J. ZETTER.

MORTISING MACHINE.

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984,057.

Patented Feb. 14, 1911.

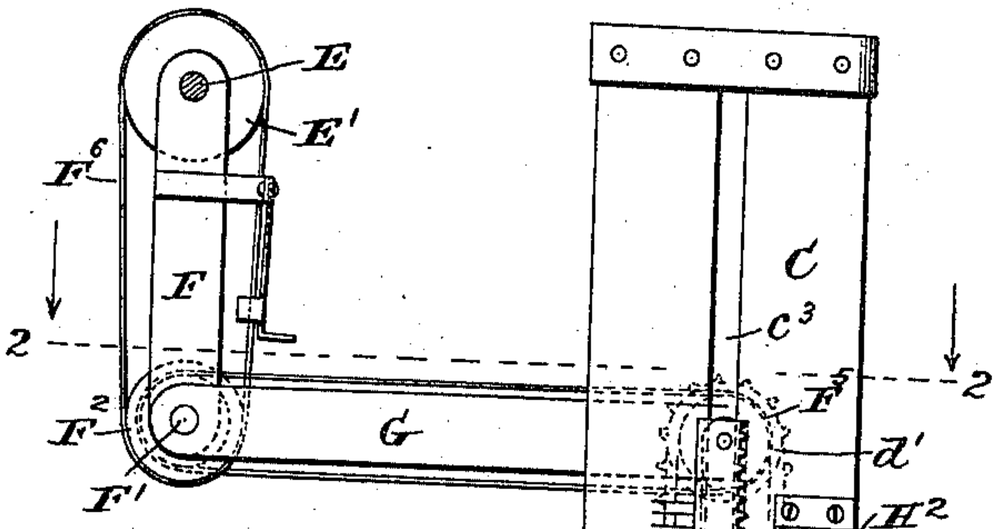
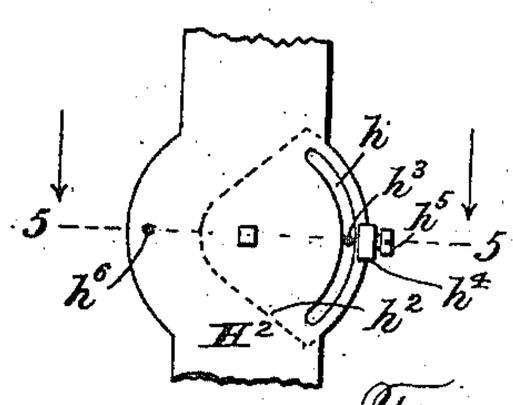


Fig. 1.

Fig. 4.



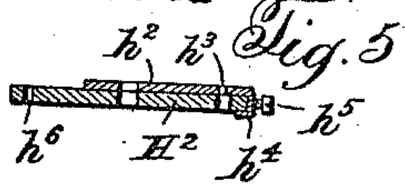
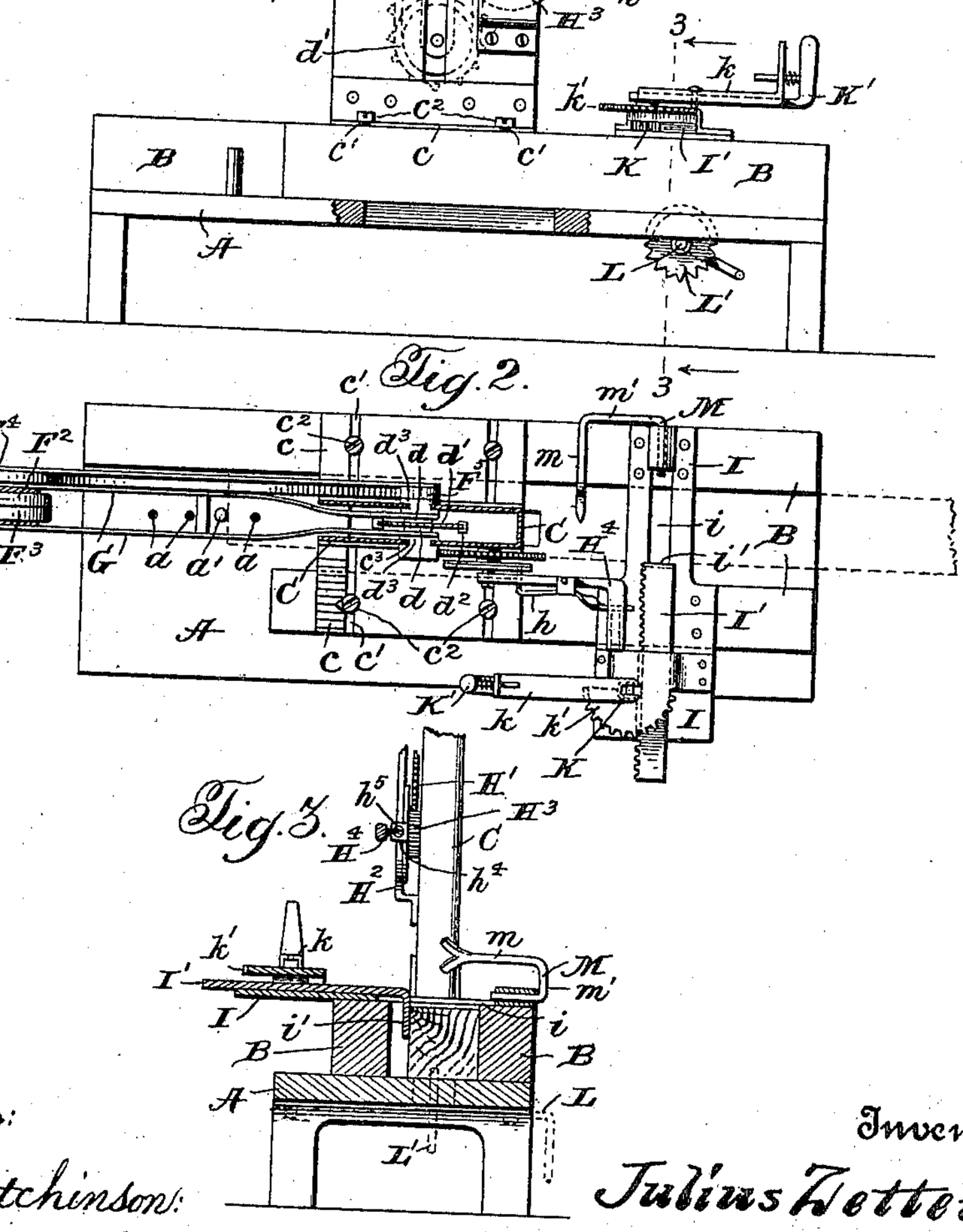


