Nov. 3, 1931. F. W. WAPPAT 1,830,580

ELECTRIC HANDSAW

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Fig. 1.

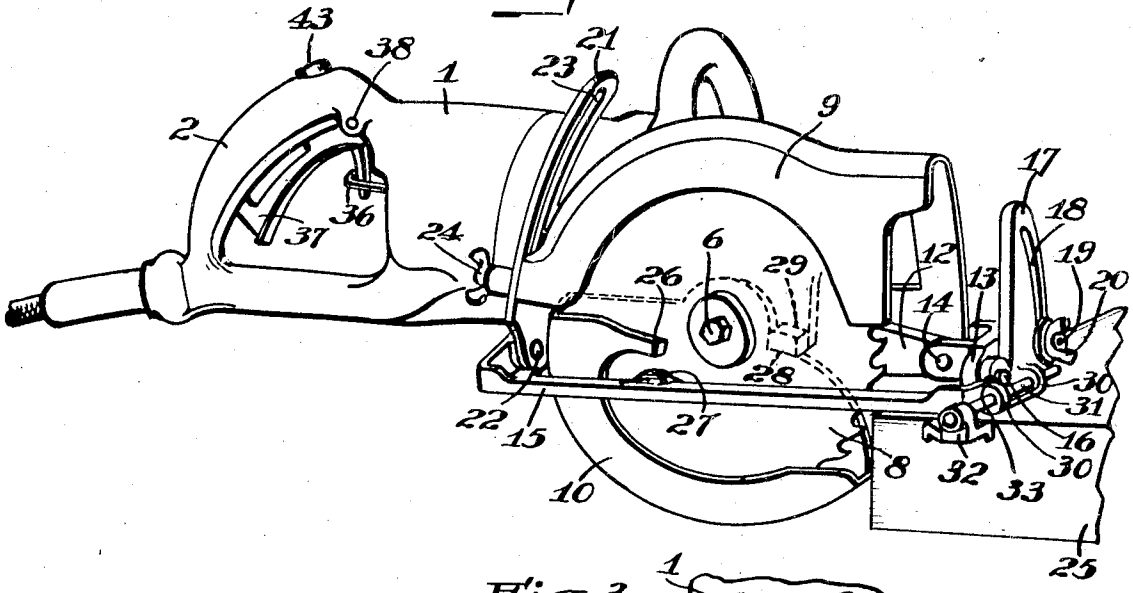


Fig. 3.

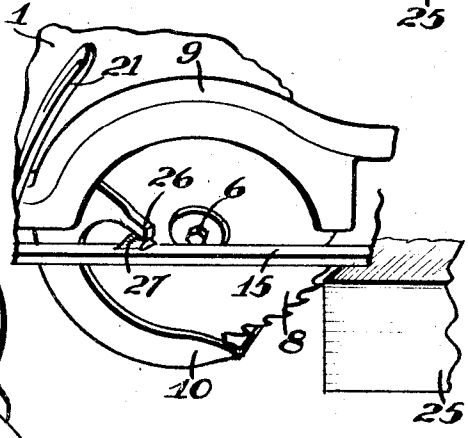


Fig. 2.

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Fig. 5.

