

(No Model.)

2 Sheets—Sheet 1.

D. HEPP.
MORTISING MACHINE.

No. 531,936.

Patented Jan. 1, 1895.

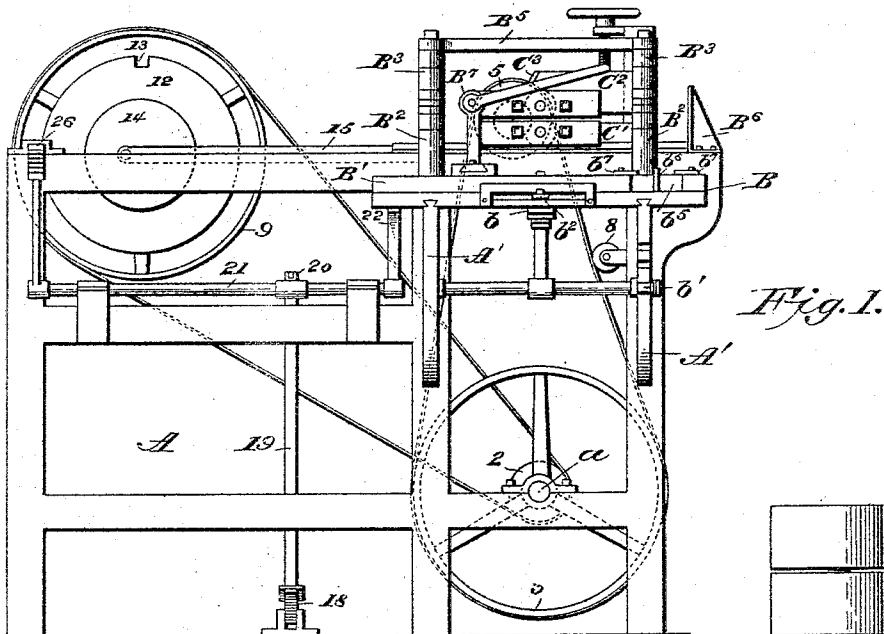


Fig. 1.

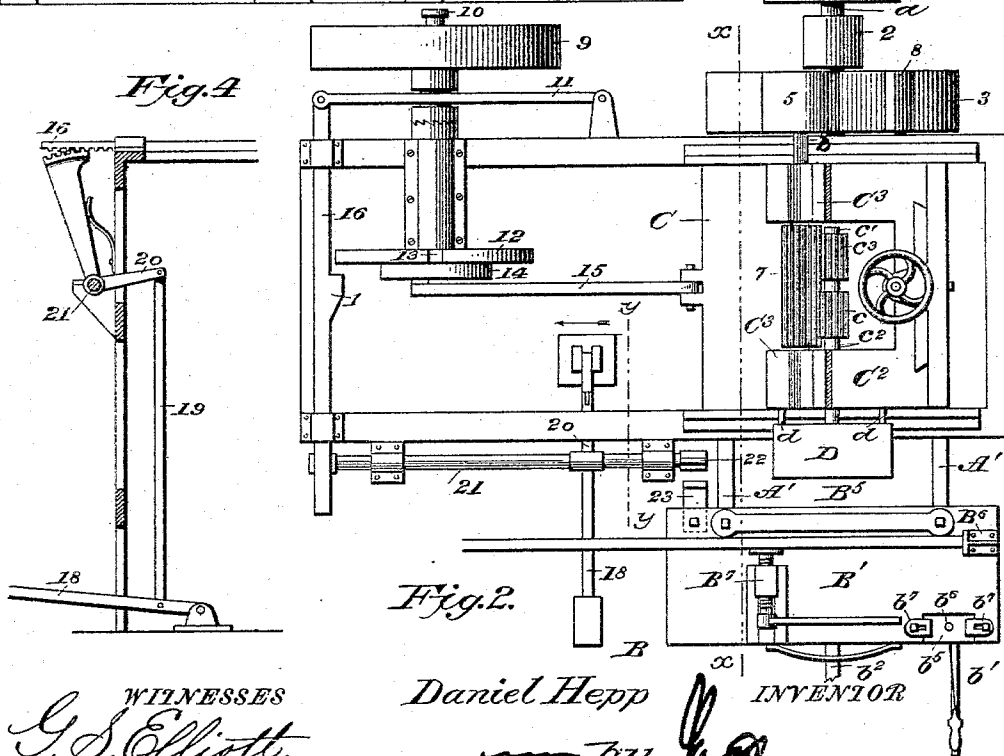


Fig. 2.