Fig. 5



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UNITED STATES PATENT OFFICE.

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MORTISING-MACHINE.

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To all whom it may concern:

Be it known that I, JULIUS ZETTER, a citizen of the United States, residing at Freeburg, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Mortising-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improvement in mortising machines, and more particularly to the type of mortising machines employing chain cutters.

The object of the present invention is the provision in a device of this character of such construction that mortises of any desired depth may be cut either entirely through or partially through timber of various thicknesses.

A further object of the invention is the provision in a device of this character of means for bodily adjusting the chain cutter so that it may be used with timber of various widths.

A further object of the invention is the provision of an improved gage in a machine of this character so as to insure the cutting of the mortise at the proper point.

Other objects of the invention will be apparent from the detailed description hereinafter when read in connection with the accompanying drawings forming a part hereof, wherein a convenient embodiment of the invention is illustrated and wherein like numerals of reference refer to similar parts in the several views.

In the drawings, Figure 1 is a side elevation of the mortising machine, Fig. 2 is a cross section on line 2—2 of Fig. 1, Fig. 3 is a section on line 3—3 of Fig. 1, and Figs. 4 and 5 are detail views showing the means utilized for limiting the downward movement of the cutter.

Referring now more particularly to the drawings, A designates the bed of the mortising machine, upon the upper surface of which are rigidly supported a pair of parallel bars B, B, between which is adapted to be supported the timber which is to be cut. Supported upon the bars B, B is a frame C in which is adjustably mounted the chain cutter, as will be hereinafter more particularly set forth. The frame C comprises parallel side walls, between which the chain cutter is adapted to be supported, and the lower ends of said walls are provided with laterally disposed portions c which rest upon the upper surfaces of the parallel bars B, B. The laterally disposed portions c of the frame C are provided with transverse slots c' therein, through which pass fastening bolts c^2 which engage the bars B, B and serve to clamp the frame C rigidly thereto. The slots c' permit the entire frame C and the cutter carried thereby to be adjusted laterally, and one of the laterally disposed portions c of the frame C is preferably provided with a suitable scale so that the operator may adjust the frame to any desired extent.

D designates the frame employed for supporting the chain cutter and such frame comprises parallel side bars d, d in the upper and lower ends of which are journaled sprocket wheels d', d', which serve to support the chain cutter d^2, which may be of any well known type. The width of the chain cutter d^2 exceeds that of the supporting frame d therefor, so that such frame will not interfere with the cutting action of the chain when cutting mortises. The frame D is positioned between the parallel side walls of the frame C and the side bars of the frame D are provided adjacent the upper portion thereof with bearing blocks d^3 which project outwardly through longitudinal slots c^3 formed in the side walls of the frame C, said bearing blocks being provided with slots in the sides thereof which engage the portions of the side walls of the frame C bounding the slots c^3. Preferably two or more bearing blocks d^3 are provided on each side of the cutter carrying frame D so that such frame will slide freely in the frame C and will be held against any canting or twisting during its movement in the frame C. The bearing blocks d^3 are positioned adjacent the upper end of the cutter carrying frame D, thus leaving the entire lower end of said cutter frame free, which enables the cutting of mortises entirely through timbers of considerable thickness.

