May 24, 1949. H. L. TREBERT, JR 2,471,014

UNIVERSAL WOODWORKING MACHINE TABLE

Filed Sept. 21, 1943 3 Sheets-Sheet 1

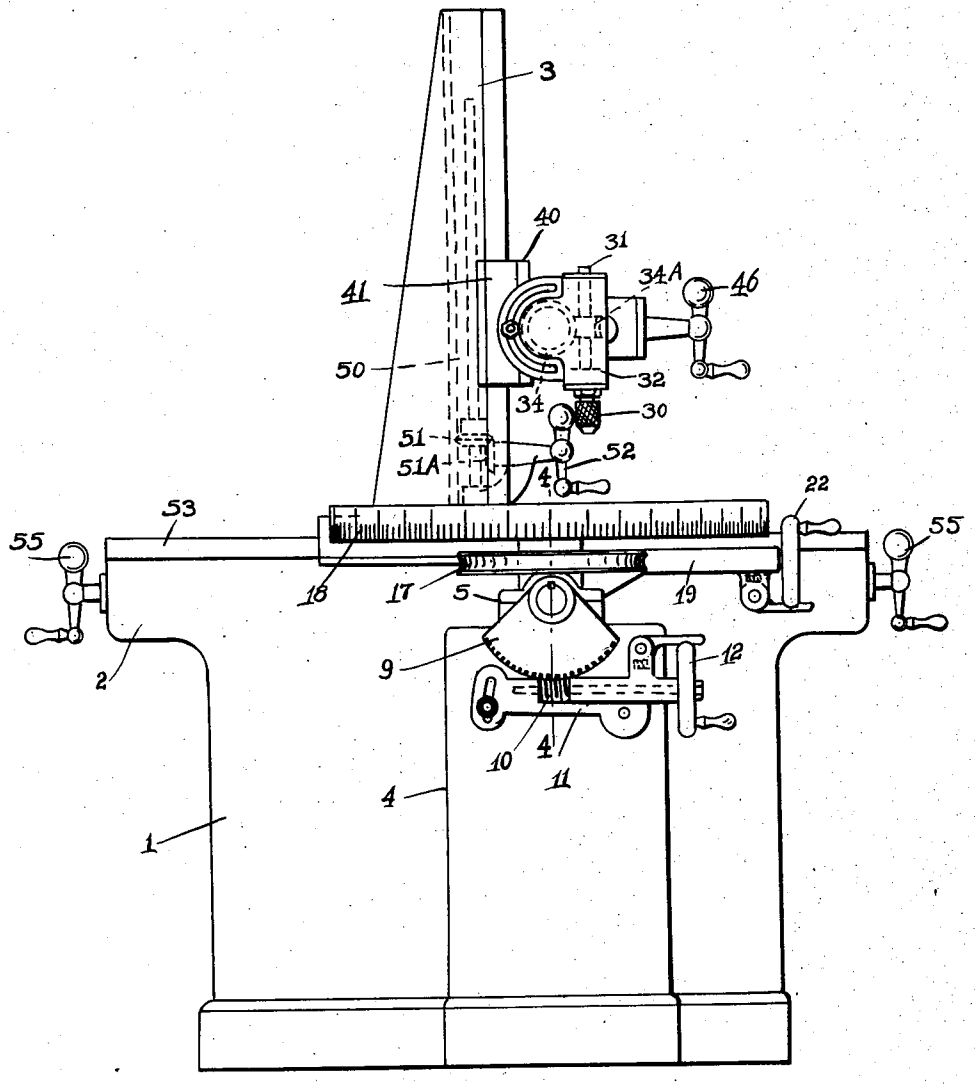

FIG 1

INVENTOR.
HENRY L. TREBERT JR.

