

No. 751,908.

PATENTED FEB. 9, 1904.

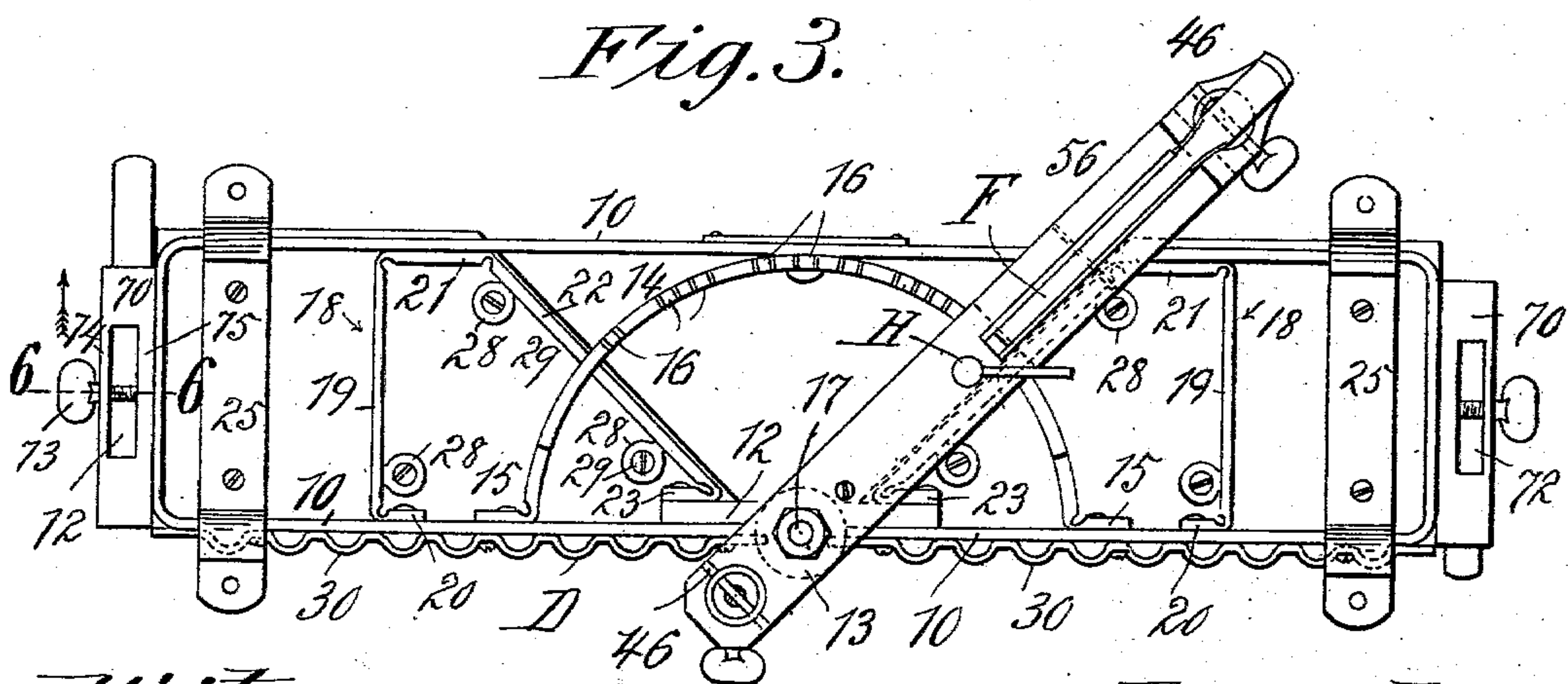
