Sept. 20, 1955 W. J. DIMMER 2,718,248

PORTABLE MOTOR DRIVEN PLANE

Filed Aug. 11, 1952

FIG.1.

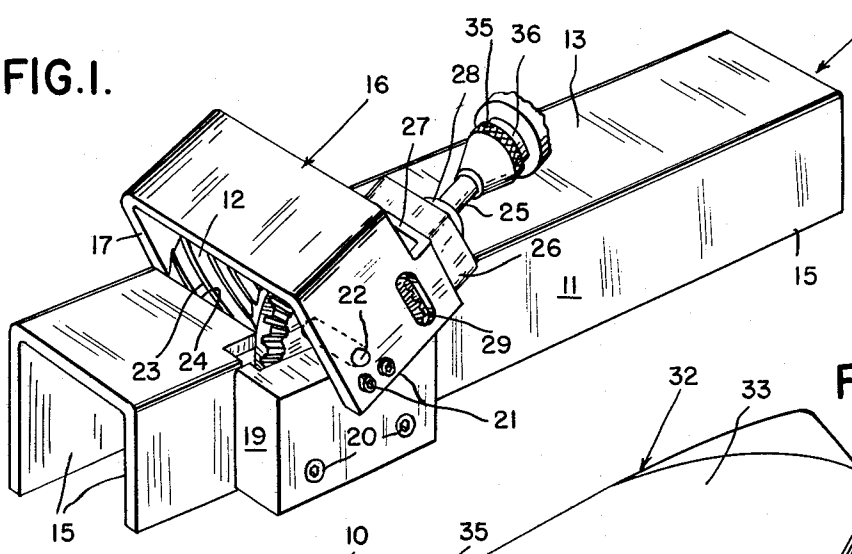


FIG.2.

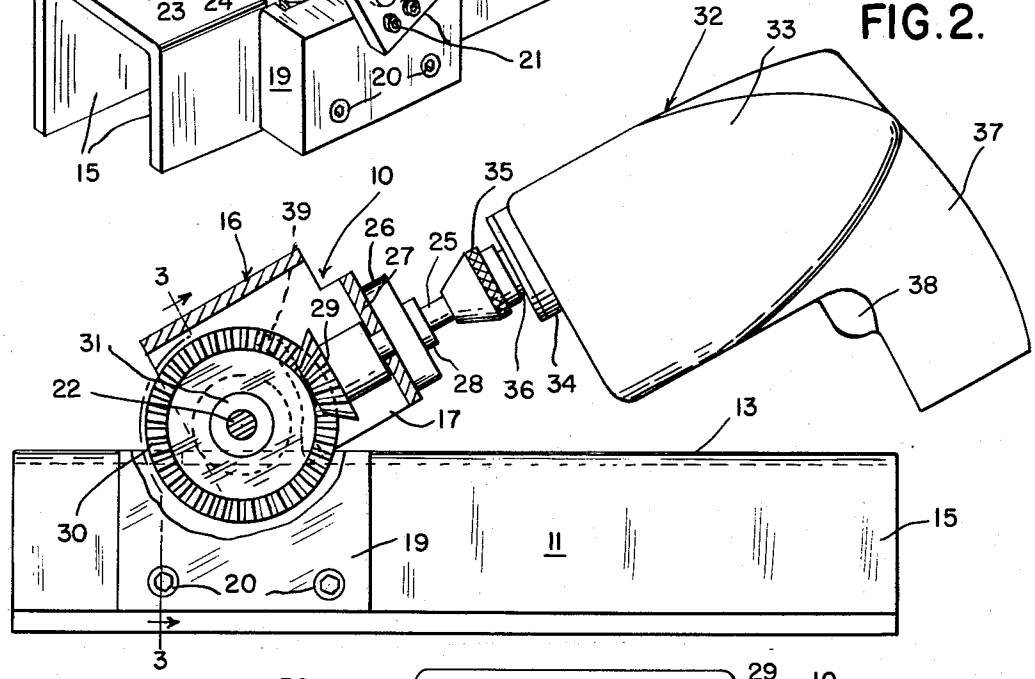
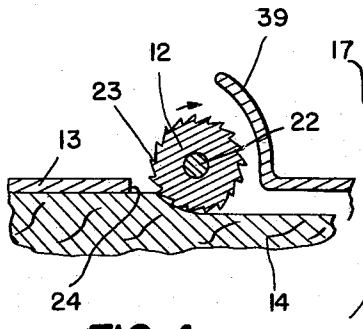


FIG.4.



