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Allaire

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[54] **MITER ATTACHMENT FOR A POWER SAW**

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[51] **Int. Cl.** **B27b 5/20**

[58] **Field of Search** ..... 143/6 G, 6 R, 89 R, 143/47 F; 83/471.3, 471.2, 522, 477, 477.1, 523, 581, 613, 821

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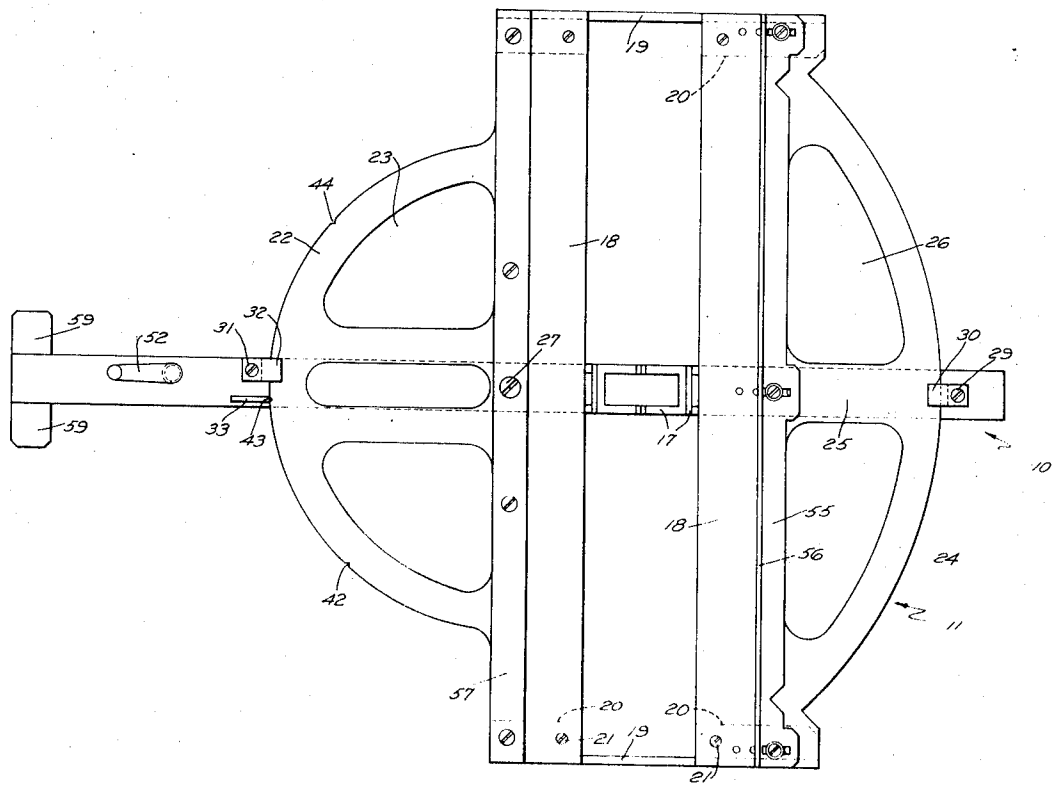
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Primary Examiner—Donald R. Schran
Attorney—Pierre Lesperance

[57] **ABSTRACT**

The device comprises a miter attachment for a power saw. An elongated base is formed of extruded aluminum stock to form a hollow housing of rectangular cross section. An intermediate portion of the base is provided with the standard miter cuts, 45° and 90° vertically and horizontally. The support for the power saw comprises a frame formed of spaced parallel supporting strips connected at their ends and pivotally mounted on the base so that the angular cuts fall between the strips. The outer edges of the strips are provided with integral semicircular guide plates. The base is provided with guide members which form slots for the edge of each plate to guide the frame in its pivotal movement. A small wedge shaped member is vertically slidably mounted in the housing and resiliently retained in the down position by a coil spring. The wedge member is located adjacent the outer perimeter of one of the guide plates so that when the wedge is raised, it is out of contact with the plate, but when the wedge is lowered by the spring, it engages the edge of the plate to hold it in position. Notches may be provided in the plate for locking the wedge at the 45° or 90° angles. A clamp is also mounted in the housing and provided with pivoted members beneath the frame for clamping the work in position. Since the work is clamped against the bottom of the frame, this also serves to hold the frame at the desired angle for the power saw.

