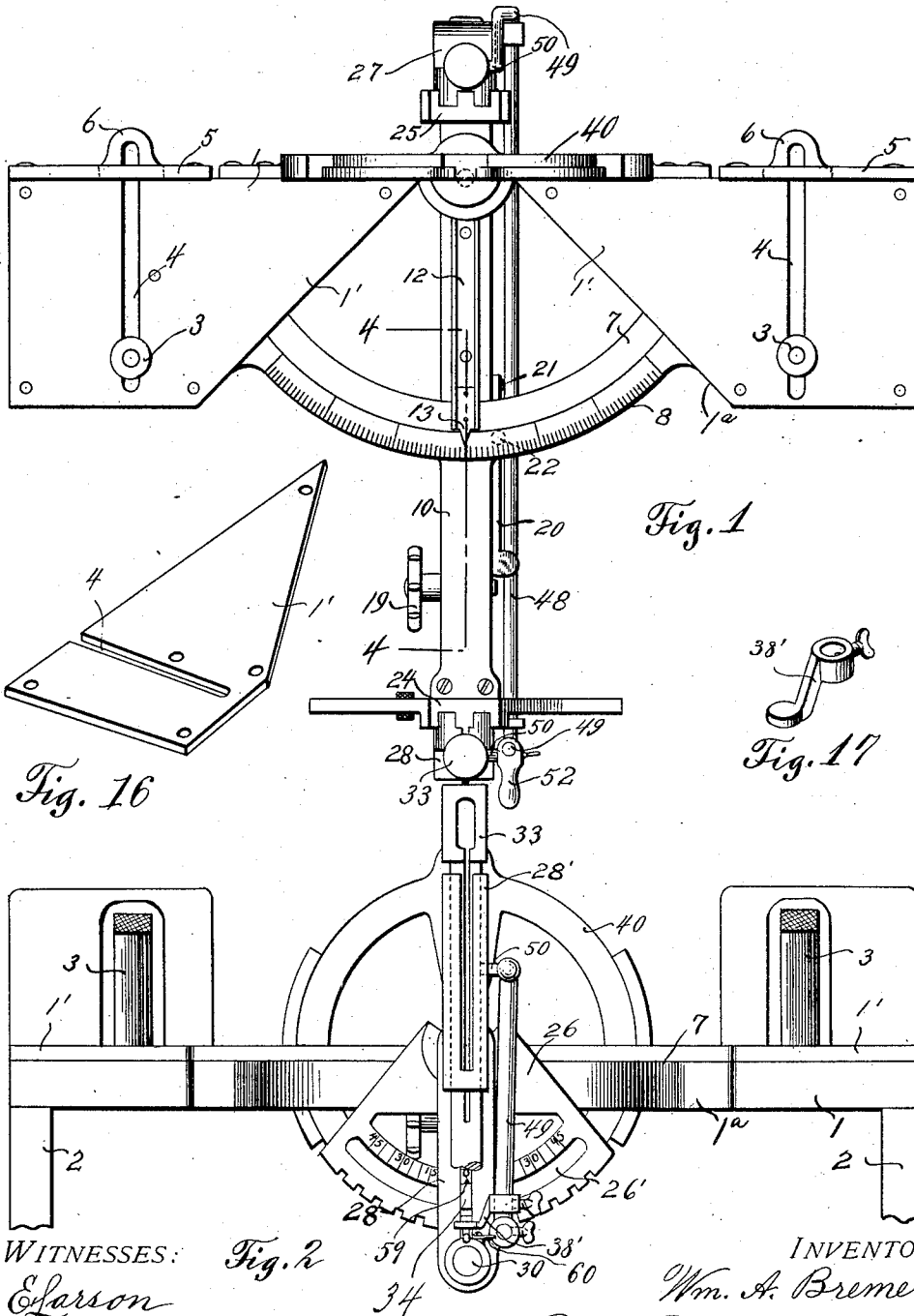


W. A. BREMER.
MITER BOX.
APPLICATION FILED MAY 15, 1911.

1,063,113.

Patented May 27, 1913.

