

No. 667,917.

Patented Feb. 12, 1901.

J. H. MATSON.

MITER BOX.

(Application filed Nov. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2

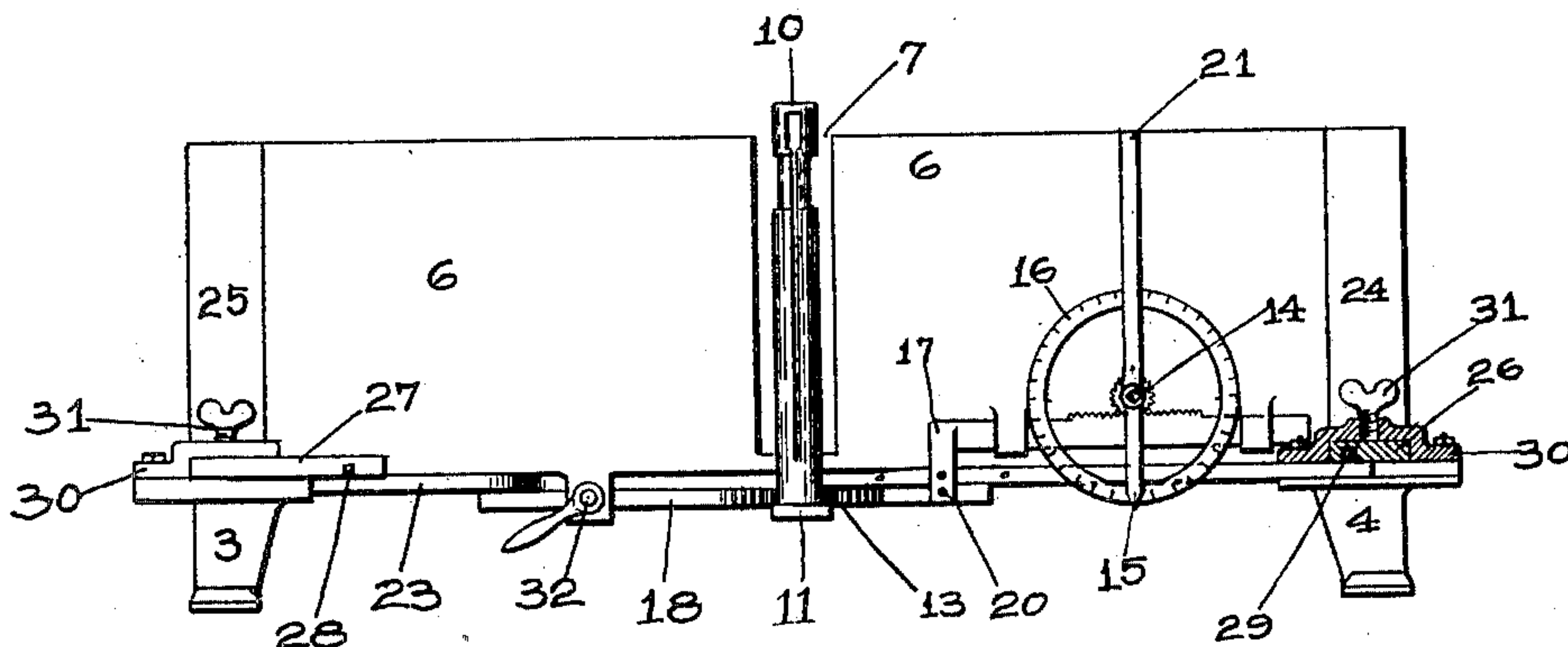
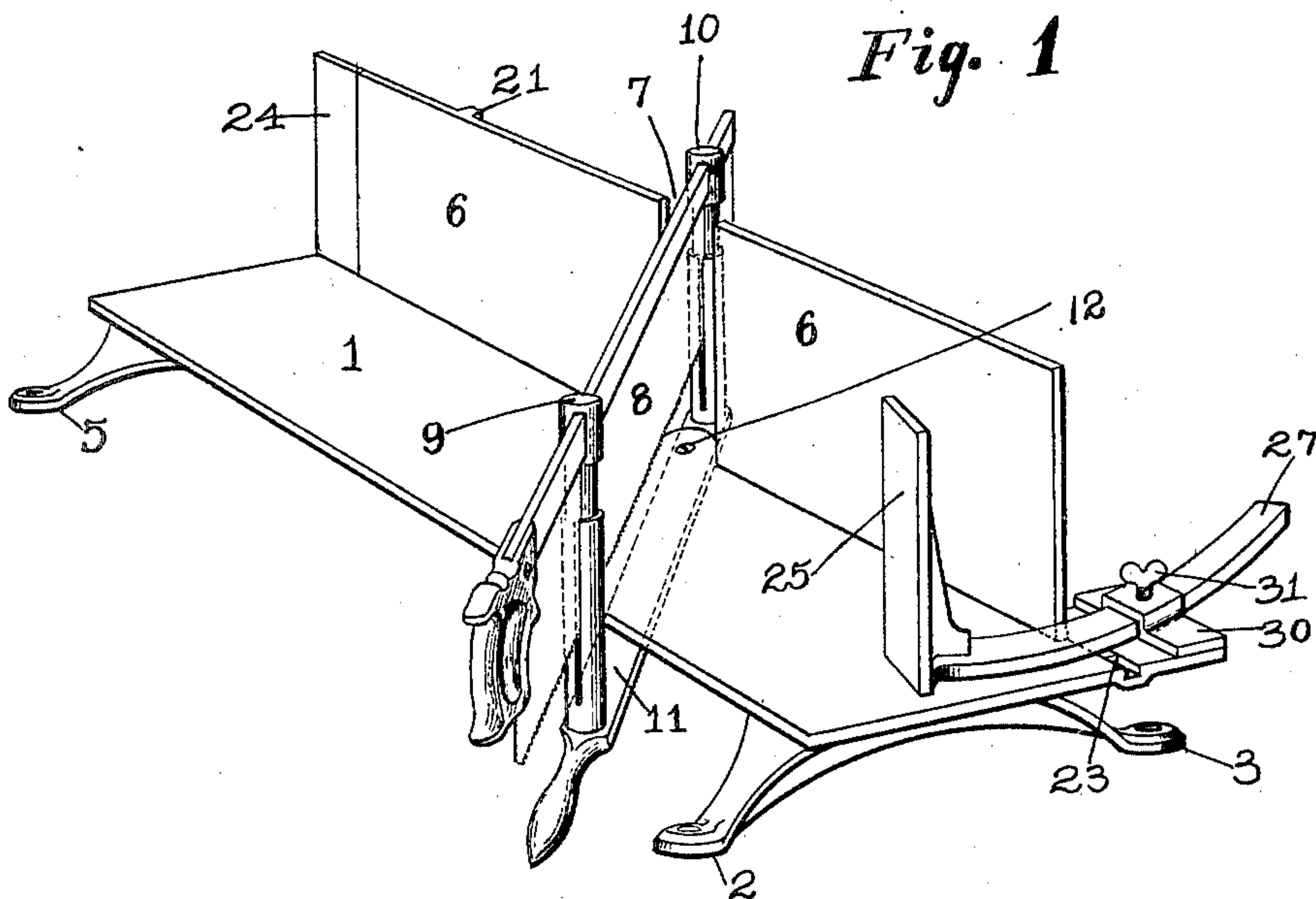