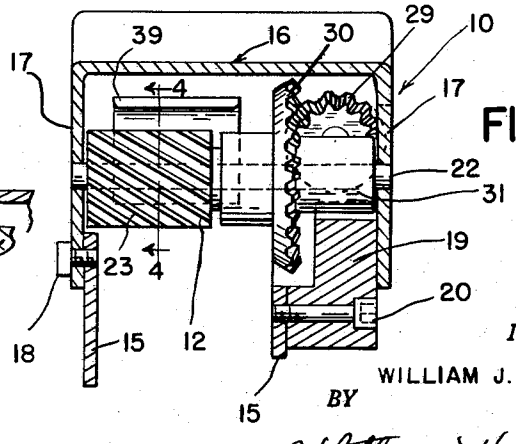


FIG.3.

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United States Patent Office 2,718,248 Patented Sept. 20, 1955

2,718,248

PORTABLE MOTOR DRIVEN PLANE

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Application August 11, 1952, Serial No. 303,740

4 Claims. (Cl. 145—4)

This invention relates to power operated planes of the portable type.

It is one of the objects of this invention to provide a portable plane having a rotary cutter and having a drive shaft for the cutter adapted for engagement with the clutch of a portable hand tool of the type equipped with an electrically operated motor for driving the clutch.

It is another object of this invention to provide a portable plane of the above type wherein the rotary cutter is supported on a work engaging shoe and wherein said shoe is movable relative to the work by the handle of the portable hand tool.

It is still another object of this invention to provide a portable plane with a shoe of inverted channel-shaped cross section adapted to receive a workpiece and having flanges cooperating with the workpiece to guide movement of the plane during the planing operation.

It is a further object of this invention to provide a portable power driven plane possessing the foregoing features and at the same time composed of a relatively few simple parts capable of being inexpensively manufactured and assembled.

The foregoing as well as other objects will be made more apparent as this description proceeds in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of a portable power driven plane embodying the features of this invention;

Figure 2 is a side elevational view of the plane shown in Figure 1 having certain parts broken away for the sake of clearness and also illustrating a portable power driven hand tool in conjunction with the plane;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2; and

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Referring now more in detail to the drawing, it will be noted that the numeral **10** indicates a portable power driven plane comprising a shoe **11** and a rotatable cutter **12**. The shoe **11** is in the form of an elongated member which is channel-shaped in cross section and is arranged with the channel opening downwardly. In use, the underside of the base **13** of the channel is supported on the top surface of a workpiece **14** (Fig. 4) and one or both of the depending flanges **15** of the channel respectively engage the adjacent side or sides of the workpiece to guide movement of the shoe along the workpiece.

Extending across the shoe **11** adjacent the front end thereof is an inverted substantially U-shaped bracket **16** having a width somewhat greater than the width of the shoe **11** and having the leg portions **17** respectively positioned at opposite sides of the flanges **15** on the shoe **11**. As shown in Figure 3 of the drawing the leg portion **17** at one side of the bracket is secured directly to the adjacent flange **15** of the shoe by a fastener **18** and a spacer **19** is positioned between the other leg portion **17** of the bracket and the adjacent flange **15** of the shoe. The spacer **19** is secured to the shoe **11** by fastener elements **20** and the adjacent leg portion **17** of the bracket **16** is

secured to the spacer by fastener elements **21** shown in Figure 1 of the drawing.

The bracket **16** provides a support for a shaft **22** which extends transversely of the shoe **11** above the base portion **13** and has the opposite ends respectively journaled in the leg portions **17** of the bracket **16**. The shaft **22** forms a support for the cutter **12** and in the present instance the cutter is pinned or otherwise secured to the shaft **22** between the leg portions **17** of the bracket **16**. The cutter **12** is elongated axially of the shaft **22** and is fashioned with a plurality of cutting teeth **23** which extend helically with respect to the axis of the cutter. The portion of the shoe **11** registering with the cutter **12** is fashioned with a clearance slot **24** and the diameter of the cutter is such as to project downwardly through this slot. The arrangement is such that rotation of the cutter **12** in the direction of the arrow shown in Figure 4 of the drawing causes the teeth **23** to remove stock from the top surface of the workpiece **14** as the shoe **11** is advanced along the workpiece.