3 SHEETS—SHEET 1.



WITNESSES:

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Fig. 2

59 34 30 60

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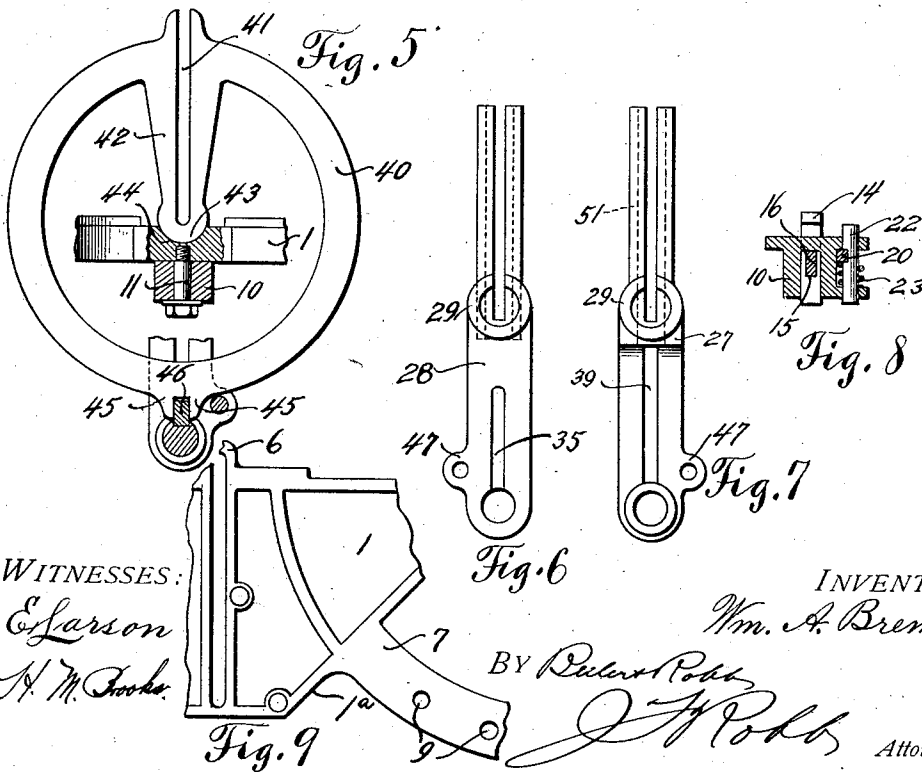
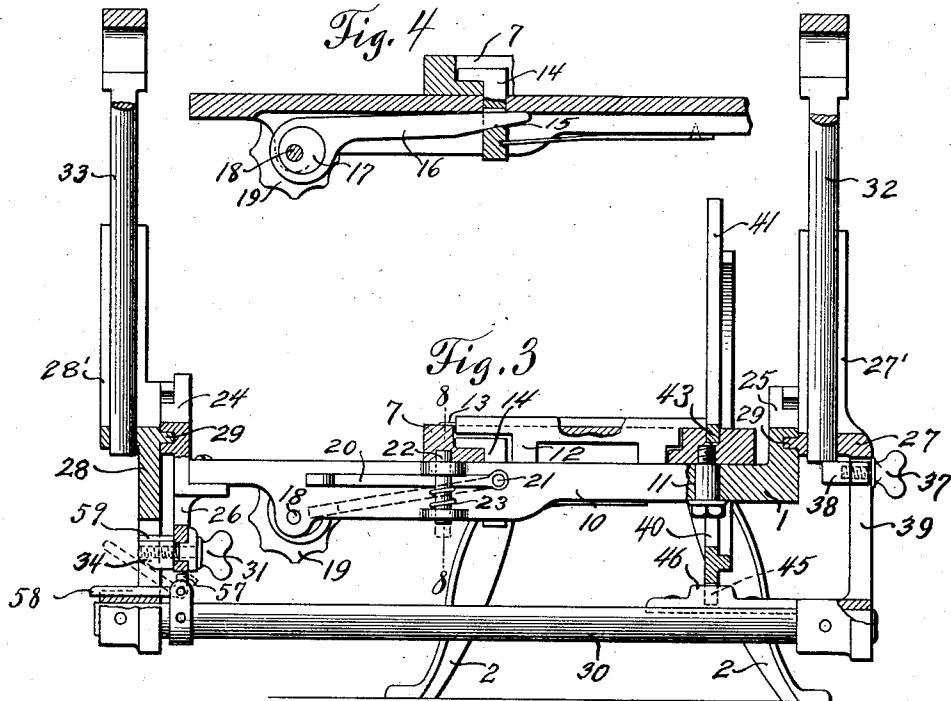
