

Nov. 26, 1935.

W. KNAPP

2,022,288

TOOL HOLDER

Filed April 5, 1934

3 Sheets-Sheet 1

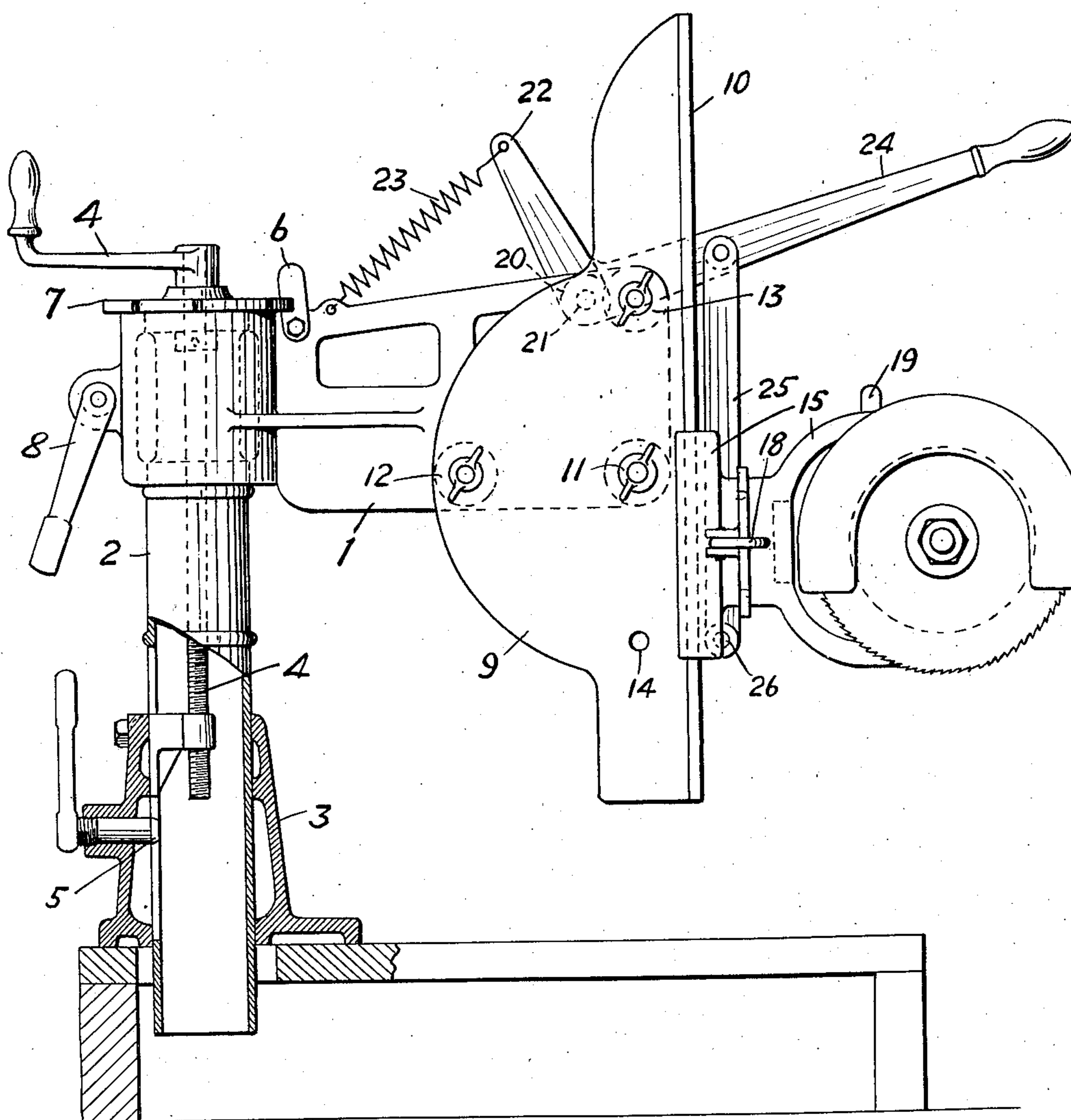


FIG. 1.

