J. H. BLOODGOOD.

PORTABLE HAND PLANER.

APPLICATION FILED JAN. 2, 1918.

1,272,196.

Patented July 9, 1918.

2 SHEETS—SHEET 1.

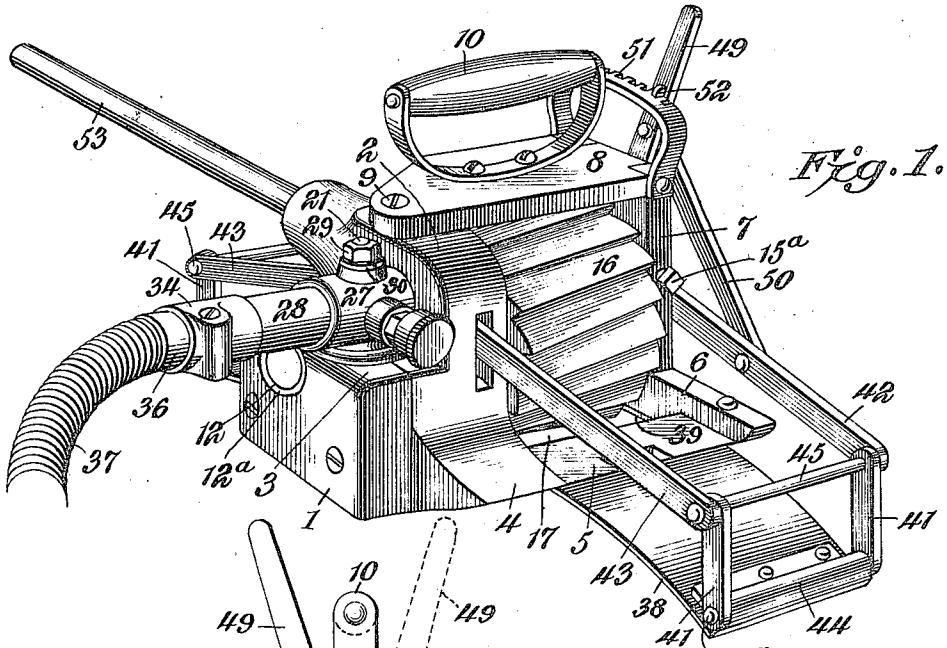


Fig. 1.

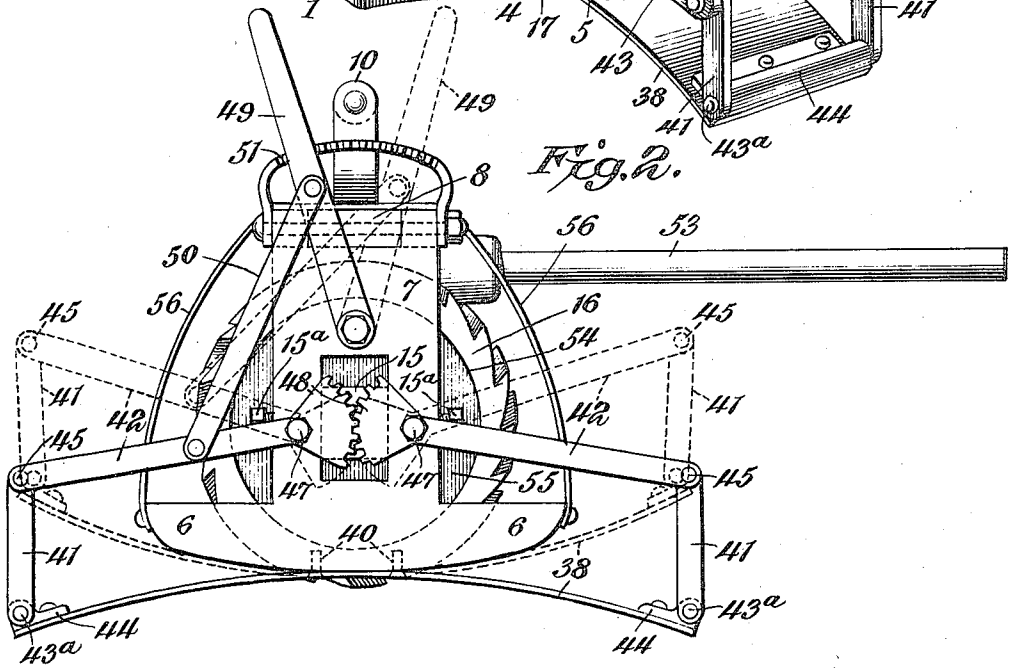


Fig. 2.

