

Feb. 4, 1930.

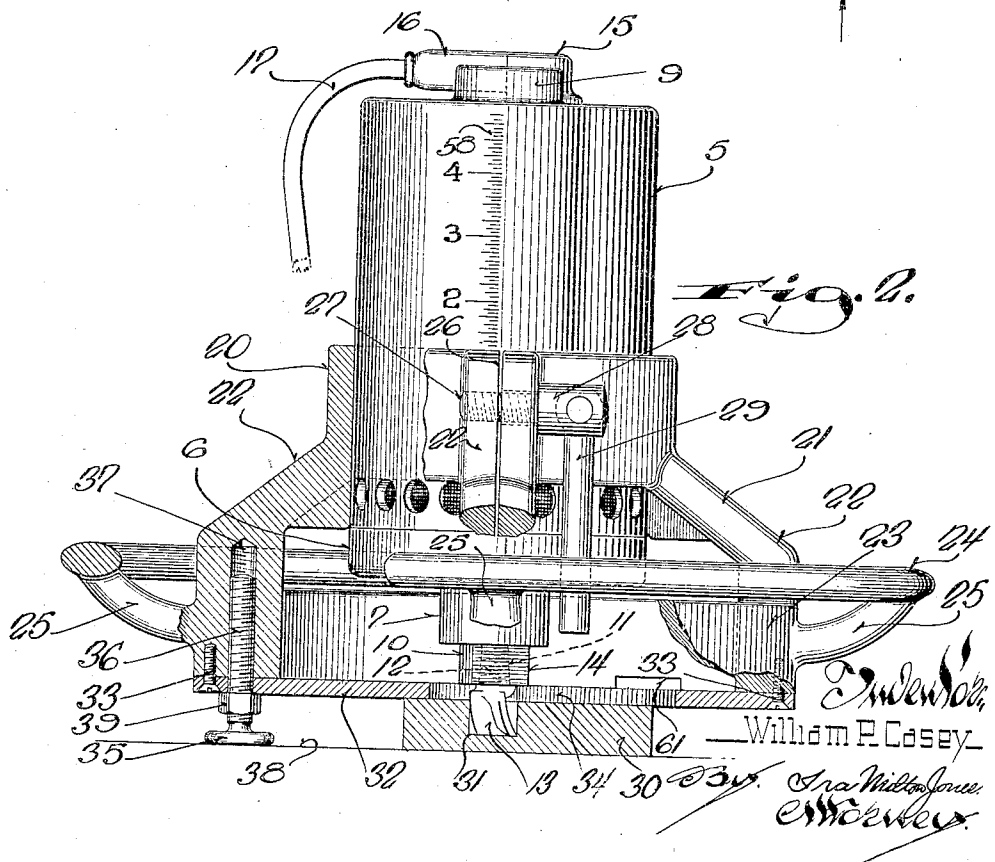
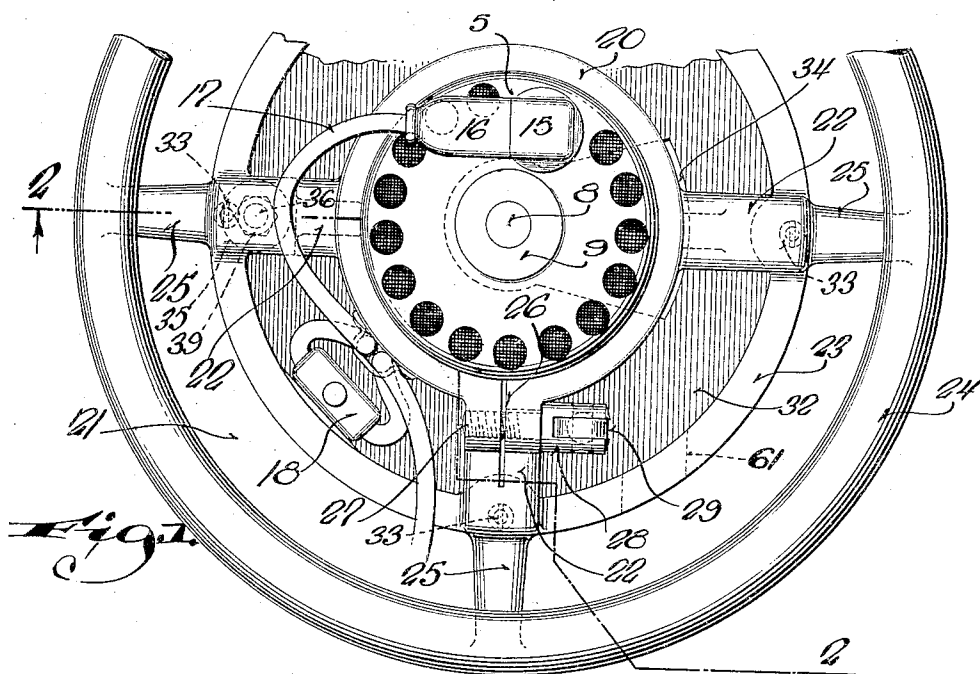
W. P. CASEY

