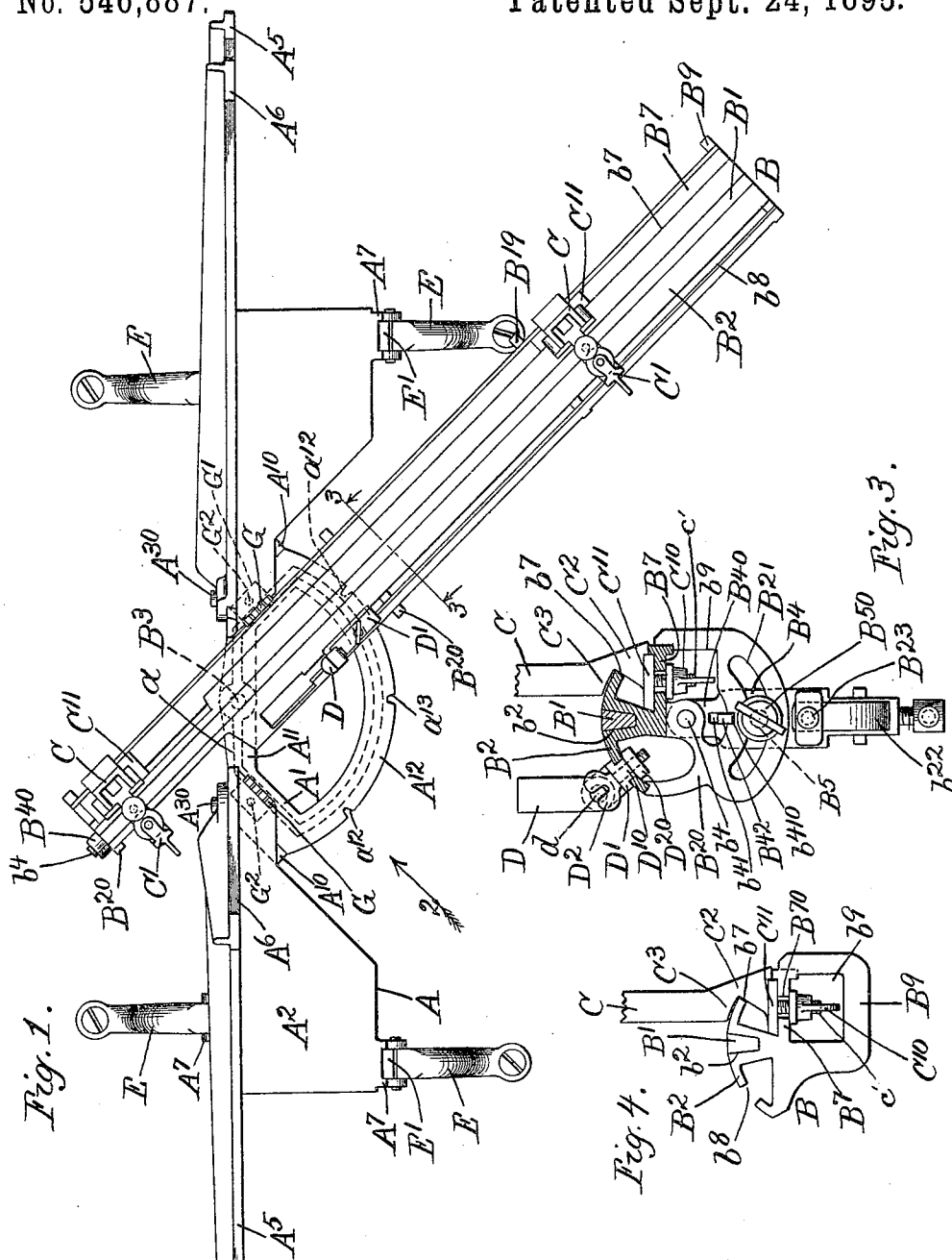


K. L. HYLLER.
MITER BOX.

No. 546,887.

Patented Sept. 24, 1895.