Fig. 1



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INVENTOR:

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By Willard Eddy, Atty.

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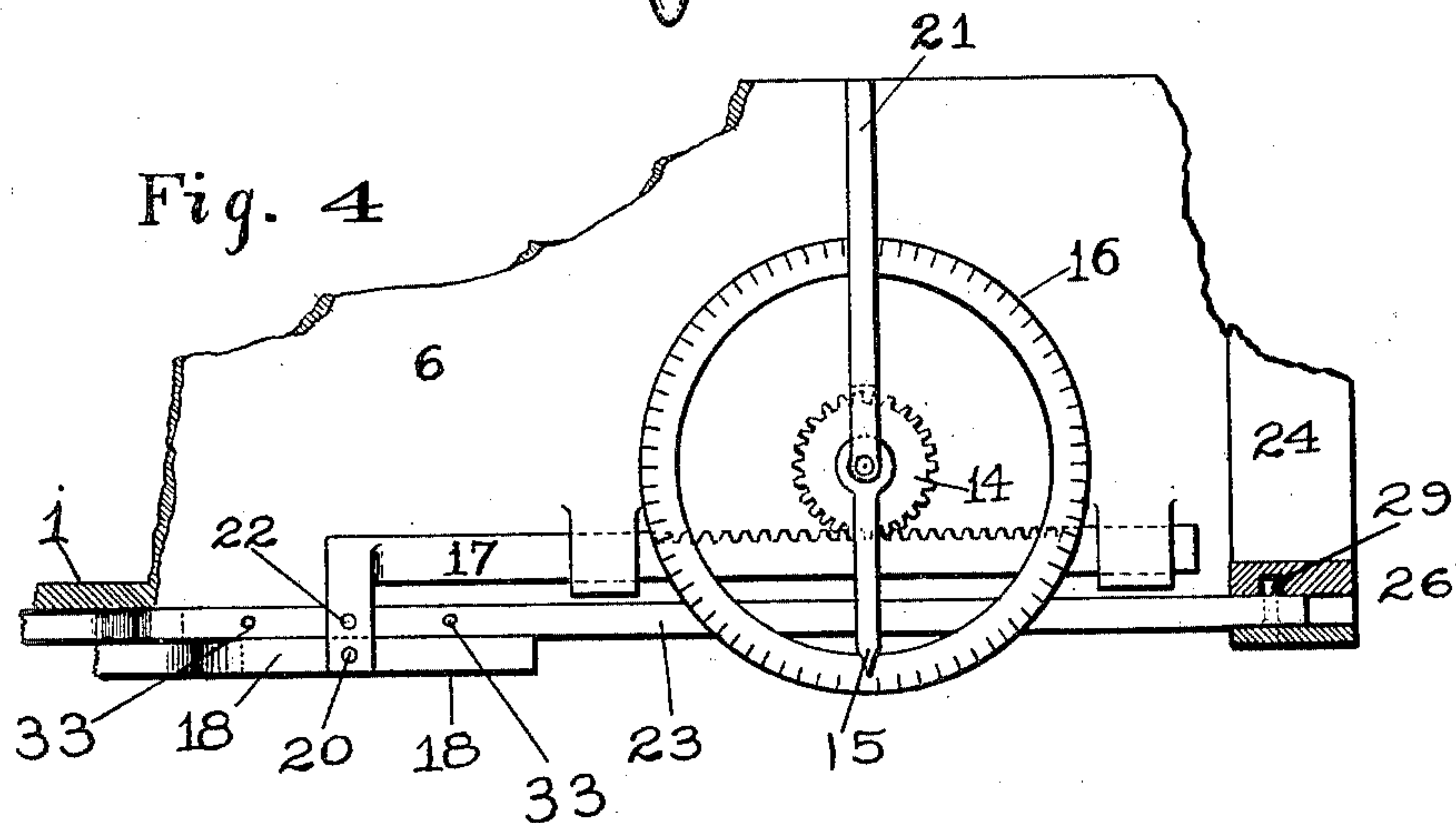
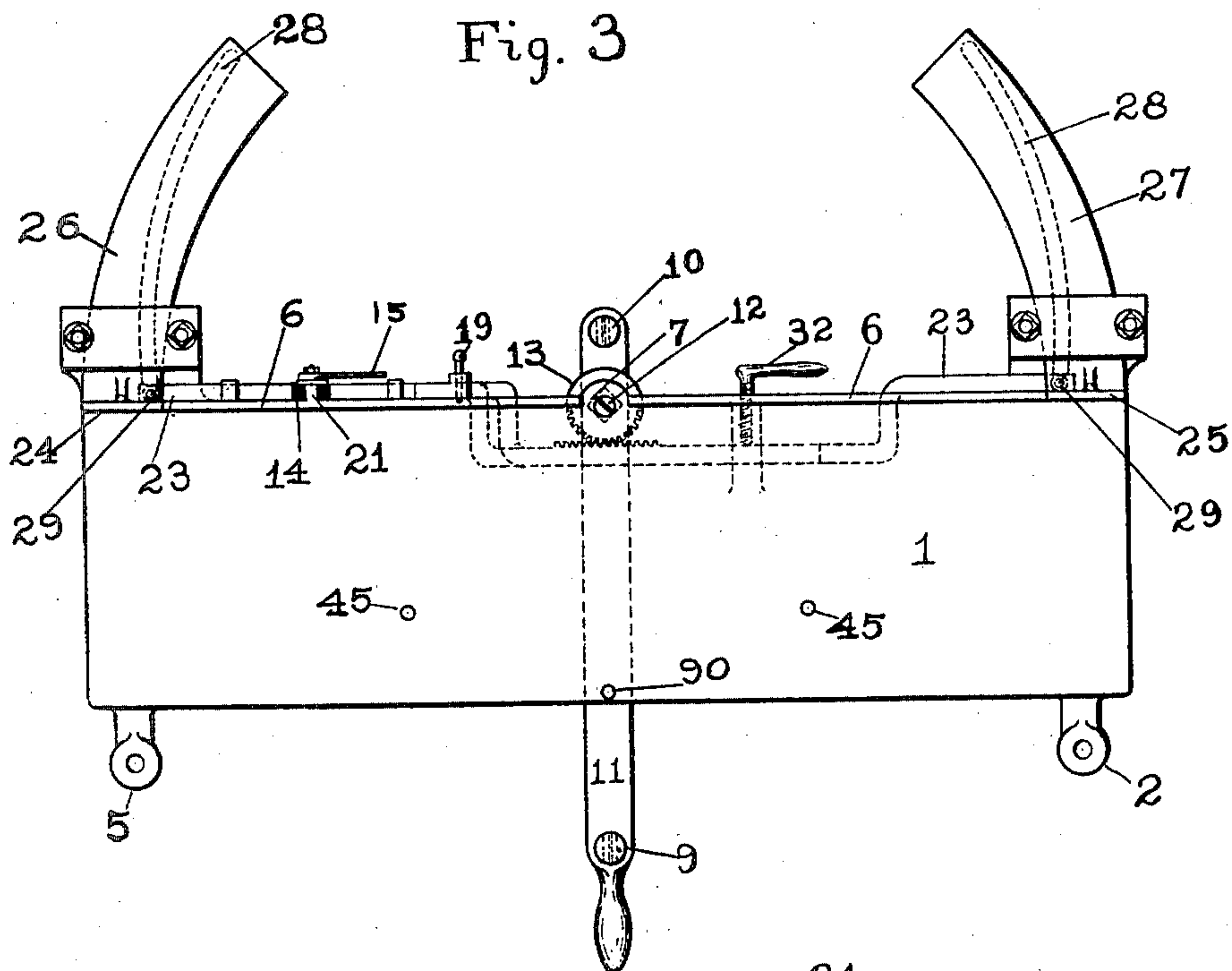
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# UNITED STATES PATENT OFFICE.