BY Eric Ashinger
Attorney

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Filed Sept. 21, 1943 3 Sheets-Sheet 2

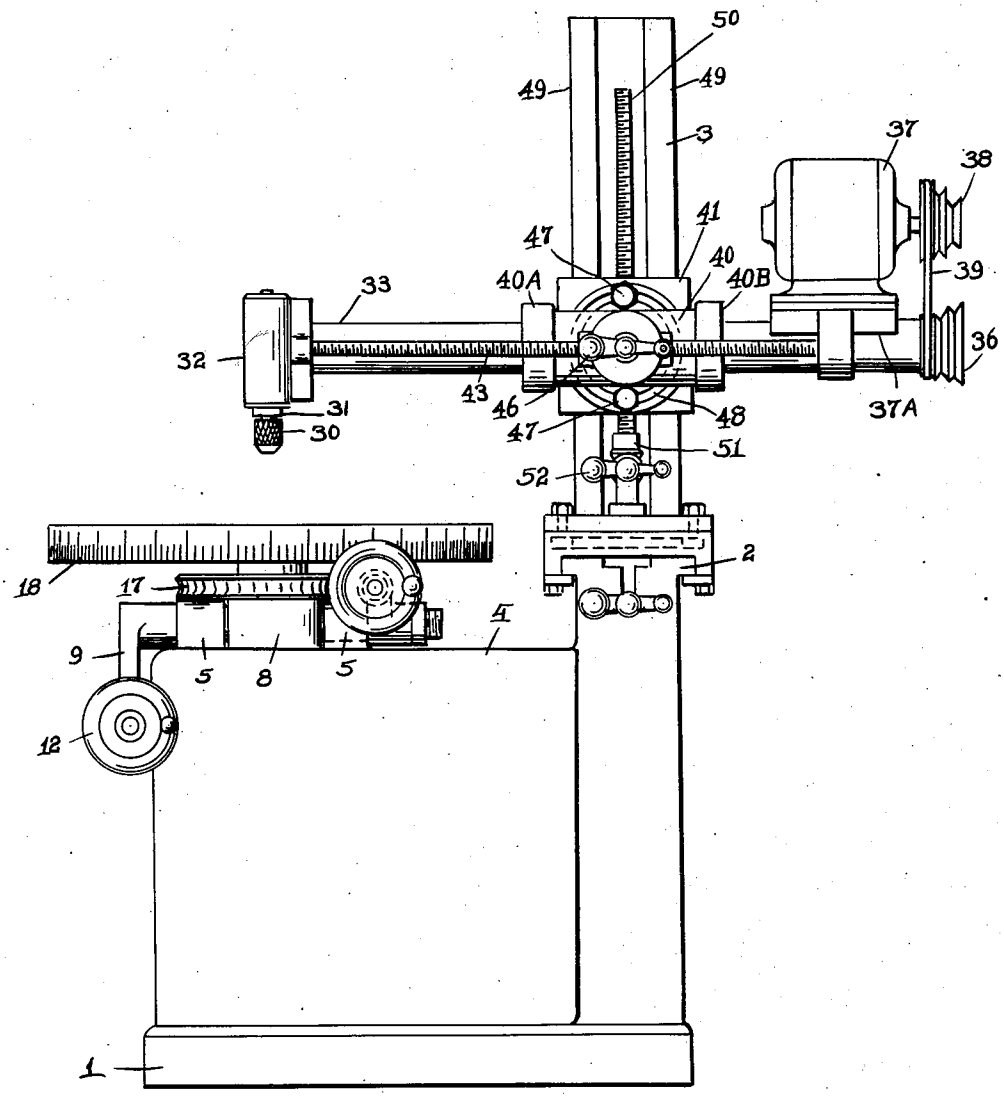

FIG 2

INVENTOR.
HENRY L. TREBERT JR.