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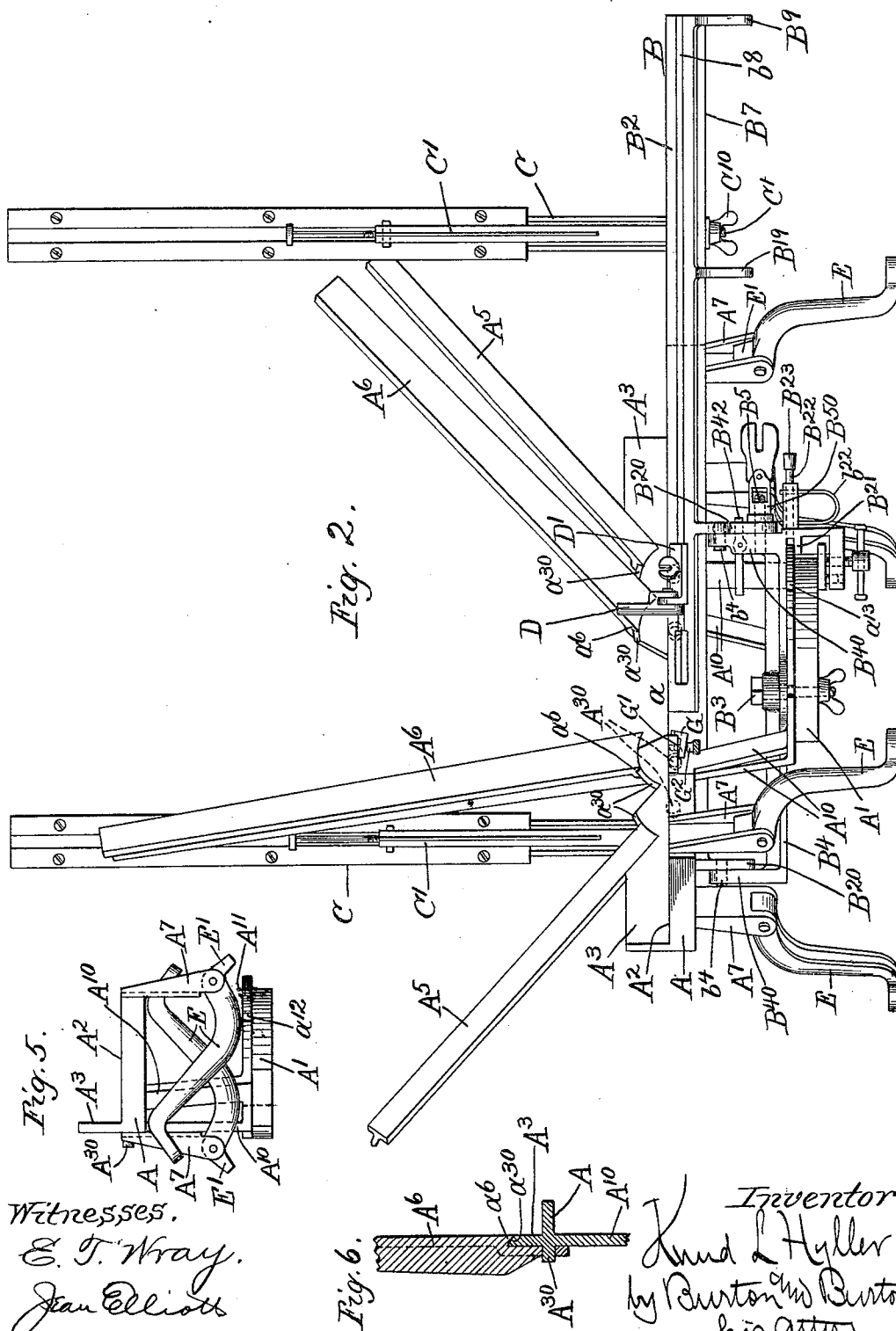
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UNITED STATES PATENT OFFICE.

KNUD L. HYLLER, OF CHICAGO, ILLINOIS.

MITER-BOX.

SPECIFICATION forming part of Letters Patent No. 546,887, dated September 24, 1895.

Application filed March 4, 1895. Serial No. 540,417. (No model.)

To all whom it may concern:

Be it known that I, KNUD L. HYLLER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Miter-Boxes, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

In the drawings, Figure 1 is a plan of my improved miter-box, set to cut a miter in one direction. Fig. 2 is an elevation looking in a direction indicated by the arrow 2 on Fig. 1—that is, looking directly at the plane of the saw-cut. Fig. 3 is a detail section at the line 3 3 on Fig. 1. Fig. 4 is a detail end elevation of the beam which carries the saw-guide posts, showing one of the posts broken away. Fig. 5 is a detail end elevation of the bed and its supporting lugs, the latter being folded up as they are designed to be for the purpose of packing the box for transportation. Fig. 6 is a detail section vertically across the bed at a pivot thereon for a tilting post, which is shown cut longitudinally at the same plane as the bed.

A is the bed, having the horizontal ledge A² to support the board or molding to be cut, and the upright lip or face or guide-wall A³, against which the board or molding rests.