JOHN H. MATSON, OF HARTFORD, CONNECTICUT.

## MITER-BOX.

SPECIFICATION forming part of Letters Patent No. 667,917, dated February 12, 1901.

Application filed November 15, 1900. Serial No. 36,596. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. MATSON, of the city and county of Hartford, in the State of Connecticut, have invented certain new and useful Improvements in Miter-Boxes, which improvements are described in the following specification and are illustrated by the accompanying drawings.

My invention relates to that class of miter-boxes in which the saw-guides are adjustable according to the required angular direction of the kerf. Its object is to facilitate in such a box the necessary adjustments of the saw-guides and to provide for special adjustments of the stock that is to be sawed. As respects the saw-guides, this object of my invention is accomplished by means of a horizontal pivoted lever, upon which they are mounted. As respects the molding or other stock which is to be cut, special adjustments thereof are facilitated by means of adjustable fence-posts, which may be advanced upon the face of the bed through any necessary angle, and as respects both the saw-guides and the stock the necessary adjustments are aided by a pivoted index-finger, which is adapted to receive, through intermediate mechanism, twice the angular movements of the pivoted lever and of the sliding posts severally, and hence to register at every adjustment of the box the entire angle at which the pieces of stock to be sawed off during that adjustment would unite in a miter-joint.

The best mode in which I have contemplated applying the principles of my invention is exhibited in said drawings, wherein—

Figure 1 is a perspective view of a miter-box constructed in accordance with those principles and holding a miter-saw in a working position. Fig. 2 is a rear elevation, and Fig. 3 is a plan, of the same box. Fig. 4 is an enlarged part of Fig. 2.

In the views the numeral 1 denotes the flat bed of the box. This bed, which is supported in a horizontal position by feet 2, 3, 4, and 5, may advantageously be made of iron or steel, with a thin wooden covering for the protection of the saw-teeth.

The numeral 6 denotes the fence, which rises perpendicularly from the back edge of bed 1 and is divided in the middle by a vertical slot

7 for the accommodation of said saw 8. The latter is held in working positions by a saw-frame consisting of two vertical split guides 9 and 10 and a horizontal lever 11, on which those guides are carried. This lever is pivoted to the underside of bed 1 by pin 12 at a point in the plane of the face of fence 6, all in the usual manner, as shown in Figs. 1 and 3. On the same pin 12 and below bed 1, as shown in Figs. 2 and 3, a cog-wheel 13 is fastened to lever 11. Projecting slightly from the under side of bed 1 are catches 45 and 90, which are respectively adapted to engage said lever 11 whenever that pivoted member is turned on its pivot, so as to form an angle of forty-five degrees or ninety degrees with the plane of fence 6. To the back side of fence 6 there is pivoted a second cog-wheel 14, carrying an index-finger 15, which is adapted to traverse a graduated arc 16. (Shown in Figs. 2 and 4.) Motion from cog-wheel 13 is communicable to cog-wheel 14 by an intermediate sliding rack, which consists of two separable parts 17 and 18. (Shown in Figs. 2 and 4.) These two parts, which engage said cog-wheels, respectively, are united, when necessary, by a removable pin 19, which is shown in Fig. 3. For that purpose this pin may be inserted in both said rack members in a hole 20, which is shown in Figs. 2 and 4. The rack member 18 may be clamped in any desired position of adjustment by screw 32. The described gearing is multiplicative in such sense that the turning of lever 11 through any pivotal angle when rack members 17 and 18 are so united will cause a deflection of index-finger 15 through twice that angle. The theoretical zero position of lever 11 is in the plane of the face of fence 6, and the corresponding zero position of finger 15 is vertically upright, so that when lever 11 is brought to an angle of ninety degrees from zero, as shown in Fig. 3, the index-finger 15 is brought to a position one hundred and eighty degrees from zero, as shown in Fig. 4. On the back of fence 6 is fastened a straight vertical strip 21, which crosses the center and zenith of the graduated arc 16. A second slide 23, which is visible to a greater or less extent in each of the drawings, is adapted to be united with the rack member 17 by means of the same pin 19, which may for that purpose be inserted in pin-hole