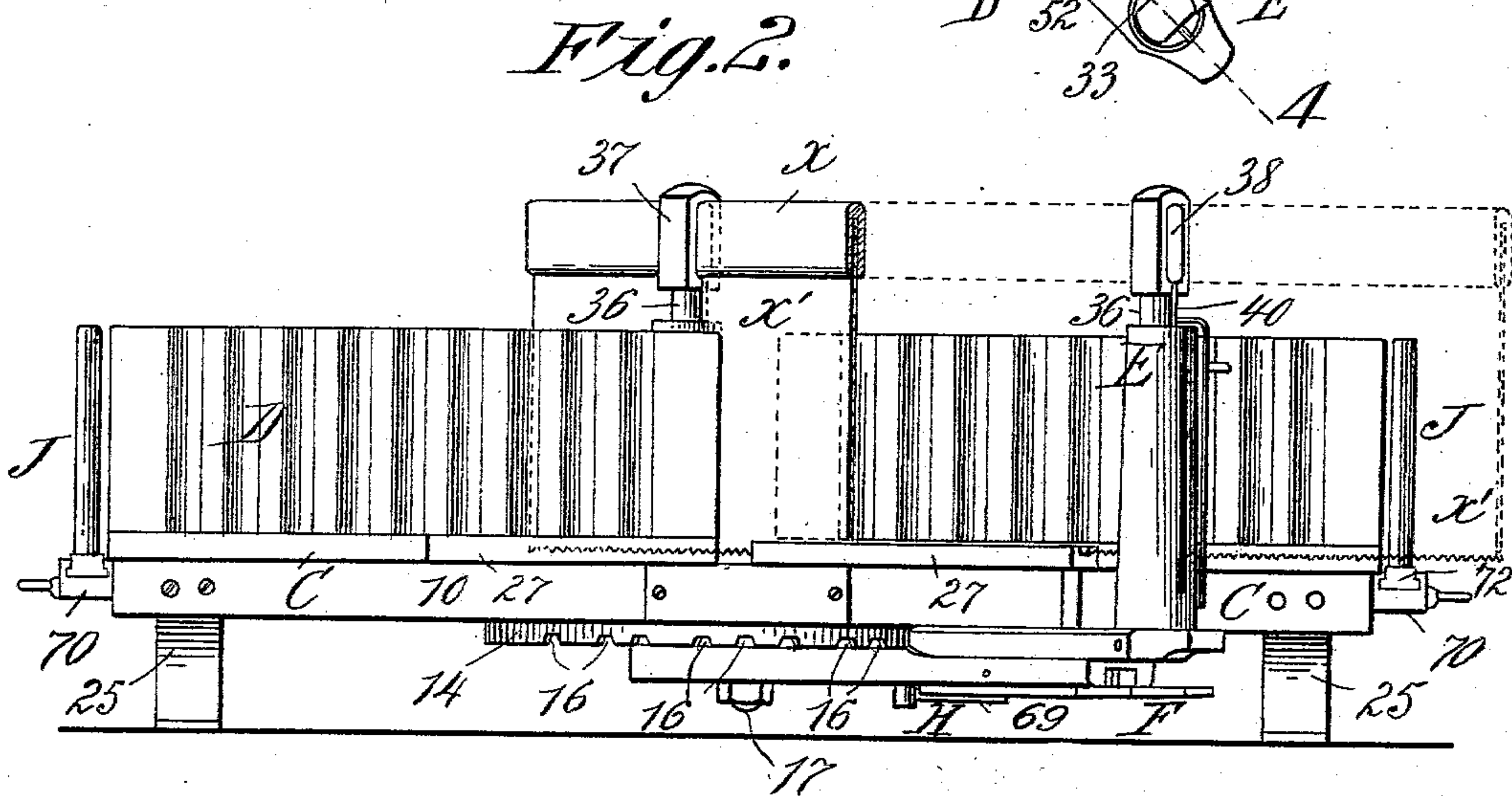
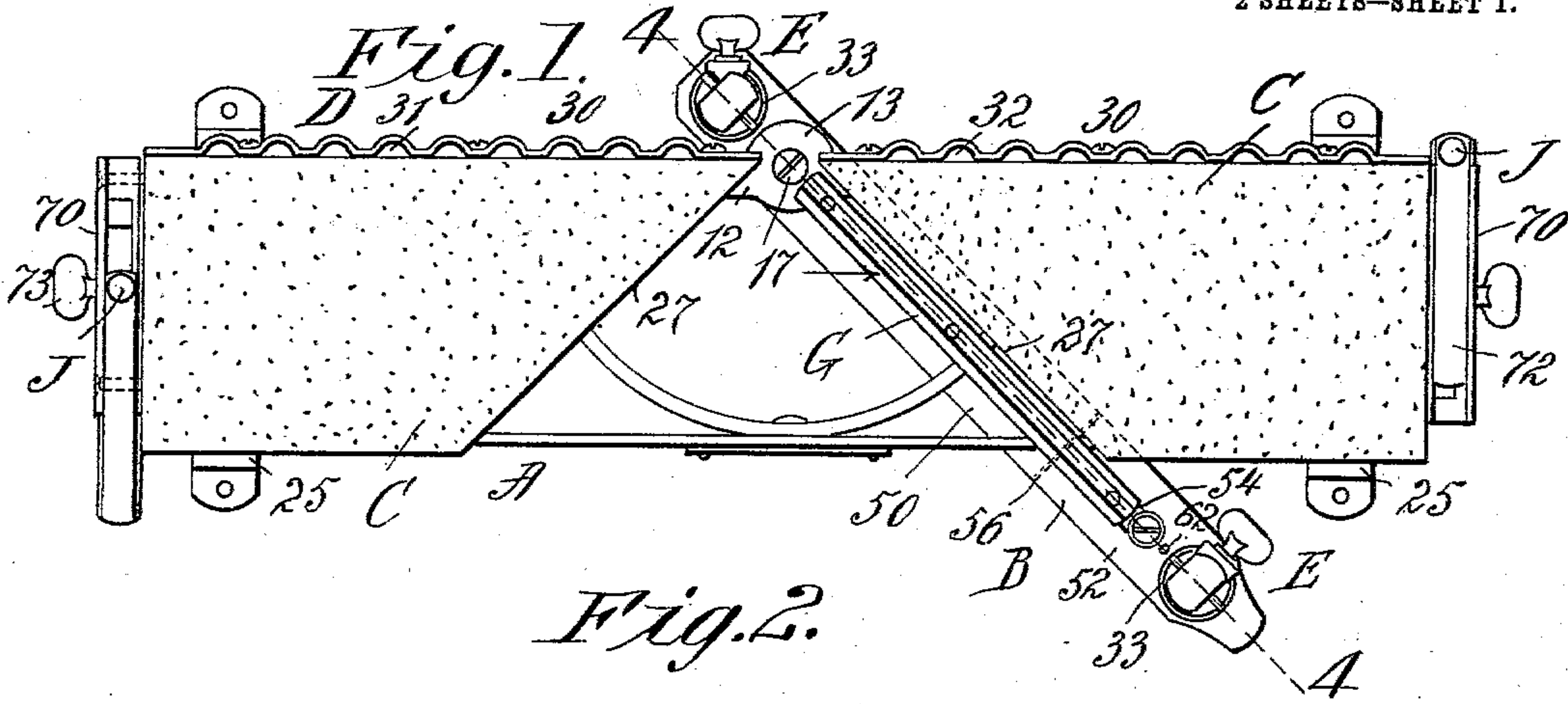
H. E. GOODELL.

