June 26, 1951 W. HESS ET AL 2,558,217

MITER GUIDE FOR POWER SAWS

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Fig. 1.

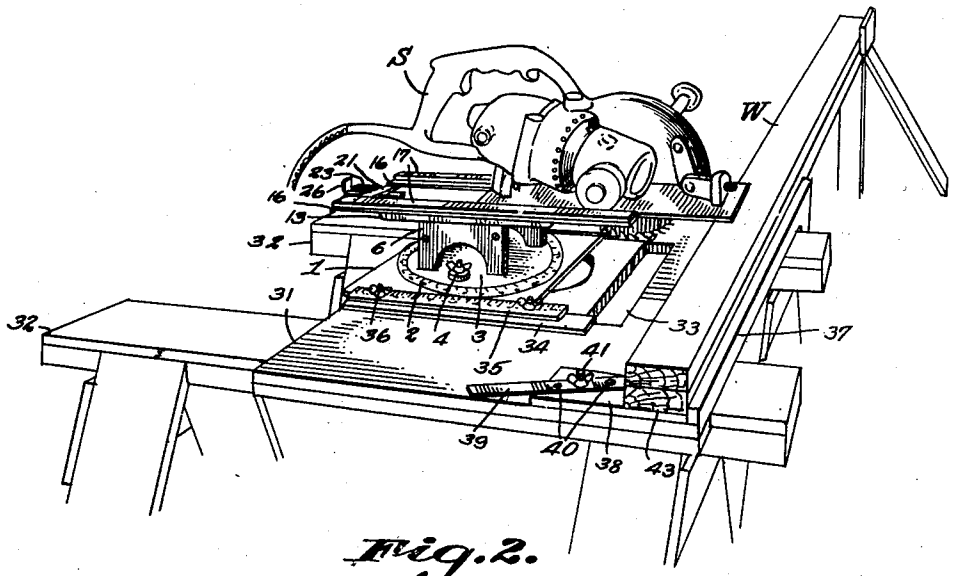

Fig. 2.

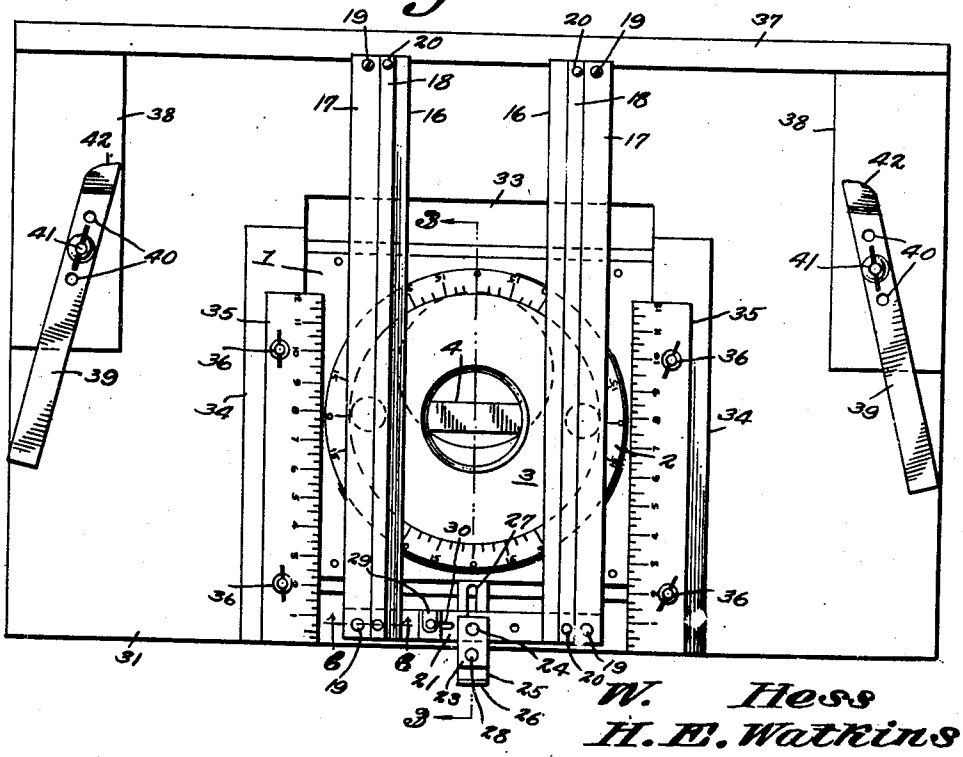

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Fig. 3.

