No. 646,479. Patented Apr. 3, 1900.

J. W. WILKINSON.

MITER BOX.

(Application filed Dec. 29, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

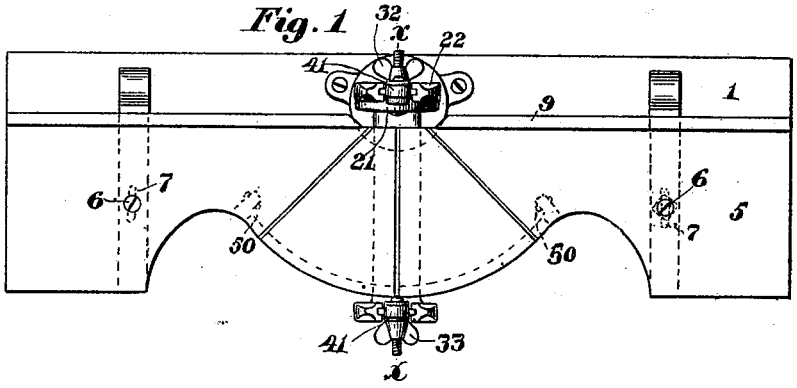

Fig. 2.

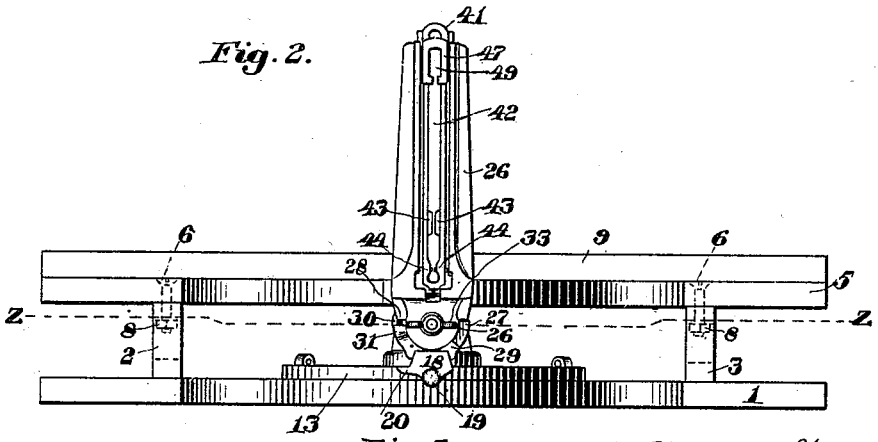

Fig. 3.

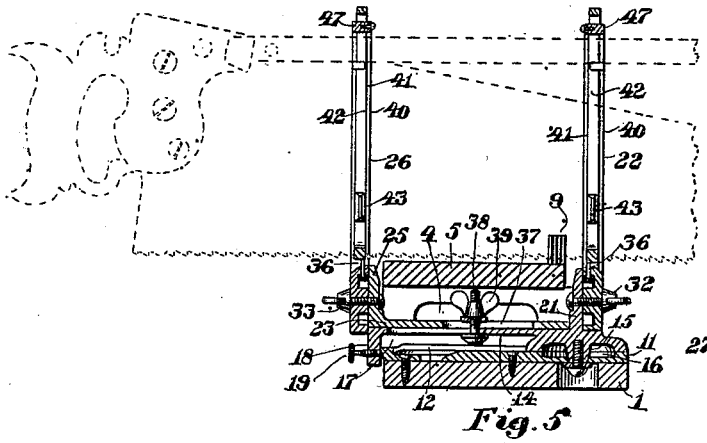

Fig. 4

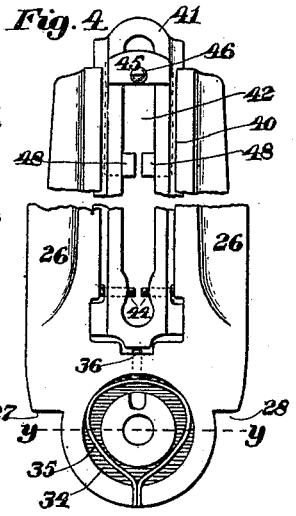

Fig. 5

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No. 646,479. Patented Apr. 3, 1900.