1,745,780

WOODWORKING MACHINE

Filed Sept. 25, 1925

2 Sheets-Sheet 1



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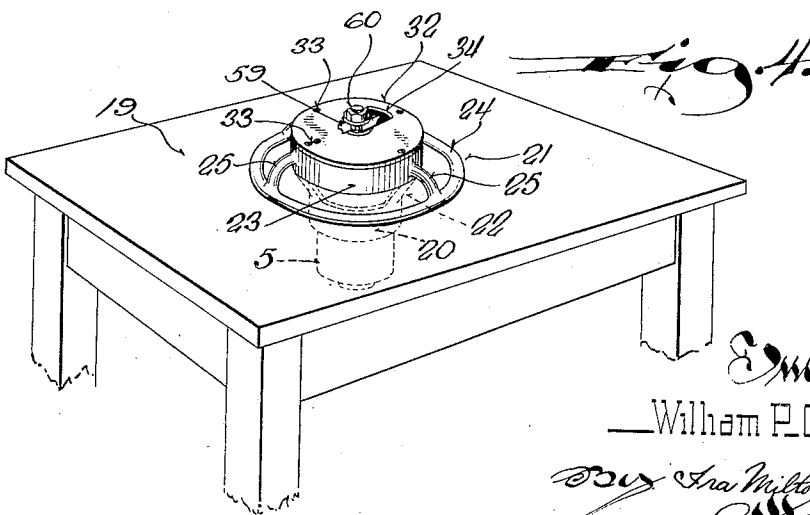
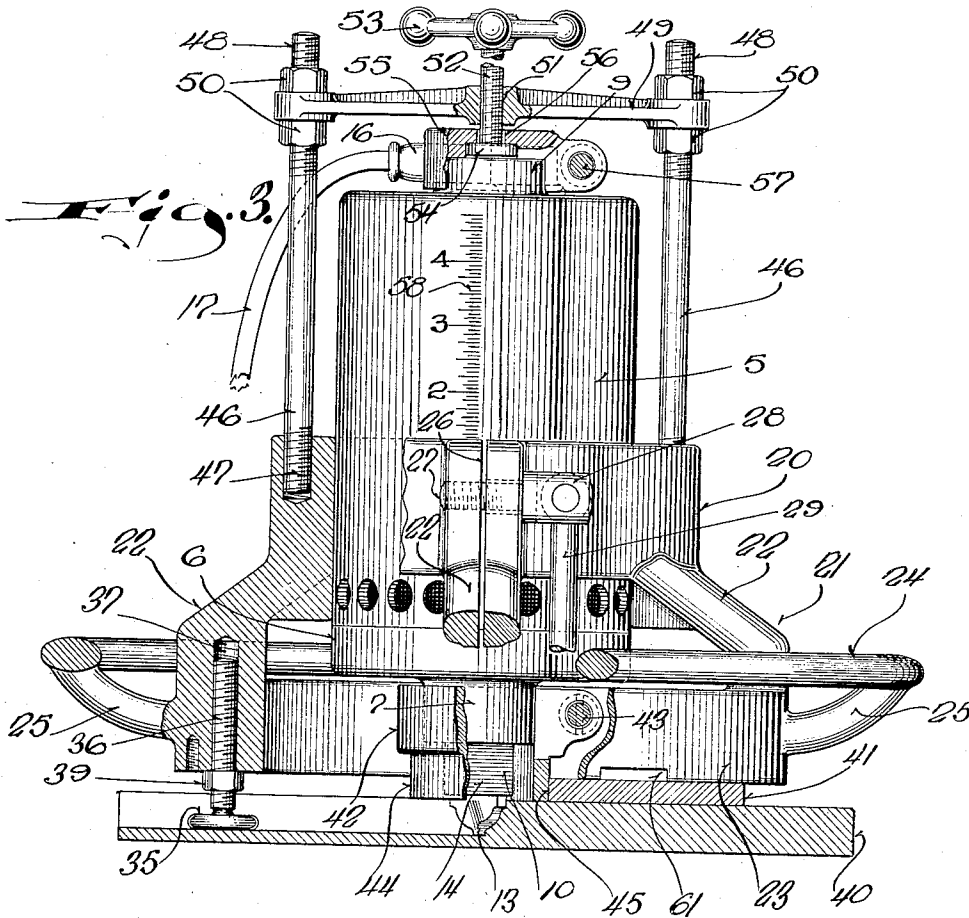
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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WOODWORKING MACHINE