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Fig. 3.

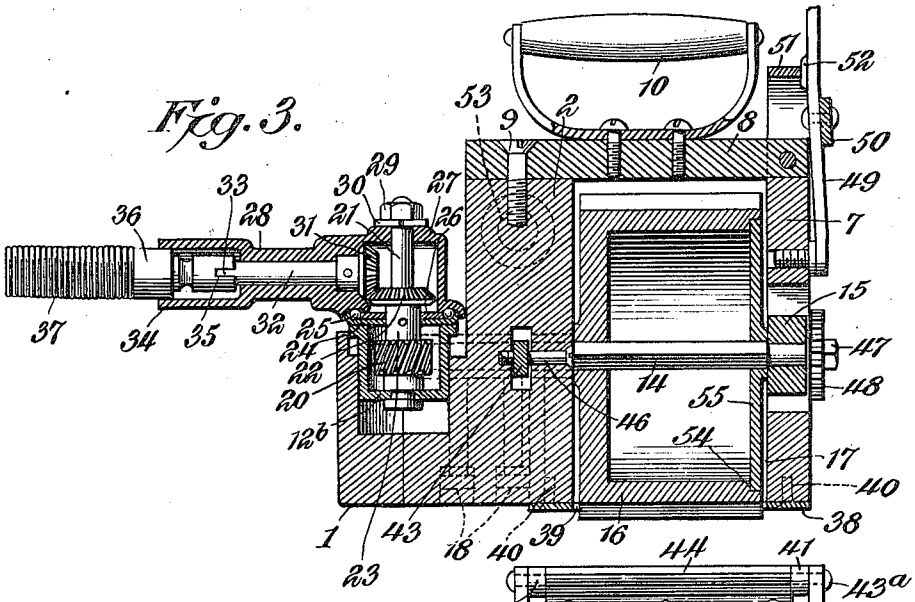


Fig. 4.

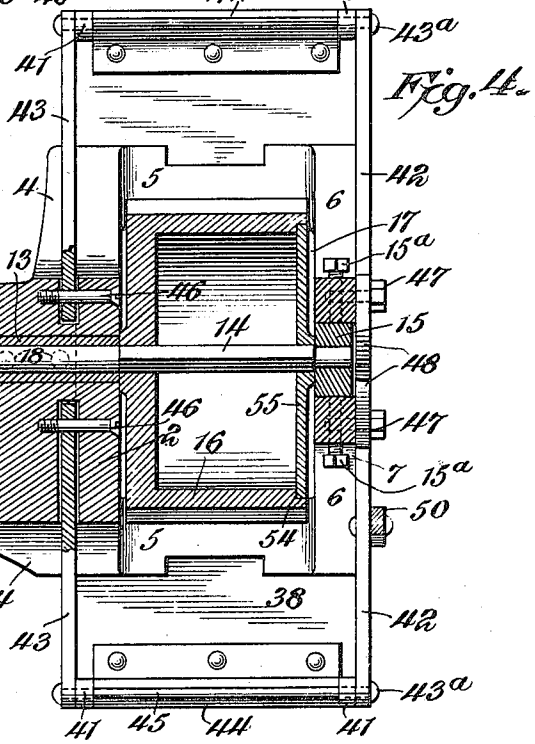
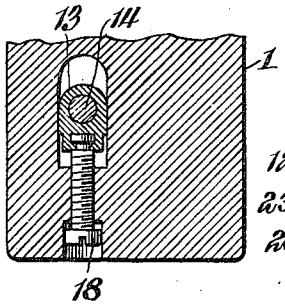


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES HENERY BLOODGOOD, OF SOUTH JACKSONVILLE, FLORIDA, ASSIGNOR OF ONE-HALF TO EDWARD C. BROWARD, OF JACKSONVILLE, FLORIDA.