11 Claims, 6 Drawing Figures



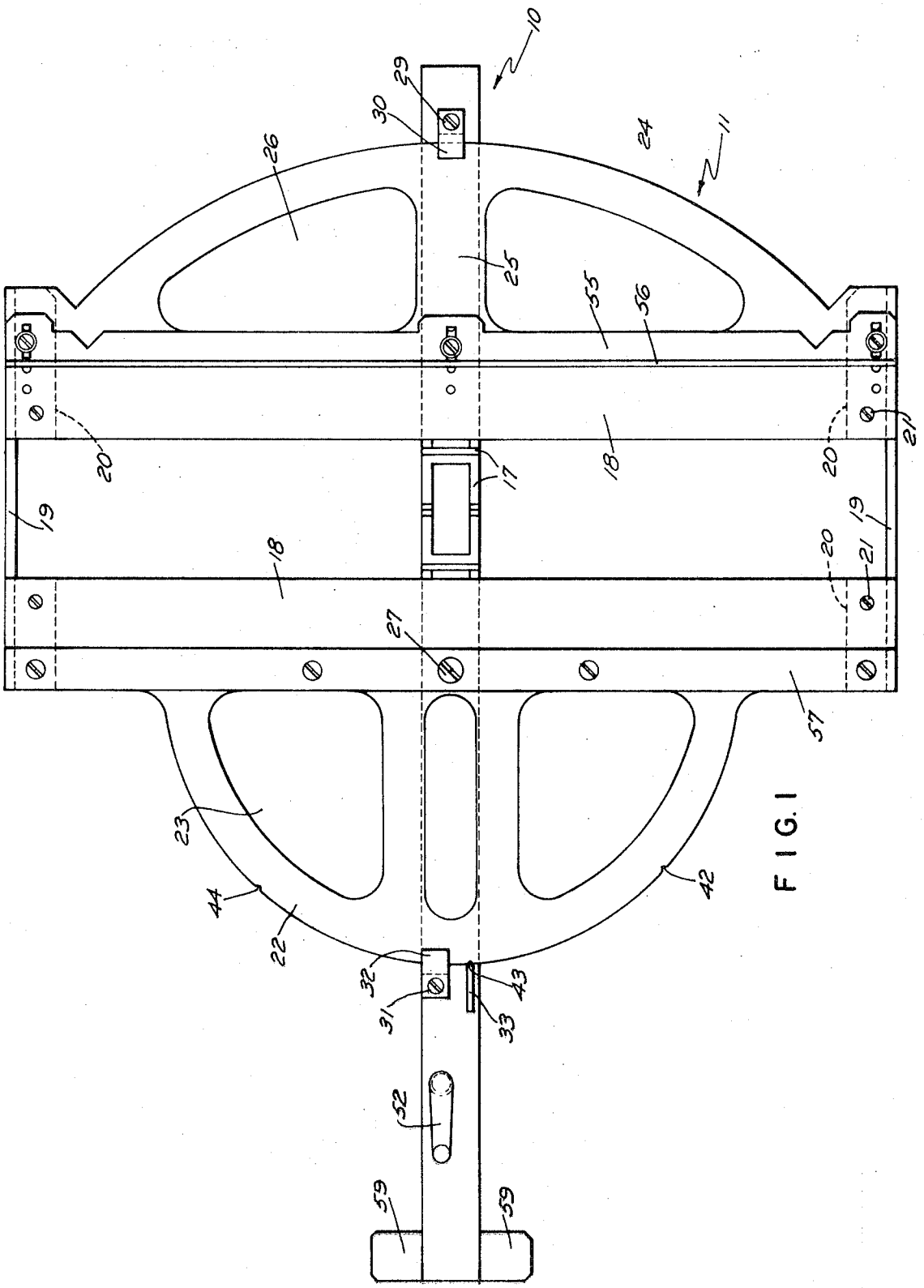

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FIG. 1

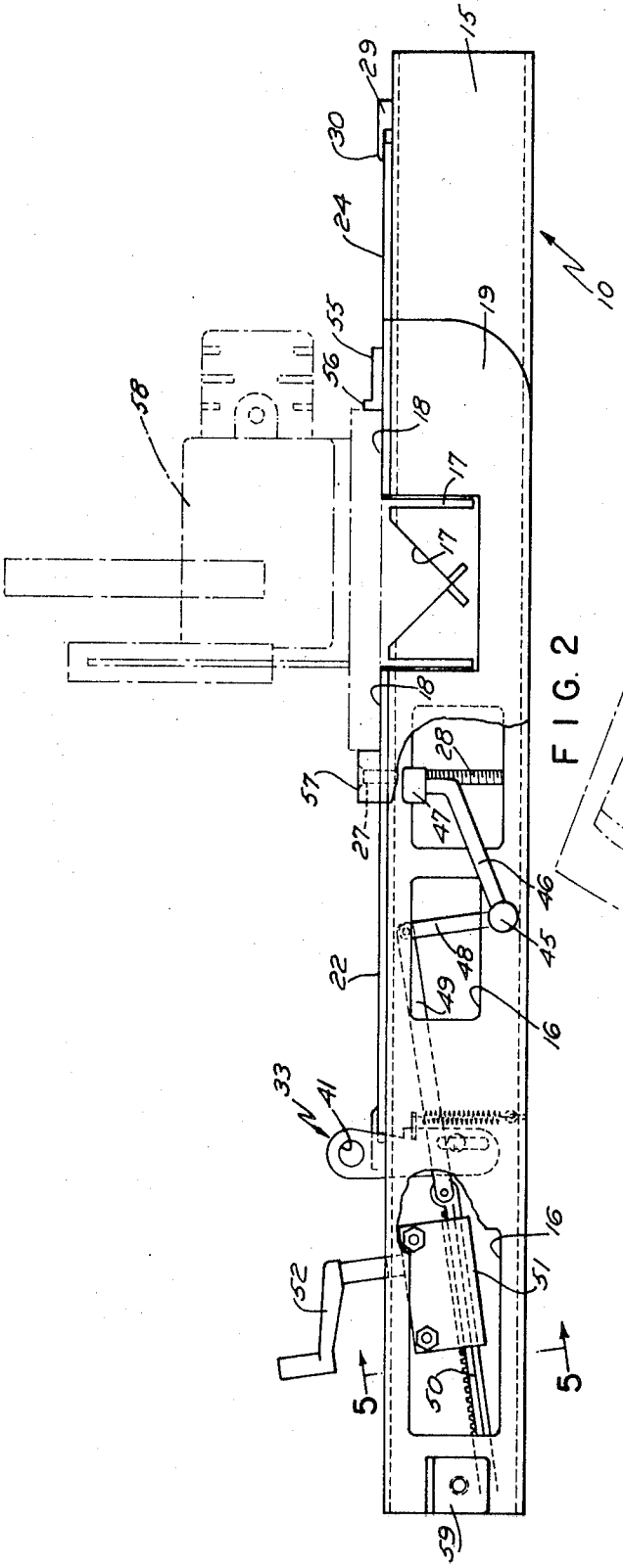

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FIG. 2

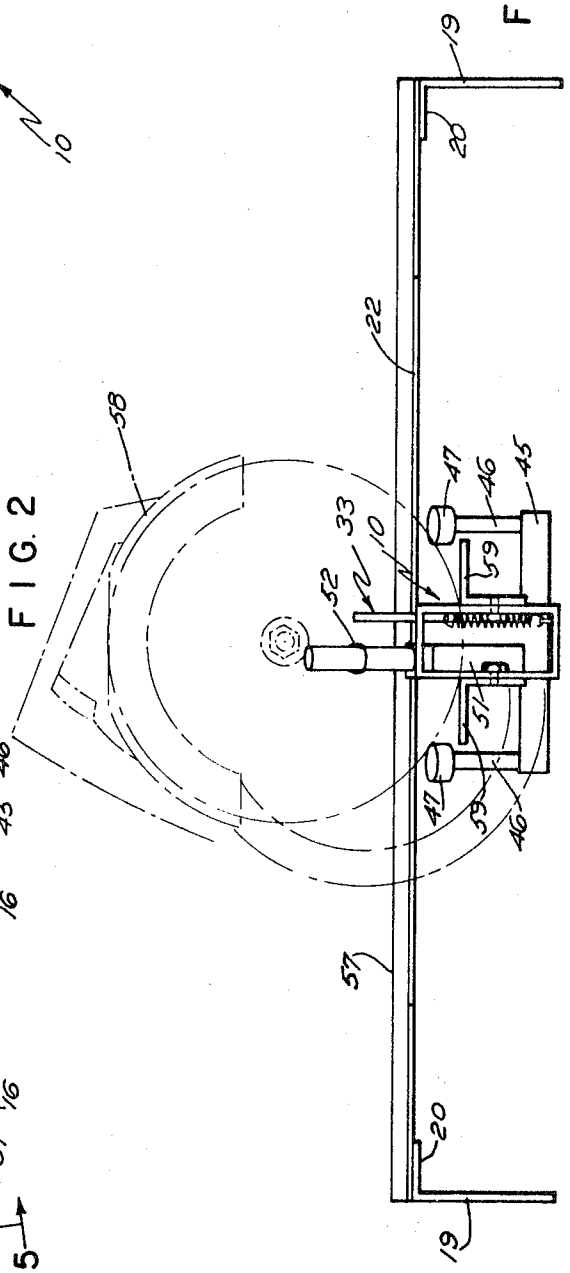

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FIG. 3

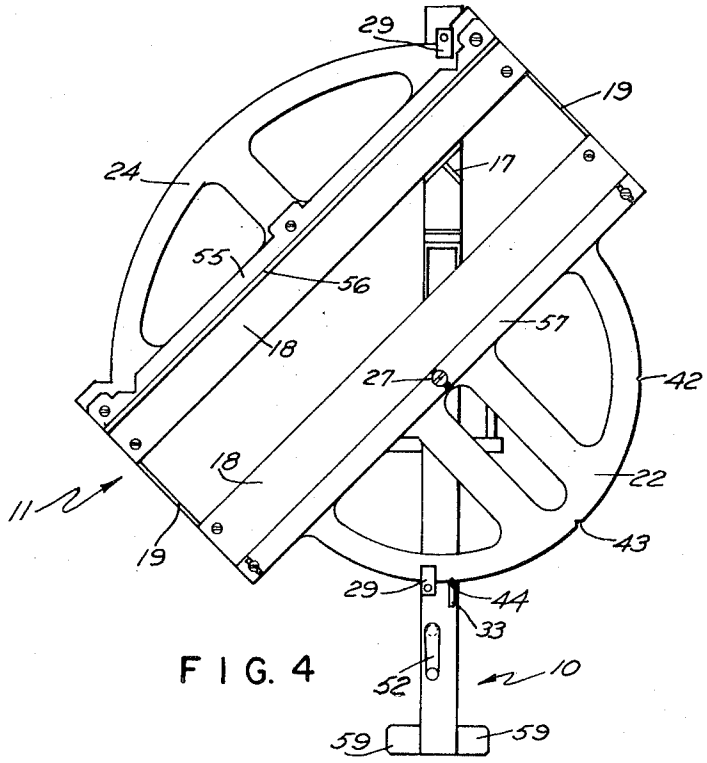


FIG. 4

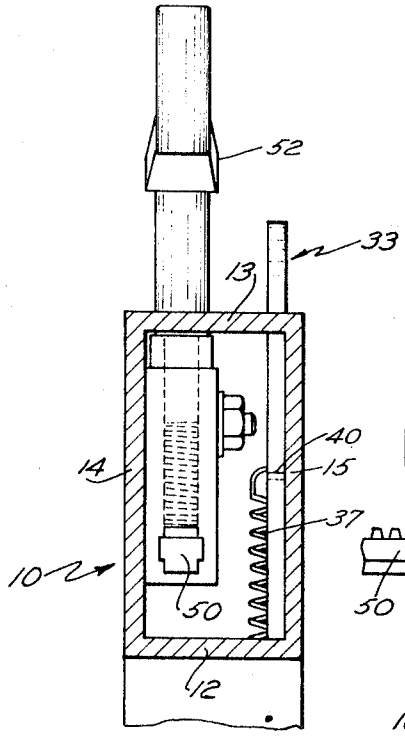


FIG. 5

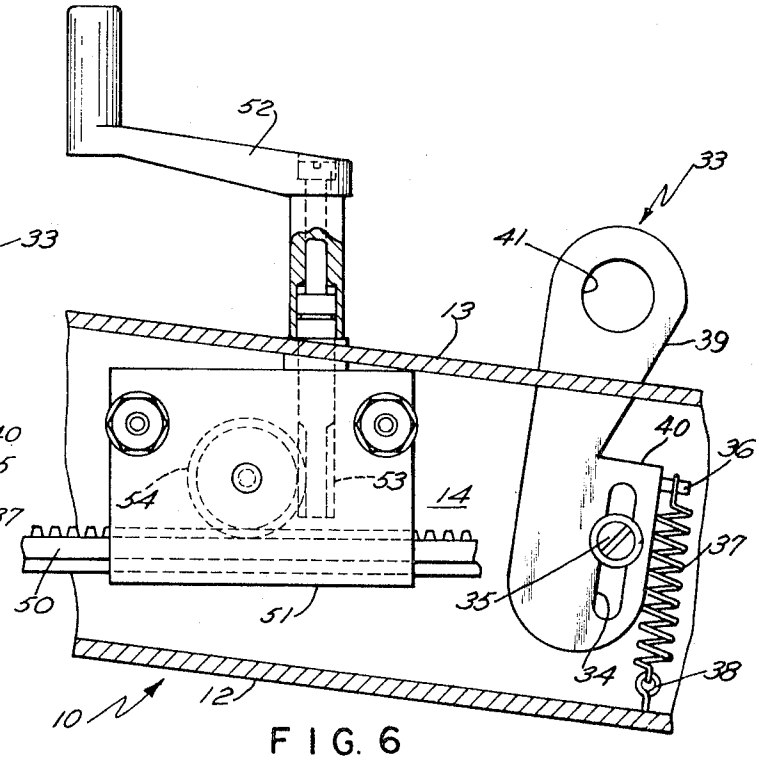


FIG. 6

MITER ATTACHMENT FOR A POWER SAW

My present invention relates to the carpentry art, and more particularly to a miter attachment for a power operated hand saw.

Te principal object of the present invention is to provide a miter attachment for a power saw.