BY Eric Ochsinger
Attorney

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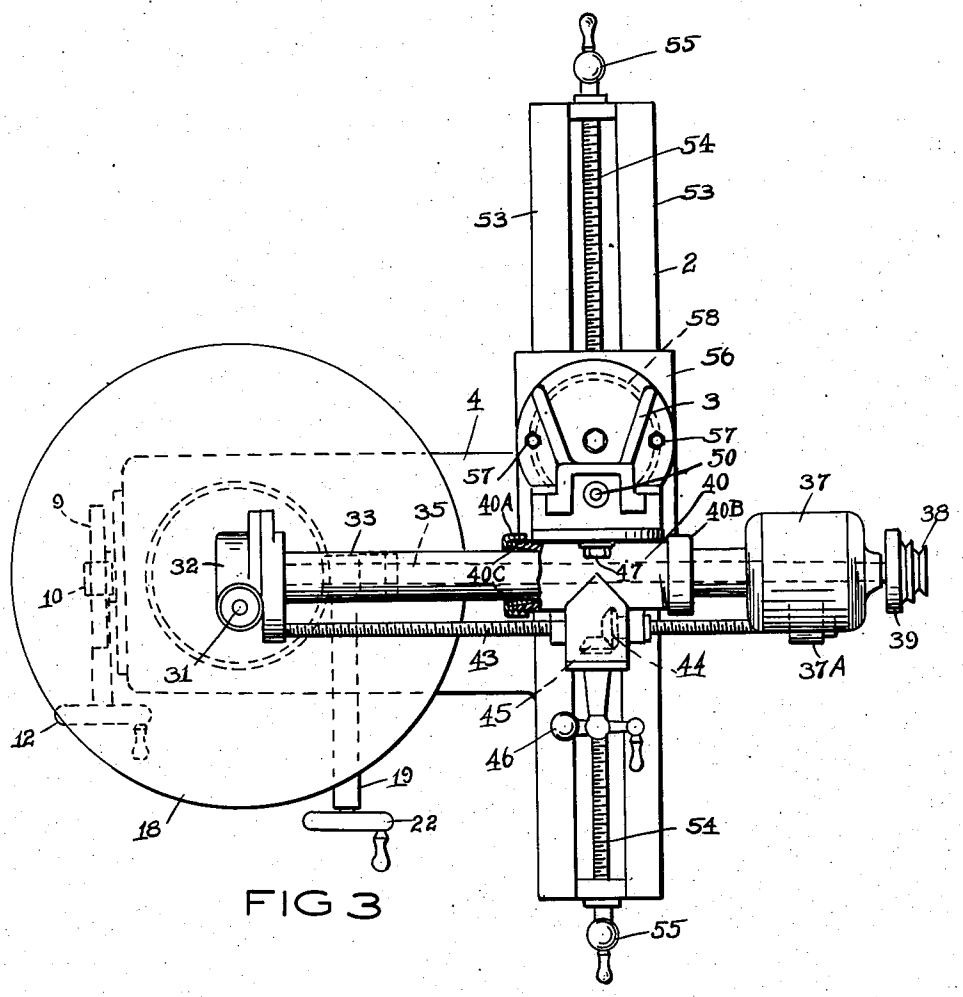

FIG 3

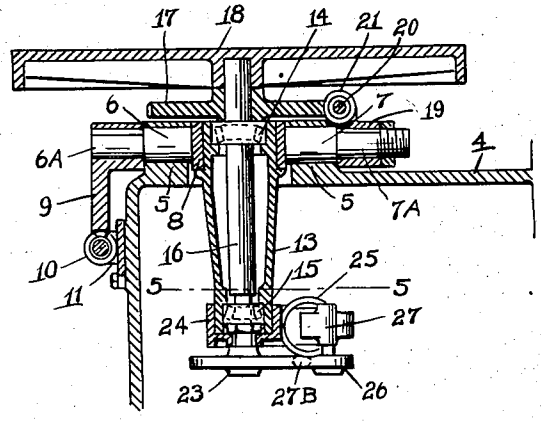

FIG 4

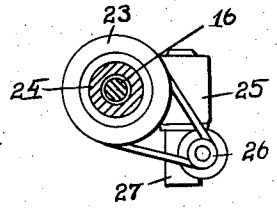

FIG 5

INVENTOR.
HENRY L. TREBERT JR.
BY Eric Ochsinger
Attorney

Patented May 24, 1949 2,471,014

UNITED STATES PATENT OFFICE

2,471,014

UNIVERSAL WOODWORKING MACHINE TABLE

Henry L. Trebert, Jr., Canandaigua, N. Y.

Application September 21, 1943, Serial No. 503,292

2 Claims. (Cl. 144—288)

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This invention relates to wood working machines and especially to pattern making machines and the invention has for its principal object to provide a new and improved construction which provides for the rotation of the work in angular planes to the axis of rotation of the tool operating on the work.

Another object of this invention is to provide a universal adjustment for the operating tool relative to any of the angular positions of the stationary or rotating work table.

