

MITER BOX.

Patented Jan. 24, 1911.

5 SHEETS--SHEET 1.

Fig. 1.

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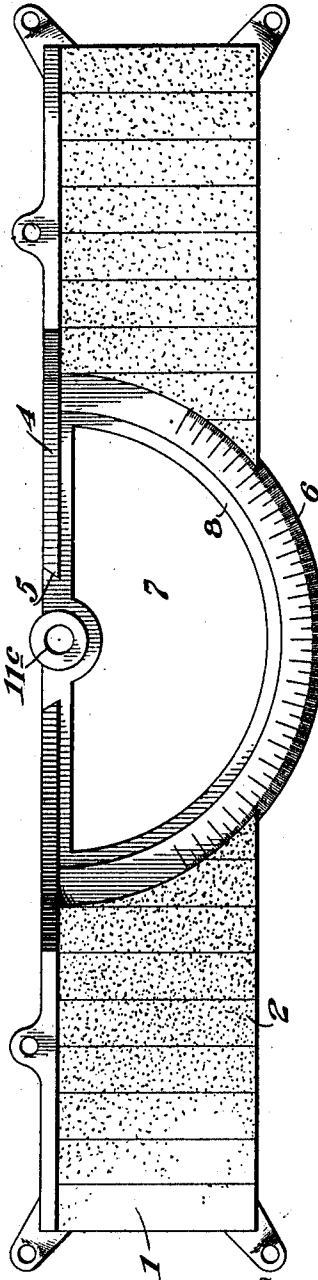


Fig. 2.

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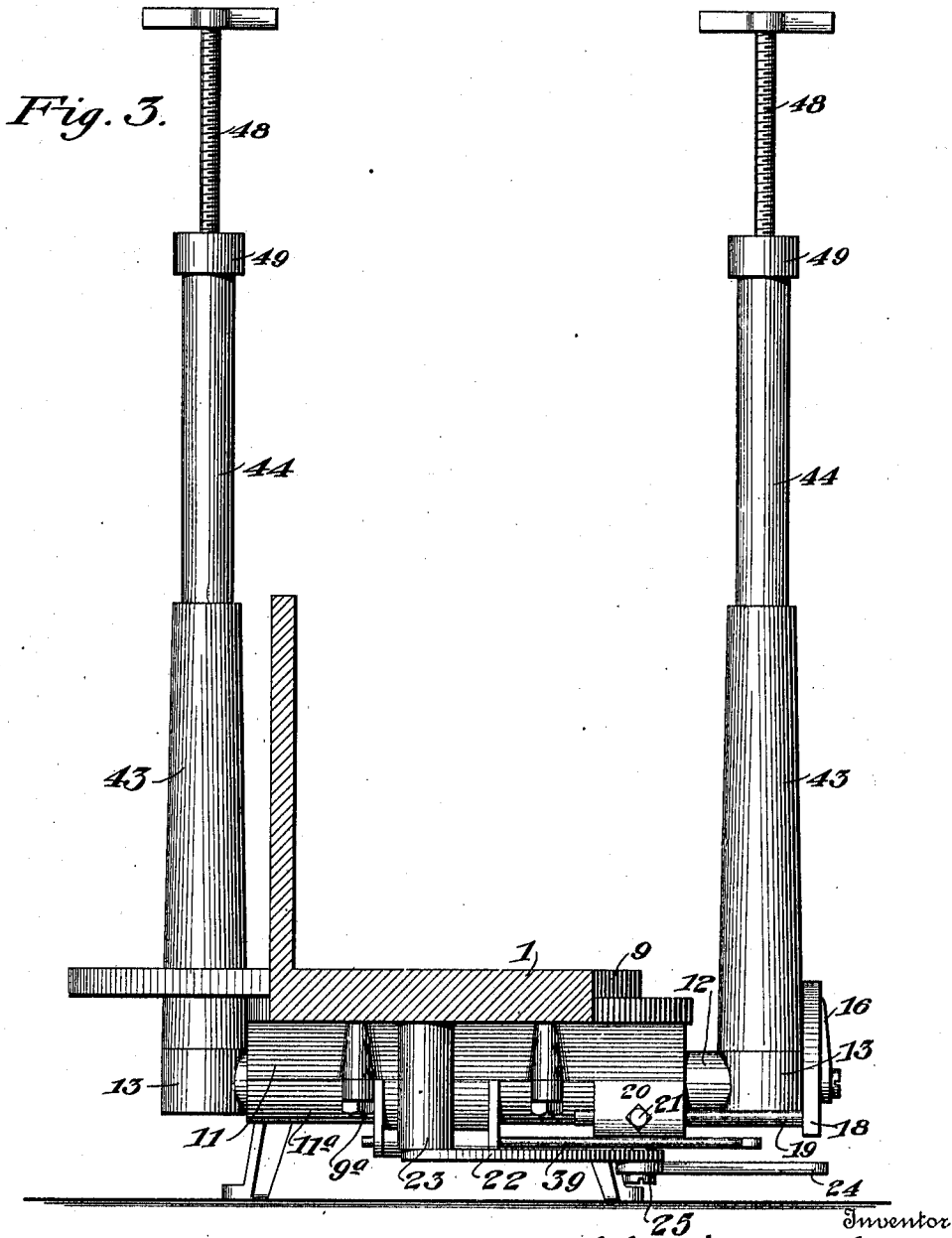
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APPLICATION FILED JAN. 21, 1910.