WITNESSES
G. S. Elliott.
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Daniel Hepp

by

INVENTOR
Attorney

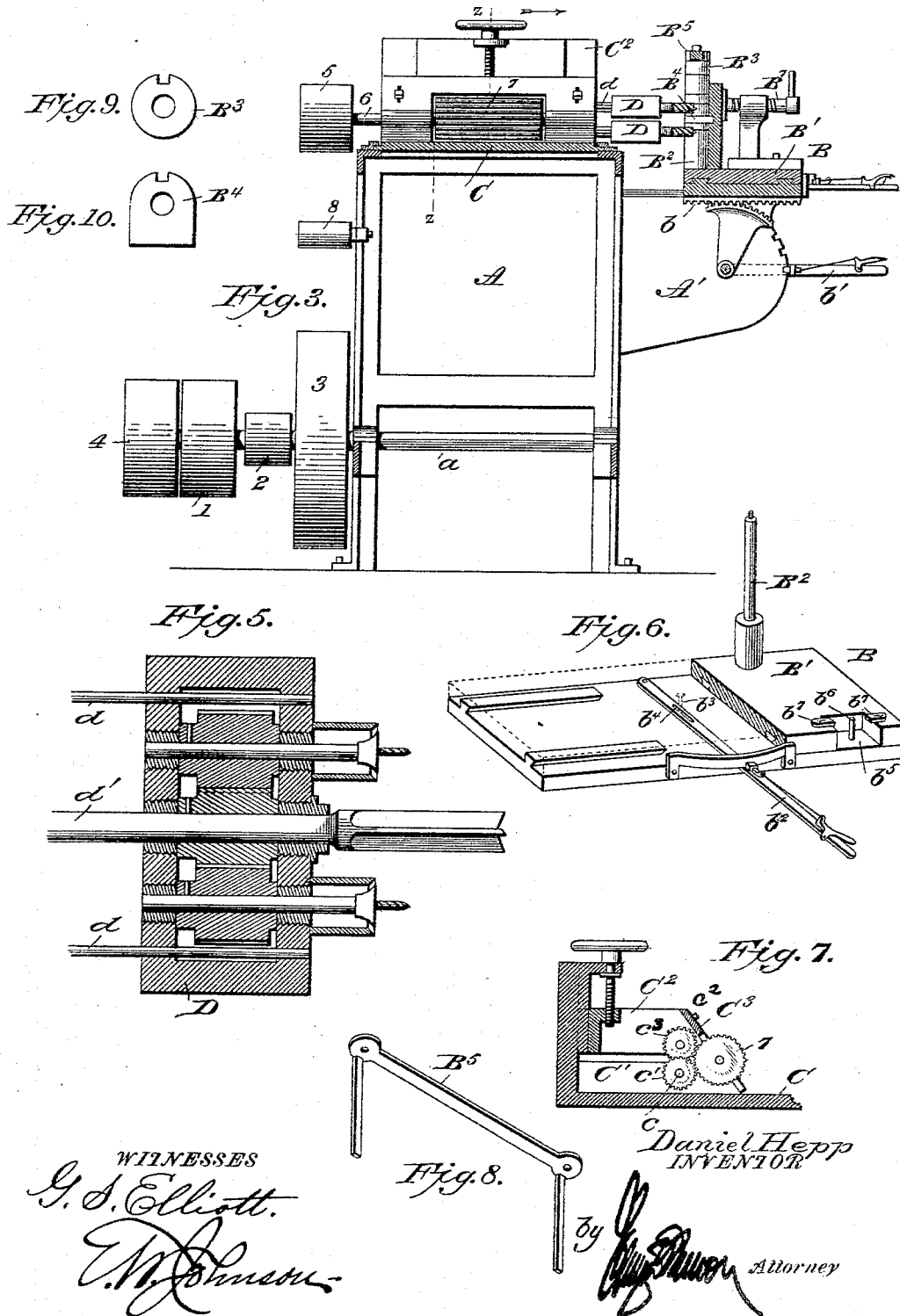
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G. S. Elliott.
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Fig. 8.