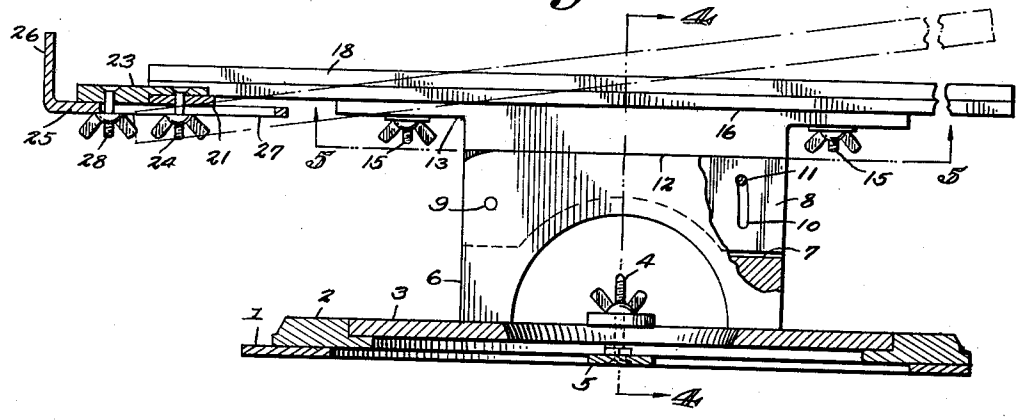


Fig. 4.

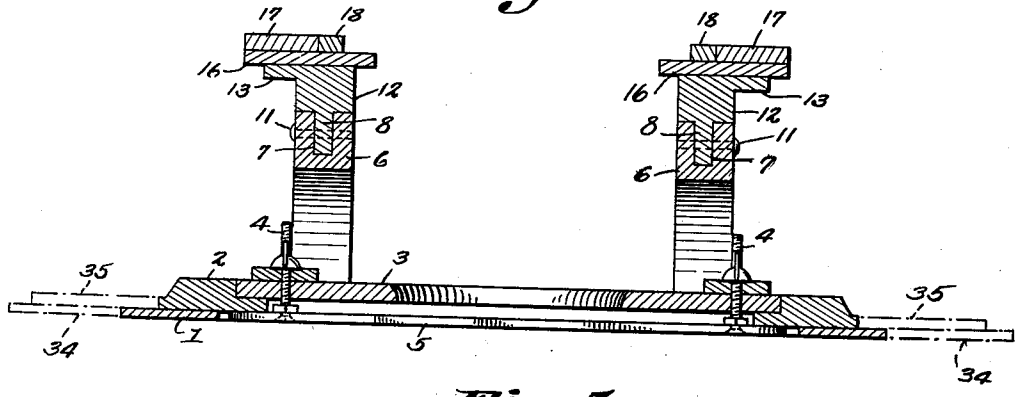


Fig. 5.

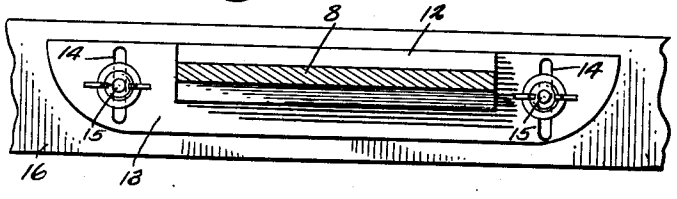
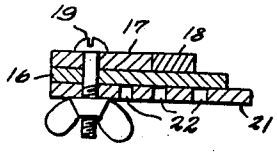


Fig. 6.



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UNITED STATES PATENT OFFICE

2,558,217

MITER GUIDE FOR POWER SAWS

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2 Claims. (Cl. 143—6)

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This invention relates to an improved construction of apparatus intended to support a conventionally made portable electric power saw in making miter cuts at any selected angle.

A miter box the overall general construction of which is somewhat similar to the present invention is described in the co-pending patent application of William Hess, filed July 1, 1948, Serial No. 36,541.

The main object of the present invention is to provide a generally improved construction of such a miter box.

Another important object is to provide a miter box construction of the type stated wherein a saw-receiving slideway, that is a part of a rotatable carriage of the miter box, is mounted for vertical tilting movement to facilitate the sawing of pieces of wood stock which may vary in thickness, one end of the slideway being elevatable by reason of the tiltable mounting so as to extend over thicker pieces.

