon.

INVENTOR

Theodore H. Lewis

By his Atty.

Henry Williams

(No Model.)

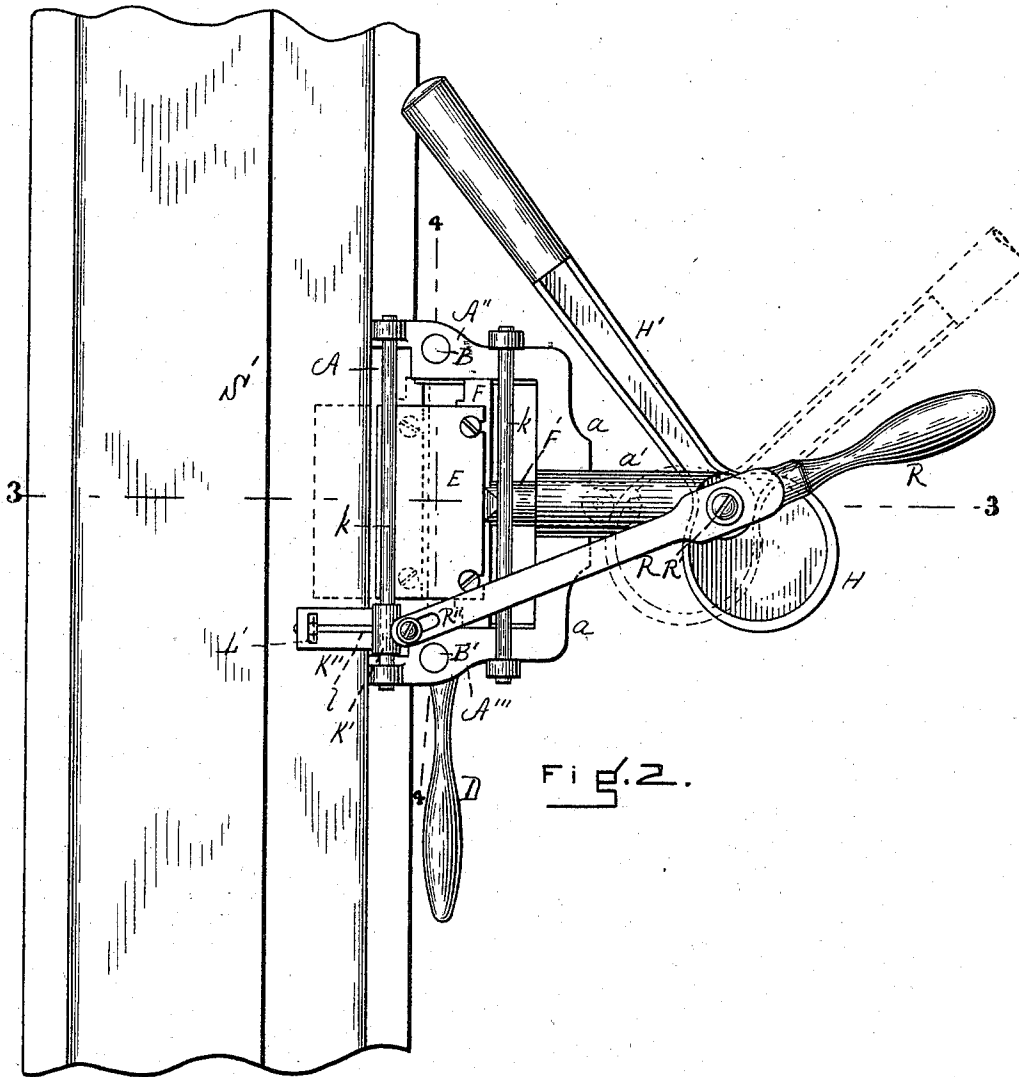
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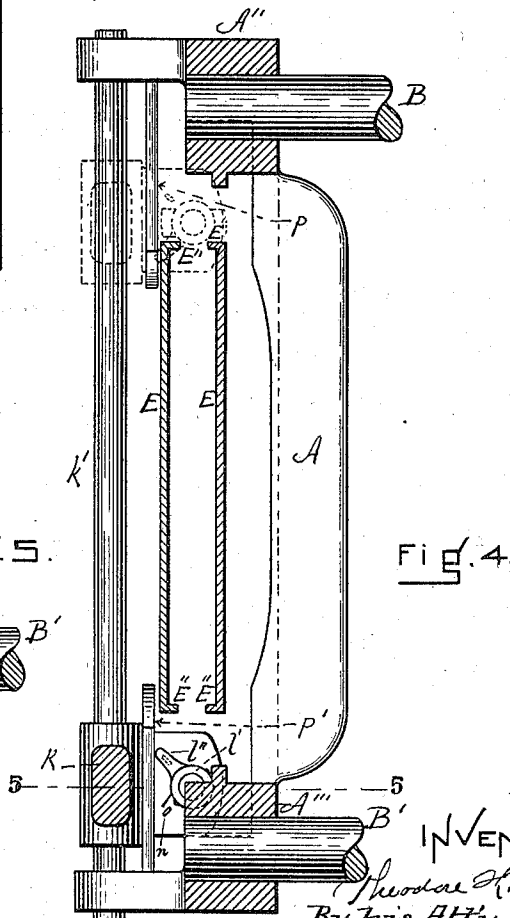