Application filed September 25, 1925. Serial No. 58,581.

It is an object of this invention to provide an improved woodworking machine of very economical and efficient construction and easy to handle inasmuch as its total overall weight is materially under that of other machines of a like character.

Another object of this invention resides in the provision of an improved woodworking machine especially designed for routing, although the power unit thereof is readily removable from its frame to permit its use in connection with a portable hand saw or a combination work table.

One objectionable feature of the conventional type of routing machine now on the market is its inability to work on material of a width less than that of the supporting and work engaging base and this invention contemplates as a further object the provision of an improved type of machine having provision whereby the router is evenly supported on work of all sizes.

A still further object of this invention resides in the provision of an improved woodworking machine of the character described having an adjustable work engaging button or support adapted to follow in the cut-away portion to assist the operator in holding the machine steady and level as it moves thereover.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

In the accompanying drawings, I have illustrated several complete examples of the physical embodiment of my invention constructed according to the best modes I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a top plan view of a woodworking machine embodying my invention, a portion of the machine being broken away;

Figure 2 is a side view, partly in section and

partly in elevation, taken through Figure 1 on the plane of the line 2—2;

Figure 3 is a view similar to Figure 2 illustrating a slightly modified construction of woodworking machine, and

Figure 4 is a perspective view of a table illustrating the manner of mounting my improved machine therein to form a small shaper or similar woodworking machine.

Referring now more particularly to the accompanying drawings, in which like numerals designate like parts throughout the several views, the numeral 5 designates a motor unit, the housing or jacket of which is of plain cylindrical form with one end closed by a removable cap piece 6 to permit access to the motor mechanism. A boss 7 is formed on the cap end 6 and has the adjacent end of the motor armature shaft 8 journaled therein, the other end of the motor shaft being journaled in a boss 9 formed on the other end of the motor jacket.

A chuck member 10 is fixed to the end of the motor shaft journaled in the boss 7 and has an internally threaded opening 11 for the reception of the threaded end of a tool spindle 12 on which the various cutting tools 13 are mounted. The opposite faces of the chuck member are flattened, as at 14, to facilitate the application thereto of a wrench, not shown, for convenience in holding the motor shaft stationary while a cutter is being removed or secured in place.

The end of the motor casing opposite the cap 6 has a terminal 15 fixed thereon with which the leads, not shown, of the motor are connected and with which a mating terminal plug 16 is detachably connected, the usual feed wires 17 leading from the plug 16 to a source of current. The motor is controlled by means of a snap or other type switch 18 located within the feed wires 17 and preferably mounted at a convenient position to permit its ready manipulation by the operator. The motor unit just described is identical with that used in connection with a portable hand saw and a combined table arrangement and is so designed that a woodworking plant may have a combination of woodworking tools all of which are operated by a single

motor to thus reduce the overhead expense.

