(No Model.) 2 Sheets—Sheet 1.

W. J. POWELL.

MITER BOX.

No. 303,320. Patented Aug. 12, 1884.

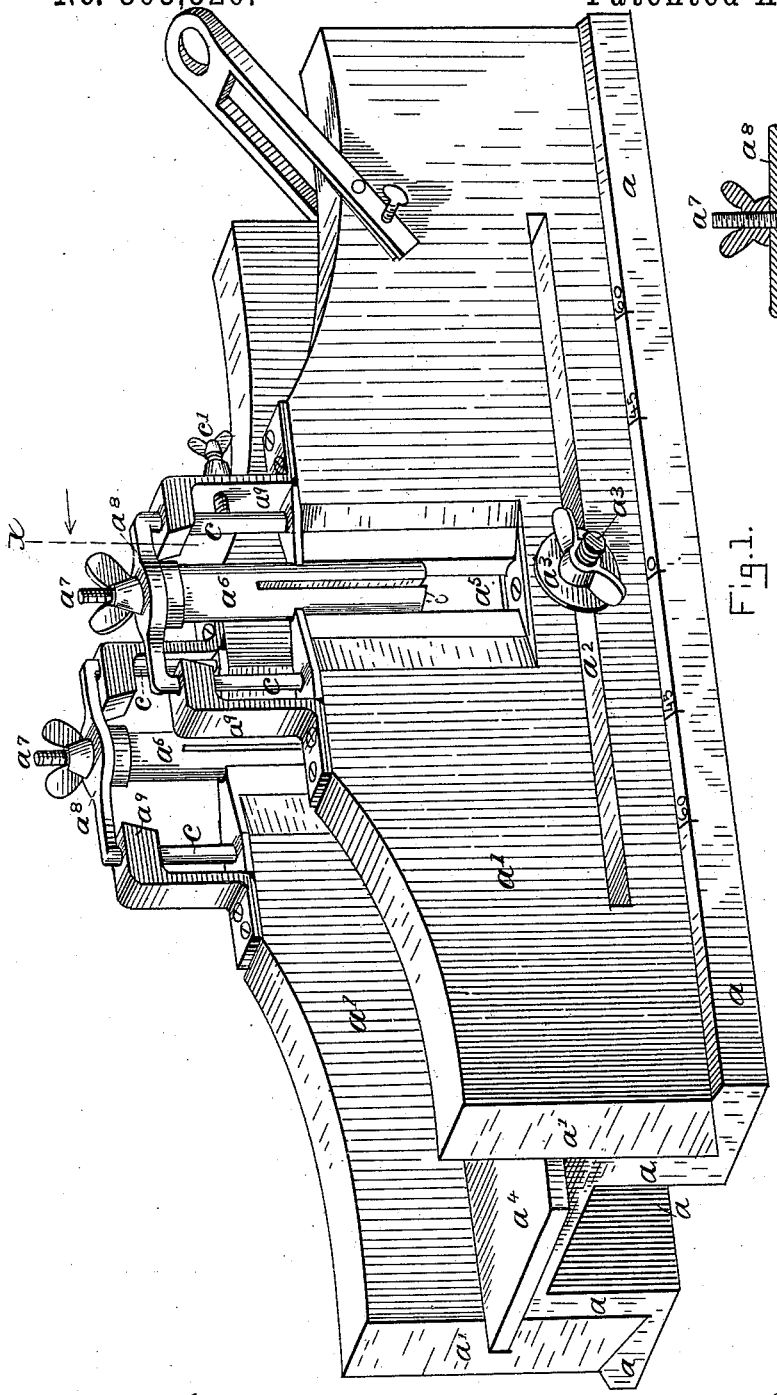

Fig. 1.

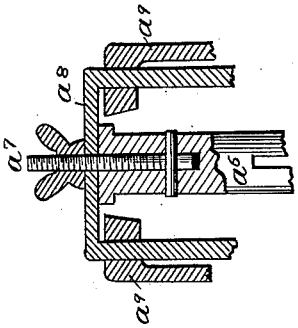

Fig. 5.

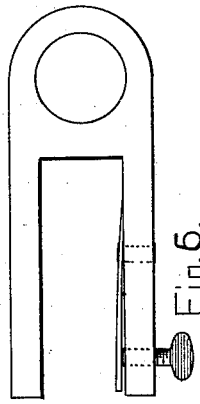

Fig. 6.

Witnesses.
Chas. Houghton
John F. Eaton

Inventor
Wm. J. Powell

(No Model.) 2 Sheets—Sheet 2.

W. J. POWELL.

MITER BOX.

No. 303,320. Patented Aug. 12, 1884.

