July 7, 1959 W. A. ADDIS 2,893,454

PORTABLE POWER PLANER WITH OUTBOARD SUPPORT FOR CUTTER

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Fig. 1.

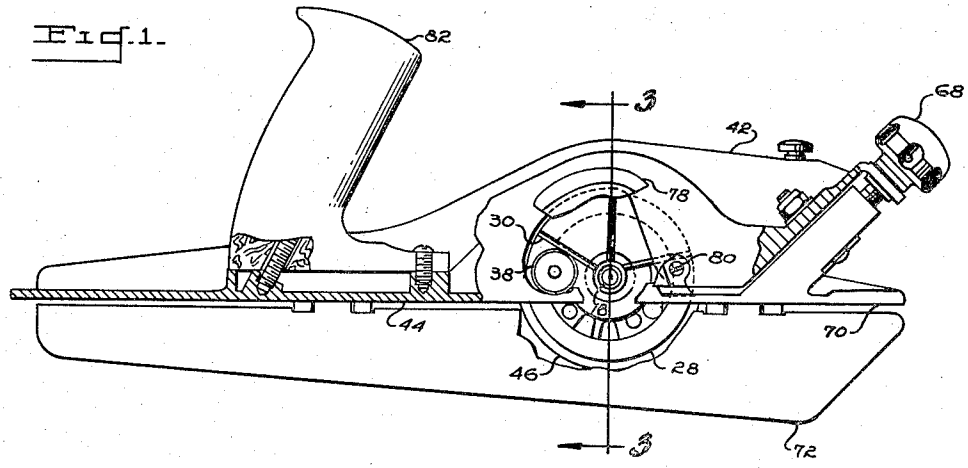


Fig. 2.

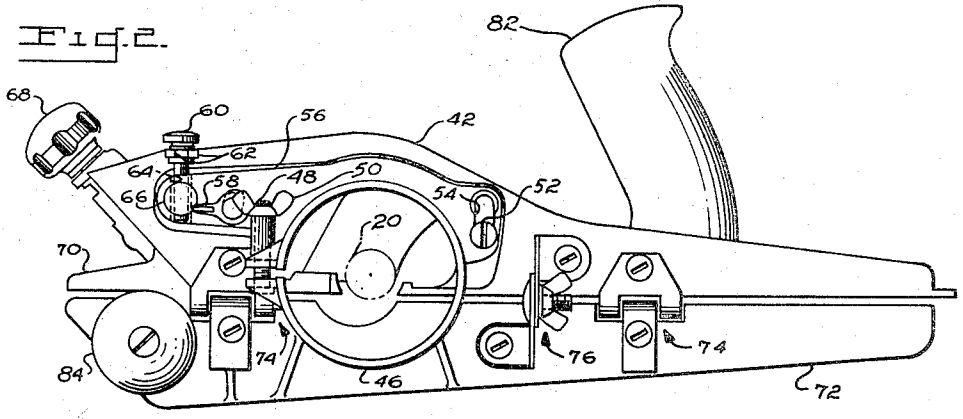
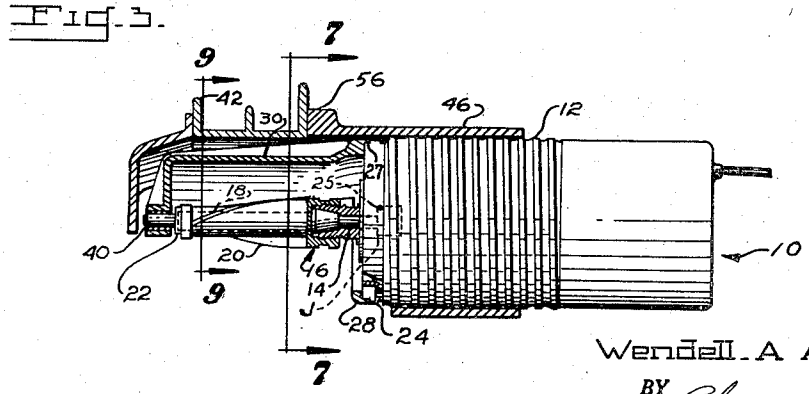


Fig. 3.