982,706.

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5 SHEETS—SHEET 2.



Witnesses

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5 SHEETS-SHEET 3.

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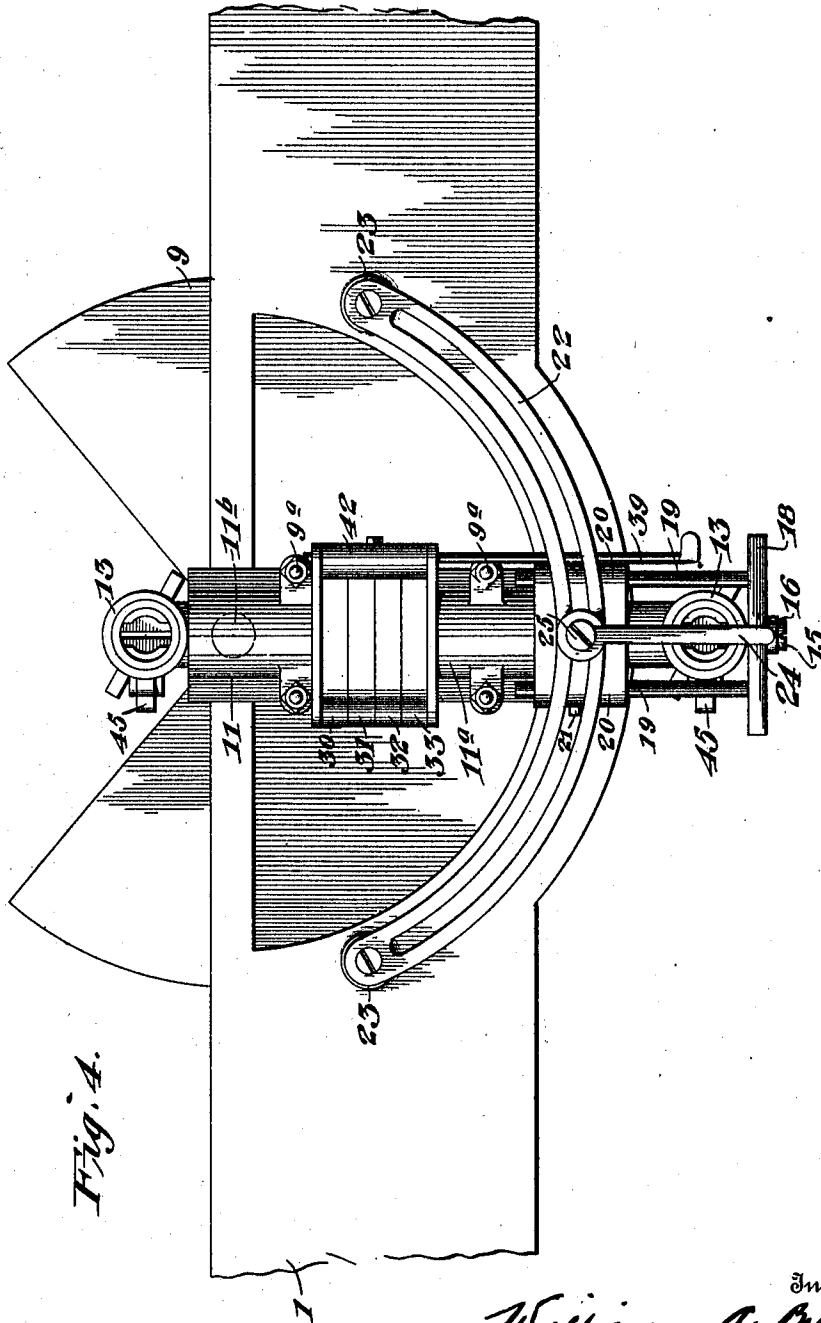