A further object of this invention is to provide a horizontal as well as vertical adjustment of the work tool in combination with the universal adjustment thereof relative to the center of rotation of the angularly adjustable work supporting table.

These and other objects of this invention will be readily apparent from the detailed description thereof which follows, reference being had to the accompanying drawing in which

Figure 1 is a front elevation of the machine.

Figure 2 is an end elevation thereof.

Figure 3 is a top plan view thereof with a portion of it in section.

Figure 4 is a detail vertical sectional view taken on the line 4—4 in Figure 1.

Figure 5 is a horizontal sectional view taken on the line 5—5 in Figure 4.

The pattern making machine forming the subject matter of this invention comprises a base 1 which has provided at its top the bed 2 for the adjustable support of the vertical upright 3 and has provided to one side of the bed 2 the work table support 4. Spacedly arranged on top of the latter are a pair of trunnion bearings 5, 5 in which are journaled the trunnions 6 and 7 for the support of the yoke 8 between them. See Fig. 4. An extension 6A of the trunnion 6 has keyed thereto the segmental worm gear 9. A worm 10, mounted in the bracket 11, meshes with this segmental worm gear and is carried by a suitable shaft which is adapted to be rotated by the hand wheel 12 for the angular adjustment of the yoke 8 between the trunnion bearings 5, 5.

In the yoke 8 is supported the spindle housing 13 and suitable roller bearings 14 and 15 rotatably support the spindle 16 centrally thereof. Directly above the yoke 8 the spindle 16 has keyed thereto the worm wheel 17 and above it the circular work table 18.

An extension 7A of the trunnion 7 has adjustably keyed thereto the bracket 19 which has journaled therein the shaft 20. This shaft carries a worm 21 which is adapted to mesh with the worm wheel 17, and the hand wheel 22 which is carried by the shaft 20 rotates the worm wheel 17 to provide for the manual rotation of the work table 18.

To make the work table motor driven, the

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bracket 19 is moved outwardly on the trunnion extension 7A until the worm 21 is out of mesh with the worm wheel 17. The work table is then free to rotate so that the spindle 16 may be rotated by means of the pulley 23 which is keyed to the end thereof below the removable support 24 on the end of the spindle housing 13. A motor 25 carried by this removable support drives a pulley 26 thru a suitable reduction gearing 27 and a belt 27B connects the pulley 26 with the pulley 23 for the rotation of the spindle 16 and the work table 18 supported on top thereof.

The work table is thus adapted to be rotated by hand by means of the hand wheel 22 to have the work supported thereon moved radially and set in any position in the plane of the work table; or the work table may be power driven to rotate the work in the plane of the work table. For both of these operations the work table may be placed into angular positions by means of the hand wheel 12 which tilts the table in the trunnion bearings 5, 5 as above described.

The tool operating on the work supported on the work table is held in the chuck 30 on the end of the spindle 31. The latter is mounted in the head 32 which is adjustably clamped to the end of the hollow arm 33 and is driven by suitable spiral gears 34 and 34A from the driving shaft 35, Fig. 3. This shaft extends thru the hollow arm and carries at its other end the cone pulleys 36. A motor 37 suitably mounted on the support 37A on top of the hollow arm carries a similar set of cone pulleys 38 so that a belt 39 connecting the two sets of cone pulleys can transmit the power from the motor at variable speeds to the tool held by the chuck 30.

The arm 33 is slidably mounted in the head 40 which is adjustably clamped to the support 41 for angular adjustment on the upright 3. A feed screw 43 is mounted to rotate in the outer end of the arm 33 is threaded thru the head 40 and extends to the motor support 37A. Within the head the feed screw carries a suitable bevel gear 44 (Fig. 3) for mesh with the bevel pinion 45 and rotation thereby. A hand wheel 46 is adapted to rotate the bevel pinion and with it the feed screw 43 so as to slide the hollow arm 33 in the head 40 for lateral adjustment of the tool held in the chuck 30. The arm 33 is adjustably held clamped in place in the head 40 by means of a pair of collars 40A and 40B which are threaded on the head so as to force the conical and contractible sleeves 40C into the head into gripping engagement with the arm 33. See Figure 3. The angular adjustment of the head on the support 41 is made possible by the engagement of the clamping bolts 47 carried by the head with the segmental slots 48 (Fig. 2) provided in the support 41 so that the arm 33, and with it the drive for the tool held in the chuck 30, may

be set angularly in a vertical plane relative to the work table 18.