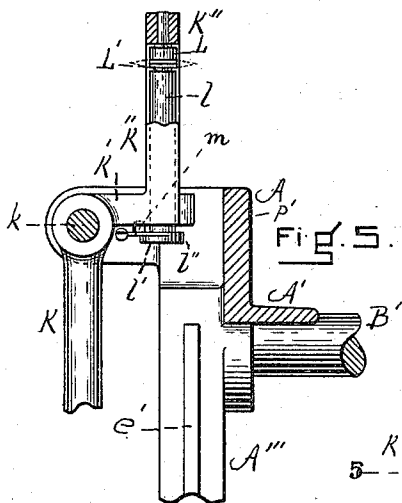
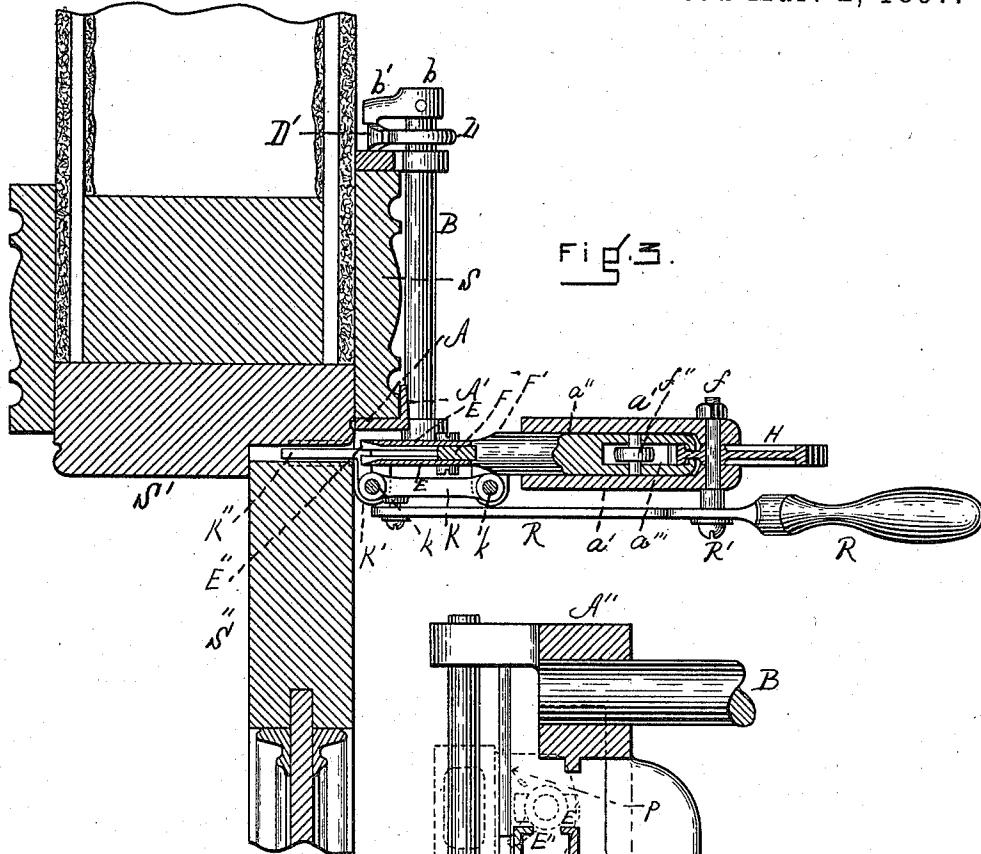
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MACHINE FOR CUTTING MORTISES FOR HINGES IN DOORS AND DOOR JAMBS.

