June 17, 1952 R. DRYSDALE 2,600,859

HAND ELECTRIC PLANE

Filed June 22, 1948

Fig. 1.

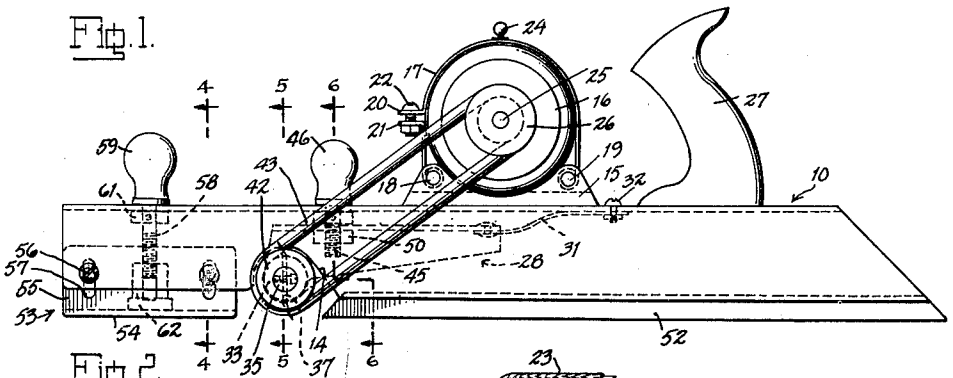


Fig. 2.

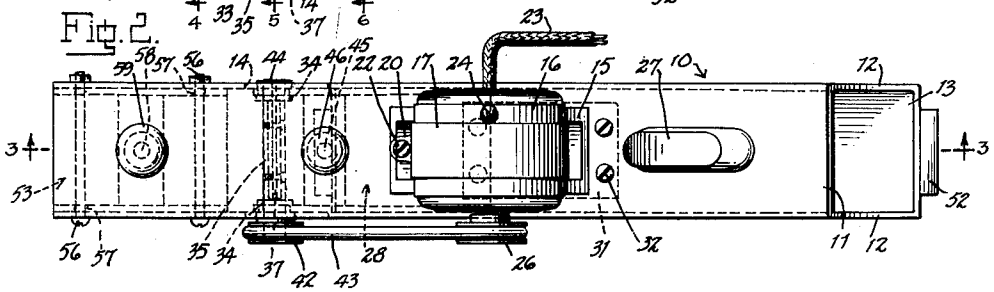


Fig. 3.

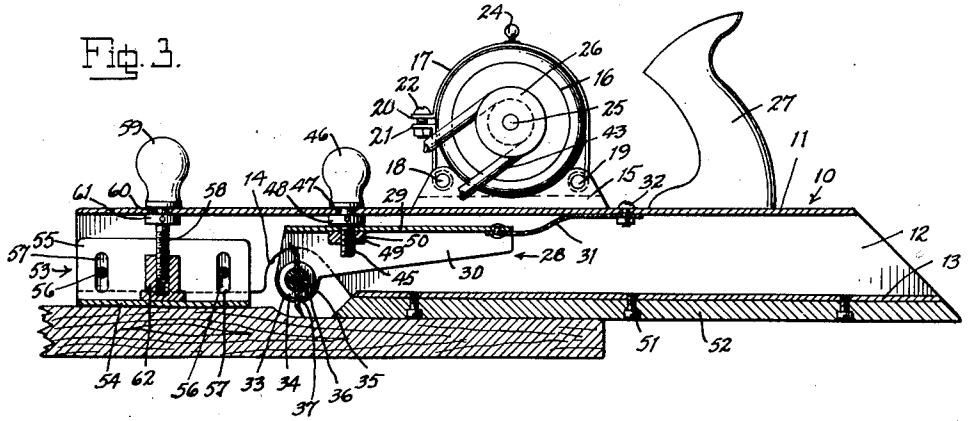


Fig. 4.

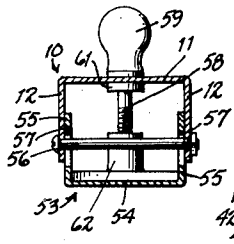


Fig. 5.

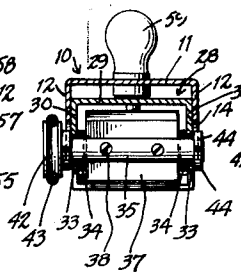


Fig. 6.

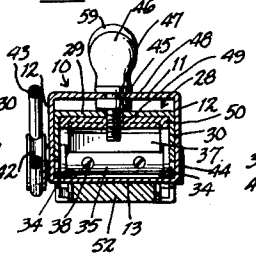
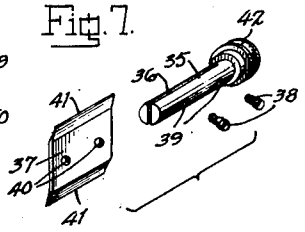


Fig. 7.



