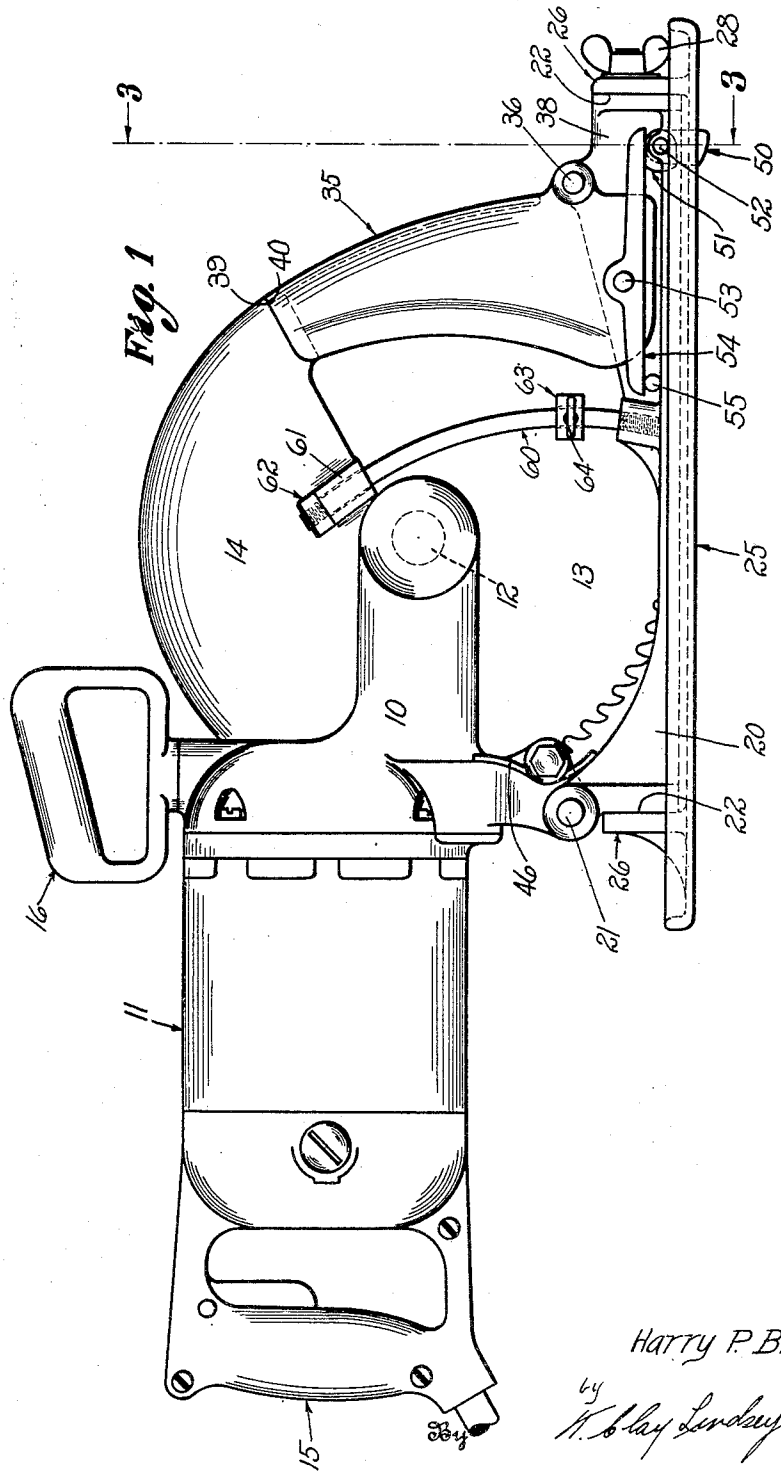
March 22, 1932. H. P. BRUMELL 1,850,444

PORTABLE MOTOR DRIVEN SAW

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Fig. 1



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PORTABLE MOTOR DRIVEN SAW

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Fig. 3

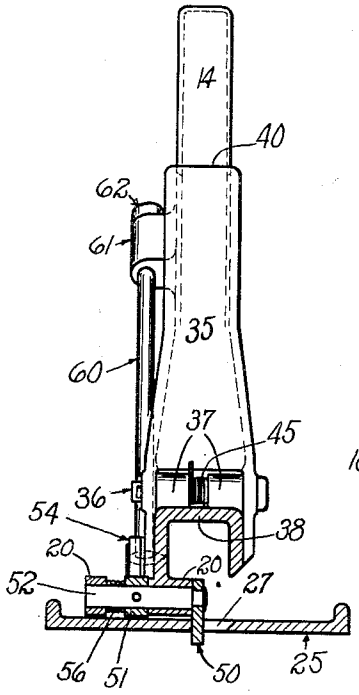
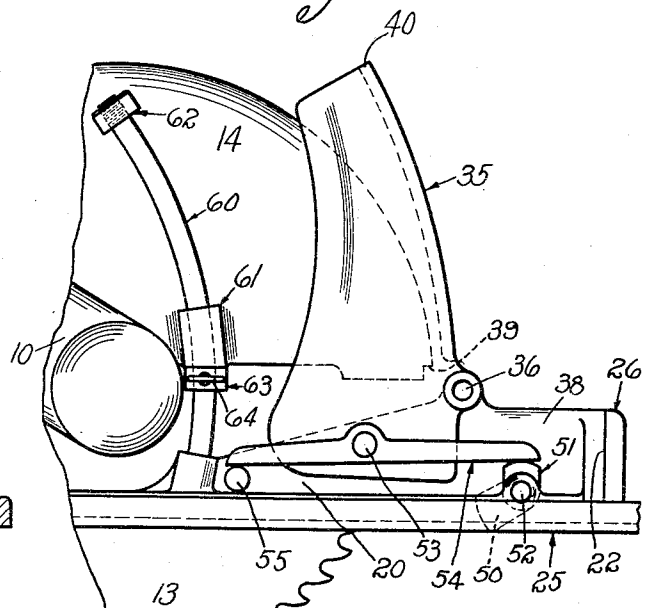
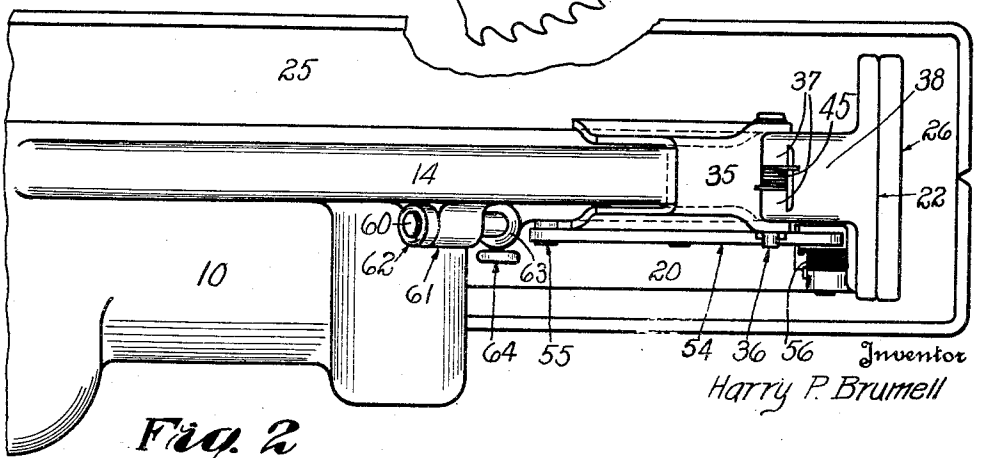


Fig. 4





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Fig. 2

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UNITED STATES PATENT OFFICE

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PORTABLE MOTOR DRIVEN SAW

Application filed September 17, 1930. Serial No. 482,438.

This invention relates to portable power driven hand tools adapted to be applied bodily to the work and moved along the same by the operator, such as the so-called "electric hand saws", examples of which are the tools shown in the John M. Crowe Patent No. 1,644,326 issued October 4, 1927 and in the pending John M. Crowe application Serial No. 327,542 filed December 21, 1928, and which Crowe patent and application have been assigned to the same assignee as the present application.

A tool of the class to which reference is had may comprise a frame, a cutting blade operatively mounted thereon and a motor on the frame for operating the blade; guarding means (which may be referred to, for convenience, as the bottom guard) movably mounted on the frame to advance and recede to guard or expose a cutting portion of the blade, and which bottom guard comprises or includes a base adapted to engage and travel along the work; automatic means, such as a spring, effective in all tool positions and tending to advance the bottom guard to guarding position, and releasable means also effective in all tool positions for automatically securing the bottom guard against retreat. The last mentioned means may be operated by the engagement of the work with an element carried by the tool so as to permit the guard to retreat.

