March 4, 1941. L. M. EVJEN 2,233,998

ROTATING SAW PLANE

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FIG. 3.

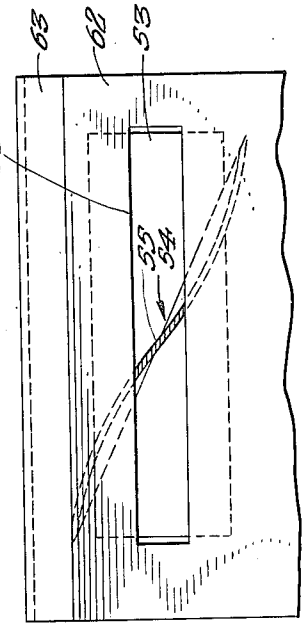


FIG. 6.

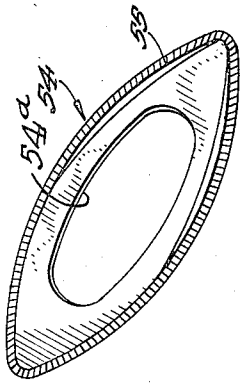


FIG. 2.

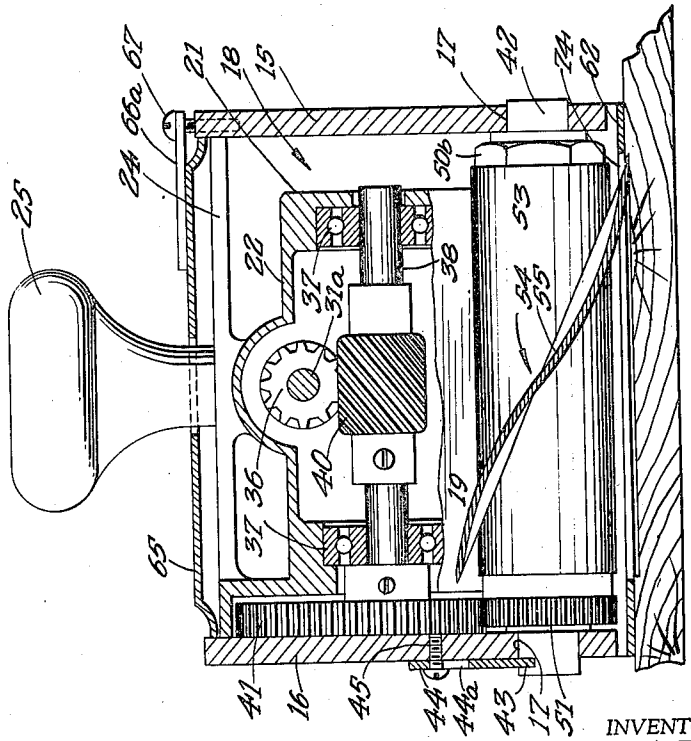
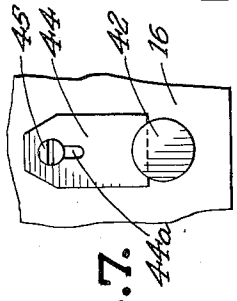


FIG. 7.



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FIG. 5.

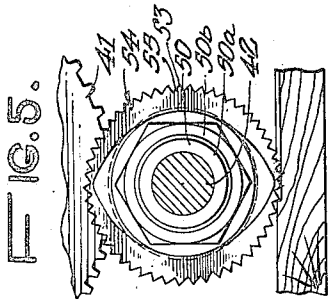


FIG. 4.

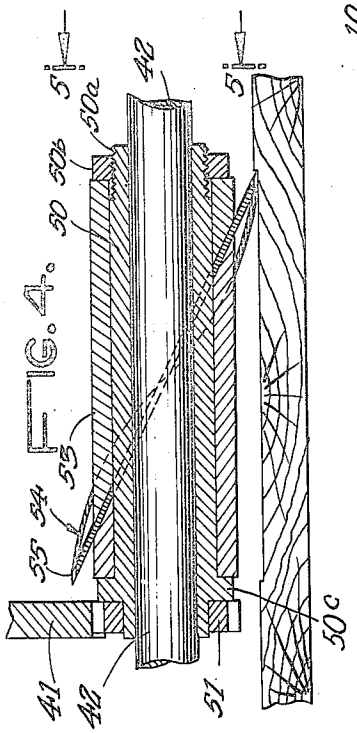


FIG. 1.

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2,233,998

UNITED STATES PATENT OFFICE

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ROTATING SAW PLANE

Louis M. Evjen, Yonkers, N. Y.

Application June 27, 1938, Serial No. 216,029

3 Claims. (Cl. 144—238)

This invention relates to rotating saw planes for planing wood, removing varnishes and paints, for scraping, and for the like purposes.

An object of this invention is to provide in a tool of the character described, a shaft or bushing carrying an oblique blade having a serrated edge, disposed in a cylindrical surface concentric with the shaft, the teeth of the serrated edge being parallel to the axis of the shaft, whereby upon rotating said shaft and blade, the teeth will cut or plane a surface as the tool is advanced.

A further object of this invention is to provide in a tool of the character described, a blade which will act as a fan for removing accumulated waste or shavings during the planing operation.

A still further object of this invention is to provide in a tool of the character described, means for adjusting the depth of the cut.

Still another object of this invention is to provide a rugged and durable tool of the character described, which shall be relatively inexpensive to manufacture, easy to assemble and manipulate, and which shall yet be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a side, elevational view of a rotating saw plane, embodying the invention;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a bottom plan view of the gauge plate;

Fig. 4 is an elevational, cross-sectional view through the shaft carrying the inclined blade;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is a front view of the blade; and

Fig. 7 is a partial, side elevational view of the key for holding the blade shaft against removal.