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WITNESSES

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UNITED STATES PATENT OFFICE.

THEODORE H. LEWIS, OF CANTON, MASSACHUSETTS.

MACHINE FOR CUTTING MORTISES FOR HINGES IN DOORS AND DOOR-JAMBS.

SPECIFICATION forming part of Letters Patent No. 577,868, dated March 2, 1897.

Application filed December 3, 1896. Serial No. 614,290. (No model.)

To all whom it may concern:

Be it known that I, THEODORE H. LEWIS, a subject of the Queen of Great Britain, residing in Canton, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Machines for Cutting Mortises for Hinges in Doors and Door-Jambs, of which the following is a specification.

This is a machine which is adapted to be clamped upon a door-casing and then by a hand operation thereof to cut and complete the mortises in the adjacent edges or sides of the door and jamb simultaneously, so that said mortises are in condition to receive the leaves of the hinge.

My invention consists of the novel construction and combinations of parts whereby this result is accomplished, as fully described below, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my machine. Fig. 2 is a side elevation of the same applied to the casing of a door. Fig. 3 is a horizontal section taken on line 3, Fig. 2. Fig. 4 is a vertical section taken on line 4, Fig. 2. Fig. 5 is a horizontal section taken on line 5, Fig. 4.

Similar letters of reference indicate corresponding parts.

The metallic frame of this machine comprises the vertical portion A, having a smooth inner face and formed with the guard or flange A', Figs. 3 and 5, the rearwardly-extending horizontal portions A'' A''', the rear vertical portion a, connecting said portions A'' A''' and extending rearward into the bifurcated arm a', said portions all being made preferably integral, and the horizontal rods B B', extending from the face of the portion A and provided on their outer ends with stops b.

C is a sliding jaw perforated to receive the rods B B' and adapted to move thereon toward and from the portion A, which is in effect a stationary jaw.

D D are handles swinging on the rods B B' between the sliding jaw and the ends b. These handles are provided on their inner ends with the wedge-shaped portions D', set at right angles to the main portion of the handles, as shown in Figs. 1 and 3, so that

the lower ends of said portions are broader than the upper ends. These wedge-shaped portions D' lie between the sliding jaw and the beveled projections b', extending from the ends or stops b. When the machine is to be used, it is applied to the casing (indicated by the letter S in Fig. 3) in the manner shown in said figure, that is, with the stationary jaw A against the inner edge of the casing next to or making a part of the jamb S', the movable jaw C against the outer edge of the casing, and the flange A' against the face thereof. By swinging down the arms D the wedge-shaped portions D' thereof are swung up and crowded between the portions b' and the movable jaw C, forcing the latter tightly against the outer edge of the casing, and thus securely clamping the machine thereto.