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HAND ELECTRIC PLANE

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2 Claims. (Cl. 145—5)

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The present invention relates to a hand electric plane, and has for an object to provide a wood working tool of this character in which the planing operation may be carried out with relative speed and accuracy, and with minimum effort on the part of the operator of the plane. It is particularly proposed to provide a hand electric plane having a rotary cutting blade operated by an electric motor carried upon the body of the plane, the plane further being provided with hand grip means by which it may be held and guided over the surface to be planed in a substantially similar manner to a conventional hand plane.

It is further proposed to provide adjustable gauge means to determine the depth of cut, as well as adjustment means for varying the depth of cut as the plane is being operated, this latter means enabling the plane to follow a curved or uneven scribed line.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation of a hand electric plane, according to the illustrated exemplary embodiment of the invention.

Fig. 2 is a plan view thereof.

Fig. 3 is a vertical longitudinal sectional view, taken along the line 3—3 of Fig. 2, and showing the plane in operative relation with a strip of wood, the plane being set to cut at a predetermined depth.

Fig. 4 is a vertical transverse sectional view, taken along the line 4—4 of Fig. 1.

Fig. 5 is a vertical transverse sectional view, taken along the line 5—5 of Fig. 1.

Fig. 6 is a vertical transverse sectional view, taken along the line 6—6 of Fig. 1.

Fig. 7 is a perspective view showing the cutter shaft and cutter blade in separated relation.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the hand electric plane, according to the illustrated exemplary embodiment of the invention, comprises a hollow frame or body, indicated generally as 10, and comprising a horizontal top wall 11, vertical side walls 12—12 and a horizontal base wall 13, the base wall having its forward end rearwardly

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offset from the forward ends of the top and side walls, and the side walls having cut-out notches 14—14 in their forwardly extending portions adjacent the forward end of the base wall for receiving the cutter shaft, as will hereinafter more fully appear.

Upon the upper side of the frame there is mounted a motor supporting bracket 15 upon which an electric motor 16 is secured by a clamping band 17 secured to the bracket by means of cross pins 18 and 19, the band being split at one side and provided with opposed apertured ears 20 and 21 adapted to be adjustably connected together by a bolt 22. The motor is provided with a conductor cord 23 and a switch 24, and upon the end of its transverse shaft 25 is provided with a pulley 26 for driving the rotary cutter, as will presently more fully appear.

A hand grip handle 27 is secured upon the upper side of the frame at a point rearwardly of the motor, in a substantially similar manner to the hand grip of a conventional hand plane.

Within the frame there is provided a cutter blade carrier, indicated generally as 28, and comprising a top wall 29 and side walls 30—30, the top wall having secured to it a rearwardly extending leaf spring 31 secured to the underside of the top wall 11 of the frame by means of bolts 32—32, this spring being suitably curved to allow for the vertical adjustment movement of the cutter blade, as will presently more fully appear. The forward end portions of the side walls of the cutter blade carrier are extended downwardly to provide bearing supports 33—33 in which flanged bearing bushings 34—34 for the cutter shaft are secured.

The cutter shaft 35 is provided with a longitudinal slot 36 in which the cutter blade 37 is engaged and secured by set screws 38—38 engaged in holes 39—39 in the shaft and holes 40—40 in the blade, the blade being provided at its opposed edges with oppositely inclined cutting edge portions 41—41. The cutter shaft is rotatably engaged in the bearings 34—34, and has secured upon one end a pulley 42 over which a driving belt 43 extends from the pulley 26 of the motor. Upon the other end of the shaft there is secured a retaining collar 44 to retain the cutter shaft against axial movement.

The cutter blade carrier is adapted to be vertically adjusted, and for this purpose a screw 45 having an operating knob 46 at its upper end is rotatably engaged in a bearing hole 47 in the top wall 11 of the frame, a retaining collar 48

being secured upon the screw at the underside of the top wall to retain the screw against vertical movement while permitting it to be rotated. The screw is engaged in a threaded hole **49** in a bar **50** welded or otherwise suitably secured to the underside of the top wall **29** of the cutter blade carrier. This screw takes the vertical thrust imposed upon the cutter blade carrier during the planing operation, and by rotation of the screw the blade may be vertically adjusted so as to adapt the plane to certain desired planing operations, as will be hereinafter more fully pointed out.

Upon the underside of the frame there is secured by screws **51** a strip **52**, which is slightly narrower than the cutting blade so that it will follow in the cut made by the blade during normal planing operations where the blade is set flush with the bottom surface of the strip.