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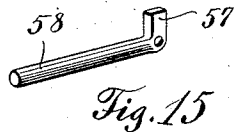
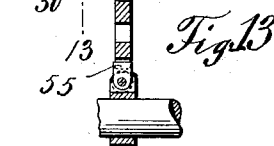
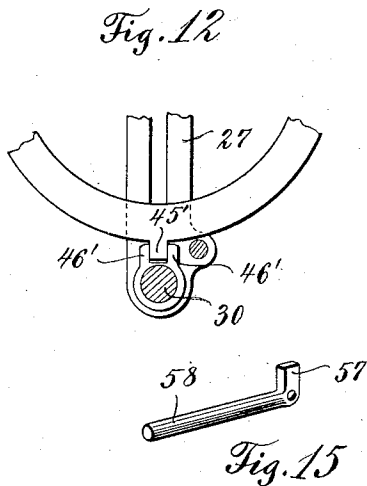
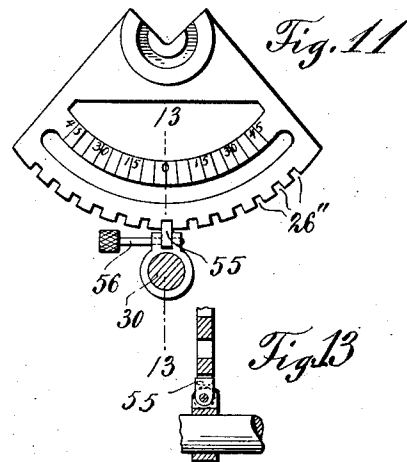
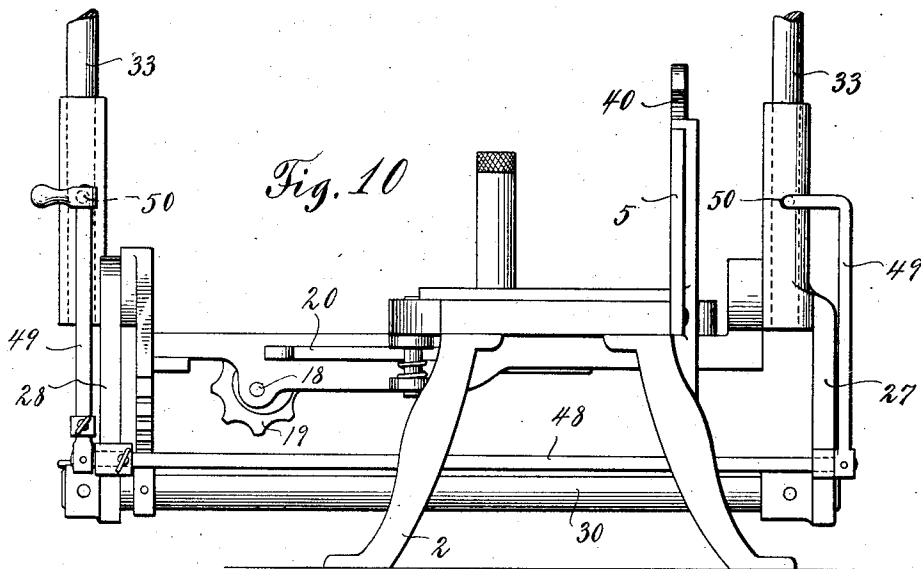
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MITER-BOX.