Fig. 4.

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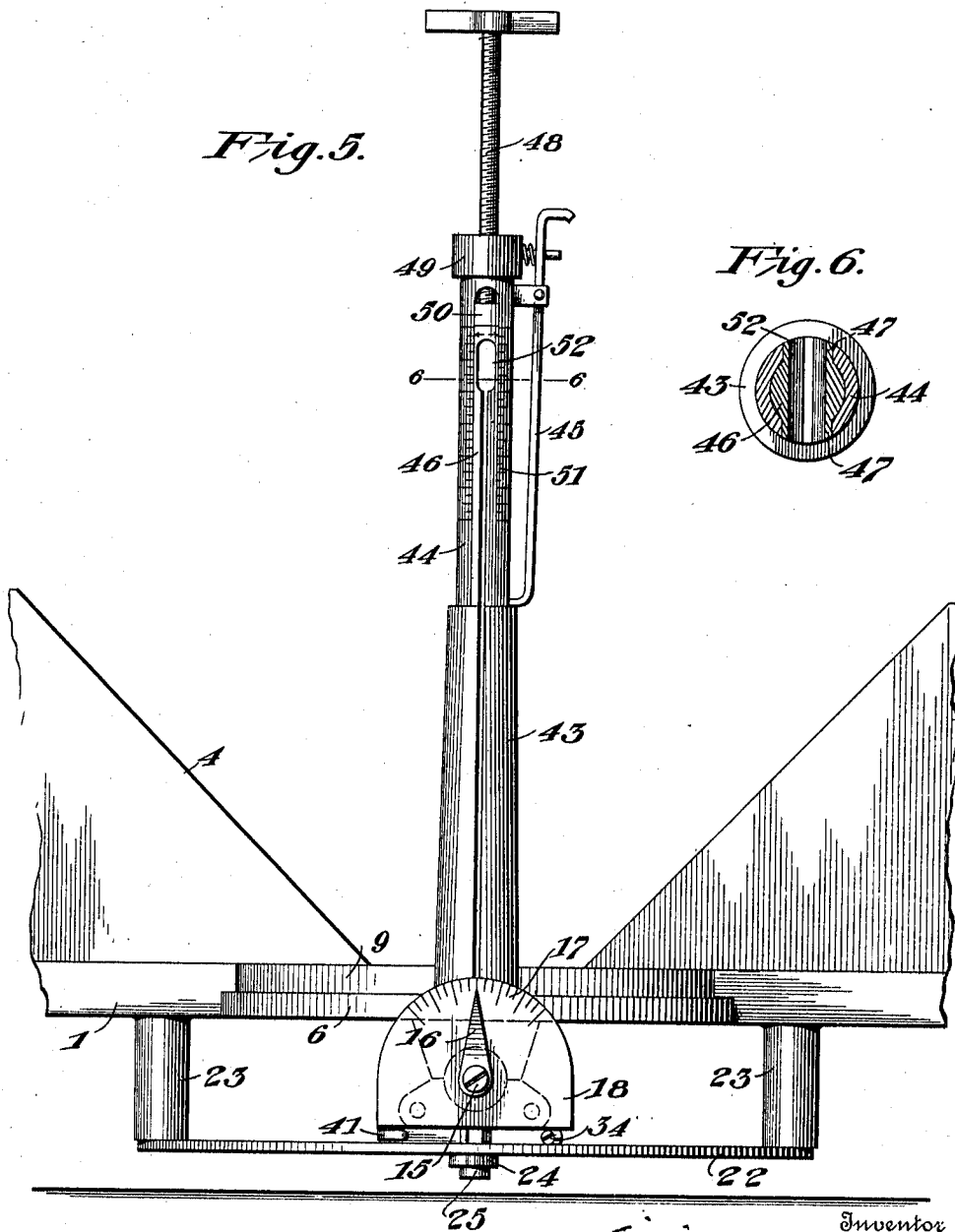
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5 SHEETS—SHEET 5.