Another important object is to provide a supporting table for a miter box of the type stated, adapted to hold the miter box in selected positions of sliding adjustment, said table being adapted to support pieces of wood stock in prescribed position to be readily cut by a saw mounted upon the slideway of the miter box.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Fig. 1 is a perspective view of an improved miter box formed in accordance with the present invention, and of a work table on which said miter box is mounted.

Fig. 2 is a top plan view of the miter box and the work table.

Fig. 3 is a section through the miter box taken on line 3—3 of Fig. 2, the dotted lines indicating a tilted position of the slideway.

Fig. 4 is a section on line 4—4 of Fig. 3, the dotted lines designating associated portions of the work table.

Fig. 5 is a section on line 5—5 of Fig. 3.

Fig. 6 is a section on line 6—6 of Fig. 2.

Referring to the drawings in detail, the improved miter box includes a base plate 1 rigid or otherwise integral with the annular guide 2 overlying the periphery of a large center opening formed in the base plate. The guide 2 is provided with a circumferential series of markings designating degrees of cuts to be made in a piece of work W to be sawed through a portable electric power saw S supported upon the miter box.

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Rotatably mounted upon the base is the rotatable saw-supporting carriage, that includes the annular bottom plate 3 supported for rotation upon the guide 2, the bottom plate 3 having one or more index markings, whereby the carriage may be rotatably adjusted within the guide 2 so as to cause the index marking of the bottom plate 3 to register with a selected degree marking of the guide, whereupon a cut made in a piece of work W will be at the angle designated by said degree marking.

Upon rotatable adjustment of the bottom plate 3 within the guide 2, said bottom plate is adapted to be rigidly clamped to the stationary base of the miter box constituted by the base plate 1 and the guide 2, and to this end we provide a clamp means including the clamping screws and associated wing nuts 4, said screws extending upwardly through suitable openings formed in the bottom plate 3, and being anchored at their lower ends in opposite ends of a cross bar 5 that extends diametrically of the large center opening of the base plate 1, the ends of said cross bar underlying the guide 2. It will thus be seen that upon rotatable adjustment of the bottom plate 3 within the annular guide, it is necessary only to tighten the wing nuts, whereupon the cross bar 5 and the bottom plate 3 are rigidly clamped to the annular guide 2.

Mounted at diametrically opposite locations upon the bottom plate 3, and made rigid with the bottom plate in any suitable manner, are the upstanding supports 6 having straight parallel top surfaces formed with the parallel grooves 7 receiving depending tongues 8. At one end, the tongues 8 are pivoted in the grooves by means of pivot pins 9, the tongues 8 having arcuate slots 10 formed in their other end portions through which extend stop pins 11. From this, it will be seen that the tongues 8 are mounted in the grooves for vertical swinging movements, the slotted end portions of the tongues being permitted swinging movement upwardly out of the grooves 7 to a limited extent, the limit determined by the length of the slots 10.

Rigid with the tongues 8, and engaging against the top surface of the respective supports 6, are the ribs 12, which are integral with the elongated flat supporting bars 13 in which are formed

(Fig. 5) transverse slots 14 through which extend bolt and wing nut connections 15, connecting to the supports 13 the elongated parallel guide rails 16 constituting a slideway for the saw.

As will be seen, the provision of the transverse slots 14 permits the guide rails 16 to be adjusted laterally toward and away from each other, so as to accommodate different widths of saws. When so adjusted, the connections 15 permit clamping of the guide rails in their selected positions of laterally spreadable adjustment.

At opposite ends of the guide rails, screws or equivalent fasteners 19 serve to secure to the guide rails the guide bars 17, which may be associated with inner guide bars 18 secured to the rails 16 by fastening means 20.

At one end, a cross bar 21 extends between the rails 16, and as seen from Fig. 6, at opposite ends this may be formed with a longitudinal series of adjustment openings 22 through one of which extends fastening means 19. Thus, on adjustment of the slideway as to width, the fastening means 19 can be extended through a selected opening 22, and the associated wing nut tightened for the purpose of securing the connection.

Mounted upon the medial portion of the cross bar 21 is a supporting bracket 23, which is secured to the cross bar by means of a bolt and wing nut 24.

An adjustable stop plate 25 is connected to the cross bar and to the plate or bracket 23, the stop 25 having the upwardly extended tongue 26 with which a saw S will engage when the saw is retracted from the piece of work W.