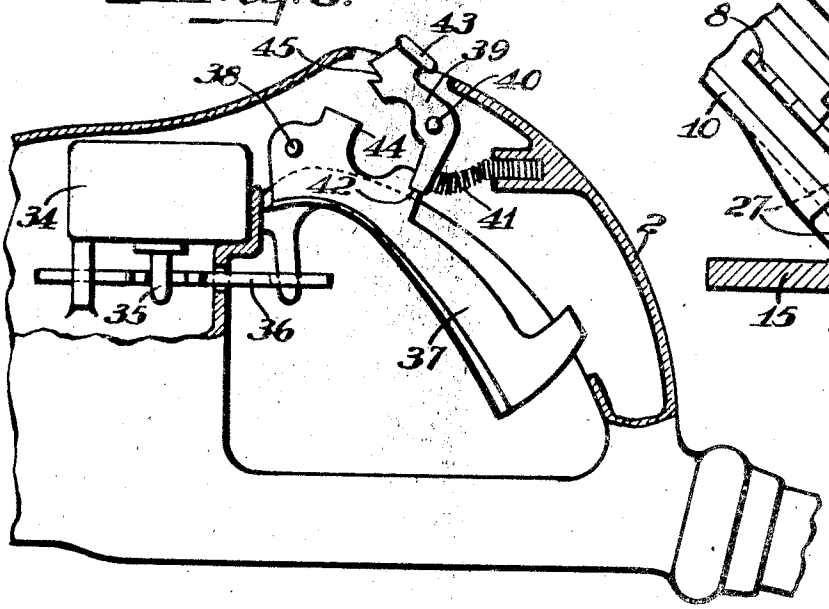
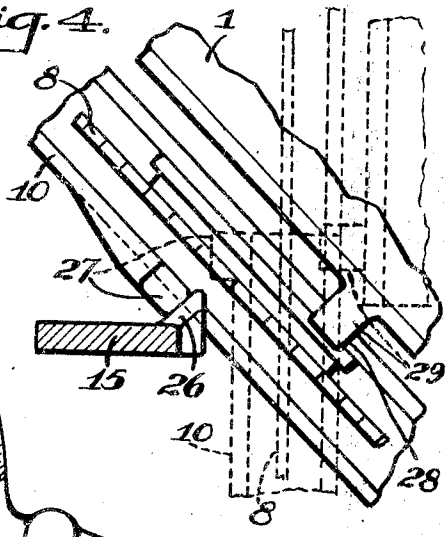


Fig. 4.



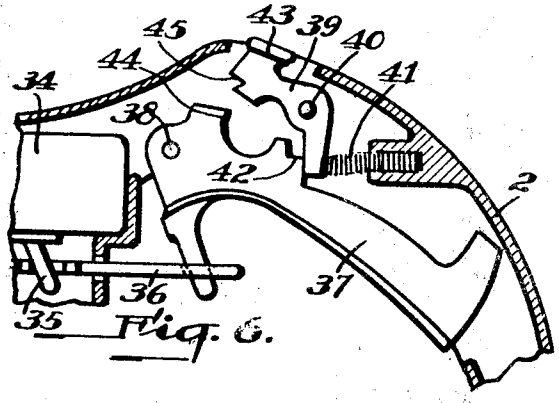


Fig. 6.

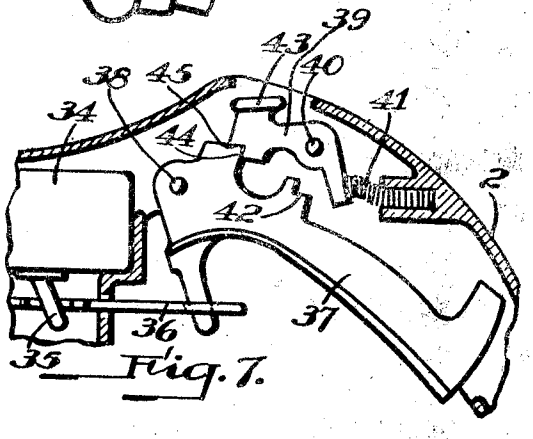
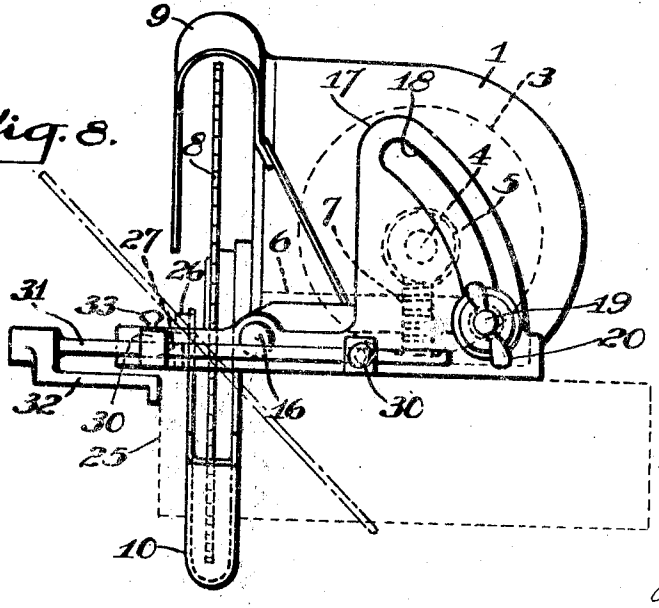


Fig. 7.

Fig. 8.



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Patented Nov. 3, 1931 1,830,580

UNITED STATES PATENT OFFICE

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ELECTRIC HANDSAW

Application filed August 16, 1930. Serial No. 475,687.