982,706.

Fig. 7

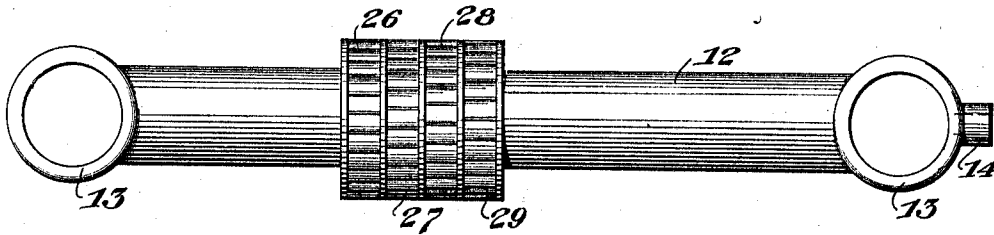


Fig. 8.

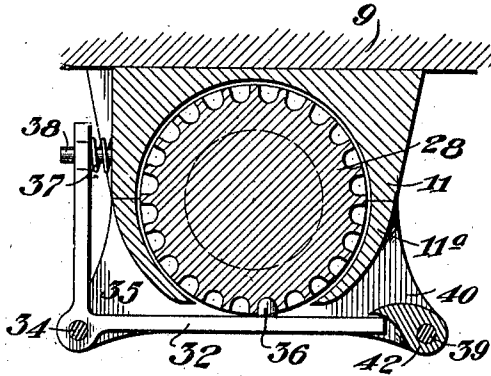


Fig. 10.

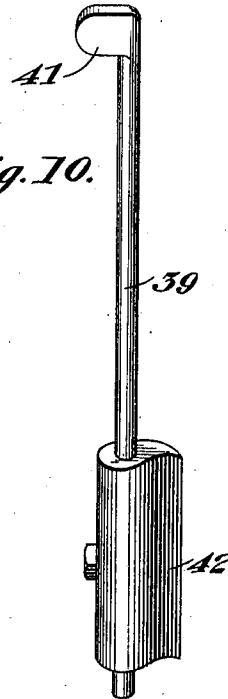
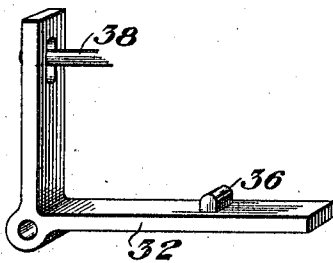


Fig. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

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MITER-BOX.

982,706.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed January 21, 1910. Serial No. 539,333.

To all whom it may concern:

Be it known that I, WILLIAM A. BURGER, a citizen of the United States, residing at Pierre, county of Hughes, State of South Dakota, have invented certain new and useful Improvements in Miter-Boxes, of which the following is a specification.