Another object of the present invention is to provide a miter attachment suitable for the "do-it-yourself" householder for the portable power saw.

A further object of the present invention is to provide a miter attachment for a power saw which is simple and easy to operate and adjust for the angle of cut.

Another object of the present invention is to provide a miter attachment for a power saw which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claims.

In the drawings,

FIG. 1 is a plan view of a miter attachment embodying my present invention;

FIG. 2 is a side elevation thereof;

FIG. 3 is an end view of the miter attachment as seen from the left in FIGS. 2;

FIG. 4 is a smaller view similar to FIG. 1 with the frame turned to a 45° angle;

FIG. 5 is an enlarged section taken on line 5—5 in FIG. 2 showing a lock mechanism forming part of the invention;

FIG. 6 is a fragmentary enlarged section showing the lock mechanism as seen from the right in FIG. 5.

With the increase in population and home ownership, the "do-it-yourself" business has greatly increased. Most home owners have full sets of tools for doing the jobs around the house. The tools usually include power drills and power saws. One of the most popular power saws, for example, is a Black & Decker No. U336 6½ inch hand power saw. While the average householder learns to use his power equipment, accuracy is always a problem. While miter boxes have been provided for accurate cuts on a hand saw, there has been no miter attachment for a power saw. The present invention is designed to provide a miter device for a power saw which permits accurate cuts with a power saw at any desired angle.

Referring more in detail to the drawings illustrating my invention, the device comprises the supporting base 10 and the power saw guiding and supporting frame 11. The base 10 comprises an elongated, hollow, housing preferably of extruded aluminum, and of rectangular cross section. As shown in FIGS. 3 and 5, the base 10 comprises a short bottom wall 12, a similar short top wall 13, and side walls 14 and 15, all integrally connected. The side walls 14 and 15 are provided with openings 16 in appropriate places along the length of the base to permit access for assembly and adjustment.