The invention relates to electric handsaws and involves certain improvements over the constructions of my Patent No. 1,623,290 and application Serial No. 424,551, filed January 30, 1930. It has for its principal objects; (1) the provision of means which come into play when cutting at an angle whereby the guard is retracted by the tilting of the saw frame so that it will not interfere with the action of the saw at such time; (2) the provision of safety means in connection with the hand lever carried in the handle of the saw for operating the electric switch whereby accidental starting of the motor is avoided; (3) the provision of means whereby said lever may be locked in operative position under certain conditions of use in order to relieve the operator of the necessity of holding the lever in such position; and (4) the provision of improved means for gauging the position of the saw with respect to the work and guiding it during the cutting operation. One embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of the saw in what may be termed normal position of use. Fig. 2 is a perspective view showing the saw in another (mitering) position of use. Fig. 3 is a partial perspective view of the saw showing the operation of the device for retracting the saw guard when the saw is adjusted to cut at an angle just as the cut is started. Fig. 4 is a detail sectional view showing the guard retracting device. Fig. 5 is a detail sectional view through the handle showing the safety device in locking position preventing the accidental operation of the switch lever. Fig. 6 is a detail sectional view similar to that of Fig. 5, but showing the parts in operating position. Fig. 7 is another section showing the parts locked in operating position. And Fig. 8 is a front view of the machine.

Referring to the drawings, 1 is the saw frame provided at one end with the handle 2; 3 (Fig. 8) is an electric motor suitably mounted in the frame and provided with a shaft 4 carrying the worm 5; 6 is a shaft extending transversely of the frame and carrying the worm wheel 7 and the circular saw 8; 9 is a guard or shield integral with the frame and surrounding the upper half of the saw; and 10 is a movable guard casing or shield similar to that of my patent heretofore referred to, said guard or shield being pivoted on the frame concentric with the axis of rotation of the saw or approximately so and being adapted to telescope into the fixed casing when swung to the rear.

The saw frame is provided at its front end with an arm 12, and to this arm is secured the bracket 13 by means of the pivot pin 14 (Fig. 1). The machine is provided with a base plate 15, which governs both the depth of the cut of the saw and the angle of such cut, such base plate being cut away to permit of the adjustment of the saw and guard 10 therethrough and being pivoted at its front end to the bracket 13 by means of the pin 16. The base plate has secured to its front end a plate 17 provided with a slot 18 in which slides the bolt 19 secured to the bracket 13. The bolt carries a clamping nut 20 for holding the base plate in any desired position of adjustment with respect to the bracket 13.

A second bracket 21 provides for the adjustment of the base plate 15 to vary the depth of cut by the saw. This bracket is secured at its lower end to the base plate by means of the pivot pin 22 (Fig. 1). It is provided with a slot 23 through which extends a clamping bolt 24 threaded into the saw frame. The pivots 16 and 22 are in alignment with each other and lie just to one side of the plane of the saw 8. The adjustment of the saw frame around these pivots gives the saw its various angles in cutting miters, the nut 20 on the bolt 19 serving to clamp the base plate in its position relative to the saw frame during the sawing operation.

Fig. 1 shows the parts adjusted so that the saw will cut at right angles to the plane of the upper face of the plank 25 and with a maximum depth of cut, the bracket 21 being at its uppermost position of adjustment. To cut at a less depth and at an angle of about 60 degrees to the upper face of the plank 25, the parts are adjusted to the position of Fig. 2, the base plate being tilted on the pivots 16 and 22 to the position shown, and the

bracket 21 being moved down and clamped.

When the saw is used to cut at an angle such as shown in Fig. 2 and approaches the end of the plank at an acute angle from left to right, the nose of the guard 10 will strike the end of the plank and prevent the saw from engaging the plank. In order to retract the guard under such conditions, an arm 26 is provided on the guard above the lug 27 on the base plate 15. When the saw frame is tilted, as indicated in Figs. 2 and 3, the arm engages the lug and retracts the guard so that the saw can engage the plank without interference with the work. After the saw has cut into the plank, the end of such plank engages the end of the guard and gives it any further movement of retraction which is necessary. Except under the conditions above recited, the parts 26 and 27 do not come into play, the guard being pushed back from the beginning by the end of the plank as the saw advances. As in my Patent No. 1,623,290, a spring (not shown) is provided tending to rotate the guard 10 in a counter clockwise direction so that it occupies the position shown in Fig. 2 with a shoulder at 28 engaging a stop lug 29 carried by the saw frame.