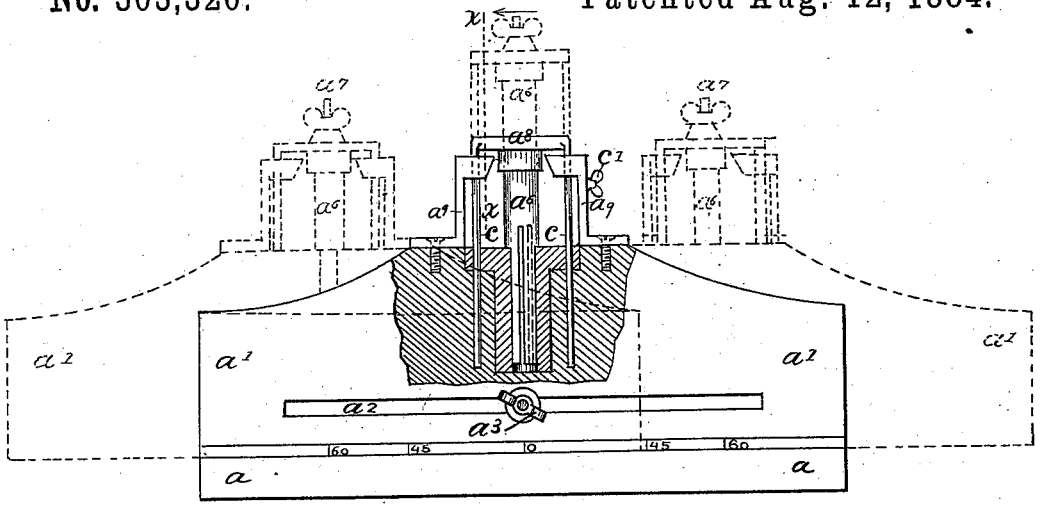

Fig. 2.

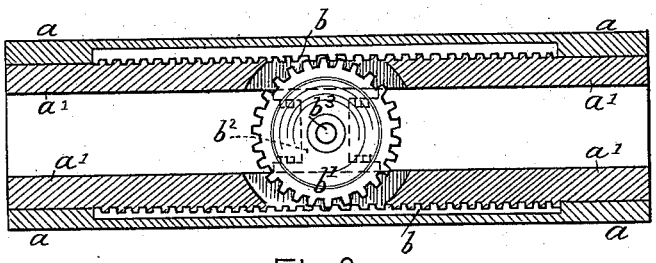

Fig. 3.

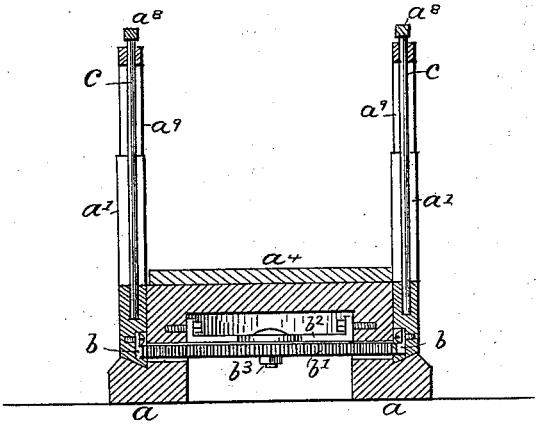

Fig. 4.

Witnesses.
Ch² Houghton
John F. Eaton

Inventor.
Wm. J. Powell

UNITED STATES PATENT OFFICE.

WILLIAM J. POWELL, OF MARSHFIELD, MASSACHUSETTS.

MITER-BOX.

SPECIFICATION forming part of Letters Patent No. 303,320, dated August 12, 1884.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. POWELL, of Marshfield, in the county of Plymouth and Commonwealth of Massachusetts, have invented a new and useful Improvement in Miter-Boxes, of which the following is a specification.

My invention relates to the construction and arrangement of the several parts of the box, the object of it being to provide a miter-box which can be instantaneously adjusted for a cut of any angle from one degree to sixty, or even eighty degrees; and it consists in the devices hereinafter described.

In the drawings annexed, Figure 1 shows the miter-box in isometrical projection or partial side perspective. Fig. 2 shows a side elevation of the miter-box. Fig. 3 is a longitudinal section through the box below the bed-plate, showing the rack and pinion which regulate the position of the sides of the box. Fig. 4 is a cross-section through the center of the saw-guides. Fig. 5 is a longitudinal section of the top of one of the saw-guides. Fig. 6 shows a spring-clamp which can be affixed to either side of the miter-box to keep the piece of lumber in the box in place.

a is the bed-plate of the miter-box.