As can be seen in FIGS. 1 and 2, the base 10 is provided forwardly of the center part, with a plurality of standard miter cuts 17 for the passage of the saw blade. These include the straight vertical cuts, 45° cuts, and angular cuts as in FIG. 4. When the work is locked in position, the saw will make the desired angular cut. The cuts 17 form apertures through the side walls 14 and 15 which define a channel or passage extending transversely through the base.

The frame 11, which supports the saw, is pivotally mounted on the base 10 as shown in FIGS. 1 and 2. A pair of spaced parallel flat supporting strips 18 are locked in proper position by the generally U-shaped supports 19 at each end. The supports 19 are vertically positioned and have their ends provided at the top edges with horizontal portions 20 on which the strips 19 are locked by the screws 21. The U-shaped supports 19 therefore define apertures which align with the aforementioned channel for passage of a saw from one end to the other of the strips. Now viewing FIG. 1, the supporting strip 18 to the left is provided with an integral semicircular plate member 22 which may be cut out at 23 to reduce the amount of metal and provide visibility. The plate 22 acts as one of the guides for the strips 18. The other guide extends opposite the plate 22 integrally from the strip 18 to the right. This comprises a semicircular strip 24 extending from end to end of the adjacent supporting strip 18, and having a central supporting bar 25, leaving the openings 26. Note that the guide strip 24 is on a longer radius than the plate 22. This is so because the pivot point for the frame 11 is at 27 at the extreme left edge of the left strip 18 and the arc-shaped portion formed by the lateral perimeter of the strips are concentric with the axis of the pivot 27.

Te pivot point 27 is the top of a bolt 28 which extends through the base and engages the bottom wall 12 of the base 10. At the forward end of the base 10, a guide member or clip 29 is screwed onto the top wall 13 and is provided with an extended portion 30 which frictionally engages the top adjacent edge of the guide strip 24. On the other side, a similar guide member or clip 31 is screwed onto the top wall 13 and is provided with the extended portion 32 which engages the adjacent edge of the plate 22. This arrangement permits pivotal movement of the support 11 at the point 27. The plate 22 and strip 24 guide and retain the frame 11 to poisition the inner edges of the strips 18 at the proper angular relation to the cuts 17 to guide the saw therethrough while the saw is supported onto the strips in projection into the aforementioned transverse channel for operative lengthwise displacement into the latter from one side to the other of the base.

It is necessary, of course, to make sure that the frame 11 is held at the desired angle to the base 10 during the movement of the saw. This is accomplished in two ways. First, I provide a wedge member 33 in the form of an elongated vertically positioned plate, see FIG. 6, having a vertical slot 34 adjacent the bottom end toward one side edge. A pivot bolt 35 extends through the slot 34 to lock the member 33 to the base 10, but permits limited vertical movement of the member 33. The top of the member 33 extends upwardly through a slot in the top wall 13. The back edge of the member 33 is provided with a pin 36. A coil spring 37 is mounted in the base 10 with one end attached to the bottom at 38 and the other end attached to the pin 36. This resiliently retains the member 33 in the down position. The rear edge of the member 33 is cut out to form the angular edge 39 terminating in a shoulder 40. A large opening 41 is provided adjacent the top end of the member 33 for easier manual grasping.

Now viewing FIGS. 1 and 4, the plate 22 is provided with a plurality of notches 42, 43 and 44 in spaced relation around the perimeter thereof. The member 33 is

placed close to the edge of the plate **22** and in its lowermost position the edge **39** engages the edge of the plate **22** to frictionally hold it in position. By pulling the member **33** upwardly against the action of the spring **37**, the frame **11** can easily be pivotted around the pivot point **27** to the desired angle. Now the member **33** is released and pulled downwardly by the spring **37**. The wedge surface **39** will clamp against the perimeter of the plate **22** and hold it in proper relation to the base **10**. However, the most used angles are either 90° or 45°. The central notch **43**, see FIG. **1**, is so positioned that when the supporting strips **18** are exactly at a 90° angle to the base **10**, the wedge **33** will enter the notch **43** to positively lock the frame in this position. Now viewing FIG. **4**, the frame **11** has now been pivotally turned to an angle of 45° to the cuts **17**. In this position the wedge edge **39** of the member **33** will enter the notch **44**. Similarly, if the frame **11** is pivoted in the opposite direction, the wedge will enter the notch **42** to hold the frame **11** in a 45° position in the opposite direction.