1,063,113.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed May 15, 1911. Serial No. 627,239.

To all whom it may concern:

Be it known that I, WILLIAM A. BREMER, a citizen of the United States, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Miter-Boxes, of which the following is a specification.

The present invention embodies certain improvements in miter machines and resides particularly in the peculiar mounting of the saw-support by which the saw may be adjusted as desired, by bodily movement in a horizontal plane.

The invention resides further in the association with the saw-support of guide means for the saw, also peculiarly mounted for angular adjustment of the saw with respect to the perpendicular.

For a full comprehension of the advantages and construction of this invention, reference is to be had to the accompanying drawings in which:—

Figure 1 is a top plan view showing a miter machine embodying the essential features of the invention; Fig. 2 is a front elevation; Fig. 3 is a transverse sectional view; Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 1, certain parts being omitted; Fig. 5 is a detail view of the movable gage plate showing more clearly its bearing on the bed of the machine and its connection with the pivoted saw-guide; Figs. 6 and 7 are views in elevation of the end arms of the pivoted guide; Fig. 8 is a section taken about on the line 8—8 of Fig. 3; and Fig. 9 is a fragmentary bottom plan view showing more clearly the arrangement of the curved gage bar of the bed of the machine with respect to the body of the latter; Fig. 10 is a side elevation of the present invention; Fig. 11 is an elevation of the fixed gage plate disclosing the means for locking the swinging saw frame; Fig. 12 is a fragmentary view of a modified form of connection between the rotatable guide plate and the saw frame; Fig. 13 is a sectional view taken on line 13—13 of Fig. 11; and Figs. 14, 15, 16 and 17 are details used in the present construction.

Similar reference characters refer to like parts throughout the several figures of the drawings.

Specifically describing the invention, a machine embodying the same comprises a suitable bed 1 which is mounted upon the supporting legs 2. At opposite end por-

tions of the bed are located the work holders 3 which are movable longitudinally in transverse slots 4 provided near the opposite ends of the bed 1. Vertical stops 5 are located at the rear edge of the bed 1 to assist in positioning the work when placed upon the bed ready for the mitering operation. The work may be clamped between the stops 5 and the work holders 3, or should the boards to be mitered be wider than the bed, the holders 3 will be moved to the rear side of the stops 5 and held in an inoperative position by the projections 6. At its central portion, the bed 1 is cut away, as shown at 1^a, and spanning the cut-away portion is a curved gage bar 7, preferably having graduations 8 upon its upper side and provided on its under side with recesses 9 at intervals. A saw-support 10 is pivoted beneath the central portion of the bed, as shown at 11, and is adapted to be moved in a horizontal plane. The support 10 carries on its upper side a recessed plate 12 provided with a pointer 13, the latter being movable in association with the graduations 8 of the gage bar 7, to facilitate positioning the saw-support at a predetermined angle in a horizontal plane. Below the outer portion of the plate 12 is a vertically movable clamp member 14, the upper end of which has a lateral extension engaging over the gage bar 7 and the lower portion of which has a horizontal opening 15 therethrough to receive a wedge 16. One edge of the wedge 16 operates through the opening 15 of the clamp member 14, while the other end of the wedge is connected with an eccentric 17 on a short shaft 18 adapted to be turned by the hand-wheel 19. By manipulation of the wheel 19, the wedge 16 is adapted to be moved longitudinally through the opening 15 to raise or lower the clamp member 14, and thus unlock and lock, respectively; the support 10 with regard to the bed of the machine.

The above means for clamping the saw-support 10 with respect to the bed 1 acts auxiliary to other means for positively accomplishing the same object. The latter means comprises a lever 20 pivoted to a side of the support 10 at 21 and engaging intermediate its ends in a notch in the side of a lock pin 22 mounted at one side of the support 10. A spring 23 encircles the pin 22 and normally tends to force said pin upwardly into engagement with the under