In this application, the improved motor unit is illustrated as used with a routing machine which may also be inverted and placed within the central aperture of a table 19 for use as a small shaper, as will be later in detail described. The motor 5 is vertically adjustably mounted in the central sleeve or collar 20 of a supporting frame 21 from which radial downwardly and outwardly inclined spider arms 22 extend to an annular work engaging member or ring 23, the bottom surface of which is trued and arranged at ninety degrees with respect to the axis of the sleeve and the motor secured therein. A steering or guiding ring 24 surrounds the annular work engaging member 23 and is supported therefrom by radial arms 25 which extend upwardly and outwardly from the member 23. As clearly illustrated in Figures 2 and 3 the component parts of the supporting frame 21 are preferably integral and cast of aluminum, although any other desirable type of material may be employed, aluminum being preferable by reason of its lightness.

The sleeve 20 and one of the radial arms 22 are split or slotted, as at 26, so that when the motor 5 is inserted therein and the binding screw 27 threaded in the slotted arm 22 is screwed inwardly to close the slot, the motor is firmly clamped in the frame. The screw 27 has a large head 28 on its outer end which is centrally slotted to pivotally receive a handle 29 which facilitates the turning of the handle through approximately 180 degrees and its swinging to a diametrically opposite position to permit its movement through another 180 degrees in the same direction.

In use, the operator loosens the screw 27 to a point where the motor is but slightly held in the sleeve 20 and may be moved therein by the application of pressure on either end. The operator then places one hand between the radial arms or spokes 22 and engaging the lower end of the motor raises the same if it be necessary until the lower end of the cutter extends below the work engaging face of the annular member 23 the desired distance. The screw 27 is then tightened to bind the motor in place against shifting within the sleeve and the operator grasps the steering or guiding wheel 24 on opposite sides preferably having the right or left hand at a point adjacent the control switch 18 which is preferably fixed to the annular member 23, as illustrated in Figure 1, although it will be understood that the same may be mounted in any other place such as on the steering wheel or one of the radial arms. The switch is then closed to connect the motor with its source of current, as a result of which the cutter is rapidly rotated and when guided over the work 30 cuts a

groove or channel 31 therein equal to the width of the cutter 13 and to the depth it projects beneath the work engaging face of the annular member.

Should the area of the work 30 be relatively small with relation to the work engaging member 23, as illustrated in Figure 2 so that the machine cannot be readily kept level thereon by reason of the work not being constantly in contact therewith with all sides of the member, a rest plate 32 is secured over the lower end of the member 23 by machine screws 33. The plate 32 has an opening 34 therein through which the cutter 13 projects, and the opening is preferably enlarged at one side thereof to provide a peep hole through which the operator may readily view the cutter as it works. The under or outer surface of the plate 32 is smooth to facilitate its free passage over the work and cooperating therewith to assist in maintaining the machine level as well as steady, in an elevating or leveling button 35 which has a threaded shank 36 adjustable in a threaded opening 37 in the member 23. The button tracks on the support 38, as illustrated in Figure 2, and is maintained in adjusted position by a lock nut 39.

In Figure 3 the machine is illustrated as being used on relatively large work 40 with the plate 32 removed, a template or guide 41 being mounted over the work 40 to guide the machine in the path in which it is desired to have the cutter follow. When used in connection with a template, a guide collar 42 is secured on the motor boss 7 by a binding bolt or other member 43 and the lower or outer end 44 thereof extends downwardly to a point substantially on a plane with the surface of the work and engages the tracking face 45 of the template. The portion 44 of the collar is of a diameter to properly space the cutter from the guiding edge of the template.