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Fig. 4.

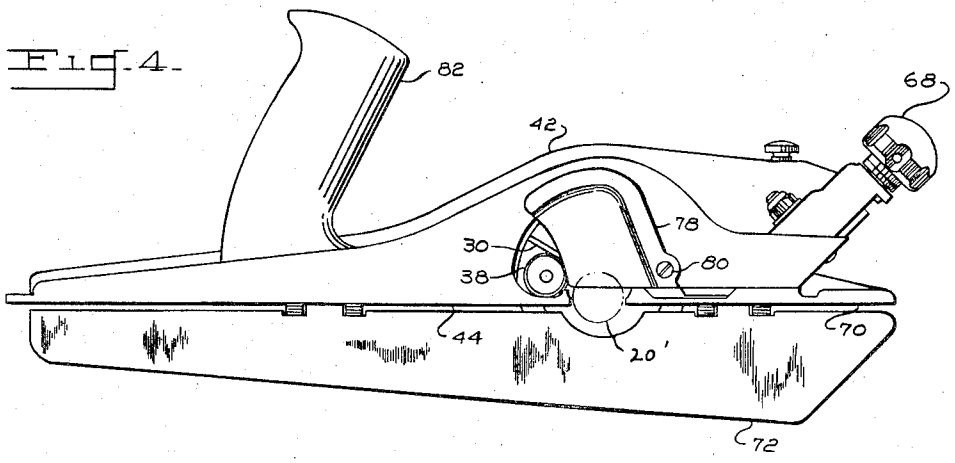


Fig. 5.

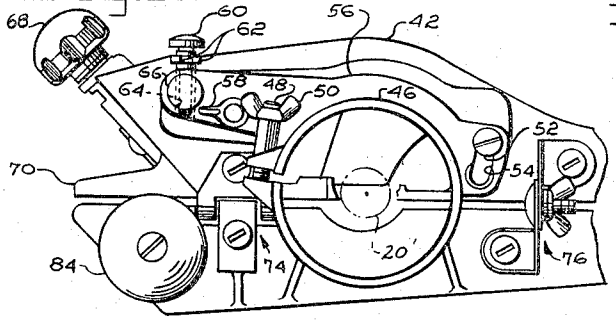


Fig. 6.

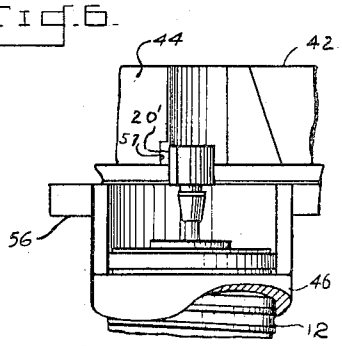


Fig. 7.

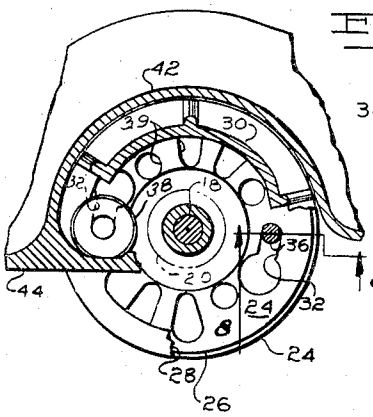


Fig. 8.

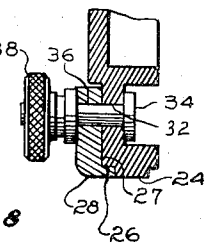
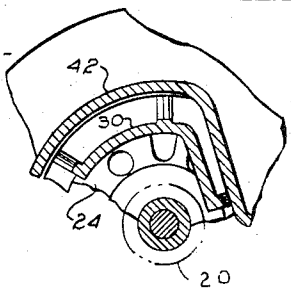


Fig. 9.