side of the gage bar 7. The pin 22 engages in any one of the recesses 9 when the latter register therewith. The recesses 9 will be located at such intervals as will afford a positive adjustment of the support 10 at certain angles in a horizontal plane. The saw support 10 is pivoted near one end of the same, as above mentioned, and the extremity adjacent the pivot, as well as that remote therefrom, carry upwardly extending bearings 24 and 25, said bearings being formed by the provision of spaced arc-shaped flanges. The bearing 24 is provided at the upper end of a fixed gage plate 26 carried by the outer end portion of the support 10. The saw-guide which is mounted on the support 10 is composed of the vertical end standards 27 and 28, said standards being provided intermediate their ends with approximately circular bearing flanges 29 which interlock with the flanges of the bearings 24 and 25 and thereby pivotally connect the standards aforesaid with the saw support. The lower ends of the standards 27 and 28 project a considerable distance below the plane of the bed 1 and are connected together by a bar 30. The upper ends of the standards 27 and 28 comprise the hollow vertically slotted portions 27' and 28', respectively, said hollow portions receiving the vertically adjustable guide members 32 and 33. The members 32 and 33 are likewise vertically slotted so that the saw may pass therethrough when mounted thereon, as well as through the slotted parts 27' and 28' of the respective guide standards.

It will be apparent from the foregoing that the parts 27, 28, 30, 32 and 33 are adapted for bodily, pivotal or swinging movement with the bearings 24 and 25 as an axis, so that the saw supported on the members 32 and 33 may be moved into angular positions with respect to the perpendicular. In order to hold the saw guide at a suitable angular adjustment after movement pivotally with respect to the support 10, the gage plate 26 is advantageously employed, being formed with a curved slot 26', through which an adjusting screw 31 passes, said screw carrying a block 34 which is received in a longitudinal slot 35 in the lower portion of the adjacent standard 28. When it is desired to adjust the saw guide, the operator can do this by grasping and imparting pivotal movement to one of the standards 27 and 28. The connecting bar 30 causes both standards to be moved simultaneously and during such movement the block 34 is carried lengthwise of the slot 26' of the gage plate 26. When the desired position of the guide has been reached, the operator tightens the screw 31 to hold the parts in their adjusted position. The guide member 32 is adapted to be held at a cer-

tain vertical adjustment by means of the clamp screw 37 and actuating member 38, said screw 37 passing through a vertical slot 39 in the lower end of the standard 27. The member 38 is adapted to directly engage the lower extremity of the guide member 32 to support the latter in a proper position.

A rotatable guide plate 40 is mounted on the bed 1 between the standards 27 and 28. It comprises a circular frame or body, shown clearly in Fig. 5, formed with a guide slot 41 in a radial arm 42 thereof, said arm 42 terminating at the center of the plate and being formed with a bearing 43 fitting in a bearing recess 44 in the upper surface of the bed 1. The lower portion of the guide plate 40 has spaced projections 45 interlocking with a rib or flange 46 on the upper side of the bar 30 whereby, when the saw guide including the bar 30 is swung or moved pivotally on the support 10, rotatable movement will be imparted to the rotatable guide plate 40 through the connections established by the parts 45 and 46. The guide 41 of the guide plate 40 is in alinement with the guide slots of the parts 27 and 28, 32 and 33. Bearing blocks 47 extend laterally from the lower ends of the standards 27 and 28 and receive the ends of the shaft 48 which is parallel to the bar 30 and which carries at its opposite extremities the upwardly extending locking arms 49 having the lateral projections 50 adapted to pass through openings 51 in the sides of the standards 27 and 28, so that when the members 50 pass through said openings 51, the guide members 32 and 33 may be held in inoperative upraised position. A suitable handle 52 may be employed to operate the locking means comprising the parts just described.

From the foregoing, it will be understood that to hold the saw in a desired adjustment, the support 10 may be moved in a horizontal plane about its pivotal axis 11 and held at a suitable adjustment by means of the locking devices 20 and 22, or the auxiliary locking means comprising the clamp block 14 which is actuated by the wedge 16. Should it be desired to hold the saw at an angle to the perpendicular either with or without angular adjustment of the support 10 in a horizontal plane, it is only necessary to move the saw guide pivotally about the bearings 24 and 25 and position the guide properly by adjustment of the screw 31. Adjustment of the saw guide, of course, simultaneously affords adjustment of the rotatable guide plate 40.