E designates a power shaft which is positioned at any suitable point above the bed A of the frame and is provided with a suitable drive pulley E′ thereon. Pivotally connected to the power shaft E at each side of the drive pulley E′ and depending therefrom are a pair of links F, F, the lower ends of which are pivotally connected to a short shaft F′.

G, G designate a pair of links which are pivotally connected at one end to the shaft

F′ outside of the links F, F. The other ends of the links G, G project between the side walls of the frame C and are pivotally connected to the shaft which supports the upper sprocket wheel d' of the chain cutter.

Loosely mounted upon the shaft F′ between the links F, F is an idle pulley F^2 and alongside of said idle pulley is a fast pulley F^3. The shaft F′ is also provided outside of the links F, F with a fast pulley F^4 which is adapted to be connected by a suitable belt with a pulley F^5 which is fixedly secured to the shaft which supports the upper sprocket wheel d' of the chain cutter. A belt F^6 normally connects the drive pulley E′ and the idle pulley F^2 and a suitable belt shifter is secured to one of the links F so that the operator may, when desired, shift the belt to the fast pulley F^3, and thus effect the driving of the chain cutter.

Carried by the chain cutter frame D and positioned outside of the walls of the frame C is a vertically disposed rack bar H, which meshes with a gear wheel H′ which is positioned below a bearing plate H^2 secured to one of the side walls of the frame C. Meshing with the gear wheel H′ is a pinion H^3, the shaft of which projects without the bearing plate H^2 and has secured thereto an operating handle H^4. The operating handle H^4 is provided with a spring pressed bolt h which normally extends into a segmental slot h' formed in the bearing plate H^2, and the operating handle is provided with any suitable hand piece for retracting the bolt when it is desired to do so.

Underlying the segmental slot h' in the bearing plate H^2 is a plate which is pivotally supported upon the shaft of the pinion H^3, which plate is provided with an aperture h^3 which underlies the slot h' and is movable in the path thereof when the plate is shifted on its pivot. The outer edge of the plate h^2 is provided with a lip h^4 which is bent over so as to overlie the front face of the bearing plate H^2, the edge of the bearing plate which is engaged by said lip being formed on an arc of a circle, the center of which is the shaft of the pinion H^3. Threaded in the lip h^4 is a set screw h^5 which is adapted to engage the edge of the bearing plate H^2 to hold the plate h^2 against movement on its pivot. In feeding the cutter, the spring pressed bolt h of the operating handle H^4 occupies a position within the segmental slot h' in the bearing plate H′, and the lower end thereof rests upon the plate h^2 which overlies said segmental slot. The handle may be turned until the spring pressed bolt h thereof engages the aperture h^3 in the plate h^2, when the handle will be locked against further movement and the feeding of the cutting chain stopped. As the plate h^2 may be adjusted to bring the aperture therein at any point of the segmental slot, it will be seen that the operator can set the machine so that the chain cutter can be fed downwardly to a predetermined extent and then stopped, so that the depth of the mortise which is to be cut can be regulated to a nicety. In addition to the segmental slot h', the bearing plate H^2 is also provided with an aperture h^6 therein which is also positioned in the path of movement of the spring pressed bolt h of the operating handle. When the spring pressed bolt of the operating handle is in engagement with the aperture h^6, the chain cutter is in its extreme uppermost position, and out of the way and the handle is moved to this position whenever it is desired to remove a finished piece of work or insert a new piece of work.

Rigidly secured to the upper surface of the bars B, B at one side of the frame C is a plate I, which is provided with a slot i therein which extends transversely of the machine. Slidably mounted upon the upper portion of the plate I is a rack bar I′, the outer end of which projects downwardly through the slot i in the plate I, and terminates in a presser foot i'. Rotatably supported upon the plate I and meshing with the rack bar I′ is a pinion K.

K′ designates an operating handle for actuating the pinion and shifting the rack bar and such actuating handle is provided with a suitable detent k which is adapted to engage a segmental rack k', secured to the plate I, to hold the operating handle in various positions of adjustment. In practice, the rack bar is normally retracted and the timber which is to be mortised is advanced on the bed of the machine between the bars B, B until it has been properly positioned with reference to the chain cutter. The actuating handle K′ is then actuated until the timber is firmly held between the presser foot i' of the rack bar I′ and the opposing bar B, and after the timber has been so secured the mortise is then cut.