MITER BOX.

APPLICATION FILED AUG. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

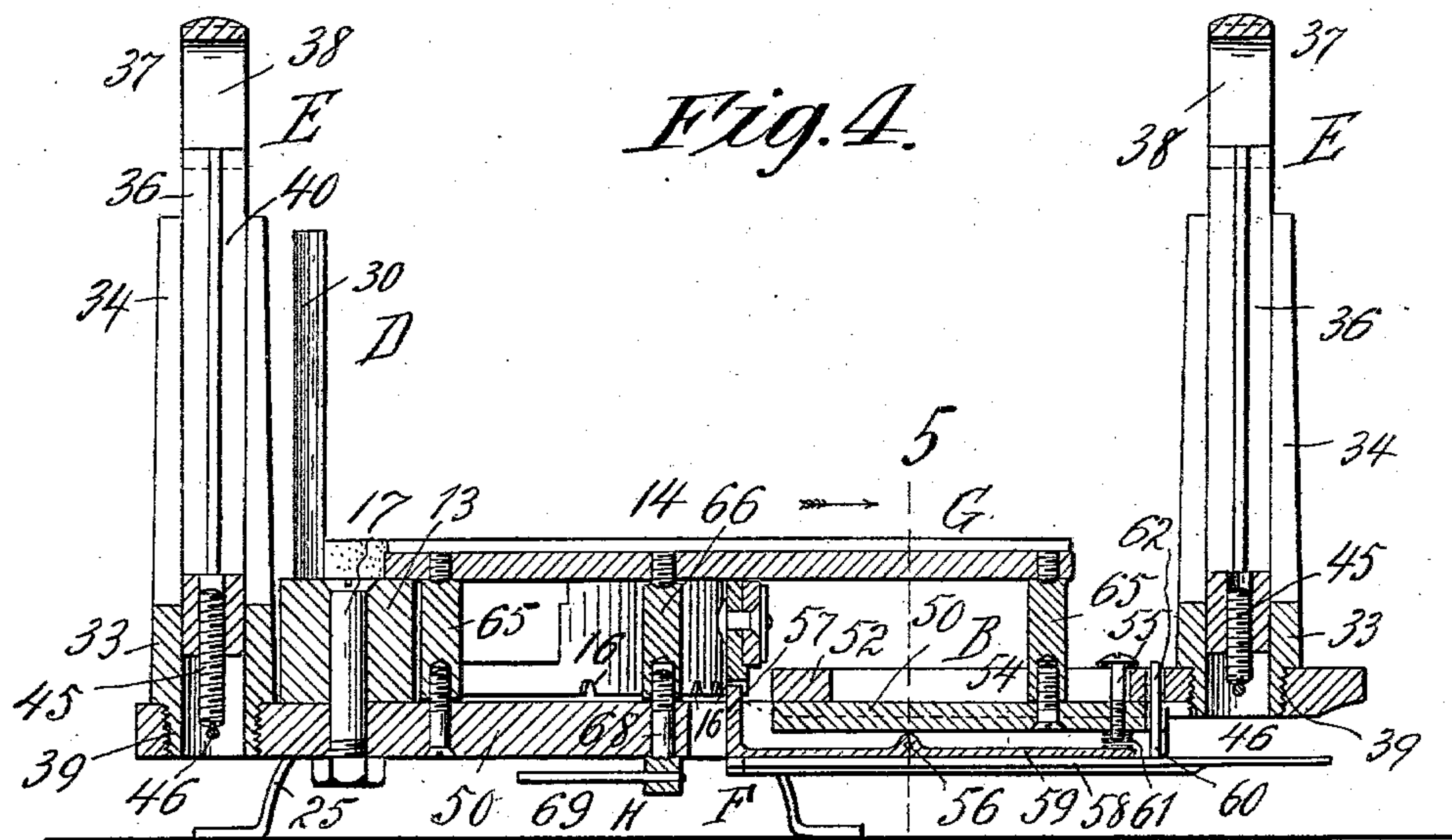


Fig. 6.