Forwardly of the cutter blade there is provided a vertically adjustable gauge shoe, indicated generally as **53**, and comprising a base wall **54** and side walls **55—55**, the side walls being slidably engaged with the inner sides of the side walls of the frame **10** and being guided in vertical adjustment movement with respect thereto by means of transverse bolts **56—56** connected between the side walls of the frame and engaged in vertical slots **57—57** in the side walls **55**. Vertical adjustment movement is imparted to the shoe by means of a vertical screw **58** provided at its upper end with a knob **59** and engaged in a bearing hole **60** in the top wall **11** of the frame, a retaining collar **61** being secured upon the screw at the under side of the top wall **11** of the frame, so as to retain the screw against vertical movement while permitting it to be rotated. The screw is engaged in a threaded nut member **62** of the shoe, preferably secured therein by welding. By turning the knob **59** the gauge shoe is vertically adjusted for the purpose of carrying out the desired planing operation, as will presently be more fully described. The knob also serves as a convenient hand hold for one hand of the operator while the other hand is gripped upon the hand grip **27**.

The operation is as follows:

Assuming a board is to be planed to a depth of ⅛ inch, the cutting blade is set flush with the bottom of the strip **52** and the gauge shoe **53** is raised by turning the knob **59** ⅛ inch above the cutting plane of the blade. The motor is started and the gauge shoe is placed upon the end of the unplaned board and the blade is guided into engagement with the board surface causing it to cut to the desired depth, the plane being gradually moved across the board surface with the shoe **53** sliding upon the unplaned part and the strip **52** sliding upon the planed part. As the strip **52** is slightly narrower it will follow in the cut made by the blade, this being of particular importance when a wide surface of a board is being planed. In the case of planing the edge of a piece of board which is narrower than the blade, the strip **52** will simply follow the blade, its width being immaterial in this case as the blade is wider than the surface being planed. As the plane is moved over the surface of the board the chips and shavings fly into the hollow space within the frame **10** and move out at the rear. In practice the driving motor is such that the blade is rotated at a speed of approximately 3600 revolutions per minute.

Where it is desired to plane a curved or uneven surface, or along a line such as would be scribed along the side of a door where the door jamb was forced in along the middle, the plane is first set with the gauge shoe **53** flush with the bottom surface of the strip **52** and with the blade either above the bottom surface of strip **52** or flush therewith. As the plane is moved along the surface, the knob **46** is turned and the blade lowered, so as to cut to the desired depth, it being possible to regulate the depth of the cut as the blade is moved along so that the scribed line may be accurately followed. Where it is desired to employ the plane for cutting grooves, or for routing, a narrow blade of the desired groove width may be substituted, a strip **52** slightly narrower than the blade being attached to the frame **10** so that it will properly follow in the cut made by the blade.

I have illustrated and described a preferred and satisfactory embodiment of the invention, but it will be understood that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

What is claimed is:

1. A power driven hand plane, comprising a longitudinal frame having a base wall and vertical side walls extending upwardly from said base wall and extending forwardly with respect to the forward edge of said base wall to provide an opening in the lower side of said frame forwardly of said base wall, said side walls having transversely aligned openings extending upwardly from their lower edges forwardly of and adjacent the forward edge of said base wall, a blade carrier mounted in said frame having vertical side walls engaged interiorly with said frame side walls rearwardly of said transversely aligned openings and extending forwardly over said openings, means cooperatively connected between said frame and said blade carrier operable to raise and lower said blade carrier, a transverse blade carrying shaft rotatably mounted in said blade carrier side walls and having at least one of its ends extended through one of the said transversely aligned openings, power driven means carried by said frame and operably connected to said extended shaft end, a blade carried by said shaft and disposed entirely between the vertical planes of said blade carrier side walls, a gauge shoe mounted in said frame forwardly of said shaft having a horizontal work engaging base wall and vertical side walls engaged interiorly with said frame side walls, means cooperatively connected between said frame member and said shoe operable to raise and lower said shoe with respect to said frame member, and fastening means cooperatively connected between said frame member and said shoe adapted to rigidly fix the position of adjustment of said shoe.

2. A power driven hand plane, comprising a longitudinal frame having a base wall and vertical side walls extending upwardly from said base wall and extending forwardly with respect to the forward edge of said base wall to provide an opening in the lower side of said frame forwardly of said base wall, said side walls having transversely aligned openings extending upwardly from their lower edges forwardly of and adjacent the forward edge of said base wall, a blade carrier mounted in said frame having vertical side walls engaged interiorly with said frame side walls rearwardly of said transversely aligned openings and extending forwardly over said openings, means cooperatively connected between said frame and said blade carrier operable to raise and lower said blade carrier, a

transverse blade carrying shaft rotatably mounted in said blade carrier side walls and having at least one of its ends extended through one of the said transversely aligned openings, power driven means carried by said frame and operably connected to said extended shaft end, a blade carried by said shaft and disposed entirely between the vertical planes of said blade carrier side walls, a gauge shoe mounted in said frame forwardly of said shaft having a horizontal work engaging base wall and vertical side walls engaged interiorly with said frame side walls, means cooperatively connected between said frame member and said shoe operable to raise and lower said shoe with respect to said frame member, and a work engaging strip carried by said base wall of said frame disposed in longitudinal line with the cutting path of said blade and being of less width than the transverse width of said blade with its side edges entirely inwardly of the longitudinal side edges of said cutting path.

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