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PORTABLE POWER PLANER WITH OUTBOARD SUPPORT FOR CUTTER

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Application May 7, 1957, Serial No. 657,688

5 Claims. (Cl. 145—4)

The present invention relates to power planers and more particularly to hand held portable power planers such as might be used in trimming the edges of door frames and the like.

It is an object of the invention to provide an improved hand held portable power planer which affords greater rigidity of construction and minimizes if not eliminates chattering of the cutting tool, thus enabling a deeper and faster cut.

Another object of the invention is to provide means for adjusting the workpiece guiding surface of the planer so that either a planing cut or a routing cut may be made.

Another object of the invention is to provide an improved power planer of the type mentioned which is particularly adapted for use with multi-purpose power units.

The above and other related objects of the invention including the various novel features of its design will be more readily apparent from a reading of the following detailed description of the disclosure found in the accompanying drawings and the novelty thereof pointed out in the appended claims.

In the drawings:

Fig. 1 is a view in front elevation of my improved planing device;

Fig. 2 is a view in rear elevation of the device seen in Fig. 1 with the power unit removed;

Fig. 3 is a section taken generally on line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 1 but with certain parts adjusted for a different type of cutting operation;

Fig. 5 is a partial rear elevation reflecting the adjusted position of Fig. 4;

Fig. 6 is a partial bottom view of the plane bottom;

Fig. 7 is a section, on an enlarged scale, taken generally on line 7—7 in Fig. 3 and on an enlarged scale;

Fig. 8 is a section taken on line 8—8 in Fig. 7; and

Fig. 9 is a section, on an enlarged scale, taken on the line 9—9 in Fig. 3.

The planer of the present invention comprises a power unit 10 in the form of an electric motor within a housing 12 (see Fig. 3). The power shaft 14 of the motor extends beyond the end of the motor housing with a taper type chuck 16 secured to the outer end of the power shaft. One end of an arbor 18 is held in the chuck 16 and a plane-type cutter 20 is held fast on the arbor 18 by a nut 22.

The outboard end of arbor 18 extends beyond the nut and is supported in the manner now to be described in order to give greater rigidity to the cutter 20, thus miniminizing or reducing chattering and enabling deeper cuts and faster rates of feed. At the shaft end of housing 12 there is provided a motor cap 24 which is accurately spaced concentrically of the shaft 14 by a circular recess or diameter 25 which receives a shaft journal J. Concentric locating means are provided on the outer surface of the cap 24 (see Figs. 7 and 8) and take the form of a diameter or shoulder 26. An extremely high degree of accuracy may be had in that the diameters 25 and 26 may

be machined in a single set-up so that both may be turned about the same center for accurate concentricity. An outboard arbor support, or bearing bracket 30, is accurately positioned on the motor cap 24 by way of a flange 28 (Figs. 7 and 8) which has an annular recess 27 for snugly receiving the cap shoulder 26.

In the outer end of bracket 30 a bushing or journal 40 (Fig. 3) receives the outboard end of the arbor 18. The journal 40 or the bore of the bracket 30 which receives the journal may be accurately formed concentrically of the recess 27 since both may be turned in a single set-up about the same center. The journal 40 is thus disposed concentrically of the shaft 14 with such accuracy that the cutter 20 will at all times turn true. While certain of the above diameters may be turned in a single set up the end result of accurately disposing the journal 40 may be obtained if sufficient care is taken in forming these diameters as separate set-up operations.

This bracket 30 is detachably secured to the motor cap 24 by the means to be now described and which are more specifically disclosed and claimed in copending application Serial No. 659,657, filed May 16, 1957, now Patent No. 2,856,975. In the cap 24, as shown by Fig. 7, curved slots 32 are formed concentrically of the shaft 14. Each slot 32 is enlarged at one end to receive the heads 34 (see also Fig. 8) of screws 36. The screws 36 are slidably mounted in the bracket flange 28 with nuts 38 being threaded on their outer ends. In assembling the bracket the flange 28 is positioned on the cap 24 with the screw heads 34 positioned to enter the enlarged ends of slots 32. The screw heads are extended through the same and the bracket rotated to bring the body portions of the screws to the narrow ends of slots 32 as seen in Fig. 7. The screws 36 are flattened to prevent rotation in the slots 32 and nuts 38 may thus draw the heads 34 against the inner surface of cap 24 for anchoring bracket 30 securely thereon. While it is considered preferable to provide a motor cap 24 as a separate item, it will be appreciated that this member could be formed integrally with housing 12.