PORTABLE HAND-PLANER.

1,272,196. Specification of Letters Patent. Patented July 9, 1918.

Application filed January 2, 1918. Serial No. 209,878.

To all whom it may concern:

Be it known that I, JAMES H. BLOODGOOD, a citizen of the United States, residing at South Jacksonville, in the county of Duval and State of Florida, have invented a new and useful Portable Hand-Planer, of which the following is a specification.

This invention has reference to portable hand planers, and its object is to provide a power planer of such size as to be readily carried in the hands of an operator while being applied to the surface to be planed, the planer being capable of operation by electricity or fluid under pressure, or in fact, any other suitable power means.

The invention comprises a body member with means for carrying a suitable tool which may be in the form of a cutter of any type, a sand paper wheel, a sharp bevel wheel for opening seams or cracks in ships for calking, or for any suitable type of tool, wherefore, while for convenience the device is termed a planer, it is to be understood that it may be adapted for other kinds of work than planing. Power is applied to the tool-carrying means by shafting and gearing, when mechanical or electrical power is applied, and by any other suitable arrangement when fluid pressure is used.

Provision is made for change of tools and for providing gripping means for holding and guiding the planer, and the base of the planer is so arranged that it may be used as a jointer or may be applied to curved surfaces whether convex or concave, as may be desired.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming part of this specification, with the further understanding that, while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings but may be changed and modified so long as such changes and modifications come within the scope of the appended claims.

In the drawings:—

Figure 1 is a perspective view of the planer;

Fig. 2 is an elevation thereof from the end remote from that seen in Fig. 1;

Fig. 3 is a central vertical section, with some parts in elevation, taken axially through the cutting tool;

Fig. 4 is a horizontal section taken through the axis of the cutting tool and showing some parts in elevation;

Fig. 5 is a section of a detail of the construction.

Referring to the drawings, there is shown a frame member comprising a block 1 with a standard portion 2 rising thereabove, so that a part of the block 1 constitutes a shoulder 3 in which certain mechanism may be arranged. On opposite sides of the block 1 beneath the standard 2 are horns 4 projecting on opposite sides thereof. These horns have continuations 5 spaced apart by a distance corresponding to the thickness of the block 1, and joining the horns 4 with corresponding horns 6 projecting from opposite sides of the lower end of a post 7 spaced from the block 1 by a suitable distance. The post 7 rises to a somewhat greater height than the standard 2, and is connected to the latter by a plate 8 which may be hinged or similarly secured to the top of the post 7 and is made fast to the standard 2 by a screw 9 or in any other suitable manner. The plate 8 is utilized for the attachment of a handle 10 whereby the planer may be carried from place to place, and whereby the planer may be grasped by one hand of the operator to guide it over the work.

Extending through the block 1 is a passageway 11 which may be widened at the end remote from the post 7, as shown at 12. Within the passage 11 is an elongated bearing sleeve 13 through which there extends a shaft or arbor 14 projecting across the space between the block 1 and post 7, and provided with another bearing in the form of a block 15 in said post, which latter carries set screws 15ª to secure the bearing 15 in adjusted positions. The shaft or arbor 14 has mounted thereon a tool 16, which may be considered in the particular showing of the drawings, as a planing head, since, for convenience of description, the tool is desig-

nated a planer, but it will be understood that the tool 16 may be replaced by any other suitable rotary tool, whereby other work than planing may be performed. This understanding with relation to the tool 16 is to be had even though the tool be hereinafter termed a planer or planer head without specifying that it may be replaced by other tools. The planer head 16 is arranged to extend through a space 17 bounded by the block 1, extension 5 and horns 6, and the arrangement is such that a portion of the planer or cutter head extends below the under surface of the body of the planer.

In order to adjust the depth of cut of the planer head or other tool, the bearings thereof are carried by screws 18 threaded through appropriate portions of the body of the machine, one of such screws being shown separately in Fig. 5, and the screws being also shown in dotted lines in Fig. 4.