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(Application filed Dec. 29, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 6.

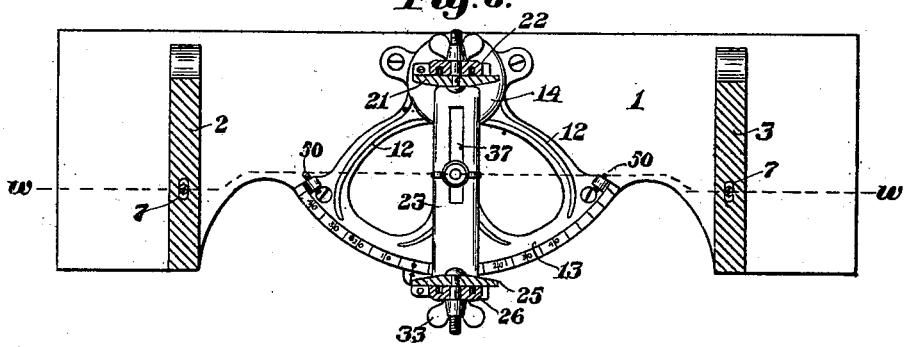


Fig. 7.

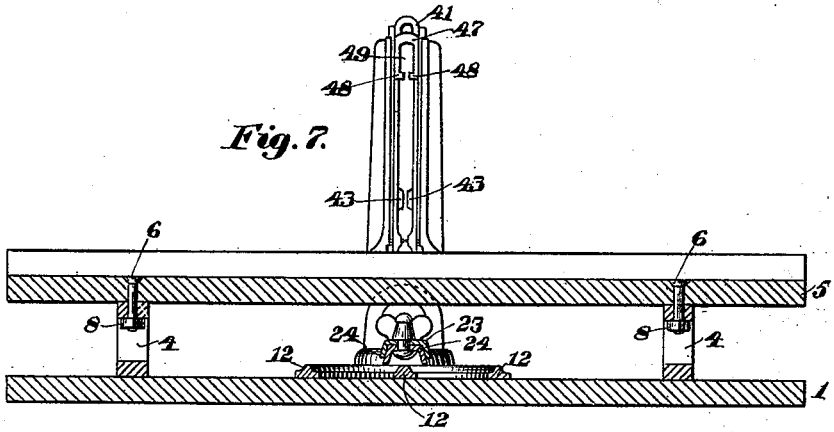


Fig. 9.

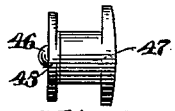


Fig. 10.

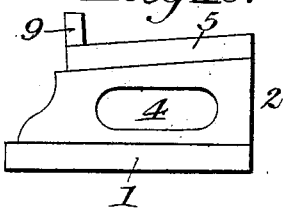
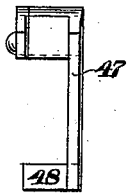


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN W. WILKINSON, OF CAMBRIDGE, MASSACHUSETTS.

MITER-BOX.

SPECIFICATION forming part of Letters Patent No. 646,479, dated April 3, 1900.

Application filed December 29, 1899. Serial No. 741,973. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. WILKINSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Miter-Boxes, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to miter-boxes of that class in which the saw-guiding frame is movable about a pivot-pin and adapted to be adjusted to any angle from a right angle to the gage to an angle of forty-five degrees in either direction from said right angle; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereto appended and in which my invention is clearly pointed out.

Figure 1 of the drawings is a plan of my improved miter-box. Fig. 2 is a front elevation. Fig. 3 is a vertical section on line *x x* on Fig. 1. Fig. 4 is an elevation of the inner side of one of the upwardly-projecting pivoted standards and its vertically-movable saw-guiding bar, drawn to an enlarged scale. Fig. 5 is a section on line *y y* on Fig. 4. Fig. 6 is a sectional plan, the cutting plane being on line *z z* on Fig. 2. Fig. 7 is a vertical section on line *w w* on Fig. 6, and Figs. 8 and 9 are respectively a side elevation and a plan of the adjustable guide for the saw-back bar. Fig. 10 is an end elevation of the base-board and table with the saw-guiding mechanism removed and illustrating to an exaggerated degree the inclination of the upper surface of the work-supporting table relative to the base-board.