Positioned immediately below the plate I and journaled in suitable bearings secured to the under side of the bed A of the machine, is a shaft L upon which is secured a toothed wheel L′, the periphery of which projects for a slight distance through the bed of the machine. The shaft L is provided with a suitable handle to permit of its actuation. The toothed wheel L′ is utilized to facilitate the feeding of the timber to be mortised along the bed of the machine.

The bed A of the machine is provided with a plurality of openings a therein beyond the frame C into any one of which is adapted to be fitted a stop gage a'. The stop gage is utilized where it is desired to mortise a large number of pieces of timber so that the mortises will be positioned the same distance from the ends of the pieces

of timber. In this case the stop gage is placed in the proper opening and each piece of timber is then fed into the machine until it abuts the stop gage when it is clamped in a manner heretofore described and the mortise cut.

Pivotally secured upon the upper portion of one of the bars B at one side of the frame C is a gage M which is utilized in marking the timber which is to be mortised so as to insure its being properly positioned beneath the chain cutter. The gage M comprises a portion *m* which is positioned transversely of the machine and the outer end of which lies between the bars B, B and is provided with oppositely disposed sharpened marking portions, and a portion *m'* which extends from the inner end of the portion *m* in a direction parallel to the bars B, B and is pivotally connected to one of the bars B in such a manner that the gage may be swung to cause the portions *m* thereof to lie upon either side of the pivotal point of the gage. The gage is so formed that when the portion *m* thereof occupies the position nearest to the chain cutter, the distance between the portion *m* and the pivot of the gage is just one half the distance between the portion *m* and the center of the chain cutter. With this construction, if it is desired to cut a mortise at any particular point in a piece of timber, such piece of timber is moved along the bed until the center of the mortise which is to be cut underlies the marking point of the portion *m* of the gage. With the timber in this position, the gage is swung over to its opposite position and the other marking point thereof utilized to mark the timber. The gage is then returned to its initial position and the timber is advanced along the bed of the machine until the mark last made thereon underlies the marking point of the gage. When the timber occupies this position, the mark which has been made to indicate the center of the mortise will directly underlie the center of the chain cutter. Instead of the swinging gage thus described, it is obvious that in lieu thereof two fixed gages might be employed, in which case such gages would be so positioned that the distance between the same would be equal to the distance between the gage nearest the chain cutter and the center of the chain cutter.

The bed of the machine is provided with a suitable opening therein directly beneath the chain cutter of a size large enough to permit the cutter to pass therein regardless of the position to which the frame C may be adjusted.

While I have illustrated a convenient embodiment of the invention, it will be understood that many changes may be made to the form and construction therein shown without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a mortising machine, a bed, a frame supported over said bed, a chain cutter slidably mounted in said frame, and means for feeding said cutter toward and away from the bed, said means including an actuating handle provided with a spring pressed detent, a plate having a segmental slot in which the spring pressed detent of the actuating handle normally travels, a plate underlying the segmental slot in said first mentioned plate and provided with an opening therein adapted to receive the spring pressed detent of the actuating handle, and means for adjusting said last mentioned plate.

2. In a mortising machine, a bed, a pair of parallel bars supported on said bed, an upwardly extending frame supported on said bars, means for adjusting said frame laterally, a chain cutter slidably mounted in said frame, means for driving said cutter, means for feeding the cutter toward and away from the bed, and an adjustable clamping bar arranged opposite the inner surface of one of the parallel bars on the bed.

3. In a mortising machine, a bed, a pair of parallel bars supported on said bed, an upwardly extending frame provided at its lower end with laterally extending supporting portions adjustably mounted on said parallel bars, a chain cutter slidably mounted in said frame, means for driving the cutter, means for adjusting the cutter toward and away from said bed, and means for clamping the work between the parallel bars on the bed beneath said chain cutter.

4. In a mortising machine, a bed, a chain cutter adjustably supported over said bed, a gage pivotally supported on the bed at one side of said chain cutter, the distance between the outer end of said gage and its pivot point being equal to one half the distance between the outer ends of the gage and the center of the chain cutter.

5. In a mortising machine, a bed, a frame supported thereon, a vertically adjustable cutter mounted in said frame, and means for feeding said cutter toward and away from the bed, said means including an actuating handle provided with a spring pressed detent, a plate provided with an opening therein lying in the path of the detent of the actuating handle, and means for adjusting said plate to limit the extent of movement of the actuating handle.

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

JULIUS ZETTER.

Witnesses:

CHAS. AHLUS, Jr.,

ALBERT ZETTER.