This invention relates to miter boxes.

The present invention has for its object the provision of a miter box of novel construction which will enable cuts of any angle to be made with great accuracy, cuts of any degree of obliquity or bevel, and will also permit cuts at any angle and any degree of obliquity to be made at the same time, and to this end the invention embodies various new features of construction and combinations of parts more fully set forth hereinafter.

In the accompanying drawings:—Figure 1 is a plan view; Fig. 2, a similar view of the base or table, the other parts being removed; Fig. 3, an enlarged end elevation, showing the table or box in section; Fig. 4, an enlarged bottom view; Fig. 5, an enlarged front elevation; Fig. 6, a cross-section on line 6—6 of Fig. 5; Fig. 7, a detail view of the stem or shaft connecting the saw guides, showing the sets of teeth thereon; Fig. 8, an enlarged cross-section through the shaft or stem of Fig. 7, showing one of the plurality of dogs or pawls which lock with the teeth; Fig. 9, a perspective detail of one of said dogs or pawls; and Fig. 10, a detail of the releasing device for the dogs or pawls.

The miter box proper 1 is preferably provided with a roughened upper face 2 to more firmly engage the work which is to be cut and there are provided the ordinary clamping devices 3 on the back of the box for securing the work against slipping. The rear wall of the box is provided with a notched or cut-out part 4 (Figs. 2 and 5) to permit the saw to cut at various angles obliquely to the length of the work, and another notch 5 (Fig. 2) is provided which permits the saw to make the usual cross-cuts at any desired angle. The box is provided with a suitably graduated scale or protractor 6, and at the center is open as at 7. A channel or rabbet 8 is also provided.

As shown in Figs. 1 and 4, there is a rotary table 9 having a roughened upper surface which turns in the rabbet 8 and whose rear parts extend through a slot in the back

of the miter box 1, this table being composed of two parts which are secured to a grooved member 10 whose end 10^x constitutes a pointer which is adapted to play over the scale 6. Screw-bolts 9^a which connect the parts of the table 9 to the member 10 fasten together the upper and lower parts 11 and 11^a of a bearing which is disposed beneath the said table, the uppermost member 11 being provided with a pivot lug 11^b (Figs. 1 and 4) which is journaled in a bearing 11^c (Fig. 2) on the miter box. Journaled in this bearing is a shaft 12 which has rings 13 at its opposite ends (Fig. 7) and secured to the end 14 of the shaft by a screw 15, is a pointer 16, which is adapted to play across a scale or graduation 17 on a scale-plate 18, which is in turn provided with rods 19 secured in ears 20 (Figs. 3 and 4) on section 11^a by screws 21. The mounting of the scale-plate 18 permits its proper adjustment in relation to the other parts.

The arrangement is such that the shaft 12 can be rotated in the bearing 11—11^a and the turn-table 9, together with the said bearing, can be swung in a horizontal plane. To lock the table 9 where swung, there is provided a curved slotted plate 22 (Figs. 3 and 4) which is secured to depending projections 23 on the bottom of the miter box, and a lever 24 has a screw 25 which passes through the slotted plate 22 and into the section 11^a.

Carried fixedly by, or formed integral with, the shaft 12 is a plurality of locking teeth (Figs. 7 and 8) 26, 27, 28 and 29, the sections 11 and 11^a being enlarged to accommodate these ratchet wheels, and the shaft 12 is thus prevented from having any end play.

As shown in Figs. 4, 8 and 9, there are a plurality of bell-crank dogs or pawls 30, 31, 32 and 33, all pivoted on a pin 34 carried by ears 35 on the section 11^a, and corresponding in number to the ratchet wheels 26, 27, 28 and 29 and respectively provided with teeth 36 to engage the ratchet wheels, the dogs or pawls being pressed into engagement with the respective ratchet wheels by springs 37 surrounding pins 38 which pass through the dogs.