Daniel Hepp
INVENTOR

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UNITED STATES PATENT OFFICE.

DANIEL HEPP, OF CHICAGO, ILLINOIS.

MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,936, dated January 1, 1895.

Application filed July 23, 1894. Serial No. 518,405. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HEPP, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mortising-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to

10 which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

15 The object of this invention is to provide a mortising machine for the purpose of cutting mortises and rabbets in sash stiles for the reception of sash-pulleys, both mortises being cut at the same time without removing the

20 stile from the table to which it is clamped, the machine being so constructed that it may be adjusted to cut mortises of different sizes and distances apart for pulleys and stiles of different sizes.

25 The invention consists in certain features of construction and in the combination of the parts, as will be hereinafter fully set forth, and more particularly in the combination with a mortising machine of the gearing and

30 arrangement of the cutters or boring tools so that each set of tools can be separated to cut the mortises at the proper distance from each other according to the size of the stile; also in combining with such adjustable cutters a

35 longitudinally and laterally movable table to which the stile is clamped so that by proper adjustments of said table the length and depth of the mortise can be varied.

40 The invention further consists in the novel construction and arrangement of the foot lever which is adapted to disconnect the machine from the driving pulley and lock the reciprocating table which carries the cutting mechanism against movement and simulta-

45 neously move the stile carrying table away from the cutters.

The invention further consists in providing the stile carrying table with means whereby the parts thereof may be adjusted upon

50 each other with respect to the cutters and moved to and from said cutters, the table having a stop and adjustable blocks against

which the stop abuts to regulate the length of the mortise as well as means which enters the groove in the stile to retain the same in

55 proper relation to the cutters.

In the accompanying drawings, Figure 1 is a front elevation of a sash-stile mortising-machine constructed in accordance with my invention. Fig. 2 is a plan view. Fig. 3 is a

60 vertical sectional view on the line $x-x$ of Fig. 2. Fig. 4 is a detail sectional view on the line $y-y$ of Fig. 2. Fig. 5 is a horizontal sectional view of one of the cutter boxes. Fig. 6 is a detail perspective view of the stile carrying

65 table. Fig. 7 is a detail sectional view on the line $z-z$ of Fig. 3. Fig. 8 is a detail perspective view of a cross-bar having splines which engage with washers, Figs. 9 and 10, which are placed upon standards projecting from the

70 stile carrying table (Fig. 6).

A designates the main frame of the machine which is provided with brackets A' which support the stile carrying table B, guides for the reciprocating or sliding table C and bearings

75 or supports for the shafts, sliding-bars and levers.

The driving shaft a is suitably journaled on the main frame and projects beyond the side thereof opposite where the operator stands,

80 and said shaft carries tight pulleys 1, 2 and 3 and a loose pulley 4. A belt passes over the pulley 3 and from thence over a pulley 5 carried by a shaft 6 which is adjustably mounted on the table C and has a long cog wheel 7 in

85 mesh with the gear wheels which revolve the cutters. In view of the fact that the table C is reciprocated and the bearings for the shaft 6 having the cog wheel 7 is adjustable the belt which passes over the pulleys 3 and 5 is provided with an automatic belt-tightener, 8,

90 which may be of any suitable construction.

A pulley 9 is loosely mounted upon a shaft 10 carried by the main frame A, and said pulley has a clutch face and is thrown in and

95 out of gear with the shaft by means of a lever 11 which is pivoted at one end to a projection on the main frame and at the other end engages with a sliding-bar. The shaft 10 has rigidly keyed thereon a disk 12 which