22 of said rack member and in either of the pin-holes 33 in said slide. At the ends of fence 6 are two vertical posts 24 and 25, which are adapted to form parts or continuations of that fence and are mounted, respectively, upon the horizontal curved slides 26 and 27. These slides, which are held in their respective orbits by guides 30 or clamped in position therein by set-screws 31, have each an inferior cam-groove 28 (shown in broken lines in Fig. 3) and adapted to accommodate a pin 29, which sticks up from slide 23. The centers of the curvature, and hence of the possible orbital motion of the cam-slides 26 and 27, are located, respectively, in the vertical lines which are next to slot 7 in the face of fence 6, and the curvature of the cam-grooves 28 is such that any angular movement of either of those slides about its said center may communicate to finger 15 through slide 23 and sliding rack member 17, united by pin 29, an angular movement of twice as many degrees.

Such being the construction of my improved miter-box, its mode of use and operation remains to be described in two cases—first, when the stock is to be cut off at an angle of not less than forty-five degrees, that being the least convenient angle of inclination of lever 11 to the plane of fence 6, and, second, when the stock is to be cut off at an angle of less than forty-five degrees. In the first case the rack members 17 and 18 being fastened together by pin 19, a bevel having its arms set at an angle equal to that of the proposed miter-joint is placed with one of its arms evenly against the side of strip 21 and with its other arm in position to be met by finger 15. Then lever 11, starting, it may be, from its ninety-degree position, (shown in Fig. 3,) is swung by hand to such a position that finger 15 is brought up evenly against the other arm of the bevel. The strip 21 and the finger 15 then form with each other the angle of the required miter-joint, or alternatively, without the use of the bevel, the same adjustment may be produced by turning lever 11 in such a manner as to bring finger 15 to the described angular position, determined by observation of the graduated scale 16. Whenever by either method finger 15 and strip 21 form with each other the angle of the proposed miter-joint, the saw-frame will be in position for the cutting of the stock at one-half that angle—namely, the angle at which the same must be cut to form that joint. The saw may then be locked in the same angular position by the set-screw

32, acting upon slide 18. In the second case lever 11 being turned to its forty-five-degree position and held there by catch 45 and finger 15 being held accordingly in a horizontal position, the rack member 17 also and the plain slide 23 being united by the same pin 19, withdrawn from pin-holes 20 and inserted in pin-holes 22 and 23 for that purpose, the fence-post 24 or 25, toward which lever 11 is deflected, is advanced by hand upon bed 1, as shown in Fig. 1. By this movement index-finger 15, being actuated by cam-slide 27 through cam-groove 28, pin 29, slide 23, and rack member 17, is so turned before the face of the graduated arc 16 as to form, with strip 21, an angle equal, as before, to the angle at which the arms of the required miter-joint are to be united. By screw 31 the parts are then clamped in the desired position. The stock, being laid against the face of the advanced fence-post and against the near edge of slot 7, will then be in position to be cut at the requisite angle by the saw so set in its position of deflection of forty-five degrees, as above described.

Such being the construction and operation of my invention, I claim—

1. In a miter-box, a pivoted saw-frame and a separately-pivoted index-finger, in combination with multiplying-gear for actuating the index-finger from the saw-frame, substantially as and for the purpose specified.

2. In a miter-box, a sliding fence-post, and a pivoted index-finger, in combination with mechanism for actuating the index-finger from the fence-post, substantially as and for the purpose specified.

3. In a miter-box, a pivoted saw-frame, a pivoted index-finger, and a pair of sliding fence-posts, in combination with mechanism for actuating such index-finger from the saw-frame and from the fence-posts, substantially as and for the purpose specified.

4. In a miter-box, a bed, a slotted fence, a pivoted saw-frame, and a pivoted index-finger, in combination with a sliding fence-post, and mechanism for actuating the index-finger from the saw-frame and from the fence-post, substantially as and for the purpose specified.

In testimony whereof I hereunto set my name in the presence of two witnesses.

JOHN H. MATSON.

Witnesses:

WILLARD EDDY,  
CHARLES EDDY.