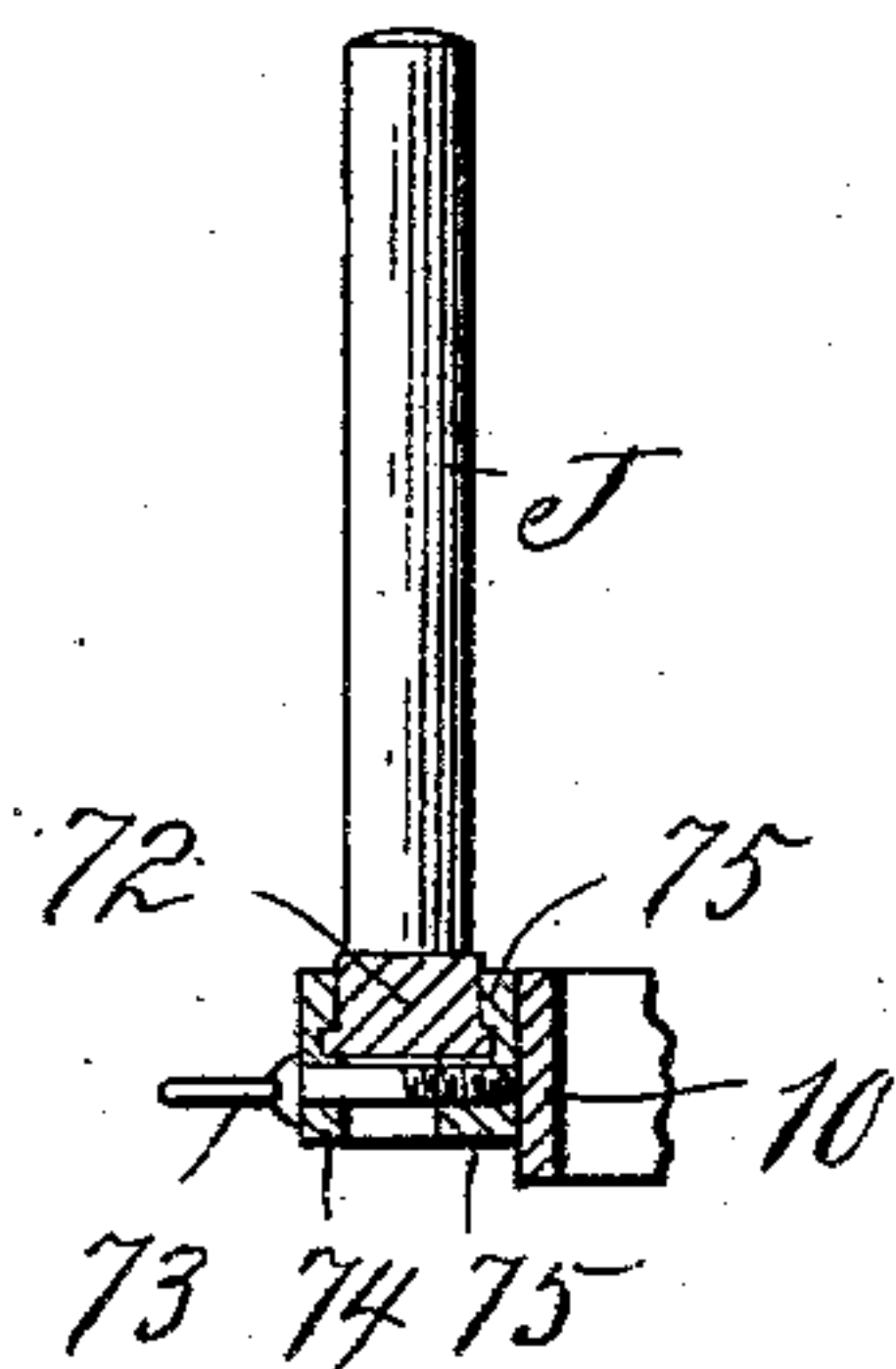


Fig. 5.

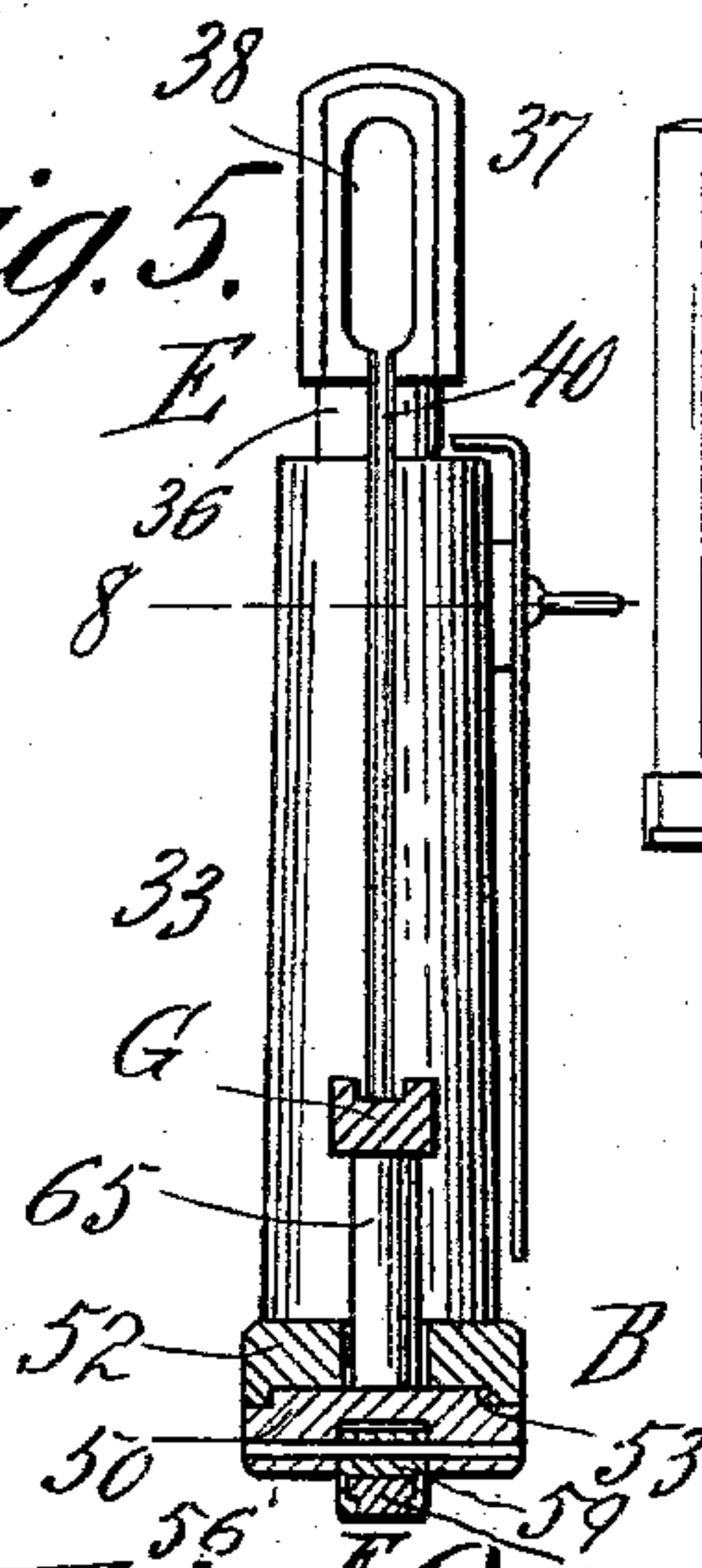


Fig. 7.