100 is provided with a notch or recess 13, and on the outer side of said disk is a wrist-wheel 14 to the wrist-pin of which is attached one end of a pitman-rod 15 the other end of which

is attached to the carriage C to reciprocate the same. The pulley 9 is driven by a belt which passes over the pulley 2. The movable end of the lever 11 which throws the clutch faces on the pulley 9 and shaft 10 in and out of engagement with each other is connected to a sliding-bar 16 carried by the frame A, said sliding-bar having a projecting portion 17 which is adapted to engage with the notch or recess 13 in the disk 12 when the clutch faces are out of engagement so as to lock the reciprocating table against movement. The sliding-bar 16 is operated in one direction by a foot-lever 18, the same being connected by a rod 19 with an arm 20 on a rock-shaft 21, said rock-shaft being journaled in brackets attached to the frame A. This rock-shaft has at one end a toothed segment which engages with the toothed end of the sliding-bar 16 so that when the foot-lever is depressed the clutch-faces on the shaft 10 and pulley 9 will be thrown out of engagement with each other and the carriage locked. The frame has secured thereto a flat spring which bears against the segment and is of sufficient strength to raise the foot-lever and move the sliding-bar. The end of the rock-shaft 21 opposite the segment carries an arm 22 the function of which is to strike against a lug 23 carried by the stile table B so that the rock-shaft will be operated thereby and the table C held against a reciprocating movement when the stile carrying table is moved toward the cutters for the purpose of cutting the holes entirely through the stile, thus providing means which will prevent injury to the cutters in case the operator is neglectful, unskillful or inexperienced.

The reciprocating carriage C is mounted on the main frame in the usual manner and attached to the same is a frame C' having bearings for a shaft c upon which is mounted a toothed wheel c' , and said shaft engages with the central cutter shown in Fig. 5. To the vertical wall at the rear end of the carriage C is attached an adjustable frame C² by means of dovetail recesses and projections, the frame being adjusted by a hand wheel and screw. To the front end of the adjustable frame is adjustably attached a plate C³ which carries the shaft 6 upon which is the cog wheel 7, and immediately above the shaft c the frame C² carries a similar shaft c^2 with a pinion c^3 . The pinions c' and c^3 are of equal size and are connected to their respective shafts so as to be out of line horizontally.

Single boring bits may be attached to the shafts c and c^2 but I prefer to use in connection with the machine central and side bits, the side bits being of less length than the central bit and incased by hollow chisels of the same type as is shown in Letters Patent issued to me March 6, 1894, which bear No. 516,014.

The bearing boxes D for each set of bits are connected by bolts d d to the frames C'

and C², the shafts c and c^2 of said frames being connected to the central bits d' the stems of said bits carrying within the boxes gear wheels which mesh with gear wheels mounted on the shafts of the shorter bits which are incased by chisels as shown. When it is desired to increase or diminish the distance between each of the set of bits so as to cut the mortises at a greater or less distance from each other, it can be accomplished by turning the hand wheel which raises the upper frame C² which carries the upper box with its bits. If the range of adjustment is such as to disengage the cog wheel c^3 from the cog wheel 7 the plate C³ may be adjusted to cause said cog wheel 7 to mesh with both the cog wheels c' and c^3 .

The stile carrying table B is made up of two movable sections, the bottom section being connected to the brackets A' by means of dovetail grooves which engage with the dovetail flanges on the upper edges of the brackets, and centrally the lower section of the table is provided with a rack-bar b which engages a toothed segment carried by a rock-shaft journaled in the brackets A', said rock-shaft being operated by a lever b' which carries a catch-bar for engagement with notches in one of the brackets so that by adjusting the lever the stile carrying table may be moved to and from the bits or cutters.

The upper section B' of the table B is held in longitudinally movable engagement with the lower section, and to the lower section is pivoted a lever b^2 carrying a suitable catch which engages with an arched plate or bar also attached to the lower section of the table. The under side of the upper section is cut away for the passage of the lever b^2 and provided with a pin b^3 which engages with a slot b^4 in the lever. One corner of the upper section is cut away to provide a recess b^5 in which projects a pin b^6 , said pin engaging adjustable stops b^7 , and by means of these adjustable stops and the pin the longitudinal movement of the table is limited so that it will not exceed the length of the mortise and rabbet.