A primary object of the present invention is to provide a tool of this sort which is lighter in weight, which comprises a fewer number of parts, which has a neater and more pleasing appearance, and wherein the guarding means for the upper portion of the saw is so arranged as to follow generally the curvature of the saw so that objectionable humps or projections, which would interfere with the operator observing the forward end of the tool and the line along which the tool should be moved, are eliminated.

In accordance with the present illustrative disclosure of my invention, the bottom guard carries a movable front guard which is adapted to cooperate with the fixed or top guard so as to releasably hold the bottom guard in protecting or advanced position, the front guard being associated, by preference, with trip mechanism adapted to engage the work for the purpose of releasing the front guard from the fixed guard and thus permitting the bottom guard to recede. The top and front guards are adapted to relatively telescope into one another, and these guards follow, more or less closely, the curvature of the saw so that they do not present any unsightly humps or projections which would interfere with the operator observing the forward end of the tool.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangements of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings, wherein I have shown, for illustrative purposes, one of the many embodiments which the present invention may take:

Figure 1 is a side elevational view of a tool in which my invention is incorporated, the bottom guarding means being shown in fully advanced or guarding position;

Fig. 2 is a top plan view of the forward end of the tool;

Fig. 3 is a view, partly in elevation and partly in section, and is taken on line 3—3 of Fig. 1; and

Fig. 4 is a side elevational view of the forward end of the tool, the bottom guard being shown in receded position so as to expose the lower portion of the cutting blade.

Referring to the drawings in detail, 10 designates generally a frame which carries a motor 11 having a shaft 12 to which is fixed a cutting blade 13. The casing 10 may house the connections between the motor and the shaft 12, these connections not being shown as they may be similar to those disclosed in said Crowe patent and they form no part of the present invention. The frame also includes a fixed guard 14 which may be formed integrally with the casing or frame. This guard 14 encloses the upper portion of the

saw and, therefore, may be referred to, for convenience, as the top guard. The rear end of the motor carries a handle 15 and, if desired, a second handle 16 may be provided.

The bottom guarding means may comprise a single member constituting a base adapted to engage and travel along the work, as shown in said Crowe Patent No. 1,644,326, or it may comprise, in combination, a guard element and a runner or base mounted for adjustment about an axis longitudinal of the cut, the latter arrangement being shown in the drawings by way of illustration only. This arrangement is also shown generally in said Crowe application Serial No. 327,542. The guard element is designated by the numeral 20 and is pivoted to the frame 10 as at 21. The ends of the guarding element 20 have flat faces 22. The runner or base is designated by the numeral 25 and has, adjacent each end, upstanding ears 26 adapted to respectively engage against the flat faces 22. The runner has a flat work engaging bottom surface which is slotted as at 27 in the plane of the saw blade to clear the same. The runner may be mounted on the guarding element 20 for adjustment thereon about an axis longitudinal of the cut in a manner similar to that disclosed in said Crowe application. The runner may be clamped in adjusted position by a thumb nut 28.

The front guard which, when the tool is in inoperative position, guards the forward end of the saw between the top guard and the bottom guard, is designated by the numeral 35 and is pivoted by a pin 36 to the guard element 20 adjacent the latter's forward end. The pivot 36 is carried by a pair of ears or lugs 37 (see Fig. 3) located on a raised or arched portion 38 of the guard element 20. The front guard 35 is generally of U shape in cross section and, at its lower end, straddles the raised portion 38 of the guard element 20. The front guard 35 is open at its upper end and is slightly wider than the fixed guard 14 so that the latter may telescope into the former, as shown in Fig. 4, when the bottom guard recedes. The top guard has, at its forward end, a shoulder or stop 39 which is adapted to engage upon the stop or shoulder 40 provided by the upper end of the connecting portion of the front guard. When the parts are in the position shown in Fig. 1, the forward end of the top guard projects slightly into the upper end of the front one; the top guard rests upon the upper end of the front guard, and the outer peripheries of the two guards, where they meet, are substantially flush. The front guard is normally urged rearwardly, that is to the locking position shown in Fig. 1, by a spring 45 coiled about the pin 36 and having its opposite ends engaging the front guard and the guarding element 20, respectively. The bottom guarding means is normally urged to the advanced or guarding position shown in Fig. 1 by a spring 46 which is comparable to the spring 30 shown in said Crowe Patent No. 1,644,326.

