Dec. 20, 1927. 1,653,386

A. S. BEYLAND

MITER BOX

Filed Aug. 25, 1923 3 Sheets-Sheet 1

Fig. 1.

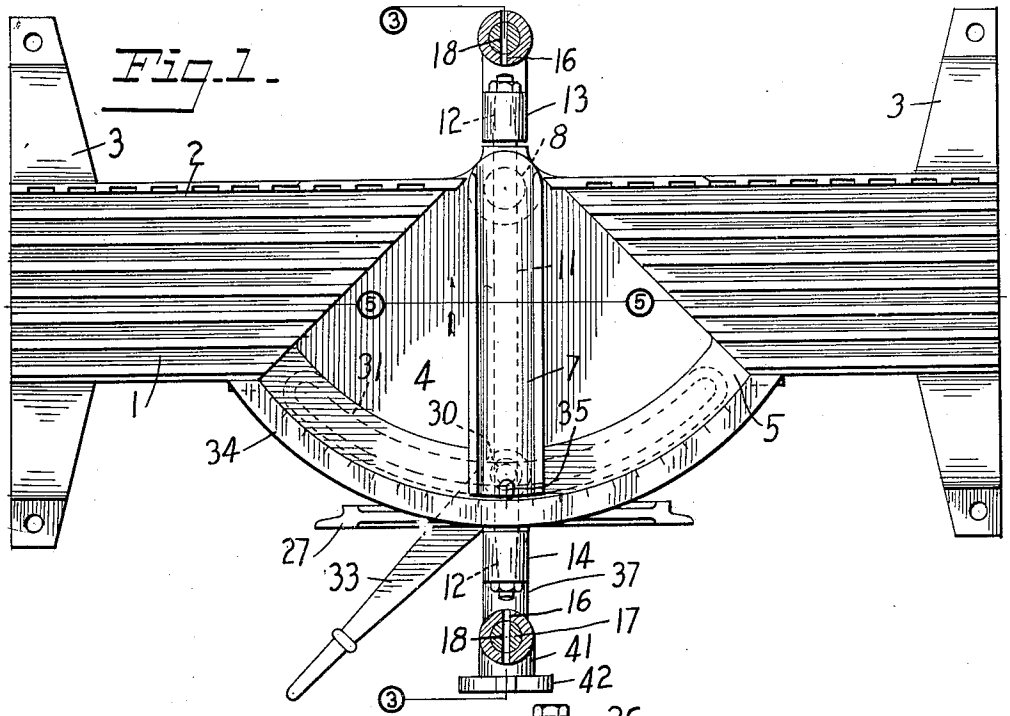
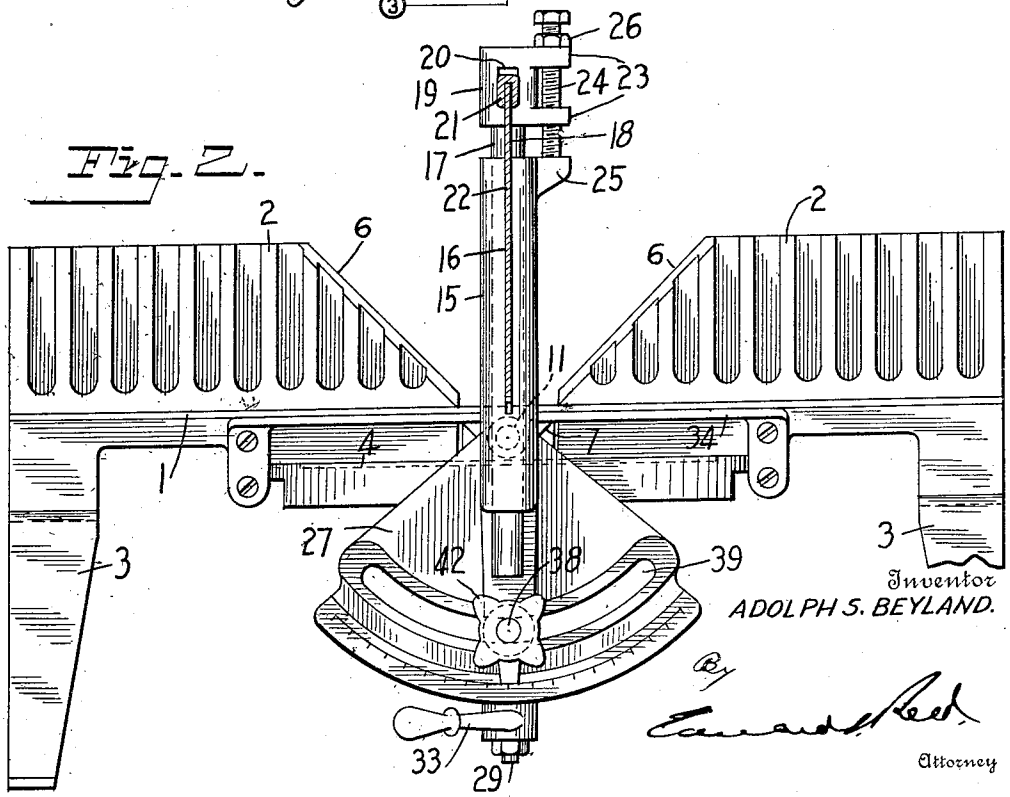