In the drawings, 1 is the base-board of the miter-box. 2 and 3 are bars extending transversely of said base, and each has a slot 4 cut through it, as shown in Figs. 3 and 7. The work-supporting table 5 rests upon and is secured to the upper edges of said bars by the screw-bolts 6, which are fitted to round holes in said table and pass through slots 7 in the upper portions of said bars and screw into nuts 8, as shown, so that said table may be readily adjusted slightly about either of said bolts to bring the back gage or bar 9, secured thereon, into a correct right-angled position relative to a line drawn through the pivotal axis of the saw-guiding frame and the center of the front saw-guiding slot of said frame when said frame is set to the zero-mark on the graduated segment 13. The upper surface of the table 5 is inclined toward the rear at a grade of about one-twelfth of an inch to one foot for the purpose of compensating for the tendency of the saw to follow the grain of the wood and cut under, due to the set of the saw-teeth, when sawing obliquely to said grain, and thereby producing a cut that is not a plane at a right angle to the bottom of the stock. The upper surface of the base-board 1 has secured thereon in a fixed position a segmental metal casting comprising the circular plate-section 11, the radial arms or spokes 12, and the segmental rim 13, the upper surface of which is graduated, as shown in Fig. 6. The circular plate portion of said segmental casting has pivoted thereto the arm 14, the hub of which has formed on its under side the tapered hub 15, which has a bearing in the plate 11 and is also provided with the annular chamber 16, which may be filled with oil-saturated wool or other suitable absorbent material to serve as a means of lubricating the bearing-surfaces thereof. The forwardly-projecting portion of said arm 14 has formed therein the longitudinal slot 17 and has formed upon its extreme end the downwardly-projecting lug or ear 18, in a threaded hole in which is fitted the set-screw 19, the inner end of which impinges against the outer beveled edge of the rim 13 to firmly secure said arm in the desired adjusted angular position relative to the gage 9. The ear or lug 18 has formed upon one side thereof the laterally-projecting lip 20, the upper surface of which is upon a level with the graduated upper surface of the rim 13 and has an index-mark formed thereon to guide the operator in adjusting said arm 14 and the parts carried thereby to the desired angular position relative to said gage 9. The bar 14 also has formed upon its rear end the upwardly-projecting ear 21, to which is pivoted the slotted standard 22, which may be adjusted to any desired position from a perpendicular to an angle of forty-five degrees from said

perpendicular by the operation of the clamping-nut 32.

The arm 14 has adjustably secured thereon the arm 23, provided on its under side with the downwardly-projecting lips 24, which embrace the edges of the arm 14 and serve to guide said arm 23 when it is moved endwise upon the arm 14 to adjust the distance between the front and rear saw-guides to the size of the work being operated upon.

The arm 23 has formed upon its front end the upwardly-projecting ear 25, to which is pivoted the slotted standard 26, having formed on opposite edges thereof near its lower end the shoulders 27 and 28, which respectively engaging with the lug 29 on the ear 25 and with the stop-screw 30, set in the lug 31 on said ear 25, limit the movement of said standard about its pivot-pin in either direction.

The standard 22 is provided with shoulders corresponding to those on standard 26, and the ear 21 is provided with fixed and adjustable stops corresponding to the lug 29 and stop-screw 30 on ear 25, whereby said standard 22 is limited in its movement about its pivot-pin in either direction precisely the same as the standard 26 is limited.

The standards 22 and 26 are firmly secured in the desired adjusted positions by means of the thumb-nuts 32 and 33, respectively.

The inner faces of the standards 22 and 26 have annular recesses 34 formed therein concentric with the axes of the pivot-pins upon which they are mounted, in each of which is secured the spring 35, bent into a nearly-circular form, with the two ends thereof secured in a slit in the wall of said recess, as shown in Fig. 4. Each of said standards has fitted to a bearing therein perpendicularly above the axis of its pivot-pin a headed push-pin 36, the head of which rests upon said spring 35, as shown in Fig. 4.

The arm 23 has formed therein the longitudinal slot 37, and said arm 23 is firmly secured in the desired adjusted position on the arm 14 by the clamping-bolt 38 and thumb-nut 39, as shown in Figs. 3, 6, and 7.