Referring now to the trip mechanism, this includes a trip lever having a trip element 50, a cam 51, and a pin 52 to which the trip element and cam are fixed. The pin extends transversely of, and is journalled in the forward end of, the guarding element 20, and the trip element or finger 50 extends through the slot 27 in the base or runner 25. Pivoted to the front guard, as at 53, is a connecting lever 54, the forward end of which rests upon the cam 51. The rear end of the connecting lever rests upon a stud 55 on the guarding element 20. The coiled spring 56 normally urges the trip lever to the position shown in Figs. 1 and 3.

For the purpose of limiting the extent to which the bottom guarding means may recede, and thus determine the depth of cut which the saw will take, there may be provided a rod 60 carried by the guarding element 20 and curved about the axis 21 about which the bottom guarding means swings. The upper end of the rod 60 extends slidably through a boss 61 on the top guard and, on the upper projecting end of the rod, is a nut 62 which limits the extent to which the bottom guarding means can be moved to advanced or protecting position. Carried by the rod 60 between the boss 61 and the guarding element 20 is an adjustable collar 63 adapted to be secured in any predetermined position of adjustment by a screw 64.

The manner in which my improved tool operates is clear from the foregoing description taken in connection with the accompanying drawings. It will be observed that, when the tool is not being used, the bottom guarding means is in advanced or protecting position and it is releasably held in that position by the front guard 35 due to the locking engagement between the upper end of that guard and the shoulder 39 on the top guard. The trip lever is in the position where the trip element 50 extends downwardly below the work engaging face of the runner 25. When it is desired to use the tool, the forward end of the runner is positioned on the surface of the work to be operated upon and then the tool is advanced by means of the handles 15 and 16. When thus advanced, the trip lever will engage the edge of the work causing the cam 51 to raise the forward end of the lever 54 with the result that the upper end of the front guard will swing forwardly and out of engagement with the shoulder 39. The bottom guard will then recede, or, what amounts to the same thing, the saw will be moved down through the slot in the runner, as shown in Fig. 4, and, during this movement, the top guard telescopes into the front one. As soon as the tool is moved from the

work, the spring 46 will immediately advance the bottom guarding means to the guarding position shown in Fig. 1 and, as the trip 50 is now released, the front guard is free to swing, under the influence of the spring 45, to the operative position shown in Fig. 1 and, in which position, it releasably holds the bottom guard in advanced position.

From the foregoing description, it will be seen that the front guard constitutes a protector for the forward portion of the saw and also acts as a latch or means for releasably holding the bottom guard in advanced position. The trip mechanism comprises but a relatively few number of parts and, therefore, may be embodied in the tool at a relatively low cost and it is also very effective in operation. It will further be seen that the top guard closely follows the curvature of the saw and that it is devoid of unsightly and inconvenient humps or projections.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In a tool of the character described a unit including a frame, a cutting blade operatively connected thereto, and a motor for operating said blade; guarding means movably mounted on said unit to advance or retreat to guard or expose a cutting portion of said blade, a guard carried by and movable relative to said guarding means and arranged to protect the forward portion of the blade, cooperating shoulders or stops on said unit and guard respectively adapted to interengage to hold said guarding means against retreat, and means normally urging said guard in a direction to engage said shoulder.

2. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard carried by said frame and having a shoulder at its forward end, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of the blade, a front guard movably carried by said guarding means and having at its upper end a shoulder adapted to cooperate with the shoulder on said fixed guard to hold said guarding means against retreat, said fixed guard being adapted to telescope into said front guard upon retreat of said guarding means, and means normally urging said front guard in a direction to engage the shoulders.

3. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard protecting the upper portion of said blade and curved generally concentrically thereto and having a stop or shoulder at its forward end, a bottom guard pivoted at its rear end and adapted to advance or retreat to guard or expose a cutting portion of the blade, a front guard pivoted adjacent its lower end to the bottom guard adjacent the forward end of the latter, the upper end of said front guard having a shoulder adapted to engage the shoulder on said fixed guard to hold the bottom guard against retreat, a spring normally urging said bottom guard to protecting position, and a spring normally urging said front guard into latching position.

4. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, a movable guard protecting a portion of the blade not projecting into the work and itself constituting means for securing said guarding means against retreat from guarding position, and means for moving said guard from securing position.

5. In a tool of the character described; a unit including a frame, a cutting blade operatively connected thereto, and a motor for operating said blade; guarding means movably mounted on said unit to advance or retreat to guard or expose a cutting portion of said blade, automatic means effective in all tool positions and tending to advance said guarding means, a movable guard protecting the forward end of said blade and adapted to directly engage said unit for holding said guarding means against retreat, and means for moving said guard from holding position.

6. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard carried by said frame, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, a front guard movably carried by said guarding means and adapted in one position to directly engage said fixed guard to hold said guarding means against retreat, means normally urging said front guard to said position, and means for moving said guard from said position to permit recession of said guarding means.

7. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, a

guard protecting a portion of the blade not projecting into the work and itself constituting means for securing said guarding means against retreat, said guard being movable with respect to said guarding means into and out of securing position, and means adapted for actuation by engagement with the work for releasing said guard from securing position.

8. In a tool of the character described; a unit including a frame, a cutting blade operatively connected thereto, and a motor for operating said blade; guarding means movable on said unit to advance or retreat to guard or expose a cutting portion of said blade, automatic means effective in all tool positions tending to advance said guarding means, a movable guard protecting the forward end of said blade and adapted to itself directly engage said unit for holding said guarding means against retreat, and means, having a portion adapted to engage the work, for moving said guard from holding position.

9. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard carried by said frame, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, a front guard mounted on and movable relative to said guarding means and adapted in one position to itself directly cooperate with said fixed guard to hold said guarding means against recession, and means adapted for actuation by engagement with the work for moving said front guard from said position to allow said guarding means to retreat.

10. In a tool of the character described; a unit including a frame, a cutting blade operatively connected thereto, and a motor for operating said blade; guarding means movably mounted on said unit to advance or retreat to guard or expose a cutting portion of the blade, a front guard pivotally mounted on said guarding means and adapted to engage said unit for holding said guarding means against retreat, and means for moving said front guard from holding position including a work-operated trip lever carried by said guarding means and an operative connection between said trip lever and said guard.

11. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard carried by said frame, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of the blade, a front guard pivotally mounted on said guarding means and adapted to directly engage said fixed guard to hold said guarding means against recession, a trip lever pivoted on said guarding means and having a projection adapted to engage the work, and a cam; and a lever between said cam and front guard whereby the front guard is moved forwardly out of holding position when the trip lever is moved by engagement with the work.

12. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, a fixed guard carried by said frame, a bottom guard movably mounted on said frame to advance or retreat to guard or expose a cutting portion of the blade, a front guard pivoted on said bottom guard, interengaging shoulders between the forward end of said fixed guard and the upper end of said front guard adapted to cooperate to hold said bottom guard against retreat, said fixed guard being adapted to telescope into said front guard upon retreat of said bottom guard, means normally urging said front guard into holding position, a trip lever pivoted on said bottom guard and having a projection adapted to engage the work, and a cam; and a lever pivoted to said front guard and engaging said cam.

13. In a tool of the character described, a frame, a cutting blade operatively mounted thereon, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, automatic means effective in all tool positions and tending to advance said guarding means, a guard for protecting the forward portion of the cutting blade, said guard being movable with respect to said guarding means and adapted to cooperate with said frame to releasably hold said guarding means against retreat, and means normally urging said guard into latching position.

14. In a tool of the character described, a frame having a fixed guard, a cutting blade operatively mounted on said frame, guarding means movably mounted on said frame to advance or retreat to guard or expose a cutting portion of said blade, and a front guard carried by and pivoted on said guarding means and having telescoping relation to said fixed guard, said front guard being movable into and out of abutting relation with said frame.

15. In a tool of the character described, a unit including a frame, a cutting blade operatively connected thereto, and a motor for operating said blade; guarding means movably mounted on said unit to advance or retreat to guard or expose a cutting portion of said blade, and a guard movable relative to said guarding means into and out of engagement with a relatively fixed part of the frame to act as a latch, said guard protecting the forward end of said blade and adapted, when in latching position, to directly engage the relatively fixed part of the frame for holding said guarding means against retreat.

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