Fig. 2.



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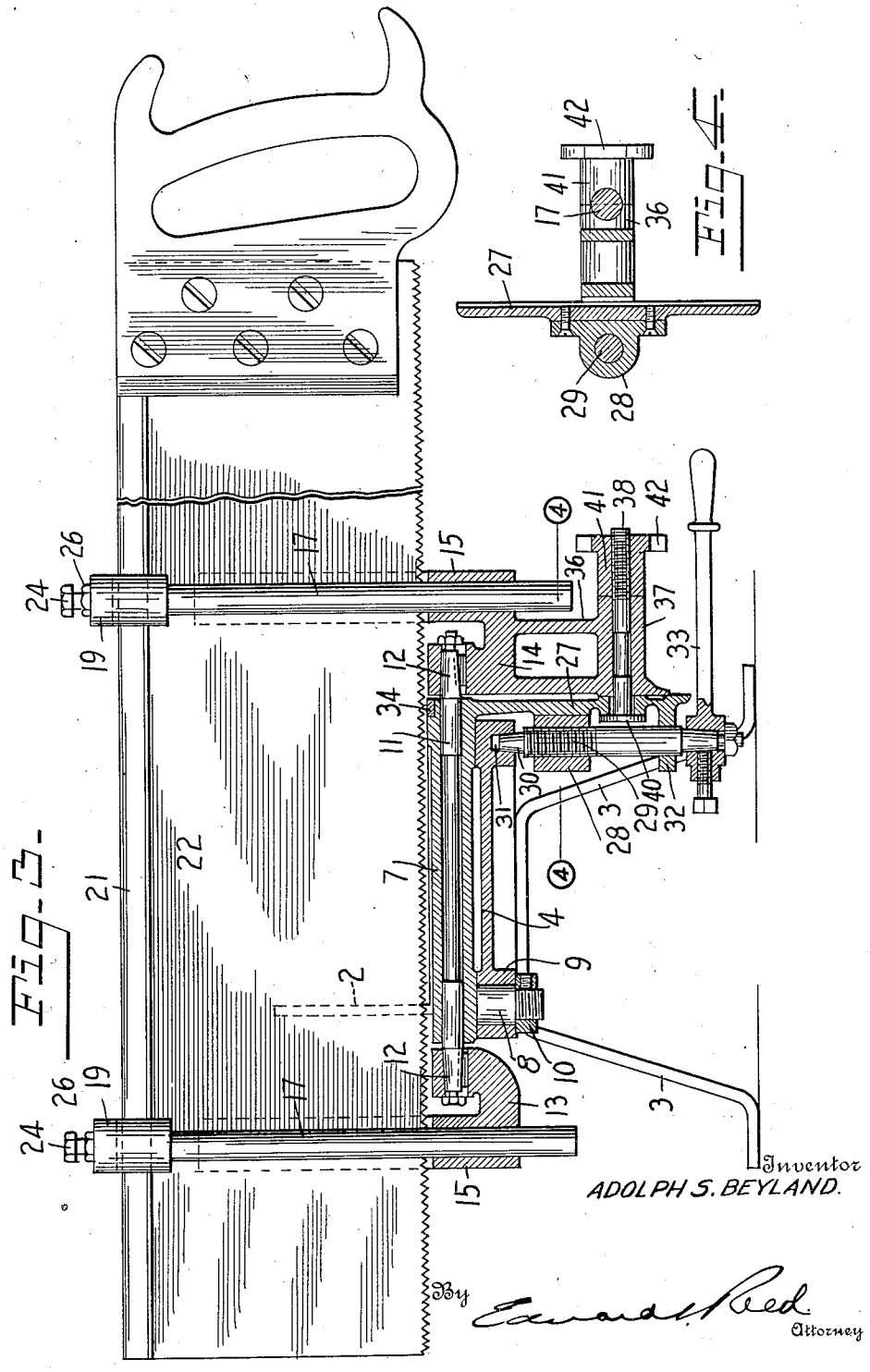