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3 Sheets-Sheet 2

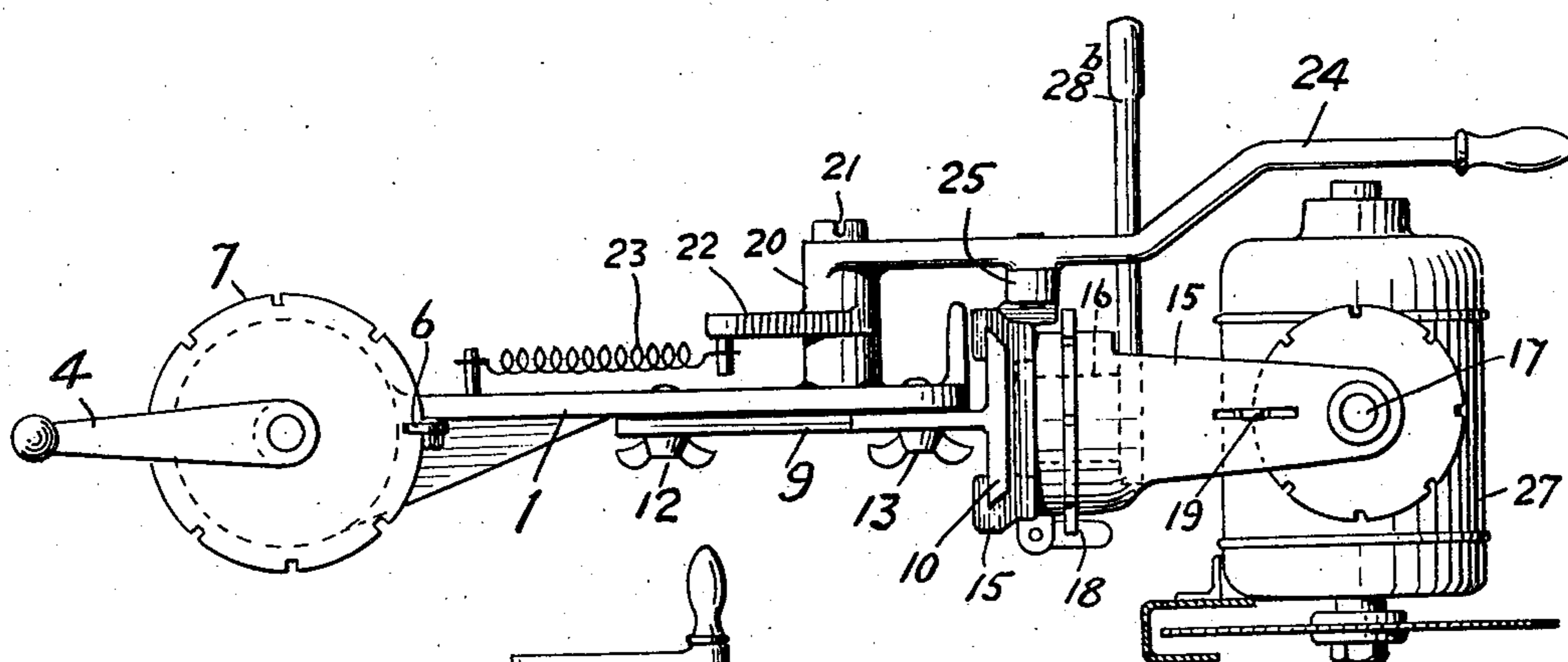


FIG. 2.