Referring now in detail to the drawings, 10 designates a tool embodying the invention, comprising a frame or base plate 11, to the rear end of which is attached a supporting roller 12. Extending upwardly from the base plate 11 is a wall 13, perpendicular to said base plate, and formed with a bearing opening 14. There also extends upwardly from the base plate 11, a pair of parallel side walls 15 and 16, perpendicular to the wall 13 and extending forwardly thereof. The walls 15 and 16 are formed with aligned bearing openings 17, for the purpose hereinafter appearing.

Fixed to the front of the wall 13 is a box 18, having a front wall 19, a bottom wall 20, side walls 21, and a top wall 22. The front wall 19 is formed with a bearing opening 23, aligned with the bearing opening 14. Extending forwardly from the wall 13, is a wall 24, carrying a handknob 25.

In the back of the wall 13 there is mounted on the base plate 11, a bearing member 30. Supported by the base plate 11 is a motor casing 31, provided with a handle 32, having a trigger switch 33, for starting and stopping the motor. The motor shaft 31*a* passes through the bearing 30 and bearing openings 14 and 23. The motor casing 31 may be adjusted by a screw 34 on the rear of the base plate 11. On the motor shaft 31*a* is a worm wheel 36 for the purpose hereinafter appearing.

The side walls 21 of the box 18 carry roller bearings 37, supporting a horizontal shaft 38, which carries a worm 40 meshing with the worm wheel 36. On one end of the shaft 38 is a pinion 41.

Rotatably mounted within the openings 17, of the side walls 15 and 16, is a shaft 42 having a key opening 43. A key 44 fixed to the side walls 16 in adjusted position, by a screw 45, engages within the key opening 43 to hold the shaft against shifting or rotation. The key 44 is formed with a vertical slot 44*a*, through which the screw 45 passes.

Rotatably mounted on the shaft 42 is a sleeve 50, to which is fixed a pinion 51 meshing with the pinion 41. Sleeve 50 is formed at one end, with a collar 50*c*, and has a screw threaded portion 50*a* at the other end. Received on the sleeve 50 is a bushing or sleeve 53 carrying a blade 54. Said bushing is fixed to sleeve 50 by nut 50*b*, screwed to threaded portion 50*a* and pressing said bushing against collar 50*c*. The blade 54 is disposed in an inclined plane and has an opening 54*a* to receive bushing 53. The inner edge of opening 54*a* contacts said bushing 53, and said blade is fixed to said bushing in any suitable manner. The outer edge 55 of said blade is formed with teeth disposed in a cylindrical surface, concentric about the axis of the shaft 42. Said teeth are parallel to said axis, whereby upon rotation of the blade 54 about the axis of shaft

42, the teeth will plane, scrape or cut a groove having a width equal to the longitudinal distance between the ends of the blade.

The blade can be replaced by unscrewing the nut 50*b* and removing the bushing 53. The bushing 53 may be of such length as to take two or more blades for double or multiple cutting.

The tool is operated by energizing the motor and moving the tool forwardly or rearwardly. It will now be understood that the blade 54 will act as a fan for removing accumulated waste during operation of the tool.

Means is provided for adjusting the depth of the cutting or planing done with the tool. To this end, there is hinged to the bottom of the side walls 15 and 16, as at 60, a gauge plate 61 having a downwardly and forwardly inclined wall 62, the forward edge 63 of which contacts the surface on which the tool is moved. Extending upwardly from the portion 62 is a wall 64, having a flange 65 disposed above the top edges of side walls 15 and 16. A screw 66, screwed to said flange serves as a stop to limit rotation of the member 61 about the hinge 60 in a counter-clockwise direction, looking at Fig. 1 of the drawings. Fixed to the flange 65 is a plate 66*a* formed with a through opening, through which there extends a screw 67, screwed into the top edge of the side wall 15.

Interposed between the gauge plate 61 and the underside of the base plate 11, is a spring 70 which tends to rotate the gauge plate downwardly about the hinge 60. The portion 62 of the gauge plate 61 is formed with a longitudinal slot 74, through which a portion of the blade 54 projects.

As the blade rotates, it will cut a portion of the surface to be cut directly beneath the slot or opening 74. As the tool is moved forwardly, the edge 63 of the gauge plate contacts the surface to be cut, and the screw 67 limits the depth of the cut. Upon loosening the screw 67, the blade will be forced further through the slot to make a deeper cut. The gauge plate may thus be set to adjust the depth of the cut. By pressing down on the handknob 25, the machine can be swung downwardly against the pressure of the spring 70 to make a deeper cut.

It will now be understood that the tool may be used for planing or cutting wood, for removing varnishes and paints, and also to do the work of a sandpaper machine from a very coarse to a very fine cut.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A planing blade substantially elliptical in shape, having an elliptical opening therein, a longer and a shorter axis, the edges of said blade at both ends of both of said axes being in a common plane, and the edges of said blade between the ends of the axes being upset in opposite directions on lines diagonal to the axes.

2. A planing blade substantially elliptical in shape, having an elliptical opening therein, a longer and a shorter axis, the edges of said blade at the ends of both of said axes being in a common plane, and the edges of said blade on one side of the shorter axis being curved in one direction and the edges of the blade on the other side of the shorter axis being curved in the opposite direction.

3. A planing blade substantially elliptical in shape having an elliptical opening therein, a longer and a shorter axis, the edges of said blade at both ends of both axes being in a common plane, and the edges of the blade on one side of the shorter axis being curved in one direction between the ends of the shorter axis and the end of the longer axis on that side, and on the other side of the shorter axis being curved in the opposite direction between the ends of the shorter axis and the end of the longer axis on that side.

LOUIS M. EVJEN.