Formed in the stop 25 is the longitudinal slot 27, through which extends the bolt and wing nut connection 28. Thus, the bolt 28 constitutes means, in cooperation with the bolt 24, whereby movement of member 25 in opposite directions is limited, and in any selected positions to which the stop is moved, the wing nuts are turned home for the purpose of clamping the stop plate rigidly in said position.

An inclined stop 29 is also mounted upon the cross bar 21, the cross bar having a transversely disposed slot 30, receiving a connecting screw extending downwardly from said inclined stop 29. The stop 29 serves the purpose of causing the rear end of the saw to be inclined upwardly when the saw is retracted, to clear the lower portion of the stop plate 25, and the transverse adjustment of the inclined stop is to accommodate different types of saws.

A miter box formed as described above is adapted to be mounted upon a work table including the flat top portion 31 which may be formed from plywood or the like, this being supported upon horses 32 and being preferably formed with an opening 33 through which sawdust can gravitate. Upon the portion 31 is mounted a pair of spaced parallel guide rails 34 to which are detachably connected graduated retaining flanges 35 connected to said guide rails by means of bolt and wing nut connections 36.

A work support provided upon the work table includes the back rest 37 at opposite ends of which are provided the raised supports 38. On each support 38 is mounted a horizontally swingable work-engaging arm 39, each arm 39 being provided with a longitudinal series of openings 40 through any of which can extend the pivot bolt 41. In this way, the sharpened inner end 42 of each arm 39 can be spaced adjustably from a piece of wood stock 43 that will constitute a replaceable support for a piece W to be cut.

Thus, it is seen that in use of the mechanism, one simply sets up a pair of horses 32 at the site of the work to be done, and simply places over these a work table 31. If, for example, two by four lumber is to be cut, a piece of said lumber 43 is positioned against the back rest 37, and the clamping arms 39 are swung to a suitable position to engage said piece 43 against movement from its proper location. Thereafter, the rotatable carriage of the miter box is swung to the desired angle and clamped in position, and the base plate 1 of the miter box is slidably adjusted forwardly or rearwardly depending upon the width of the particular piece of work to be cut. The graduations on the guide rails 35 permit the adjustment of the bottom or base plate 1 to be determined in accordance with the width of the pieces to be cut.

The user now simply places a piece of work W upon the support 43, and the saw S is positioned upon the slideway. It is simply necessary, at this time, to traverse the wood with the saw blade, the saw sliding forwardly and rearwardly in the slideway defined by the rails 16, 17, 18.

Each time the saw is retracted, it is engaged by the stop 26. If the work W is of greater thickness, the slideway for the saw tilts upwardly upon the pivotal connections 9, so that there is no necessity of mounting the work table 31 in a higher location.

It will be seen that the work can be cut with great rapidity and at the exact angle desired, and a single saw operator can cut, in a short time, a considerable quantity of rafters, studding, joists, or the like.

What is claimed is:

1. A miter box construction including a stationary base plate, an annular guide rigid with said base plate and provided with a circumferential series of degree markings, a rotatable carriage mounted upon said annular guide, said rotatable carriage having cooperating markings for adjustment of the carriage rotatably upon the guide to selected positions denoting angles at which work is to be cut, said rotatable carriage including a pair of upstanding spaced apart supports, a guide rail mounted upon each support for up and down tilting movement, means for adjusting said guide rails toward and away from each other, said guide rails constituting a slideway for a portable electric power saw, and means at one end of the slideway for limiting movement of a power saw in one direction.

2. A miter box construction including a base plate having a center opening, an annular guide rigid with said base plate and extending peripherally of said opening, said guide having a circumferential series of degree markings, a rotatable carriage including a circular bottom plate having rotating movement within said annular guide, a cross bar connected to said bottom plate of the carriage and underlying said guide, means for rigidly clamping said cross bar and bottom plate to said guide in selected positions to which the carriage is rotatably adjusted, upstanding supports upon said bottom plate, said supports each having grooves formed in their top surfaces, a saw slideway comprising a pair of spaced parallel guide rails, said guide rails including depending tongues received in said grooves and pivotally connected to the supports at one end, the other end of the tongues tilting upwardly and downwardly within the grooves for up and

down tilting of said guide rails, and means adjustably connecting said guide rails for adjustment toward and away from each other to accommodate saws of different widths.

WILLIAM HESS.
HOMER E. WATKINS.

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