A frame K is adapted to slide vertically on the rods k, secured to the frame, and said frame is bent inward at K' and extends forward into the portion K'', which is provided with the slot K''', within which is pivotally secured a cutter-head L, having a winged cutter L', Figs. 1 and 5, said cutter-head being rotated by a shaft l. This shaft extends horizontally through the portion K'', and from its head l'; Fig. 5, extends a projection or spring-finger l''. The wedge-shaped projections P P' extend from the frame into the path of the finger l'' near the upper and lower portions of the machine, Figs. 1, 4, and 5. A teat m on the finger l'' springs into one of two corresponding depressions, (broken lines n, Fig. 4.)

The frame having been clamped in the position described on the casing S and the door S' having been placed in position in the casing, the rear end of the lever R, which is pivoted at R' to the frame and whose front end engages by means of the slot R'' the cutter-frame K, is depressed, and said cutter-frame is thereby lifted to the top of the machine, sliding on the rods k. The cutter L, which, while the cutter-frame is down, lies within and parallel with the slot K''', strikes, as it reaches the upper end of its stroke, the wedge-shaped projection P at the upper end of the frame and the cutter is turned substantially at right angles with the slot, as shown in broken lines in Fig. 5, the finger l'' moving

and turning the shaft *l*, to which said cutter is secured. Raising the rear end of the lever *R* lowers the cutter-frame and the two cutters cut simultaneously the rear ends of the mortises in the casing *S* and the door *S'*, said cutters extending horizontally during the downward movement and being prevented from turning by the teat *m*, which projects into one of the depressions *n*. As the cutter reaches the bottom of its stroke the wedge-shaped projection *P'* engages the finger *l''* and turns the cutter back into the slot, as shown in Fig. 1. Thus the cutter is kept out of action when the cutter-frame is raised and cuts the rear edges of the mortises on both sides when the cutter-frame is lowered.

E E represent a pair of knives or cutters bolted to a vertical plate or head *F*, whose upper and lower ends are grooved, as shown at *E'*, Fig. 1, so as to slide on suitable tongues *e e'* on the under side of the portion *A''* of the frame and the upper side of the portion *A'''* of the frame, respectively. The cutters are turned inward toward each other at their upper and lower ends at *E''*, so that when pressed into the jamb and door they will cut the upper and lower ends and sides of the mortises, thus completing the mortises and allowing the stock to drop out. The sliding head *F* extends from the reciprocating rod or plunger *F'*, moving horizontally in the extension *a'* of the frame, within whose bifurcation *a''* is pivotally secured at *f* a cam *H*, actuated by the handle *H'*. After the rear edges of the mortises have been cut by the cutter *L*, as above described, depressing the handle *H'* causes the cam to move the cutters *E* horizontally forward and press them into the jamb and adjacent edge of the door, thus completing the mortises. A roller *f''* is preferably hung in a bifurcation *a'''* in the rear portion of the rod or plunger *F'* in order, by receiving the edge of the cam, to prevent undue friction.

Thus it will be seen that in order to cut the mortises in the door and casing for the application of the hinges thereto I first place the door in position in the casing. The door is usually from one-quarter of an inch (in a whitewood door) to three-sixteenths of an inch (in a pine door) narrower than the opening in the casing. This is in order to allow for the expansion which invariably occurs in kiln-dried stock after oiling, such oiling being invariably done after the door has been hung. This space between the edge of the door and the casing applies to doors from one and one-quarter to two and one-quarter inches in thickness, from two feet four inches to two feet ten inches in width, and from six feet four inches to six feet ten inches in height. The door is placed in position before the threshold has been laid and is held therein by blocks or wedges which are driven in beneath it and between its edges and the jamb; second, I clamp my machine upon the casing with the portion *K''* (which is usually from one-eighth

of an inch to three-sixteenths of an inch thick) of the cutter-frame *K*, extending between the edge of the door and the jamb; third, move up the cutter-frame *K'''* as far as it will go; fourth, move the cutter-frame down, with the effect that the winged cutter *L L'* cuts the rear vertical edges of the mortises in both door and jamb; fifth, force in the main cutters *E* by means of the handle and cam *H' H*, thus completing the mortises, and, sixth, withdraw said cutters and allow the stock to drop out. The mortises are then ready to receive the hinges, the cutters *E E L'* being made of suitable length and shape to cut to the required depth.