In order to drive the shaft or spindle 14 and to permit great flexibility of movement of the planer structure with reference to the source of power, especially in case such source is mechanical in nature, the shaft 14 carries a worm 19 within the enlargement 12, and inclosed in a housing 12^a. In another housing 12^b, which may be in one piece with the housing 12^a, is a companion worm or worm wheel 20 meshing with the worm 19, and mounted loosely on a spindle 21. Fast to the worm wheel 20 is a bevel gear 22 located above the shoulder 3 and having a sleeve portion 23 extending through the shoulder. The worm gear wheel 20 is located within the housing 12^b having a lateral extended upper portion 24 constituting a ball race for anti-friction balls 25 carried by a washer 26 which also serves as a lubricant retainer. Above the washer 26 and housing the bevel gear wheel 22 is a cap 27 formed on one end of a tubular arm 28 projecting at or substantially at right angles to the cap 27, which latter is traversed by the spindle 21. The upper end of the spindle has a nut 29 and washer 30 applied thereto, the latter being preferably of the split type, so that the cap 27 may move about the spindle as an axis.

Meshing with the gear wheel 22 is another bevel gear wheel 31 on one end of a shaft 32 extending lengthwise of the arm 28, and terminating in a tongue 33 in a socket 34 at the outer end of the arm 28. The tongue 33 is designed to enter a slot 35 in a head 36 entering the socket 34 and fast to one end of a flexible shaft 37. There is thereby provided drive means for the cutter by which mechanical power may be utilized to propel the cutter or planer head or other tool, no matter in what position the planer may be, and this operation is performed without placing any of the parts under undue strain, as sometimes happens when common forms of universal joints are used. The power transmission devices may be replaced by electrical means or by pneumatic means, and in such case, other connecting devices may be used, but, whatever be the character of the prime mover, the arrangement shown in the drawings provides a highly flexible and efficient type of drive for the planer head.

Fast to the underside of the block 1 and of the post 7 is an elongated flexible plate 38 having a cut out 39 matching the opening 17. This plate may be made of steel because of its flexibility and wearing qualities, since the plate forms the bearing face of the planer and may be bent to adapt the planer to convex and concave surfaces. The under face of the planer is made convex, so that the plate 38 may be bent to conform to concave surfaces. When it is desired to work on convex surfaces, the plate 38 is bent in the opposite direction away from the body of the device. The plate 38 is held to the body of the planer by screws 40 or any other appropriate means, permitting the bending of the plate in the way described.

In order to bend the plate 38, there is provided mechanism comprising links 41 each connected at one end to an appropriate corner portion of the plate, and at the other end to an arm 42 or 43, as the case may be. The connections of the links 41 to the plate 38 comprise pins 43^a and ears 44. The connections of the links 41 to the arms 42 and 43 comprise pins 45 traversing the links and arms, each pin 45 also connecting the links at the corresponding end of the plate 38.

The arms 43 extend to the standard 2, and are pivoted thereto by screws 46 or otherwise, while the arms 42 are pivoted to the post 7 by screws 47 and beyond these screws are formed into gear segments 48, which latter intermesh.

A lever 49 is pivotally mounted on, and extends above the post 7, and is connected by a link 50 to one of the arms 42. A rack 51 is made fast to the top of the post 7, and rises thereabove, and the lever 49 has a tooth 52 to engage the rack. By making the teeth of the rack small enough, adjustments of the plate 38 may be made within practical limits. In order to facilitate the handling of the planer, another handle 53 is arranged to project from the block 1 in an appropriate direction.

Since the device is to be a portable device of a character to be carried about by the operator while being operated, the more bulky parts may be made of aluminum or of sheet metal, and only such parts as are necessary need be made of steel or other heavy metal. To reduce the weight of the cutter or planer head 16, it may be made hol-

low with a rabbet 54 about one edge to receive a cover plate 55, wherefore the amount of metal needed for the cutter head is greatly reduced.

While the block 1 has been described as provided with a shoulder 3 and as embedding the housings 12^a and 12^b, and also as having horns 4 with extensions 5, the parts may be otherwise arranged. For purposes of manufacture and repair, it may be found advisable to make some parts in two or more pieces, and of different materials where shown as integral in the drawings and other parts integral where shown as made in two or more parts.