A⁵ A⁵ and A⁶ A⁶ are posts or fingers secured to the guide-wall A³ and adapted to serve as upright extensions of the same in order to adapt the device to hold a wide board or molding edgewise while being cut. These posts A⁵ A⁶ are secured to the guide-wall A³ in a manner adapting them to be readily detached and to be adjusted angularly in the vertical plane of said guide-wall, so that at least one of them may be brought quite close to the cut and adapted thereby to stay the board and prevent the spring or vibration of the same under the action of the saw. The miter-box being adapted, as hereinafter explained, to cut in planes inclined to the horizontal as well as in vertical planes at varying angles to the vertical plane of the board or of the upright face A³, the fingers A⁶ are adapted to be inclined more or less to the vertical plane or to be set in vertical position to guard the cut when it is vertical. Each of the fingers A⁵ and A⁶ is arranged to be detachably secured to the guide-

wall A³ by means of a stud A³⁰, rooted in the said guide-wall at the center of an arc conformable to which the upper edge of the guide-wall is cut at a³⁰, said edge being beveled as well as cut in the arc, the finger having an eye adapted to enter onto the pin, and having an undercut overhanging shoulder a⁶, adapted to fit and hug closely the beveled edge a³⁰. The finger is put in place by applying the eye to the stud and entering the shoulder a⁶ over the edge a³⁰, and swinging the finger about the pivot to cause the shoulder to embrace more or less of the arc of the beveled edge, said arc extending far enough past the vertical line of the stud, so that in the case of the inner post A⁶ enough engagement is effected to hold the fingers rigid by the time they are vertical, and the arc extending enough farther to adapt them to be rocked over to an incline of forty-five degrees. In respect to the outer fingers A⁵, it is never necessary that they should stand vertical, and it is therefore not particularly important that the arc should bear such relation to the pivot as to cause a perfect engagement while the post is vertical. On the contrary, it is sufficient for all practical purposes that the engagement should be effected by the time the finger is tilted down to a position where it is out of the way of the finger A⁶ when the latter is inclined at forty-five degrees. At the middle part of its length the bed A is interrupted by an opening a, which is necessary to admit the beam B, which carries the saw-guide posts and the saw-track, and in order to permit the opening a for this purpose, without disconnecting the two parts of the bed on opposite sides thereof; but, on the contrary, to keep the bed practically integral and therefore as rigid as it ought to be for the purpose of a miter-box, the opening a is bridged underneath by a hanger-like portion or chair A', which comprises the arms A¹⁰ A¹⁰, extending down from the bed A at opposite sides of the opening a to the seat A¹¹, which is horizontal and at a short distance below the level of the bed A and extends across the gap opening a. This seat A¹¹ affords the means for supporting the beam B in a position such that its upper side may hold the saw-track—a wooden strip B'—on which the saw-blade runs at the bottom of the cut, and

which is therefore substantially at the level of the horizontal upper surface of the bed A. The beam B is pivoted to the chair at B³, the axis of the pivotal connection being vertical and in the plane of the face of the vertical guide-wall A³ of the bed, so that the adjustment of the beam about that pivot is made without varying the line at which the saw-cut intersects said face or vertical wall. This pivotal line is also located midway in the width of the opening *a* in order to permit the beam B to swing to an equal distance in either direction. The beam B is made in two pieces, the upper piece B² having a groove b² to afford a seat for the saw-track B' and the lower piece B⁴ having the pivotal connection described at B³, the arms B²⁰ B²⁰ and B⁴⁰ B⁴⁰ on the two pieces respectively serving to connect them, and being pivoted together at a horizontal line which intersects the vertical axis of the pivot B³, said line being a little below the level of the saw-track, since it is impracticable to make it at that level. This pivotal connection is represented at b⁴ b⁴. One of the arms B²⁰ of the beam B² is extended below the pivot b⁴ in the form of a segment, having the slot B²¹ and a stud-screw B⁵, provided with a clamp-nut B⁵⁰, passing through this slot, so that the nut binds on the outer face of the segment, projects from the lug B⁴⁰, and thereby provision is made for securing the portion of the beam which carries the saw-guide posts in its angular adjustment about the pivot-line b⁴ b⁴, such adjustment being provided in order to adapt the device for gaging a miter or oblique cut at and desired angle to the vertical axis.