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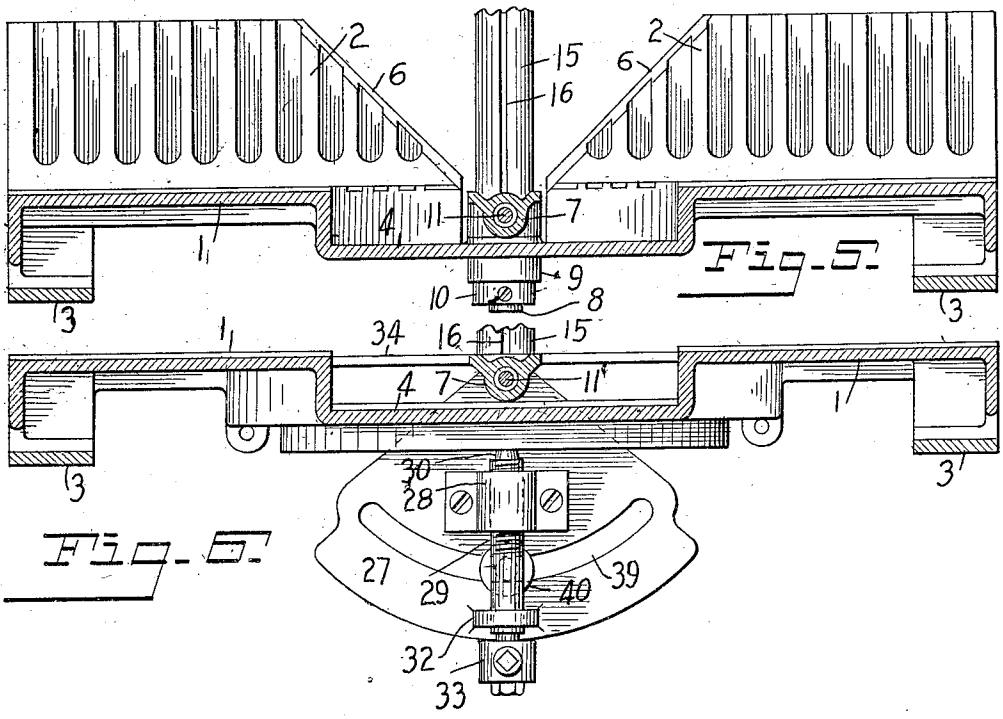


Fig. 5.

Fig. 6.