The above construction is designed to hold the frame **11** in its proper angular relation to the base **10**. The work holding device constitutes another means of retaining the frame **11** in position. The work must be clamped against the base **10** and up against the bottom surface of the frame **11**. This clamping action will serve to further hold the frame in proper position. While any type of work holding clamp may be used, I have illustrated a screw type clamp shown in FIGS. **2, 3** and **6**. A pivot bar **45** is mounted through the walls **14** and **15** of the base **10** adjacent the bottom edge and rearwardly of the pivot point **27** as shown in FIG. **2**. A clamping arm **46** extends upwardly from each end of the bar **45** with rubber tips **47** for clamping upwardly against the work and holding it tightly against the bottom of the adjacent supporting strip **18**. Now, inside of the base, the pivot bar **45** is provided with a lever arm **48** which is pivotally connected by an elongated bar **49** to one end of a rack **50**. Mounted in the base **10** is a small housing **51** through which the rack **50** extends as shown in FIGS. **2** and **6**. A manually engagable handle **52** on top of the housing base **10**, extends downwardly to a worm **53** in the housing **51** which turns the gear **54** in engagement with the rack **50**. It is obvious, with the above arrangement, that turning movement of the handle **52** in one direction will move the rack **50** towards the right, and turning movement of the handle in the opposite direction will move the rack **50** to the left. This movement of the rack **50** is transmitted through the bar **49** to the lever arm **48**, causing pivotal movement of the pivot bar **45** and its associated clamping arms **46**. This will effectively clamp a piece of work beneath the supporting strip **18** to the left in FIGS. **1** and **2**. This also serves to clamp the frame **11** in proper angular position.

A simple lever with a cam action may also be provided to accomplish the same clamping action. Various guide members are also provided. An adjustable guide strip **55** is mounted at the right of the supporting strip **18**, see FIG. **1**. The strip **55** has a vertical flange **56** against which the saw is guided. At the left, an elongated bar **57** is mounted on the left strip **18** for a fixed guide at that edge. The guide bar **55** is adjustable sideways towards and away from the guide bar **57**. The saw **58** slides between the guides, see FIG. **2**. At the rear of the base **10**, on the side walls **14** and **15**, I provide a pair of vertically adjustable angle iron supports **59**. These support the work extending from the clamp **46** and prevent sagging.

I have thus provided a simple means for guiding a power saw through a miter movement. The device is not attached to the saw, but forms a miter attachment sold with the saw. It is simple in construction, having a few readily assembled parts. Aluminum is the preferred metal because of its light weight and durability. The operation of the device is simple, the release of the member **33** permitting a quick and easy selection of the required angle. Other advantages of the present invention will be readily apparent to a person skilled in the art.

Finally, it should be noted that with the attachment of the present invention, mouldings are always sawed on the reverse side of the wood. This gives the visible front surface a perfect cut and finished appearance. The attachment of the present invention permits the angles to be adjusted to provide this cut.

I claim:

1. A miter device for a power-operated saw comprising an elongated base having aligned apertures through the opposite lateral sides thereof defining a channel extending transversely through said base, a frame pivotally mounted onto said base and including a pair of spaced-apart strips constructed and arranged for supporting a power saw thereon in projection into said transverse channel for operative lengthwise displacement into the latter from one side to the other of said elongated base, locking means constructed and arranged to releasably lock said frame at a selected angle relative to said elongated base, and a work clamping device constructed and arranged to adjustably clamp a piece of work against said frame and to cooperate with said locking means to lock said frame against rotation relative to said base.