Vertical adjustment of the tool is provided by the movement of the support 41 on the upright 3. For this purpose the support is guided on the upright by the rails 49, 49 and has threaded therethru the feed screw 50. The latter is mounted to rotate within the upright and carries a bevel gear 51 which meshes with the bevel pinion 51A near the bottom of the upright. A hand wheel 52 is adapted to rotate the bevel pinion 51A and with it the feed screw 50 for movement of the support 41 and with it the arm 33 either up or down on the upright 3 relative to the work table 18.

The upright 3 is mounted to laterally slide on the bed 2 which, for this purpose, is provided with the rails 53, 53. A feed screw 54 (Fig. 3) extends the full length of the bed and is journaled at each end thereof with the hand wheels 55, 55 keyed thereto. The feed screw has threaded engagement with the base 56 on which the upright 3 is mounted so that rotation of the feed screw 54 by means of one of the hand wheels 55 causes the base 56 and with it the upright 3 to move horizontally relative to the work table 18 and laterally spaced therefrom.

The upright 3 is pivotally supported on the base 56 and clamping screws 57 at the bottom of the upright engage the segmental slots 58 in the base to adjustably clamp the upright in any angular position on the base and thus hold the arm 31 with its tool holder in any desired horizontal angular position over the work table 18.

Adjustment of the tool may thus be effected on the end of the arm 33 by the rotation of the head 31 thereon. The tool may be moved in and out over the work table by the operation of the arm in the head 40 and then angularly adjusted in a vertical plane by the rotatable mounting of the head 40 on the support 41. Vertical adjustment is secured by the up and down movement of the head 32 on the upright 3 by means of the feed screw 50 and horizontally angular adjustment of the arm is secured by the rotatable support of the upright 3 on the base 56. Finally, lateral adjustment of the arm in any of its adjustable positions is secured by the feed screw 54 which operates to move the upright 3 on the bed 2.

A universal adjustment of the tool for operation on the work piece is thus combined with the support of the work piece on a rotatable work table which is angularly adjustable and can be rotated in any of its angular positions to cooperate with the movement of the tool to increase the speed with which the work may be operated upon and to provide the proper surface finish on the work by the tool.

I claim:

1. In a wood working machine, a base having a top formed with an opening, bearings at opposite sides of the opening, a yoke over the opening having trunnions projecting horizontally from opposite sides and rotatably mounted through the bearings, a tubular housing mounted vertically through said yoke and tiltably mounted by the trunnions, a spindle extending vertically through the housing and rotatable therein, a work table upon the upper end of said spindle, a worm gear carried by one trunnion, a bearing bracket carried by said base, a shaft rotatably carried by the bearing bracket and provided with a worm meshing with the worm gear and with a hand wheel for rotating the shaft and causing rotation of the trunnions to tilt the housing and the spindle and hold the work table in an angularly adjusted position, a motor mounted at a side of the lower end position of said housing, means for transmitting rotary motion from said motor to said spindle, a gear carried by said work table, a bearing bracket carried by the second trunnion and shiftable towards and away from the gear, and a shaft rotatably carried by the bearing bracket and carrying a hand wheel and a worm for meshing with the gear of the table and rotating the table.

2. In a wood working machine, a base, bearings carried by said base, a vertical housing between said bearings, trunnions projecting from opposite sides of the housing through said bearings and mounting the housing for vertical tilting movement, a spindle extending vertically through the housing and rotatably mounted, a work table at the upper end of said spindle, a motor at the lower end of said housing, means for transmitting rotary motion from said motor to said spindle, a bearing bracket carried and shiftable along one trunnion, a manually rotatable shaft carried by said bearing bracket and shiftable with the said bearing bracket into and out of position for imparting rotary motion to the work table and the spindle, a gear carried by the second trunnion, a bearing bracket carried by said base, and a shaft rotatably carried by the last mentioned bearing bracket and carrying a worm meshing with said gear for rotating the trunnions and tilting the spindle to move the work table to an angularly adjusted position.

HENRY L. TREBERT, JR.

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