Also in Figure 3 is illustrated an attachment which may be applied to the device illustrated in Figures 1 and 2 to facilitate the ready fine adjustment of the motor within the sleeve 20 to regulate the depth of cut. In this construction a pair of studs 46 are threaded in the sleeve 20, as at 47, at diametrically opposite points with their upper ends 48 threaded and extended above the top of the motor, a cross arm 49 connecting the upper ends of the studs and being secured in place by lock nuts 50. The cross arm 49 has a centrally threaded opening 51 in axial alignment with the motor in which a stud 52 is threaded, the upper end of the stud having a hand wheel 53 fixed thereon and the lower end thereof having a head or enlargement 54 which is swiveled within a cap or collar member 55 through the central opening 56 of which the stud 52 passes. The cap 55 is firmly secured over the motor boss 9 by

a binding or clamping device 57 so that with the screw 27 loosened to free the motor in the member 20, turning of the screw 52 by the hand wheel 53 raises or lowers the motor in the supporting frame.

5 If desired, graduations 58 may be delineated vertically on the motor casing which, reading from the upper edge portion of the ring 20, assists in setting the cutter for any desired depth. After the motor has been set
10 in the housing at the desired position through the medium of the screw 52, the clamping device 27 is tightened as described in connection with Figures 1 and 2 and the machine is ready for use.

15 When inverted and inserted through the central opening of a small table 19 for use as a shaper, the steering or guide wheel 24 rests on the top of the table and serves to provide a broad support to insure steadiness. In
20 Figure 4 a shaper cutter 59 is secured in the chuck 10 by a spindle device 60 and the work to be shaped is then passed over the plate 32 in engagement with the cutter.

25 The steering or guiding wheel 24 is so arranged that when the operator grasps the same he will be in a natural lifting position to thus relieve him of unnecessary strains. The under edge of the member 23 is slotted, as at 61, to receive a guide member, not
30 shown, of the bar type.

From the foregoing description taken in connection with the accompanying drawings it will be readily apparent to those skilled in the art to which an invention of this character appertains that I provide a very novel and improved woodworking machine which is very easy to handle and one in which the power unit thereof may be employed in connection with other types of machines.

40 What I claim as my invention is:

1. A machine of the character described, comprising a supporting frame including two connected concentric ring members of different diameters, the smaller member being
45 disposed above the other, a drive motor vertically adjustable in the smaller member, means for securing the drive motor in the smaller member in adjusted position, a cutter adapted to be driven from the motor and
50 projectable below the lower face of the larger member, and an annular handle of steering wheel type adjacent the supporting surface of the frame but sufficiently removed therefrom to permit the wheel to be grasped at
55 any point about its periphery, said annular handle being disposed in a plane to position the operator's hands grasping the same in a natural lifting position.

60 2. A machine of the character described, comprising a supporting frame including two connected concentric members of different diameters, the smaller member being disposed above the other, a drive motor ver-
65 tically adjustable in said smaller annular

member, a cutter driven from the motor and projectable below the larger member, diametrically opposed rods extending upwardly from the frame, a transverse arm connecting the upper ends of the rods and intersecting
70 the axis of the motor, a stud threaded in the arm in axial alignment with the motor, and means connecting the stud with the motor whereby movement of the stud vertically adjusts the motor in the supporting frame.

75 3. In a woodworking device, the combination with a table having a recess in the top thereof, of a machine adapted to be inverted and disposed in the recess and comprising a supporting frame, a motor mounted in the
80 frame, a cutter driven from the motor and projecting beyond the frame, and a steering wheel surrounding the supporting frame and connected therewith for guiding the machine over work when used as a router independent
85 of the table, said steering wheel providing a support engageable with the table top when the machine is inverted and placed in the recess therein.

90 4. A machine of the character described, comprising a supporting frame, a drive motor mounted within the frame, a cutter adapted to be driven from the motor and projectable beyond the lower face of the frame, and a substantially annular handle of steering
95 wheel type adjacent the supporting surface of the frame but sufficiently removed therefrom to permit the wheel to be grasped at any point about its periphery.

In testimony whereof I affix my signature.
WILLIAM P. CASEY.

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