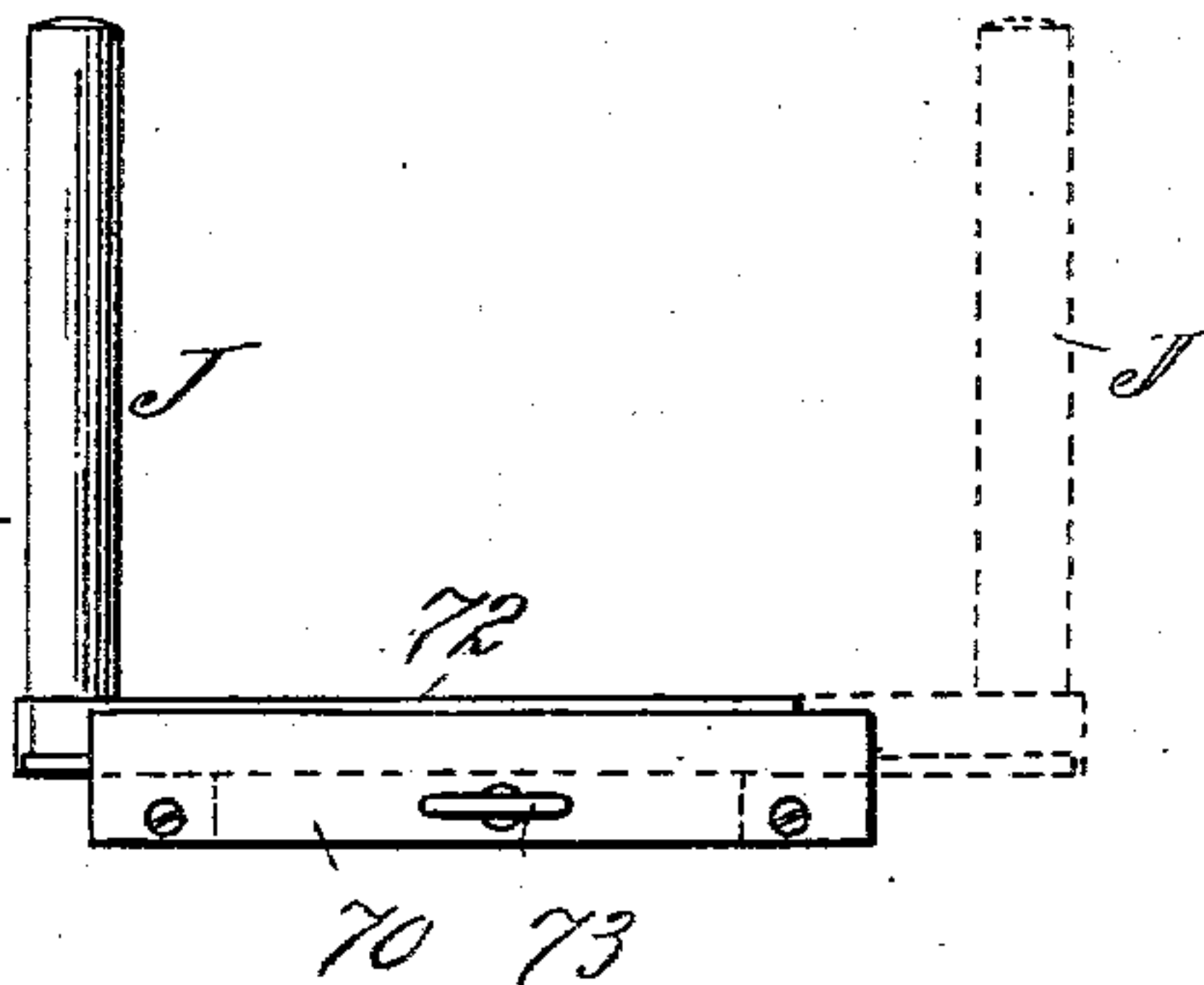
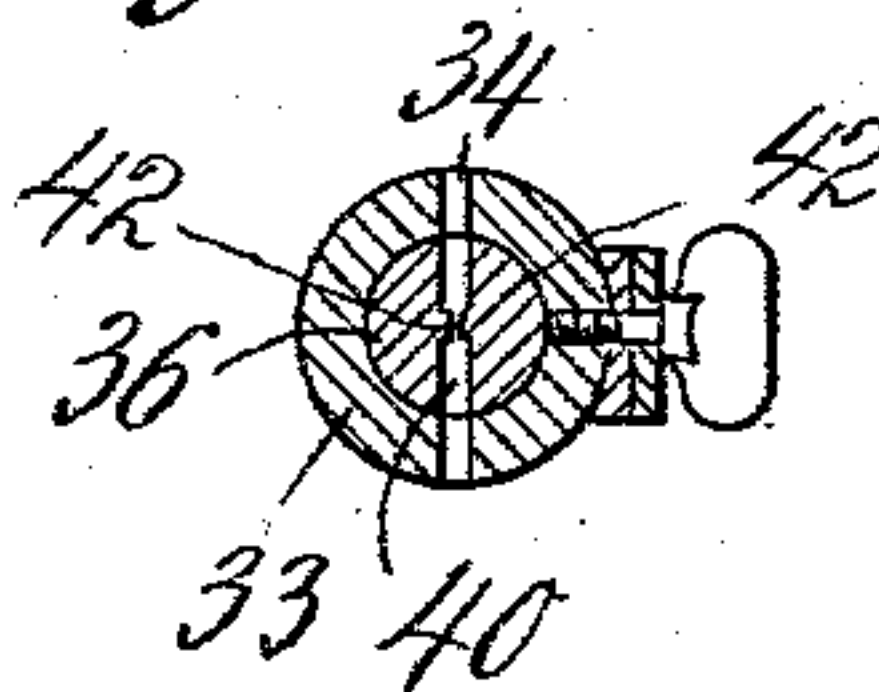


Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY E. GOODELL, OF GREENFIELD, MASSACHUSETTS, ASSIGNOR TO
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SETTS, A CORPORATION.