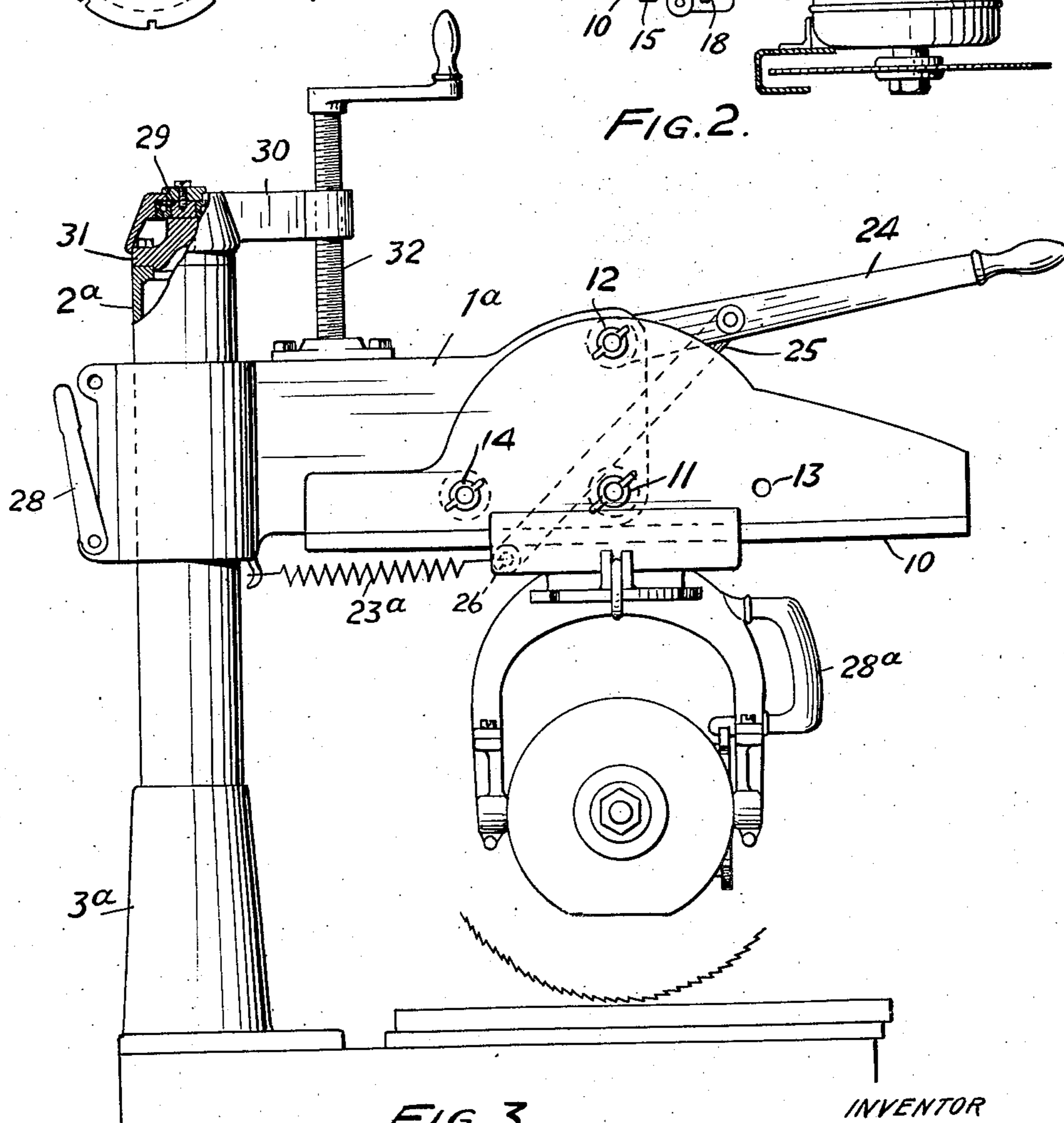


FIG. 3.