The upper portion of the beam B is a shell or skeleton, so made for the sake of lightness and to adapt it at the same time to afford all necessary surface for supporting and guiding the parts which pertain and are connected to it. The saw-guide posts C C, having the saw-guides C' C' upon them, are secured at their lower ends to the beam and are adapted to be adjusted longitudinally on the beam to bring them as near as possible to the opposite surfaces or edges of the board or block which is to be cut, so that the saw may have its guide-bearings only so far apart as necessary to admit between them the board or block, thus insuring greater accuracy in the cut and preventing the wobbling or vibrating of the saw between the bearings. In order to afford firm footing for the posts on the beam, I form on the latter the horizontal web B⁷ a little above the level of the horizontal axis of the beam, and I make a rift b⁷ in the semicylindrical upper surface of the beam, extending from end to end of the latter. The saw-guide post C, I form with a foot C¹¹, adapted to seat upon the upper surface of the horizontal web B⁷, and to connect this foot with the post proper I provide a reduced portion C², which, after the analogy of the word "foot" applied to the portion C¹¹, may be termed the "ankle" of the post. This ankle

is of such width as to enter and fit quite snugly in the rift b⁷. At the upper limit of the ankle the post has a shoulder C³, which overhangs and bears closely upon the outer cylindrical surface of the beam. The web B⁷ has a longitudinal slot B⁷⁰, and from the foot C¹¹ of the post C a threaded stem c' extends down through the slot B⁷⁰ and receives a thumb-nut C¹⁰, below the web B⁷, whereby the foot is clamped tightly to the web and thereby to the beam at any point in the length of the beam to which it may be adjusted. On the other side of the saw-track from the rift b⁷, I form in the upper cylindrical portion of the beam another rift b⁸, which is designed to afford means of adjusting and securing a check-finger D, adapted to be set up against the face of the board or block being cut to hold it against the vertical face or guide-wall A³ of the bed. This finger D is pivotally connected at d to a foot-piece D', the connection at the pivot being tight enough to cause the finger to be held frictionally to any position at which it may be set about the pivot. The foot-piece D' has a rib D¹⁰ on the lower surface which is adapted to enter the rift b⁸, and a thumb-screw D² inserted through the foot-piece takes into a nut D²⁰, located below the rib and made wide enough to engage the under surface of the cylindrical web of the beam, so that the thumb-screw may serve as a means for clamping the foot-piece firmly to the beam at any position to which it may be adjusted. The adjustability of the finger D at its pivotal connection with the foot-piece, in connection with the longitudinal adjustability of the entire device on the beam, makes it possible to set the finger up against the forward or outer surface of the block or board resting on the bed, whatever be the angle at which the beam is set, and thereby hold the board or block firmly while it is being cut, reducing to a minimum the assistance required of the hand of the operator for that purpose. In order to give the beam the necessary strength, notwithstanding the rifts and channels formed in it and notwithstanding its skeleton character, the skeleton is extended at the ends in transverse webs, one of which is seen in elevation in Fig. 4 and indicated by the letter B⁹, this web being provided with an opening b⁹ of suitable size to admit the thumb-nut C¹⁰. Any desired number of cross-webs similar to B⁹ may be provided at intervals throughout the length of the beam, and it will be understood that the opposite end web is of similar form. I have also shown one intermediate web, lettered B¹⁰, which appears in edge view on Fig. 2 and is identical in form with the end web B. A similar purpose—to wit, strengthening the beam—is effected by the cross-web which constitutes the extension of the arm B²⁰, which has a similar opening (indicated by the letter b⁹) to admit the thumb-nut C¹⁰, but is farther extended below that opening to contain the segmental slot B²¹. It will be noticed that

this construction is well adapted to permit the several parts to be attached, so that the entire device may be compactly packed for transportation and carrying by hand from place to place; and to facilitate the same the legs E E are secured to the bed in forked lugs A⁷ A⁷, &c., and are provided with short tail projections E' E', which stop against the outer face of the lugs when the legs are properly spread. The lugs A⁷ for the opposite legs at each end of the bed are not directly opposite each other, but on the contrary are out of line enough to permit the legs to fold up under the bed and lie when folded alongside of each other, as may be understood by comparison of Figs. 1 and 5.

Although, as indicated, the beam is adapted to be adjusted to cut an oblique angle either in a vertical or horizontal plane, or both, since the most frequent requirement will be to cut at an angle of forty-five degrees to one plane while cutting at right angles to the other, I provide in addition to the clamps for securing the beam at any angle in either plane special latches whereby it may be locked quickly at the positions most frequently required. Thus for securing the beam in its horizontal adjustment the chair A' has the segment A¹² in an arc about the vertical pivot of the beam and the lower member B⁴ of the beam has a flange B²¹, clasping the edge of the segment, the latter having the notches a¹² a¹² and a¹³, the former at forty-five degrees on each side of the latter, which is at the intersection of a vertical plane at right angles to the face A³, and a dog B²² is provided on the lower member B⁴ of the bed adapted to engage these notches and having a spring b²² to throw it into engagement and a projecting handle B²³ for convenience in disengaging it. For a similar purpose in respect to the adjustment in a vertical plane I provide a latch B⁴², which is pivoted on the forward or upwardly-projecting arm of the lower member B⁴ of the bed, said latch projecting through the slot b⁴¹ in the arm B⁴⁰ and adapted to engage a notch b⁴¹⁰ in the lower side of that slot to lock the parts together automatically when the saw-posts are vertical.