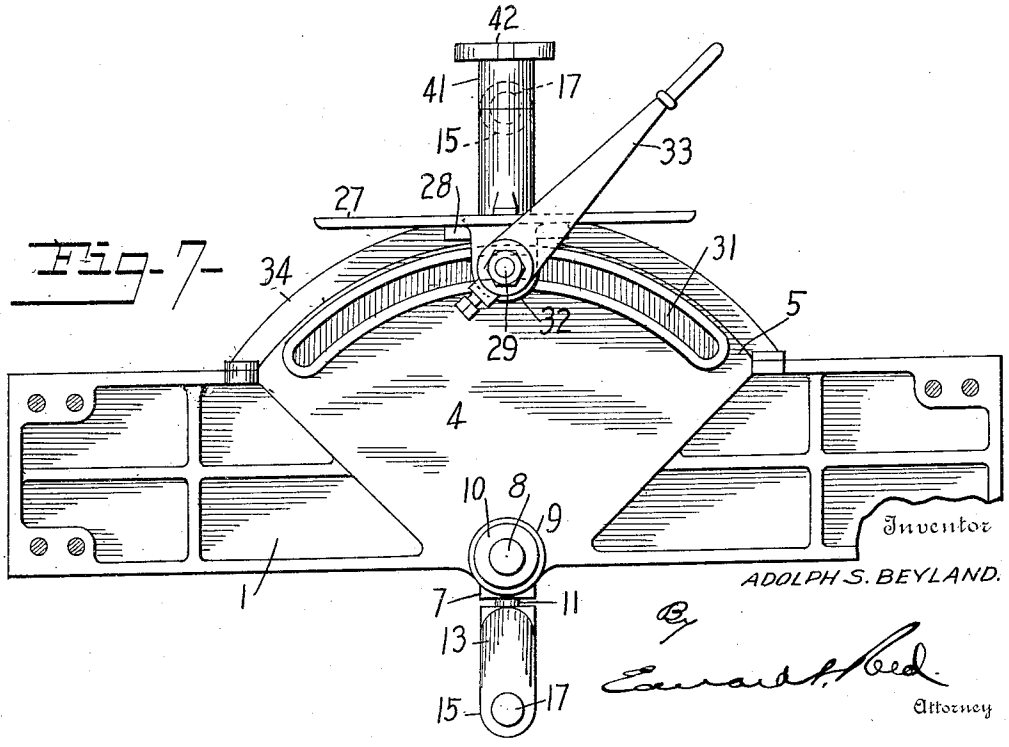


Fig. 7.

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UNITED STATES PATENT OFFICE.

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MITER BOX.

Application filed August 25, 1923. Serial No. 659,299.

This invention relates to miter boxes such as are used by carpenters and cabinet makers for sawing boards or strips at certain predetermined angles.

One object of the invention is to provide a miter box of such a character that the saw may be positioned to cut at an acute angle to the vertical plane or at an acute angle to the horizontal plane; or to cut at both angles simultaneously.

A further object of the invention is to provide such a device in which the adjustments may be quickly and easily made and in which the adjustable parts may be rigidly secured in their adjusted positions.

A further object of the invention is to provide a device of this kind which will be simple in construction and operation and of a strong durable character.

Other objects of the invention will appear as the invention is described in detail.

In the accompanying drawings Fig. 1 is a plan view of a miter box embodying my invention showing the saw guides in section; Fig. 2 is a front elevation of the same; Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1; Fig. 4 is a section taken on the line 4—4 of Fig. 3; Fig. 5 is a section taken on the line 5—5 of Fig. 1, looking in the direction of the arrows; Fig. 6 is a section taken on the line 5—5 of Fig. 1, looking in the direction opposite that indicated by the arrows; and Fig. 7 is a bottom plan view of the device.