MITER-BOX.

SPECIFICATION forming part of Letters Patent No. 751,908, dated February 9, 1904.

Application filed August 10, 1903. Serial No. 168,925. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. GOODELL, a citizen of the United States of America, and a resident of Greenfield, in the county of Frank-
lin and State of Massachusetts, have invented
certain new and useful Improvements in
Miter-Boxes, of which the following is a full,
clear, and exact description.

This invention relates to improvements in
miter-boxes, or "miter-boards," as sometimes
termed, of the general description which is
characterized by the combination, with the
board or base support for the stock to be
sawed for a miter, of a swinging bar carry-
ing bodily as upward extensions vertical saw-
guides, means for locking the bar at any de-
sired angle in its position across the board,
together with end gages which are adjustable
in a line perpendicularly across the board, so
that the edge of the board or piece of stock
to be sawed by being brought thereagainst
will have the mitering saw-cut made therein
on the desired line angularly in exactly the
required degree to its length.

The improvements are found in various
particular specific and detail structural fea-
tures, combinations, arrangements, and for-
mations to the end of improving the miter-
box as a whole, rendering it a high grade,
convenient, efficient, and generally satisfactory
device for the use of carpenters and other
woodworkers.

The improvements are pointed out, de-
scribed, and explained in conjunction with
the accompanying drawings, and finally speci-
fied in the claims.

In the drawings, Figure 1 is a plan view of
the miter-box. Fig. 2 is a front elevation of
the same. Fig. 3 is a plan view of the miter-
box inverted. Fig. 4 is substantially a trans-
verse sectional view, on a larger scale, of the
miter-box as taken on the line 4 4, Fig. 1, the
line of view being in the direction of the
arrow. Fig. 5 is a vertical sectional view in
detail as taken on the line 5 5, Fig. 4. Fig.
6 is a cross-sectional view in detail of the ad-
justable and reversible end gage and of the
stationary part of the miter-box in which it

has its sliding engagement and showing the
means for confining it in its given adjustment.
Fig. 7 is an elevation as seen at the end of the
miter-box of the parts last mentioned, the
gage being by the full line shown as having a
reversed position. Fig. 8 is a horizontal cross-
sectional view as taken on the line 8, Fig. 5.

Similar characters of reference indicate
corresponding parts in all of the views.

The main support for the miter-box is con-
stituted by an elongated metallic skeleton
frame A, which advantageously may be com-
posed of strap-steel to form the frame of rec-
tangular shape, the same being bent around
to the form best shown in the inverted view,
Fig. 3, the extremities of the strap-like metal
10 overlapping and being screwed or riveted to
the metallic bar or block 12, provided with the
hub or enlargement 13, having a horizontally-
bored hole therethrough for a pivotal con-
nection of the swinging bar which constitutes
a support for the vertically-arranged saw-
guides which are mounted thereon. United
to and within the rectangular frame is a mem-
ber 14 of semicircular form, the end lugs 15
15 of which are riveted to the back of frame
10, while the front middle part is likewise
rigidly connected with the front of frame 10,
and the lower edge of this semicircular mem-
ber 14 has notches 16 16 therein arranged in
radial lines from the pivot 17, from which the
bar B swings, into which notches the locking-
catch for the bar, hereinafter pointed out, may
be detachably engaged. The frame, moreover,
comprises, connected therewithin, parts con-
stituted by strap-steel, (indicated at 18 18,) the same having transverse portions 19, back
lugs 20, riveted to the back of the main frame,
front sections 21, obliquely crossing sections
22, and the angularly and longitudinally ex-
tending lugs 23, riveted to the aforesaid block
12. The said portions 22 are shown as cross-
ing between front and rear portions of the
main frame 10 at angles of forty-five degrees
to the front and rear. The frame is supported
on the legs 25, constituted by strap-steel suit-
ably bent and riveted to the frame.

C C represents board-sections which con-

stitute the top or table of the device, the same being secured to the frame in any suitable manner and having their edges 27 arranged at the angles of forty-five corresponding to and
 5 adjacent the aforementioned metallic portions 22 within and strengthening the frame. Screw-eyes 28, the screw-shanks of which are horizontally engaged in screw-threaded perforations therefor in the strap-formed frame
 10 members, receive through the eyes thereof screws 29, the shanks of which screws engage into the boards C C from below, the eye-rings serving as countersunk socketed members into which the heads of the screws are bottomed.

15 Having described at some length the structure of the supporting-frame, the different portions of the miter-box will be pointed out by reference characters and thereafter described in detail.

20 D represents the miter-box back.

E E represent the saw-guides, mounted on and bodily movable as one with the swinging radius-bar B aforementioned.

F represents the catch or stop device for the
 25 bar B, operative when swung and set to hold the saw-guides at any predetermined angle relatively to the general longitudinal line of the miter-box.

G indicates a bar supported above and from
 30 the swinging bar B and bodily movable in unison therewith to have its position with its top edge in the plane of the board-sections of the miter-box and to constitute a direct support under the stock or piece to be sawed along the
 35 sawing-line.

H indicates the device for locking and holding the bars B and G absolutely rigid and immovable at any angle at which they may be set.

40 J J represent the end gage-posts, which are adjustable on slides, which latter may be endwise reversed in the slideways therefor for the purpose hereinafter explained.

The miter-box back D is constituted by two plates of steel having corrugations 30, as
 45 shown, such plates being screwed rigidly to the back of the main frame and rising thereabove, and by reason of the corrugations, as evident in the plan view Fig. 1, there are series of apertures 32 formed, which lead down-
 50 wardly at the back of the board for the escape of sawdust thereat. The inner ends of the back plates are slightly separated to give free play to the saw.