Referring to Fig. 7, it will be seen that the teeth of the respective ratchet wheels 26, 27, 28 and 29 are arranged in staggered relation, that is, out of alinement with each

other so that the necessity for providing a very large number of fine teeth on a single ratchet wheel is obviated and yet a very minute axial adjustment of the shaft 12 is rendered possible because one of the dogs is always in engagement with a tooth, and there being several dogs and ratchet wheels, the shaft 12 will be locked firmly, although it may be axially turned only to a very small degree.

To enable the dogs to be simultaneously released so that the shaft 12 can be axially turned as may be desired, the device shown in Fig. 10 is provided which consists of an operating rod 39 journaled in ears 40 on the section 11^a, provided with a handle 41 at its outer end (Figs. 3 and 4) and having a wiper 42 which is sufficiently broad to engage with all of the free ends of the dogs (Fig. 4). By turning the handle 41, all of the dogs are released and the shaft 12 can be turned to any desired angle.

Screwed into the rings 13, which are internally threaded, are split lower saw guides 43 into which telescope split upper saw guides 44, the latter carrying spring-actuated pivoted latches 45 which, when the upper saw guides are raised to the position shown in Fig. 5, engage with the upper ends of the lower saw guides 43 and thus sustain the upper saw guides. Slidable within the upper saw guides are saw supports 46, each consisting of a split tube having lateral flanges 47 which are received in the split parts of the saw guides 44, and thus relative turning of these parts is prevented, but the saw supports can slide up and down inside the saw guides 44, such adjustment being effected by hand-screws 48 which are threaded through caps 49 on the upper ends of the guides 44 and whose lower ends are swiveled at 50 to the upper ends of the saw supports. Scales 51 on the saw supports and the upper saw guides 44 indicate the depth of the cut, it being understood that the usual mitering saw is received in the slots of the saw supports and the lower saw guides, and the thickened rib on the back of the saw is received in the enlarged openings 52 in the saw supports.

In operation the saw having been inserted in the slots and enlargements 52 of the respective saw guides, the depth of cut can be regulated by adjusting the screws 48. If a straight-across cut, without beveling, is desired, the saw guides will be positioned in exactly perpendicular arrangement which will be indicated by the position of the pointer 16, as shown in Fig. 5, and the angle of the cut

in relation to the wood can be regulated as desired by turning the table 9 and locking it at the desired angle, as indicated by the pointer 10^a on the scale 6, by tightening the lever 24. If, however, it is desired to make a bevel cut, then the handle 41 is depressed and the saw guides and shaft 12 turned to assume the desired angle to the horizontal which will be indicated by the position of the pointer 16 on the scale 17, and then the handle 41 is released, whereupon the pawls 30, 31, 32 and 33 will engage the respective ratchet wheels 26, 27, 28 and 29 and lock the shaft 12 and the saw guides at the proper angle. The desired bevel cut can then be obtained and the angle of the cut, crosswise of the work, can be made what is desired by releasing the lever 24, swinging the table 9, and again clamping the lever when the desired adjustment has been had. It will be seen, therefore, that with the present miter box, the depth of the cut can be regulated, the angle regulated crosswise of the work and the cut can be made at any desired bevel, as well as transverse angle.

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

1. In a miter box, the combination with a box for holding the work, of a tiltable saw guide, a plurality of ratchet wheels having their teeth arranged in staggered relation and carried by the saw guide, and a plurality of releasable pawls adapted to engage with the respective ratchet wheels.

2. In a miter box, the combination with a box for holding the work, of a tiltable saw guide, a plurality of ratchet wheels having their teeth arranged in staggered relation and carried by the saw guide, and a plurality of independently releasable pawls adapted to respectively engage with the ratchet wheels aforesaid.

3. In a miter box, the combination with a box for holding the work, of a tiltable saw guide, a plurality of ratchet wheels having their teeth arranged in staggered relation and carried by the saw guide, a plurality of independent releasable pawls adapted to respectively engage with the ratchet wheels aforesaid, and a releasing device for simultaneously releasing all of the pawls.

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

WILLIAM A. BURGER.

Witnesses:

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A. F. MOORE.