In these drawings I have illustrated one embodiment of my invention and have shown the same as comprising a work support consisting of a base 1 and an upright back wall 2 extending upwardly from the rear edge of the base and rigidly secured thereto. This work support is mounted on supporting brackets or standards 3 by means of which it may be supported on a bench and, if desired, rigidly secured thereto. The base or bottom member of the work support has its intermediate portion depressed below the level of the end portions thereof, as shown at 4. The edges of this depressed portion diverge from the rear edge of the base to the front edge thereof and the forward part of the depressed portion of the base is extended beyond the adjacent edge of the base in the form of an arc, as shown at 5, so that the depressed portion as a whole is substantially sector shaped. The back wall has its intermediate portion cut away to provide a V-shaped opening 6 through which a saw may extend and which will permit the saw to be adjusted about a horizontal axis.

Mounted upon the work support is a saw supporting structure which is of such a character that the saw may be positioned at any angle to the vertical plane of the back wall 2 within the range of the edges of the depressed portion 4 of the base, and may be positioned at any angle to the horizontal plane of the base within the range of the diverging edges of the V-shaped opening 6 in the back wall. This saw supporting structure comprises a pivoted arm or swinging member 7 which is mounted on a vertical axis adjacent to the back wall 2 and within the depressed portion 4 of the base 1. As here shown, the rear end of this arm is provided with a stud 8 which is mounted in a bearing 9 formed at the apex of the sector shaped depression in the base and is secured therein by a nut 10. The pivoted member 7 extends forwardly across the base and has its forward end arranged adjacent to the curved outer end of the sector 4. Carried by this pivoted member or arm 7 are two upright saw guides arranged on the opposite sides of the base. These saw guides may be of any suitable character and may be secured to the swinging arm in any suitable manner but, as here shown, that arm is provided with a longitudinal bore in which is mounted a rod or shaft 11 the end portions of which extend beyond the respective ends of the arm and are tapered, as shown at 12. Mounted on the respective tapered portions of the rod 11 and held against rotation thereon are brackets 13 and 14 each of which is provided with an upwardly extending tubular part 15, those portions of the tubular parts lying above the base being provided with vertical slots 16 to receive the saw and the two tubular members being secured in fixed relation one to the other so that the slots will be in perfect alinement. Slidably mounted within each of the tubular members 15 is a rod 17 having a longitudinal slot 18 which registers with the slot 16 in the tubular member. At its upper end the rod 17 is provided with an enlarged portion or head 19 having an opening 20 to receive the stiffening bar 21 of a miter saw 22. The inner portions or rods 17 of the telescoping saw guides may be elevated to permit the saw to be inserted therein above the level of the

work which rests upon the work support and as the saw cuts through the work these inner members will move downwardly with the saw. Preferably stops are provided to so limit the downward movement of the inner members of the telescoping guides as to prevent the saw coming in contact with the metal base of the work support. As here shown, the head 19 of each guide member 17 is provided with screw threaded lugs 23 in which is mounted a screw 24 the lower end of which is arranged to engage a lug 25 on the tubular member 15 of the guide and thus limit the downward movement of the saw. The screw may be adjusted to accommodate the same to the width of the saw that is being used and when the adjustment has been made the stop or screw may be rigidly secured in its adjusted position by a lock nut 26.

It will be apparent that the saw supporting structure may be swung about the axis of the swinging member 7 so as to position the saw at various angles with relation to the vertical back wall of the work support. This adjustment may be accomplished and the saw support may be held in its adjusted position in any suitable manner but, in the present instance, I have provided a locking device by means of which the saw supporting structure may be secured in any position with relation to its vertical axis. To this end the forward end of the swinging arm of the saw supporting structure is provided with a depending portion 27 which, in the present instance, is sector shaped and is provided with a lug 28 which, in the present instance, is formed separate therefrom and has a screw threaded opening adapted to receive a screw threaded rod or bolt 29 the upper end of which is slightly reduced in size and tapered as shown at 30. The lower side of the curved outer portion 5 of the part 4 of the base is provided with an arcuate groove 31 the side walls of which converge toward its base so as to provide a tapered seat for the tapered end of the rod or bolt 29. In the present construction, the depending plate 27 is provided with a second lug 32 to receive and guide the unthreaded lower portion of the pin or bolt 29. Rigidly secured to the bolt 29, below the lug 32, is a handle 33 by means of which the bolt may be rotated and the screw threads caused to move the tapered portion 30 thereof into and out of wedging contact with the converging walls of the groove 31 of the base. It will be apparent therefore that by loosening the locking bolt 29 and then grasping any convenient part of the saw supporting structure the latter can be moved about a vertical axis to a desired position and by then operating the handle 33 in the opposite direction the structure can be rigidly secured in that position. Preferably a curved plate or strip 34 is mounted at its ends on the forward edge of the base 1 and extends about the curved edge of the depressed portion 4 of the base. This plate is provided with graduations which may, if desired, be divided into degrees and minutes and which are adapted to register with an index or mark 35 on the adjacent portion of the swinging arm 7, thereby enabling the angular position of the saw to be accurately adjusted.