As shown (Figs. 3, 7, and 9), the bracket 30 overlies the cutter 20. Preferably that portion rearwardly disposed with relation to the cutter (i.e. the trailing portion with reference to the direction of movement) extends generally parallel to the axis of the cutter. The portion forwardly of the cutter is directed inwardly of the cutter axis or tapers towards the outer end of the cutter. This configuration is particularly effective to clear chips away from the cutter under the influence of centrifugal force and air expelled from openings 39 in the motor cap 24 by a motor fan (not shown) in casing 12.

The cutter 20 is positioned with respect to a workpiece by a plane body 42 (Fig. 1) having a workpiece engaging surface or bottom 44. The plane body is secured to the power unit through the use of a split sleeve 46 (see Fig. 2) which is clamped on the motor housing 12 by means of a stud or screw 48 and wing nut 50. The workpiece surface 44 is parallel to the axis of the power shaft and the plane body 42 is adjustable relative to sleeve 46, for reasons which will further appear, by way of a pivot screw 52 which passes through a slot 54 in a flange 56 formed integrally with the sleeve 46. The slot 54 is recessed at each end to receive the head of screw 52 and thus provide two points of pivotal connection between the plane body 42 and sleeve flange 56.

When performing a planing operation it is highly desirable that the work engaging surface 44 be in an appropriate tangential relation to the cutter blades 20. The surface 44 may be accurately positioned for this tangential relationship when the screw 52 is in the lower recess of slot 54 (Fig. 2), by means of an adjusting screw 60. Screw 60 is captured between projections 62 ex-

tending from the plane body **42** above an extension of flange **56** at the other side of sleeve **46**. The screw **60** passes through an opening **64** formed in flange **56** and is threadably received in a threaded member **66** which is transversely positioned and rotatably carried at that end of flange **56**. This arrangement allows adjusting screw **60** to be turned to pivot the plane body **42** about its pivotal connection with the sleeve flange **46**, and bring the work engaging surface **44** into the desired tangential relationship. Thereafter a clamp nut **58**, threaded into the plane body **42**, may be tightened to hold the desired relationship.

It will be noted that the plane body **42** has a portion (Fig. 9) which overlies the bracket **30** and cutter **20**. The overlying surface of the plane body has the same general configuration as the overlying surface of the bracket **30**. Thus if the bracket **30** in a particular instance were not being used by the operator for any reason, the overlying surface configuration of the plane body **42** would facilitate clearing of the chips from the cutter **20** in the same manner as the bracket **30**.

The depth of cut made by a cutter **20** may be regulated by rotation of a knob **68** (Fig. 1) to move a front shoe **70** up or down. A side guide or fence **72** is also secured to the plane body **42** through hinges **74** (Fig. 2) and adjustably held in desired position through a clamping bracket **76**. Also, as seen in Figs. 1 and 4, a guard **78** may be swingably connected to the plane body **42** adjacent the outer end of the cutter bracket **30** as on a pivot stud **80**. Hand grips at **82** and **84** (Fig. 2), are provided for convenient use of the planer.

The present device has to this point been described as it would be used in making a planing cut. Further advantages are found in the simple manner in which it can be converted to use a router cutter. Generally speaking, router cutters are relatively short and need no outboard support. The bracket **30** may therefore be removed by the simple process of loosening nuts **38** (Fig. 7) and rotating the bracket **30** to bring the screws **36** to their disengaging positions at the opposite ends of slots **32**.