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3 Sheets-Sheet 3

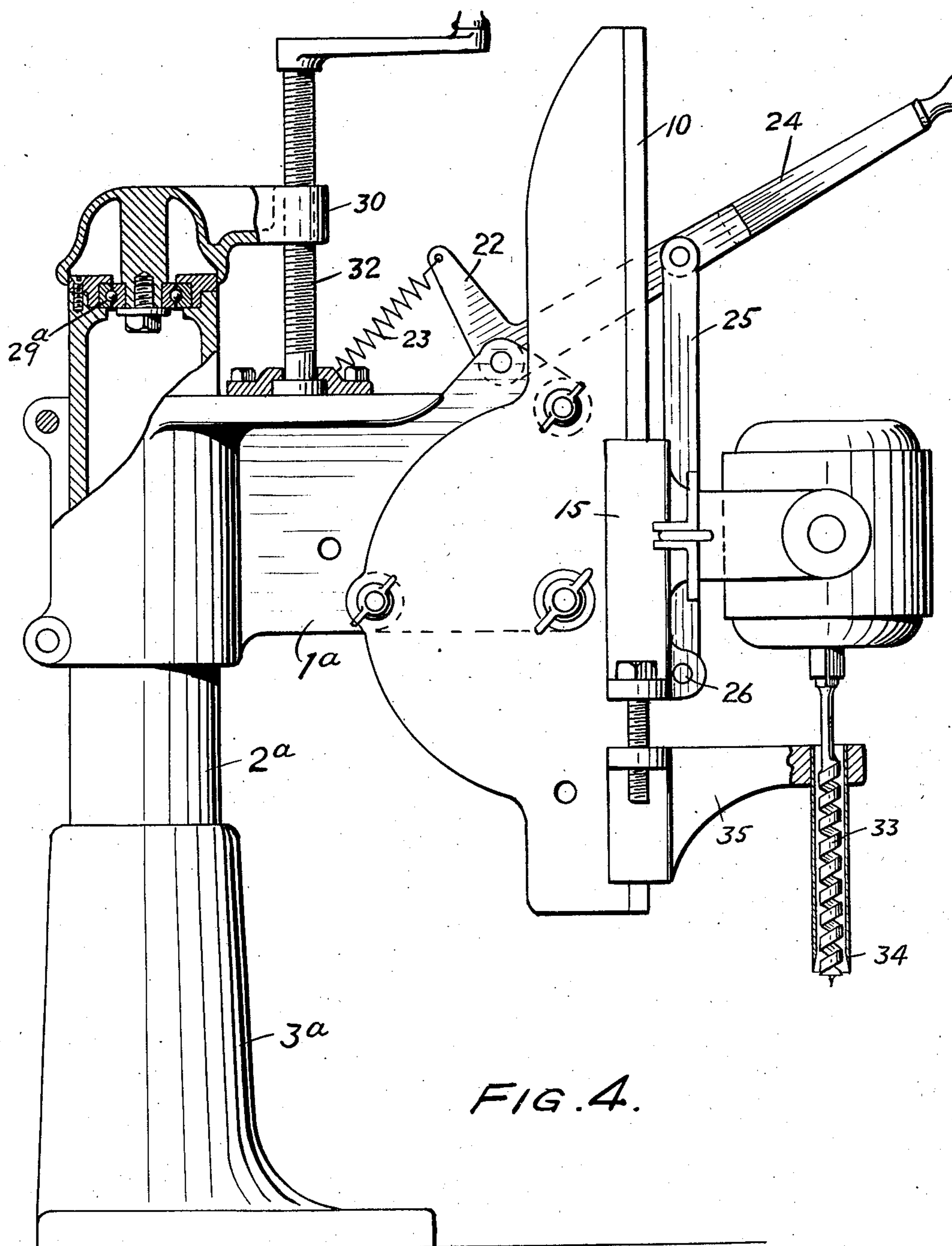


FIG. 4.

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UNITED STATES PATENT OFFICE

2,022,288

TOOL HOLDER

Walter Knapp, Lancaster, Pa.

Application April 5, 1934, Serial No. 719,110

3 Claims. (Cl. 143—6)

The principal object of the present invention is to provide a tool holder or machine in which a rotating tool can be presented to and moved over or toward or away from the work at many angles and from many directions, not only in a vertical plane but also in a horizontal plane thereby increasing not only the universal character of the machine but also its working range.

Another object of the invention is to provide comparatively simple, reliable and convenient mechanism for accomplishing the results stated.

Other objects of the invention will appear from the following description at the end of which the invention will be claimed.

Generally stated, the invention comprises a bracket supported to swing horizontally about a vertical axis, an arm supported by the bracket to swing vertically about a horizontal pivot and provided with a track, means for clamping the arm to the bracket with the track in vertical position and with the track in horizontal position, a motor support slidable on the track and comprising pivots arranged 90° apart, and hand operated mechanism for raising and lowering the motor support on said track when in vertical position.

The invention also comprises the improvements to be presently described and finally claimed.

In the following description reference will be made to the accompanying drawings forming part hereof and in which,

Figure 1 is an elevational view with parts broken away of a tool holder embodying features of the invention and showing the parts arranged in position for the tool to operate in a vertical plane.

Figure 2 is a plan view of the top of the machine shown in Figure 1.

Figure 3 is a view similar to Figure 1 with the parts in position for the tool to operate in a horizontal plane and also showing a modified construction of some of the parts, and

Figure 4 is a view similar to Figure 1 with the parts arranged in the same way and showing modifications.

Referring more particularly to Figures 1 and 2, 1 is a bracket supported to swing horizontally about a vertical axis. The axis is provided by a standard 2 which can be raised and lowered in respect to the pedestal 3 by screw and nut mechanism 4. The standard is retained in fixed angular relation in the pedestal and is secured against turning motion by the slot and keyway 5 which when loosened permits rising and falling motion of the standard. The bracket 1 is turnable on the standard and can be set in position by the latch