The cutter **12** is rotated by a drive shaft **25** supported on the bracket **16** with the axis thereof extending perpendicular to the axis of the cutter shaft **22**. As shown in Figure 2 of the drawing the drive shaft **35** is journaled in a bearing block **26** which is secured to an ear **27** formed on the bracket **16**. In the present instance, the ear **27** extends along the rear side of the bracket **16** and the bracket is angularly positioned so that the drive shaft **25** is inclined in an upward direction with respect to the shoe **11**. A thrust collar **28** is provided on the shaft **25** at the rear side of the block **26** and a beveled pinion **29** is secured to the drive shaft **25** at the front side of the ear **27** on the bracket **16**. The construction is such that the pinion **29** coacts with the thrust collar in preventing axial movement of the shaft **25** relative to the bracket **16**. The bevelled pinion **29** meshes with a bevelled gear **30** which is secured on the shaft **22** adjacent the cutter **12** and transmits rotation of the drive shaft **25** to the cutter **12**. The reference character **31** in Figure 3 of the drawing indicates a spacer which is secured to the shaft **22** between the bevelled gear **30** and the adjacent leg portion **17** of the bracket **16**. This spacer coacts with the cutter **12** in restricting axial movement of the shaft **22** relative to the bracket **16**.

The plane described above is adapted to be driven by any one of various types of portable hand tools available to the trade. An example of such a tool is indicated in Figure 2 of the drawing by the numeral **32**. Briefly, the tool **32** comprises a housing **33** for an electrically operated motor **34**, and a chuck **35** is suitably secured to the drive shaft **36** of the motor. In accordance with conventional practice the housing is equipped with a hand engaging portion or handle **37** and a trigger **38** is provided adjacent the handle **37** for controlling the operation of the electric motor **34**.

The chuck **35** is of a nature to removably grip the rear end of the drive shaft **25** on the plane and to transmit power from the motor shaft **36** to the drive shaft **25**. Rotation of the drive shaft **25** by the motor shaft **36** imparts a rotative movement to the cutter **12** in the direction of the arrow shown in Figure 4 and stock is removed from the top surface of the workpiece **14** by the teeth **23** on the cutter as the shoe **11** is advanced along the workpiece. The handle **37** of the power tool **32** is used for the purpose of sliding the plane **10** along the workpiece **14** during the cutting operation rendering it unnecessary to provide a separate handle on the plane **10**. The stock removed by the cutter **12** is deflected laterally outwardly with respect to the plane **10** by a tongue **39** which is formed integral with the base **13** of the channel and extends from the rear edge of the clearance opening **24** over the cutter **12**.

What I claim as my invention is:

1. A portable power driven plane comprising an elongated shoe of inverted channel-shaped cross section for slidably receiving a work piece and for guiding the movement of said shoe along the work piece, the base of said channel-shaped shoe having an opening therein, a bracket mounted upon said shoe adjacent said opening, a rotatable cutter carried by said bracket and projecting through the opening aforesaid for engagement with a work piece within said shoe, and a drive shaft carried by said bracket and operatively connected to said cutter.

2. A portable power driven plane comprising an elongated shoe of inverted channel-shaped cross section for slidably receiving a workpiece and for guiding the movement of said shoe along the workpiece, the base of said channel-shaped shoe having an opening therein intermediate the ends of said shoe, a bracket mounted upon said shoe adjacent said opening, a rotatable cutter carried by said bracket with its axis extending transversely of said shoe, said cutter projecting through said opening for engagement with a workpiece within said shoe, a drive shaft supported by said bracket for rotation about an axis extending toward the rear end of said shoe, the rear end portion of said drive shaft being accessible for engagement by a power operated member, and a driving connection between said drive shaft and cutter.

3. A portable power driven plane comprising an elongated shoe of inverted channel-shaped cross section for slidably receiving a workpiece and for guiding the movement of said shoe along the workpiece, the base of said channel-shaped shoe having an opening therein intermediate the ends of said shoe, an inverted substantially U-shaped bracket having a base portion spaced directly above said opening and having leg portions respectively

secured to opposite sides of said shoe, a shaft having the end portions respectively journalled on the leg portions of said bracket, said shaft registering with said opening and having its axis extending at right angles to said shoe, a rotary cutter secured to said shaft and projecting through said opening for engagement with a workpiece within said shoe, a drive shaft journalled on said bracket at the rear side of the latter with its axis extending perpendicular to the axis of the first-mentioned shaft in a direction toward the rear end of said shoe, the rear end portion of said drive shaft being accessible for engagement by a power operated tool, and intermeshing gears respectively secured to said shafts for rotating said cutter.

4. A portable power driven plane as defined in claim 3 including a tongue projecting from one edge of the opening in the base of said shoe and extending over the top of said cutter in a position to deflect material removed from a workpiece by said cutter.

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