Generally, a router cutter such as **20'** (see Figs. 4, 5 and 6) should be disposed a substantial distance below the workpiece engaging surface **44** of the plane body **42**. In order to obtain this relationship, the head of screw **52** is shifted to the recess at the upper end of slot **54** (Fig. 5) in order to establish a different point of pivotal connection between the plane body **42** and sleeve flange **56**. It will be noted that the surface **44** (Fig. 6) is cut away at **57** to receive the greater diameter of a router cutter below its level but is so cut away only for the approximate length of the cutter so that the maximum possible bearing surface is provided for both planing and routing operations.

Fine adjustment of the position of the router cutter **20'** can again be obtained by rotation of the adjusting screw **60**. Then any desired relation may be maintained by tightening the clamp nut **58**.

It is to be appreciated that if only a small cut is to be taken by the router cutter **20'**, the original pivotal connection between the plane body **42** and sleeve flange **56**, with the screw **52** in the lower end of slot **54**, would be employed.

Having thus described my invention what I claim as novel and desire to secure by Letters Patent of the United States is:

1. A portable hand held power planer comprising a power unit having a motor housing and a power shaft extending from one end of said housing, a cutter mounted on said power shaft, a bracket secured to said one end of the power unit motor housing, positioning means for accurately securing said bracket thereon, said bracket having a journal accurately disposed with respect to said positioning means for providing outboard support for said cutter, said journal being accurately positioned coaxially of said power shaft to provide an outboard support for said cutter, and a separate workpiece guide secured to the exterior of said power unit housing and having a workpiece engaging surface parallel to the axis of said power shaft.

2. A portable hand held planer comprising a power unit having a motor housing and a power shaft extending from one end of the housing, positioning means at said one housing end having a fixed relation to the axis of said power shaft, a cutter supported at one end and driven by said power shaft, a bracket having means cooperating with said positioning means to position said bracket on said housing, said bracket overlying said cutter and having a journal in fixed relation to said cooperating means which is thus disposed coaxially of said power shaft to provide an outboard support for said cutter, and a workpiece guide secured to said motor housing.

3. A portable hand held power planer as in claim 2 which planer is adapted for operative movement in a given direction and wherein the overlying portion of the bracket rearwardly of the cutter is generally parallel to the axis of the cutter and forwardly of the cutter tapers toward the outboard end of the cutter axis.

4. A portable hand held power planer comprising a power unit having a motor housing and a power shaft extending from one end of said housing, a cutter rotated by said power shaft, a bracket having a journal means for supporting the outboard end of said cutter, means for accurately positioning said bracket to dispose said journal means coaxially of said power shaft, a sleeve secured to said housing, a workpiece guide having a work engaging surface parallel to the axis of said power shaft, selective means for establishing a desired point of pivotal connection between said sleeve and said guide and a single adjusting means for accurately positioning said work engaging surface with respect to said cutter.

5. A portable hand held power planer comprising a power unit having a cylindrical motor housing and a power shaft extending axially beyond said housing, a motor cap attached to one end of said housing and surrounding said power shaft, an arbor extending from said shaft and having a cutter mounted thereon, an outboard support bracket positioned by said mounting plate in which the outer end of the arbor is journaled, said bracket being detachably secured to said mounting plate, a sleeve clamped on said motor housing and having a flange normal to the axis of said cutter, a workpiece guide pivotally mounted on said flange and having a work engaging surface parallel with the axis of said power shaft, said flange having a slot recessed at its opposite ends and disposed generally normal to said guide surface, a pivot screw threaded into said guide with its head received by one of said recesses to establish the relative point of pivoting between said guide and said flange, an adjusting screw carried by said guide and a rotatable member on said flange threadably receiving said adjusting screw.

References Cited in the file of this patent

UNITED STATES PATENTS

1,527,785	Carter	Feb. 24, 1925
2,672,172	Godfrey et al.	Mar. 16, 1954
2,688,348	Sullivan	Sept. 7, 1954
2,774,399	Emmons	Dec. 18, 1956