The standards 22 and 26 are slotted from their upper ends downward to a point below the upper surface of the work-supporting table 5, and the inner edge of each fork of each standard has formed therein a rectangular longitudinal groove 40, and each standard has fitted to said grooves, so as to be vertically movable therein, a bar 41, the lower ends of which rest upon the push-pins 36, as shown in Fig. 4. The bars 41 have each formed therein a longitudinal slot 42, extending nearly the whole length thereof and having a width for the greater part of its length at least equal to the thickness of the back bar of the saw to be used therein. At a point distant from the lower end of said slot 42 not greater than the width of the narrowest portion of the saw-blade to be used therein said slot is contracted by the inwardly-projecting beveled lugs 43 to a width only slightly in excess of the thickness of said saw-blade. Near the lower ends of said bars two screws 44 are set therein from opposite sides, with their inner ends at a distance apart approximately equal to the thickness of said saw-blade, and serve to guide said saw just above the teeth thereof.

In the upper end of the slot 42 is adjustably secured, by means of the clamping-plate 45 and screw 46, the slotted guide-block 47, provided with the inwardly-projecting lips 48, which are separated from each other by a space equal to or slightly exceeding the thickness of the saw-blade. The rectangular opening 49 in said block receives and guides the back bar of the saw, as indicated in dotted lines in Fig. 3, where a portion of the saw to be used in this miter-box is represented in dotted lines, but forms no part of this invention, as it forms the subject-matter of another application of mine of even date herewith.

The segmental rim 13 has its outer edge beveled or cut under, as shown in Fig. 3, so that when the set-screw is screwed against said beveled surface the pressure thereon will tend to draw the front end of the arm 14 downward into close contact with the rim 13, as shown in said Fig. 3. The ends of the rim 13 are each provided with a screw-stop 50 to limit the movement of the saw-guiding standards and their carrying-arms 14 and 23 about the pivot-hub 15 and determine the forty-five-degree position of said guiding-frame.

The adjustability of the saw-back-guiding block in the vertically-movable bars 41 is an important feature of my invention, as by the means of such adjustment said blocks are readily adapted to the varying width of the saw due to repeated sharpening thereof or the varying widths of different saws. So, also, the springs 35 and push-pins 36 are very important, as the tension of the springs 35 raises the saw slightly above the surface of the work-supporting table 5 after each cut is completed, so that the saw and its guiding-frame may be moved to the opposite angle without touching the surface of said table.

It will be seen that the central portions of the front edges of the base-board and work-table are cut away to the same curve as the front edge of the segmental rim 13.

The operation of my invention will be readily understood from the foregoing description, in connection with the accompanying drawings, without further explanation here.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a miter-box, the combination with the work-supporting table and a saw-guiding frame movable about a vertical axis to the extent of ninety degrees, of two slotted vertically-movable guiding-bars carried by said frame and each provided with a pair of inwardly-projecting lugs 43, a pair of adjust-

able guide-screws set in the lower portion of each of said vertically-movable bars, and adapted to guide the saw just above its toothed edge; a pair of vertically-movable push-pins set in said frame, one beneath each of the vertically-movable guide-bars; springs acting upon said push-pins to move them and said guide-bars upward, when the cut is completed and pressure is removed from the saw; and a back-bar-guiding block adjustably secured in the upper portion of the slot in each of said saw-guiding bars.

2. In a miter-box, the combination with a pivoted saw-guiding frame comprising two forked standards, of two vertically-movable slotted guide-bars fitted to said standards; a vertically-movable push-pin set in each of said standards beneath its vertically-movable guide-bar and in contact therewith; and a spring acting upon said push-pin to move it and the guide-bar upward when the cut is completed and the pressure is removed from the saw.

3. In a miter-box, the combination with a saw-guiding frame movable about a vertical axis to the extent of forty-five degrees in either direction from a central position at right angles to the back gage and constructed and arranged to guide the toothed edge of the saw in a horizontal plane; of a work-supporting table provided with a suitable back gage and having its upper surface inclined to a horizontal toward the rear substantially as and for the purposes described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 26th day of December A. D. 1899.

JOHN W. WILKINSON.

Witnesses:
N. C. LOMBARD,
J. A. BACON.