B² designates standards which are attached to the upper section of the table B, and upon these standards are placed blocks or washers B³ and B⁴, the circular washers B³ being used to properly position the washers B⁴ which have straight edges for engagement with the longitudinal groove or recess with which the stiles are provided and in which are placed the parting strips of the sash-frame. When the washers have been properly placed on the standards they are secured in place by a bar B⁵ having splines or keys (shown in Fig. 8) which lie in the notches in the washers and hold them against rotation, and said bar B⁵ is clamped in place by nuts which engage with the upper threaded ends of the standards. A bracket or stop B⁶ is carried by the table adjacent to one of the standards and

against said stop one of the ends of the stile to be mortised abuts.

B⁷ designates a clamping screw which is operated by a suitable hand-lever, the clamping-screw being mounted on a support which is adjustably attached to the table so as to be out of the range of the cutting bits.

The operation is as follows: The parts of the machine and gages are first adjusted as hereinbefore indicated for a stile which is clamped upon the table B so that one end will abut against the stop B⁶ and the straight edges of the washers on the standards enter the longitudinal groove therein. Now as the carriage C with the cutters reciprocates the lever b' is caused to engage with the first notch in the bracket A' and the lever b² is reciprocated, the movement of the table being gaged by the pin b⁶ and the adjustable plates with which said pin engages. This operation will cut in the stile two shallow mortises, being cut by the central bits, and when these shallow mortises are cut the operator steps upon the foot-lever 18 which rocks the shaft 21 so as to move the bars 16 and 11 which disengage the clutch faces, and a further movement of the bar 16 will cause the carriage to be locked, the projection 17 engaging with the recess 13 in the disk 12. Thus the carriage C is centered on the frame and when the foot-lever is depressed it is locked against movement. In the meantime the lever b² is placed and held at the central portion of the arched bar with which it engages. The stile is then moved toward the bits by moving the lever b' to the last notch in the bracket which causes the central bit to pass through the stile while the end bits and chisels cut out the ends of the rabbets. After the rabbets are cut the lever b' is moved to its central notch which takes the chisels and end bits out of contact with the stile and the operator releases the foot-lever when the spring will move the bar 16 and cause the clutch faces to engage so that the carriage will reciprocate and the central bit being in engagement with the stile will cut through to complete the mortise. In case the operator should fail to adjust the lever to move the end bits and chisels out of engagement with the stile before releasing the foot-lever the arm 22 on the rock-shaft will strike the stop 23 on the table and prevent movement of the bar 16 until the lever has been properly set, thus preventing the end bits and chisels scraping the stile.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a mortising machine, the combination, of a driven shaft having a gear wheel mounted thereon, frames carrying shafts to which the mortising spindles are connected, said shafts having gear wheels which mesh with the gear wheel on the driven shaft, substantially as shown and for the purpose set forth.

2. In a mortising machine, the combination, of a movable table B having a clamp, of standards carried by the table and provided with washers, each standard carrying a washer with projecting portion, for the purpose set forth.

3. The combination in a mortising machine, a stile supporting table having a clamping-screw and standards, of removable washers having recesses, each standard carrying a projecting washer, of a clamping bar having splines which engage with the recesses in the washers, substantially as shown.

4. In a mortising machine, a frame A having a movable work holding table B, a reciprocating carriage carrying the cutting tools, mechanism for actuating the carriage, the work holding table having a projection or stop 23, a foot-lever 18 connected to a rock-shaft 21 having at one end an arm 22 and at the other a segment spring-actuated in one direction, a sliding-bar in engagement with the segment and adapted to disconnect the driving mechanism from the reciprocating carriage and lock said carriage, when the stop 23 throws the arm 22 the parts being organized and combined substantially as shown and for the purpose set forth.

5. In a mortising machine, the combination, of a pair of casings each having spindles with bits arranged on a line with each other, the outer bits having chisels as shown, the spindles being geared to each other within the casings, of shafts connected to the central spindles said shafts having gear wheels c' and c² which mesh with the gearwheel 7 mounted on a shaft having a pulley 5 over which passes a driving belt, substantially as shown, to provide means whereby the upper and lower sets of spindles can be adjusted to and from each other and be driven by a single belt.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL HEPP.

Witnesses:

LOUIS F. MUELLER,
THOMAS A. WALTER.