The saw-guides (designated by the general
 55 letters E E) are constituted, as shown in Figs. 4 and 5, more particularly by tubular posts 33 33, upwardly open and having the slot 34 through each longitudinally in the plane of its axis, and the lower extremities of these
 60 tubular posts are necked down and screw-threaded, as indicated at 39, and screw-engaged into tapped sockets therefor in the opposite extremities of the swinging bar B. The saw-guides, furthermore, comprise the stems
 65 36 36, having enlarged heads 37 with aper-

tures 38 to fit the saw-back, (represented at α in Fig. 2,) said apertures 38 being continued in downward longitudinal slots 40, in which and the slots 34 the blade α' of the saw may be freely accommodated to have its back and
 70 forth movements in working and as guided by the saw-guide. The slotted stems 36 have centrally and longitudinally within the slots 40 the approached ribs 42, as shown in Fig. 8, to give the closest possible guiding-bearing to
 75 the saw-blade with a minimum of friction-producing surface. In order that the stem comprising portions of the saw-guide may be vertically adjusted within a comparatively slight
 80 range, so that the blade of the saw may work with its teeth at the completion of sawing through the piece of wood quite closely down to but without coming against the bar G, the stems are at their bottoms axially socketed and tapped, receiving screw-plugs 45 therein,
 85 which by being turned may be distended or further inclosed within the bases of the stems, and the lower ends of these screw-plugs rest on cross-pins 46, transversely penetrating the hollow base portions of the tubular posts, as
 90 shown in Fig. 4. The saw engaged through the saw-guides in the manner indicated in Fig. 2 is, with the guides, properly elevated at the commencement of a sawing action, the saw and stems 36 36 bodily rising rela-
 95 tively to the slotted posts 33 33 and gradually settling down therewithin as the miter sawing progresses. By turning the screw-plugs 45 inwardly relatively to the bottoms of the tubular stems 36 the portions of the
 100 saw-guides, which have the capabilities for the rising and lowering movements, may have their final rests on the stops 46 to permit the teeth of the saw to come to a lower line at the completion of the miter-sawing action
 105 than if the screw-plugs were distended, it being understood that the screw-plugs are most distended when the saw is new and the blade thereof wide, the adjustments being accomplished corresponding to the wearing
 110 away of the saw at its toothed edge and the narrowing of the blade consequent thereon.

The radius-bar constituting the swinging support for the saw-guides, which has its center of motion at the pivot-bolt 17, is formed
 115 in two sections 50 and 52, the latter being distensible relatively to the section 50, the rear saw-guide E being mounted on the section 50 to the rear of the pivot-bolt 17, while the front saw-guide E is carried by the distensible section
 120 52, said parts 50 and 52 being engaged by a slide tongue and way, as indicated at 53 in Fig. 5, one of the sections having the longitudinal slot 54, through which the shank of the headed screw 55 is passed and continued with a screw
 125 engagement into the other section, and when the screw 55 is screwed inwardly to its head, bearing against the adjacent bar-section, the two sections are clamped or bound together
 130 as one; but of course by loosening the screw

temporarily the front bar-section may be slid outwardly, carrying the front saw-guide therewith, to widen the space between the rear and front saw-guides, as may be required when an unusually wide piece of stock is to be sawed.

The semicircular member 14 of the frame has the notches 16 in its lower edge arranged at certain predetermined radius lines angular to the basic line of the miter-box—for instance, at five, fifteen, twenty, and thirty degrees—in any of which the catch-lever F may engage as the radius-bar is swung around to bring and set the saw-guides to and at the desired line corresponding to the angle of the miter to be sawed. The limits of the swing of the bar are oppositely to angles of forty-five degrees. The catch-lever F is pivoted, as indicated at 56, to the main section 50 of the radius-bar, the inner extremity of this lever having the upwardly-extending engagement-lug 57, adjacent the notched edge of the aforesaid member 14. In order that when the radius-bar is forwardly distended, as and for the purpose before explained, the handle or operating end of the lever may be correspondingly distended to be at all times conveniently accessible to be operated, the catch-lever is made in sections, the extensible section 58 being of dovetailed shape cross-sectionally and fitted to slide in the main section 59 of the catch-lever, which main section is pivoted to the main section 50 of the radius-bar. The said distensible section of the catch-lever has the upstanding pin 60, which protrudes and engages upwardly through a vertical socket 62 in the distensible member 52 of the radius-bar, so that notwithstanding the fact that the catch-lever is fulcrumed, as pointed out at 56, to the main section 50 of the radius-bar the portion of the catch-lever which receives the finger-pressure whereby it is operated is compelled to have outward and inward movements in unison with the distensible radius-bar member 52.

The bar G, between the two saw-guides E E and in line therewith, having the longitudinal groove in such line at its upper side, is supported on the pillars 65 65, which are rigidly secured to the main section 50 of the radius-bar and to the said bar G. There is an intermediate inverted stud 66 between the two bars, the same being rigidly united to the top bar G by having the necked down-threaded stem screw-engaged into said top bar, while the lower end of this intermediate pillar has an axially-threaded socket 67 therein, in which the upper screw-threaded end of a small shaft 68 engages, the shoulder constituted by the head at the lower end of said small shaft being in contact against the under surface of the main member 50 of the radius-bar, said shaft extending upwardly through a vertical hole in the member 50, and said shaft 68 has the handle-lever for conveniently rotating it. By turning the handle-lever to the right the

screw-threaded shaft 68 by being relatively drawn into the threaded socket 67 in the pillar has, in effect, the action to draw the stud 66 in a downward direction, drawing the bar G downwardly at its middle to a hard and firm bind against the upper edge of the frame 10, so that the radius-bar and the saw-guides thereon will be firmly and reliably held in any given set position and until the small shaft 68 is turned to the leftward to terminate the bind, whereupon, of course, the radius-bar when the catch-lever is swung against its spring 61 to free the catch-lug 57 from the notches 16 may be changed to any different desired angle.