The base plate 15 is provided at its front end with a pair of perforate lugs 30, 30 in which is mounted a gauge rod 31 (shown in Figs. 1 and 8 but removed in Fig. 2), such rod being adjustable endwise and provided at one end with a stop member 32 for engaging the side edge of the plank 25. A set screw 33 serves to clamp the rod in any desired position of adjustment. The use of this gauge assists in guiding the saw so as to make a straight cut parallel to the side edge of the plank. The device is also very convenient when it is desired to cut off a very thin strip because the end 32 lies below the base plate.

The device for operating the switch which starts and stops the motor is shown in Figs. 5, 6, and 7, wherein 34 is a snap switch having a trigger 35 operated by the slide rod 36, and 37 is an operating lever pivoted at 38 in the handle 2. The switch is so constructed that the trigger is yieldingly held in the full line position of Fig. 5, at which time the circuit to the motor is interrupted. When this trigger is moved to the right, the circuit is completed. The lever is moved to start the motor by the operator squeezing the handle, thus moving the rod 36 to the right (Fig. 5), the position thus assumed by the lever being that shown in Fig. 6. In order to prevent the motor from being started accidentally when the operator grasps the handle to move the machine, the detent 39 pivoted at 40 and normally pressed to the position shown in Fig. 5 by the spring 41 is provided. The end of this detent engages a shoulder 42 on the lever, thus preventing it from being accidentally swung to the right around its pivot 38. The detent has a thumb piece 43 projecting through an opening in the handle. In order to release the lever from the detent when it is desired to start the motor, the operator first presses the end 43 inward, thus disengaging the inner end of the detent from the shoulder 42. The lever may then be swung to its "on" position, as shown in Fig. 6.

In some cases, it may be desirable to lock the lever 37 in "on" position, as for instance, when the saw is turned upside down and clamped in such position in order to use its base plate as a saw table over which the members to be cut are moved, and in order to so lock the lever it is provided with a shoulder 44 adapted to be engaged and held by the recess 45 in the detent when the parts are moved to the position of Fig. 7. This engagement is secured by pushing the thumb piece 43 down from the position of Fig. 6 and allowing the lever to swing to the left from the position of Fig. 6 to the position of Fig. 7 so that the shoulder engages the recess. To release the parts and allow them to come back to the position of Fig. 5, the lever 37 is swung to the right at which time the spring 41 swings the detent back to such position.

What I claim is:

1. In combination in an electric hand saw, a saw frame, a saw mounted for rotation therein, a motor in the frame for driving the saw, a shield also carried by the saw frame and covering the upper part of the saw, a guard mounted for swinging movement about the axis of rotation of the saw and yieldingly held in forward position protecting the lower part of the saw, a base plate through which the saw and said guard project mounted for tilting movement on the saw frame so as to provide for miter cuts by the saw, and an arm carried by the rear portion of the guard above the base plate positioned so that such arm engages the base plate and causes a movement of the guard to the rear when the base plate is tilted to mitering position.

2. In combination in an electric hand saw, a saw frame, a saw mounted for rotation therein, a motor on the frame for driving the saw, a shield also carried by the saw frame and covering the upper part of the saw, a guard mounted for swinging movement about the axis of rotation of the saw and yieldingly held in forward position protecting the lower part of the saw, a base plate through which the saw and said guard project mounted for tilting movement on the saw frame so as to provide for miter cuts by the saw, and interengaging means between the base plate and guard arranged so that the guard is moved to the rear when

the base plate is tilted on the saw frame to a mitering position.

3. In combination in an electric hand saw, a saw frame, a saw mounted for rotation therein, a motor on the frame for driving the saw, a shield also carried by the saw frame and covering the upper part of the saw, a guard mounted for swinging movement about the axis of rotation of the saw and yieldingly held in forward position protecting the lower part of the saw, a base plate adapted to contact with the surface of the work to be cut and guide the saw in its movement therethrough, having pivotal connection with the saw frame, and interengaging means between the base plate and guard arranged so that the guard is moved to the rear when the base plate is tilted with respect to the saw frame to a mitering position.

In testimony whereof, I have hereunto subscribed my name this 14th day of August, 1930.

FRED W. WAPPAT.