The saw guides are also adjustable about a horizontal axis to permit the saw to be positioned at an acute angle to the horizontal plane of the base. As has been stated the saw guides are carried by brackets 13 and 14 rigidly secured to the ends of a rod or shaft 11 which is journaled in the bore in the swinging arm 7 so that the saw guides move with the arm 7 about its vertical axis and may be rotated relatively thereto about a horizontal axis. In order to secure the saw guides in their adjusted positions with relation to the horizontal axis the supporting bracket 14 has a depending portion 36 provided at its lower end with a bearing 37 in which is slidably mounted a rod or bolt 38 which extends through a curved slot 39 in the plate 27 and is provided with a head 40 to engage that plate on the inner side thereof. The other end of the bolt 38 extends beyond the outer end of the bearing 37 and is screw threaded to receive a nut 31 which may, if desired, be provided with a flanged head 42 to provide a hand grip therefor. By screwing the nut down against the adjacent end of the bearing 27 the head 40 will be drawn against the plate 27 and the bearing and plate clamped together and consequently the bracket 14 will be locked rigidly against movement with relation to the plate 27. The plate 27 being carried by the swinging arm 7 the saw supporting structure as a whole can be moved about the vertical axis regardless of the position of the saw guides with relation to the horizontal axis, and likewise the saw guides may be moved about the horizontal axis regardless of the position of the arm 7 with relation to this vertical axis.

The operation of the device will be readily understood from the foregoing description and it will be apparent that I have provided a miter box of such a construction that the saw may be positioned at any angle to the vertical plane within the range of adjustment and at any angle to the horizontal plane within the range of adjustment, thereby enabling the work to be cut at any desired angle and, further, enabling the cut to be made at acute angles both to the vertical plane and to the horizontal plane. Further, it will be apparent that the device is very simple in its construction and operation, that the adjustments may be quickly and easily made and that when adjusted the

movable parts are rigidly held in their adjusted positions. Further, the device is of a strong durable character and will not be easily broken or disarranged so as to interfere with its operation.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may appear to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a miter box, a work support, a saw supporting structure comprising a member extending transversely to said work support and pivotally mounted at one end for movement about a vertical axis, saw guides carried by said pivoted member and arranged in fixed relation one to the other, said work support having an arcuate tapered groove in the lower surface thereof, a locking bolt carried by said pivoted member and having a tapered end adapted to enter said groove, and means for actuating said bolt to move said tapered end into and out of locking engagement with the walls of said groove.

2. In a miter box, a work support, a saw supporting structure comprising a member extending transversely to said work support and pivotally mounted at one end for movement about a vertical axis, saw guides carried by said pivoted member and arranged in fixed relation one to the other, said work support having a curved portion provided with an arcuate tapered groove in the lower surface thereof, a plate rigidly secured to and depending from said pivoted member adjacent to said groove, a screw threaded lug carried by said plate, a bolt screw threaded into said lug and having a tapered end adapted to enter said groove with a wedging action, and means for actuating said bolt.

In testimony whereof, I affix my signature hereto.

ADOLPH S. BEYLAND.