At the ends of the miter-box frame transverse horizontal dovetail bars 70 are firmly screwed, the bases thereof having slots 72 therein to render the portion thereof outside of each slot flexible. Bars 72 are fitted to slide in the dovetail ways, the gage-post J being mounted and standing vertically upon each of the slide-bars, near the end thereof. The thumb-screw 73 has the shank thereof passed loosely through the member 74 at the base of the bar 70, having the dovetail slide-way therein, and with a screw-thread engagement in the opposite member 75, so that by setting up the thumb-screw the intermediate portion of the grooved bar 70 is pinched to bind and hold the slide-bar carrying the gage-post in any given set position.

Either or both of the gage-posts may be set forwardly from the plane of the back of the miter-box, so that the edge of the strip to be sawed, having one portion resting thereon and its end set against the back, may be sawed at any desired unusual angle not determined by the set-notches 16. Generally the gage-posts will be set both in a longitudinal line of the miter-box adjacent and parallel with the miter-box back; but the range of variability of use of the box is increased by the capability of endwise reversing the gage-post slides, indication of the doing of which is made by the dotted lines in Fig. 7.

The construction and organization of the miter-box shown and described is such that steel may be largely employed for constituting nearly all of the parts, and the miter-box is rendered available for accurate work in any mitering that may be necessary, while the cost of the device beyond that of less efficient miter-boxes is not greatly increased.

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

1. In a miter-box, the rectangular frame comprising the metallic strap-formed rectangular portion 10, and metallic strap-formed portions comprising transverse sections 19 19 extending between the front and rear sections of the frame 10, angularly-turned lugs 20 and opposite sections 21 secured to rear and front sections of said rectangular portion

10, the obliquely-crossing sections 22 22 and end-uniting lugs 23 23, combined with top board-sections, the swinging radius-bar and the saw-guides mounted thereon.

5 2. In a miter-box, the frame comprising the bar 12; the metallic strap-formed rectangular portion 10, having the approached and rearwardly-arranged extremities connected to the end portions of said bar; the semicircular member 14 having rear end lugs 15 secured to the back member of said portion 10 and centrally secured to the front member thereof, and having graduation-notches within its lower edge combined with the top board-sections, the radius-bar pivotally mounted on the bar 12 and having the front and rear saw-guides thereon, a catch carried by the radius-bar and detachably engaged in the said graduation-notches, and means for locking the radius-bar to the frame.

3. In a miter-box, a frame comprising the bar 12 having the vertical pivot-hole, the rectangular portion 10 of strap metal bent to form and having end portions thereof united to the said bar, the pair of intermediately-disposed strap-metal sections comprising the two transversely-extended portions 19 and 22, uniting portion 21, adjacent and secured to portion 10, and the end lugs 20 and 23 secured to the opposite frame member, and the semicircular member 14, having portions thereof secured at front and rear to said frame portion 10, and having graduation-notches in its lower edge, combined with the radius-bar having the pivot therefor engaged through the pivot-hole in the frame-bar 12, and having the saw-guides mounted thereon, and a stop-catch pivotally mounted on the radius-bar and detachably engaging in the notches in the semicircular member.

4. In a miter-box, the combination with the metallic skeleton frame and elevating-supports therefor, of the radius-bar pivotally connected at the back portion of the frame, having the saw-guides and having the pillars 65 65, the bar G ranging over the radius-bar connected to the upper ends of said pillars, and having its under surface adjoining the top of the frame, the member 66 secured to and depending below the intermediate portion of the bar G, having a screw-threaded axial hole in its lower end, the small shaft 68 having an enlargement which is in bearing against the under surface of the radius-bar, the shaft thereabove extending loosely through the perforation therefor in the radius-bar, and having its

upper extremity threaded and screw-engaging in said axial hole, and said shaft having means for turning it, for the purposes set forth.

5. In a miter-box, the combination with the frame having the arc-shaped member provided with stop-notches, within its depending edge, the top board-sections, and the back, of the radius-bar comprising sections 50 and 52, slidably engaged one with the other, said section 50 being pivotally connected at the back of the frame, and extending forwardly thereunder, and both sections having an upstanding saw-guide, means for clamping the two bar-sections together, a catch-lever pivotally connected to the bar-section 50, and arranged to be swung to engage in said stop-notches, and provided with a forward extension member slidably engaged on the lever proper and so engaged with the forward section of the radius-bar as to partake of distending and contracting sliding movements in conjunction therewith.

6. In a miter-box, the combination with the frame having the notched member and the saw-guide-supporting radius-bar consisting of the pivotally-connected section 50, and the slidably-engaged extension-section 52, and means for confining the sections one to the other and the extension-section having a vertical aperture in a forward portion thereof, of the catch-lever 59, pivoted to the under side of the bar-section 52 and arranged to engage in the stop-notches and the lever extension 58 having a dovetail connection with the lever proper and longitudinally slidable relatively thereto and provided with the upwardly-extending pin 62 engaging through the aperture in a radius-bar section 52, as shown, for the purpose set forth.

7. In a miter-box, the combination with the metallic supporting-frame, and the top board-sections and back, of grooved members transversely arranged and connected at the ends of the frame having at the bases of the grooves, the apertures 72, the slide-bars fitted in said grooved members, and reversible therein, and having the upstanding posts J, and the horizontally applied and engaging thumb-screws 73, cooperating with the apertured base portions of the said grooved members, as and for the purposes set forth.

Signed by me at Greenfield, Massachusetts, in presence of two subscribing witnesses.

HENRY E. GOODELL.

Witnesses:

PERLEY E. FAY,
JOSIE M. FAY.