a' a' are the side pieces of the box, and both are removable by removing the nut and screw described below, and are movable longitudinally on the bed-plate in opposite directions, the movement being so controlled by racks on the lower inside of both of them, working with a pinion between them, that when one side moves longitudinally on the bed-plate the other moves in the opposite direction over equal space or distance. These side pieces are beveled at the bottom to fit into beveled grooves in the base of the bed-piece, in which they slide to and fro. Both these side pieces have a slot or opening cut through them near the bottom, extending about two-thirds the length, which permits them to move longitudinally over the screw-bolt which holds them to the bed-piece.

a^2 is the slot mentioned.

a^3 is a screw-bolt with thumb-nut and washer at one end and a broad head at the other end, extending transversely through the miter-box and its side pieces below the bed-plate. This screw-bolt holds the side pieces to the bed-plate. When it is desirable to move the side pieces on the bed-plate, the thumb-nut is loosened and the side pieces will slide in the beveled groove in the lower part of the bed-plate. The side pieces are firmly secured in any desired position on the bed-plate by turning up the thumb-nut a^3.

a^4 is a loose bottom laid on the bed-plate to prevent the saw-teeth from coming in contact with the bed-plate.

a^5 a^5 are vertical openings through the side pieces, in which the saw-guides hang suspended from above. These openings are beveled on both sides to permit the saw in the saw-guides to swing to any desired possible angle across the bed-plate. The vertical edges of these openings in the side pieces are fitted with a metal shield, which will be cut on a circle to correspond to the circle of the surface of the saw-guides and embrace them loosely, so that they cannot get out of place.

a^6 a^6 are the saw-guides cylinders, of hard wood, a little longer than the depth of the opening a^5, and of a diameter to fit loosely in the vertical opening a^5 in the side pieces, with a longitudinal slot in the center of each from the lower ends upward far enough to accommodate the width of the saw used. These saw-guides are secured to a supporting-yoke over the upper ends of them by a screw-bolt inserted and firmly fixed in the center of the top end of the saw-guides, having a thumb-nut at its outer end, which is marked a^7.

a^8 a^8 are the supporting-yokes, from which the saw-guides a^6 are suspended. These yokes are supported by brackets affixed to the top edges of the side pieces, which are marked a^9. At each end of the supporting-yokes a^8, and integral with the yokes, are guide-rods marked c, which extend downward through openings made for them in the brackets a^9, and through the side pieces, a'. When the thumb-nuts a^7 are loosened, the saw-guides a^6 may be partially revolved on the axial line of them to bring the slot c^2 in them, in which the saw is placed and guided in the line in which the saw is to move. The saw-guides a^6, with the yoke a^8 and the guide-rods c, may be raised or low-

ered or removed by lifting the whole together, or they may be fixed at any desired altitude in the side pieces by a set-screw, as shown at c'. The slots in the saw-guides for the saw to move in are marked c^2. On the outside base of one or both of the side pieces I place figures to indicate the different degrees of the angle at which the saw will cut the work when the figures are opposite the center of the side plate, as indicated by the slot c^2 in the saw-guide.

b b, Fig. 3, Sheet 2, are racks on the insides of the bottom of the side pieces, a', having uniform equal teeth projecting inward and engaging with the teeth of a pinion-gear between them.

b' is a pinion-gear located under the bed-plate of the box, between and with its teeth matching into the teeth on the racks b b. This pinion-gear is supported by a bracket extending across the bed-plate, to which it is attached by a screw-bolt and nut, on which it will revolve. The bracket supporting the pinion b' is marked b^2, and the screw-bolt on which the pinion b' revolves is marked b^3. The racks b b, and the pinion b', with the teeth on the racks engaging the teeth of the gear, so act on and control the side pieces, a', that if either is moved along on the bed-plate the other will be moved an equal distance in the opposite direction, carrying with them the saw-guides, and a saw placed in the slot in the saw-guides will be across the bed-plate at the angle indicated by the figures on the base of the bed-plate, and the thumb-nut a^3, being set up close, will secure the side pieces in the position in which they are placed, and the thumb-nuts a^7 being set up, the saw-guides will be securely fixed. By loosening the thumb-nuts a^3 and a^7 the side pieces may be moved to make the line of the saw take any desired angle to the line of the side pieces.

The convenience and advantages of this miter-box are obvious.

I claim as new and my invention—

1. The above-described improved miter-box, consisting of a bed-plate, a, having beneath it a pinion-gear, b', the side pieces, a', having on each a rack, b, and brackets a^9, in combination with yokes a^8, the guide-rods c, and the saw-guides a^6, having the screws and thumb-nuts a^7, all substantially as described, for the purposes set forth.

2. In a miter-box, in combination with a bed-plate and side pieces constructed as described, the saw-guides a^6, the supporting-yokes a^8, the guide-rods c, and the securing-screws and thumb-nuts a^3 and a^7, all substantially as described.

WM. J. POWELL.

Witnesses:
CHS. HOUGHTON,
EUGENE P. CARVER.