6 which engages into the notches of disk 7 which is secured to the standard. The clamp 8 is a means for clamping the bracket to the standard. 9 is an arm supported by the bracket to swing about a horizontal pivot and the arm is provided with a track 10. This track 10 is shown as arranged at the edge of the arm 9 and the track 10 extends laterally from the arm. As shown the arm is pivoted at its central part to the bracket 1 by means of the pivot 11 shown as a set screw. 12 and 13 are clamping screws and they constitute means for clamping the arm to the bracket with the track in vertical position, Figure 1, and also with the track in horizontal position Figure 3. The hole 14 is used for a clamping screw 12 when the track is in horizontal position. By providing additional holes the arm may be clamped to the bracket with the track in any intermediate position. 15 is a motor support slidable on the track 10 and it includes pivots 16 and 17 arranged 90° apart and provided with dial setting means 18 and 19. The angular lever 20 is pivoted at 21 to the bracket and one of its arms 22 is connected with a counter-balancing spring 23 and the other of its arms 24 is arranged for hand operation. 25 is a link interposed between the arm 24 and the motor support 15 to which it is connected by a detachable pivot connection 26. With the parts arranged as shown in Figure 1, and by means of the adjustments described, the motor support can be moved in a vertical plane by means of the handle 24, and through the adjustments described the tool that is rotated by the motor 27 can be caused to work in a vertical plane.

The construction and mode of operation of the modification shown in Figure 3 are as above described except that the arm and track 10 are clamped to the bracket 1^a in a horizontal position and when the rail shown in Figure 1 is adjusted into horizontal position the handle 28^a is available for moving the motor support along the rail, it being understood that the pivot 26 may be disconnected. The hand operated mechanism 24—25, may be used with the arm 10 in horizontal position as shown in Figure 3 for short ranges along the arm 10, and in such case the spring is relocated as at 23^a and the motor support will return to the normal position at the rear of the machine. The standard 2^a in Figure 3 is not movable in respect to the pedestal 3 and there is but one finished joint between the bracket 1^a and the standard. This joint permits the bracket to be turned on the standard and to be raised and lowered on the standard. 28 is a clamp mechanism by means of which the bracket 1^a

can be clamped to and released from the standard. On top of the standard 2^a there is a bearing 29 interposed between the arm 30 and a cap 31 and which permits the rotary movement of the arm 30. The hand screw mechanism 32 serves to raise and lower the bracket 1^a on the standard 2^a as may be required. The construction last described is the subject matter of my pending application, Serial No. 719,111 filed Apr. 5, 1934, and is not claimed herein. The principal purpose of Figure 3 is to show the track 10 clamped in horizontal position as distinguished from vertical position and further to show that the track 10 may be put into and clamped in either of these positions. The handle 28^b is provided for turning and positioning the motor support.

The construction and mode of operation of the modification shown in Figure 4 are as above described except that the construction of the bearing 29^a at the top of the standard is somewhat modified or reversed and there is shown a mortising tool which comprises a bit 33 working in a tubular chisel 34 carried by a bracket 35 connected with the motor support 15.

The character of the tool employed is not important and tools of various characters can be used. An important feature of the invention is to move the motor support vertically as well as horizontally which, in connection with the provision for adjustment of the motor support about two pivots disposed at right angles to each other, and of course of the tool carried by the motor spindle, permits of the repetition in a vertical plane of the work that can be done in a horizontal plane, and in this way the universality of the machine or holder is greatly increased and in some cases the range of the tool in respect to the work is enlarged.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of construction and arrangement and in matters of mere form without

departing from the spirit of the invention which is not limited in respect to such matters or otherwise than as the prior art and the appended claims may require.

I claim:

1. In a tool holder the combination of a bracket supported to swing horizontally about a vertical axis, an arm supported by the bracket to swing vertically about a horizontal pivot and provided with a track, means for clamping the arm to the bracket with the track in vertical position or with the track in horizontal position, a motor support slidable on the track and comprising pivots arranged 90° apart, and hand mechanism for raising and lowering the motor support on said track when in vertical position.

2. In a tool holder the combination of a bracket supported to swing horizontally about a vertical axis, an arm supported by the bracket to swing vertically about a horizontal pivot and provided with a track, means for clamping the arm to the bracket with the track in vertical position or with the track in horizontal position, a motor support slidable on the track and comprising pivots arranged 90° apart, and counter-balanced linkage detachably interposed between the motor support and bracket for raising and lowering the motor support on said track when in vertical position.

3. In a tool holder the combination of a bracket supported to swing horizontally about a vertical axis, an arm supported by the bracket for turning motion and provided with a laterally extending track, means for clamping the arm to the bracket with the track in vertical position or with the track in horizontal position, a motor support slidable on the track and comprising pivots arranged 90° apart, and hand mechanism for raising and lowering the motor support on said track when in vertical position.

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