In order to protect the operator, the planer head or other tool where there is any liability of accidental contact, may be covered, by a shield, or shields, as indicated at 56 in Fig. 2, but omitted from the other figures of the drawings.

What is claimed is:—

1. A rotary wood-working tool comprising a body member formed at one side with a shoulder offset from the body member, the bottom of which shoulder constitutes a continuation of the bottom of the body member, a tool-carrying shaft mounted in the body member below the level of the shoulder, a worm gear on the shaft, an upright spindle at one side of the shaft and mounted in the shoulder, and extending in a direction at right angles to the length of the shaft, a worm gear mounted on the spindle and meshing with the first-named worm gear, a swivel member on the shoulder and for which the spindle constitutes a pivot, and intermeshing gearing, one of which is fast to the worm gear and the other of which is journaled in the swivel member for the application of power to the tool-carrying shaft, said swivel member inclosing the intermeshing gearing.

2. A rotary wood-working tool comprising a body member, a tool-carrying shaft journaled in the body member and having one end extending to one side, a swivel member consisting of a tubular arm and a cap, an arbor traversing the swivel member and constituting the pivotal axis thereof, said arbor being arranged at right angles to the length of the shaft, intermeshing worm gear wheels, one on the shaft and the other mounted on the arbor, housing inclosing the worm wheels and constituting the lower member of the swivel joint, intermeshing bevel gear wheels, one fast to the worm wheel on the arbor and both located within the swivel member, and means carried by the swivel member for the application of power to the gear wheel carried by said swivel member.

3. A rotary wood-working tool comprising a body member having a post in spaced relation and connected thereto by extended portions bridging the space between the body member and the post and forming a throat, a tool-carrying shaft journaled in the body member with the tool extending through the throat, journal bearings for the shaft, adjusting means for the journal bearings accessible from the underside of the body member, and swivel driving means carried by the body member and connected to the shaft, whereby the body member may be placed in various positions with respect to the driving means.

4. A rotary wood-working tool comprising a body member, a tool-carrying shaft journaled in the body member and having one end extending to one side, a worm wheel on the extended end of the shaft, an upright spindle located at one side of the shaft, a worm gear on said spindle meshing with the worm wheel on the tool-carrying shaft, a housing inclosing the worm wheels and also forming a bearing for the tool-carrying shaft, said housing constituting the lower member of a swivel joint, and maintained at a relatively fixed position with respect to the body member, the upper member of said joint consisting of a tubular arm and a cap, and the spindle forming the pivotal axis of said cap and also connecting the two members of the joint, intermeshing bevel gear wheels, one fast to the worm wheel on the spindle and both inclosed within the cap, and a washer interposed between the cap and the housing and forming a ball cage and a retaining means for lubricant.

5. A rotary wood-working tool comprising a body member having an extended working face with a throat for the reception of the tool, a tool-carrying shaft journaled in the body member and extending to one side thereof, an upright spindle mounted at one side of the shaft, gearing between the spindle and the tool-carrying shaft, a drive shaft, gearing between the drive shaft and the first-mentioned gearing, and a swivel joint inclosing all the gearing, the lower member of the joint maintaining a relatively fixed position with respect to the body member, and the other member of the joint moving about the spindle.

6. A rotary wood-working tool, comprising a body member having an extended working face with a throat for the reception of the tool, a tool-carrying shaft in and extending to one side of the body member, an upright spindle mounted at one side of the shaft, gearing between the spindle and the tool-carrying shaft, a drive shaft, gearing between the drive shaft and the first-mentioned gearing, a swivel joint inclosing all the gearing, with the lower member of the joint provided with a bearing sleeve for the tool-carrying shaft, and the other mem-

ber of the joint moving about the spindle, and adjusting screws entering the body member through the working face and engaging the bearing sleeve for determining the depth of cut of the tool.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES HENERY BLOODGOOD.

Witnesses:

JOHN H. SIGGERS,

JAS. K. MCCATHRAN.