In the drawings the space between the edge of the door and the jamb, together with the thickness of the portion *K''*, is somewhat exaggerated for the purposes of clearness.

The means above described of preventing the winged cutter *L'* from rotating in the vertical slot *K'''* consists of forming a teat *m* on the spring-finger *l''* and cutting a pair of depressions *n* in the rearward-facing portion of the part *K'*. The wedge-shaped projections *P P'* force the spring-finger from one to the other of the depressions just before the commencement of the rising and falling strokes of the cutter-head. The object is of course to hold the cutter within the slot while it is rising and to hold its ends projecting from the slots on both sides when it is falling. I do not confine myself, however, to the teat and depressions as a means for holding the cutter in position, as any other suitable method may be employed.

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

1. In a machine of the character described, a frame adapted to be clamped in a horizontal plane upon the casing of a door next the jamb to which the hinges are to be applied; the pair of vertical parallel cutters *E* provided with the inwardly-projecting horizontal cutting edges *E''* at the upper and lower ends thereof, said cutters being adapted to work on a horizontal plane between the jamb and the edge of the door; a clamp for securing the frame in position, said clamp being horizontally secured to such frame on a plane at right angles with the plane of the cutters and the plane in which they work; and mechanism supported by the frame and adapted to force said cutters horizontally and simultaneously into the jamb of the casing and the adjacent edge of the door for the purpose of cutting a mortise for both leaves of the hinge, substantially as described.

2. In a machine of the character described, the frame *A*, *A''*, *A'''*, *a*; a clamp adapted to be secured horizontally to the casing of the door and supporting the frame; the bifurcated horizontal rearward extension *a'*; the cam pivotally secured to said extension within the bifurcation; the horizontal rod or plunger *F'* within said extension, adapted to be engaged

by the cam and provided with the plate F adapted to slide horizontally within the frame; and the cutters E provided with the inwardly-turned upper and lower edges E'', substantially as set forth.

3. In a machine of the character described, a frame adapted to be clamped upon the casing of a door next the jamb to which the hinges are to be applied; a cutter-frame adapted to reciprocate vertically in said frame and provided with the forward extension K'' vertically slotted at K'''; the winged cutter L, L' within said slot and actuated by a shaft l'; and means for reciprocating said cutter-frame vertically within the frame and swinging the wings of the cutter out at substantially right angles to the slot, said portion K'' being adapted, when the machine is clamped in position upon the casing, to extend between the jamb and the edge of the door, whereby the rear edges of the mortises for the two leaves of the hinge may be simultaneously cut, substantially as described.

4. In a machine of the character described, a frame adapted to be clamped upon the casing of a door next the jamb to which the hinges are to be applied; vertical rods k supported by the frame; the cutter-frame K, K' sliding on said rods and provided with the horizontal forward extension K'' adapted to enter the space between the jamb and the door, said extension being formed with the

vertical slot K'''; the winged cutter L, L' within the slot, and shaft l to which the cutter is secured supported by the cutter-frame; the finger l'' extending from said shaft; the projections P, P' located at the upper and lower portions of the machine and extending into the path of the finger for turning the winged cutter out before its downward stroke and into the slot before its upward stroke; and means for vertically reciprocating said cutter-frame, substantially as set forth.

5. A machine of the character described, comprising a frame adapted to be clamped upon a casing of a door next the jamb to which the hinges are to be applied; a pair of horizontally-moving cutters of shape to cut the size and upper and lower ends of the mortises in the jamb and door for the two leaves of a hinge; means for forcing said cutters simultaneously into the jamb and door; a horizontally-reciprocating cutter and cutter-frame supported by the machine and extending into the space between the jamb and the door and adapted to cut the rear edges of said mortises simultaneously, and means for vertically reciprocating said cutter and cutter-frame, substantially as described.

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