2. A miter device as defined in claim **1**, wherein said frame includes a pair of U-shaped bracket members transversely and upwardly underlying the opposite ends of said strips respectively with the ends of each U-shaped bracket members rigidly secured to the two strips respectively to rigidly connect one to the other and to define apertures arranged to be aligned with said channel for unobstructed passage of the saw from one end to the other of said strips.

3. A miter device as defined in claim **1**, wherein said frame defines a pivot axis, said supporting strips are formed each with an arc-shaped portion concentric with said pivot axis and guiding members are mounted onto said base to operatively adjoin said arc-shaped portions and thereby pivotally restrain said strips onto said base.

4. A miter device as defined in claim **3**, wherein said frame includes substantially semi-circular plates integrally extending from the opposite outer edges of said strips respectively and defining said arc-shaped portions, and said guiding members constitute guide clips mounted onto said base in slidable engagement with said plates.

5. A miter device as defined in claim **4**, further including adjustable guide means mounted onto said strips and constructed and arranged to guide said saw along said strips.

6. A miter device as defined in claim **5**, wherein said adjustable guide means includes a first guide bar fixedly secured onto one of said strips along the outer edge thereof and a second guide bar adjustably secured onto

the other of said strips along the outer edge thereof and constructed and arranged for sideways displacement towards and away from said first guide bar, whereby to vary the spacing between said guide bars.

7. A miter device as defined in claim **1**, wherein said frame defines an operatively lateral perimeter and is formed with spaced notches along said perimeter and said locking means includes a locking member pivotally mounted onto said base and arranged for pivotal movement towards and away from said perimeter and engagement into one of said notches and a spring connected to said locking member and arranged to bias the latter towards said engagement, whereby to non-rotatably hold said frame at angles of 45° or 90° to said base.

8. A miter device as defined in claim **7**, wherein said locking member constitutes a plate extending upwardly relative to said base, having a manually engageable portion and an upward slot therethrough, a pivot extends transversely of said base through said slot, and one edge of said locking plate is slanted inwardly adjacent said perimeter and is arranged to downwardly and pivotally engage into anyone of said notches under the bias of said spring

9. A miter device as defined in claim **1**, wherein said work clamping device includes clamping members outwardly projecting relative to said opposite sides respectively of said elongated base and constructed and arranged to selectively clamp a piece of work outwardly along any of said opposite lateral sides.

10. A miter device as defined in claim **9**, wherein said work clamping device includes a handle rotatably mounted on said base and outwardly projecting therefrom for manual operation thereof, a gear track is geared to said handle to be linearly actuated therefrom, said clamping members include clamping arms and a crossbar is rigidly secured to said clamping arms for pivotal movement therewith and is connected to said gear rack and arranged to be rotated by the latter upon rotation of said handle.

11. A miter device as defined in claim **10**, wherein said frame includes a pair of U-shaped bracket members transversely and upwardly underlying the opposite ends of said strips respectively with the ends of each U-shaped bracket members rigidly secured to the two strips respectively to rigidly connect one to the other and to define apertures arranged to be aligned with said channel for unobstructed passage of the saw from one end to the other of said strips, said frame includes substantially semi-circular plates integrally extending from the opposite outer edges of said strips respectively and defining arc-shaped portions, guide clips are mounted onto said base in slidable engagement with said plates, a first guide bar is fixedly secured onto one of said strips along the outer edge thereof, a second guide bar is adjustably secured onto the other of said strips along the outer edge thereof and constructed and arranged for sideways displacement towards and away from said first guide bar, whereby to vary the spacing between said guide bars, said frame defines an operatively lateral perimeter and is formed with spaced notches along said perimeter, said locking means includes a locking wedge plate extending upwardly relative to said base, having a manually engageable portion, and an upward slot therethrough, a pivot extends transversely of said base through said slot for pivotal movement towards and away from said perimeter, one edge of said locking wedge plate is slanted inwardly adjacent said perimeter and is arranged to downwardly engage into anyone of said notches, a spring is connected to said locking wedge plate and arranged to bias the latter towards said engagement to non-rotatably hold said frame at angles of 45° or 90° to said base, and the latter includes a body of hollow, rectangular, aluminum extrusion having a plurality of miter cuts extending transversely therethrough at angles of 45° and 90° thereto along said channel for the passage of the saw.

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