The fixed gage plate 26 is provided on its lower edge with a series of notches 26'' which are engaged by a locking member 55 eccentrically mounted on a shaft 56, as clearly disclosed in Figs. 11 and 13. A

modified form of locking member, as shown in Figs. 3 and 15, may also be used in place of the locking member 55, the former being of bell-crank shape and having the locking terminal 57 and the operating arm 58.

The adjustment screw 31 is provided with the nut 34, the upper edge of which is pointed as at 59 to facilitate the proper adjustment on the graduated gage plate 26. The lower edge of the nut 34 is beveled to permit the proper manipulation of the locking lever 58.

Instead of having the connection between the rotatable guide plate 40 and the swinging saw frame illustrated in Fig. 5, the connection as shown in Fig. 12 may be used, the latter comprising spaced projections 46' carried by the bar 30 and the single projection 45' carried by said rotatable guide plate and extending between said projections.

From the foregoing it will be observed that when it is desired to swing the saw frame the locking member 55 may be rotated from engagement with the plate 26 whereupon the saw frame may be properly moved to the desired adjustment. Should it be desired to adjust the saw frame at an angle not obtainable by the engaging of the locking member in the notches 26'', the adjustment screw 31 will be used, as will be obvious. The frame may be provided with a pair of slotted plates 1', as illustrated in Fig. 16.

A modified form of adjustment means 38' is illustrated in Fig. 17, the latter being slidably mounted on the locking arm 49. A leaf spring 60 is carried by the standard 28 and engages in a slot formed in the base of one of the locking arms 49, whereby the normal tendency of the locking arms 49 is to force the projections 50 against the guide members 32 and 33.

Having thus described the invention, what is claimed as new is:—

1. In a miter box, the combination, with a bed, of a saw support extending across and beneath the bed, a pivot pin extending upwardly through the saw support and engaging the bed to sustain the support pivotally and leaving the same free to swing horizontally beneath the bed, bearings connected to and spaced above the saw support, saw guides journaled in the bearings in position for swinging vertically, means connecting the guides, a guide disposed between the first mentioned guides and mounted to rock upon the bed, the axis of rocking movement being in the line of the axis of movement of the saw guides, and means connecting the second mentioned guide to

the connecting means of the first mentioned guides for effecting simultaneous action of all of the guides.

2. In a miter box, the combination, with a bed, of a saw support mounted thereon, vertical saw guides arranged at opposite portions of the support and pivotally connected therewith for swinging vertically, a bar connecting the lower ends of the saw guides beneath the bed, a guide plate disposed intermediate said saw guides and comprising a circular frame disposed to inclose portions of the bed, said frame having a radial arm extending toward its center and slotted to receive a saw, the arm being mounted to rock on the bed, and to thus pivotally support the guide plate, and means of connection between the lower portions of the guide plate and the connecting bar for the saw guides.

3. In a miter box, the combination, with a bed, of a saw support extending across and beneath the bed, means pivotally connecting the support to the bed and allowing the support to swing freely horizontally, saw guides pivotally connected to the end portions of the saw support in position for swinging vertically, means connecting said saw guides, a guide plate intermediate said saw guides comprising a circular frame having a pendent slotted arm, the lower end of the arm being of arcuate form, and the bed being formed with an arcuate recess receiving said lower end of the arm for permitting rocking of the guide plate in said arcuate recess, the axis of movement of the guide plate being in line with the axis of movement of the saw guides, and means connecting the guide plate to the saw guides for effecting cooperative movements thereof.

4. In a miter box, the combination of a bed, a saw support mounted thereon, standards at the opposite ends of the support, guide members mounted for vertical movement in said standards, a bar rigidly connecting the lower ends of the standards, means on the saw support for pivotally supporting the standards intermediate their ends, a shaft carried by said standards, locking arms mounted on said shaft and cooperating with the guide members to hold the latter at a desired adjustment, and means for operating said shaft to actuate the locking arms.

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

WILLIAM A. BREMER.

Witnesses:

HENRY M. KNUTSON,
TONY VER HULST.