For the purpose of more firmly steadying the board or molding to be cut I provide serrated plates G G, to be used when the edge or face of the molding which would be engaged thereby is not finished or is to be finished or used in such manner that the marks which would be left by the device would not be objectionable. These plates G G are let into suitable recesses formed to receive them, respectively, in the edges of the bed at the opening a. The plates are in angle form, having a lip G', which extends under the bed, and a thumb-nut G² is there provided to clamp them to the bed by binding the lip G' tightly against the under face of the latter, the height of the serrated plate being such that when thus bound the teeth project slightly above the upper face of the bed on which the board or

molding rests and will engage the face or edge of the board or molding which rests upon the bed. When the face thus resting on the bed would be marred in an objectionable manner by these teeth, the plates need not be used, and in that case the thumb-screw G² will be slackened to allow the plate to drop down far enough to bring the points of the teeth below the plane of the upper surface of the bed.

I claim—

1. In a miter box, a bed for supporting the board or molding to be cut comprising a vertical guide-wall, in combination with finger bars secured to the vertical guide-walls and having a face adapted to constitute a vertical extension of said guide-wall, such bed being divided between its ends, and a beam carrying the saw guide and extending through the interval between the divided portions of the bed, and provided with means for tilting the saw guides, said fingers proximate to the interval between the divided portions of the bed being adapted to be tilted about their connection with the said vertical wall of the latter, whereby they are adapted to be adjusted according to the inclination of the saw-cut to sustain the board on opposite sides of such cut: substantially as set forth.

2. In combination with the bed having the vertical wall A³ divided between its ends and the beam extended through the interval and adapted to be adjusted to tilt the saw guide posts, the fingers A⁶ pivoted to the vertical guide-wall and having the undercut and beveled shoulder a⁶, the upper edge of said guide-wall being shaped in an arc about the pivot and beveled and adapted to engage under the under-cut shoulder a⁶: substantially as set forth.

3. In combination with the bed having the vertical wall A³, the fingers A⁵ and A⁶ pivoted to the rear side of such wall; the bed and the finger having, the one a rigid stud and the other an eye adapted to receive the stud as the means of such pivoting; the edge of the vertical wall being shaped in arcs about such pivots respectively, and beveled inward, said fingers having beveled or undercut shoulders formed in arcs about the pivots and adapted to engage tightly the beveled arcs respectively at the edge of the wall: substantially as set forth.

4. In a miter box, in combination with a fixed bed and the beam which carries the saw posts pivotally and adjustably connected to the bed, said beam comprising a semi-cylindrical shell or skeleton having let into its upper surface a non-metallic track for the saw edge and having a longitudinal rift whose mouth at the cylindrical surface is parallel with the saw track; the saw guide post having a foot with a narrow portion or ankle above the same, said foot adapted to pass within the skeleton beam and the ankle adapted to pass into said rift: substantially as set forth.

5. In a miter box, in combination with the

beam B, the shell or skeleton portion B² provided with a saw track and the horizontal web B⁷ and the rift b⁷ through the cylindrical web; the saw guide post having a foot C¹¹ adapted to seat in the web B⁷ and connected to a post by the ankle C² adapted to pass into the rift b⁷; the web B⁷ having a longitudinal slot and the foot having a threaded stem which passes through the slot; and a clamp nut adapted to operate on said stem and bind against the lower side of the web: substantially as set forth.

6. In a miter box, in combination with the beam comprising a semi-cylindrical shell or skeleton having the horizontal web B⁷ and the rift b⁷, the saw post having a foot adapted to seat on the horizontal web, and the ankle adapted to pass through the rift b⁷, and the shoulder C³ above the ankle adapted to bear upon the outer cylindrical surface of the beam, and suitable means for clamping the

foot to the horizontal web: substantially as set forth.

7. In a miter box, in combination with the bed divided between its ends and the beam which carries the saw posts extending between the divided portions, the edges of the bed on opposite sides of the interval through which the beam extends being provided with serrated lips G G, and suitable means for adjusting them to cause them to protrude or not to protrude above the surface of the bed: substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 26th day of February, 1895.

KNUD L. HYLLER.

Witnesses:

CHAS. S. BURTON,
JEAN ELLIOTT.