Nov. 21, 1944. A. E. BROCKLEBANK 2,363,115

ROUTING MACHINE

Filed June 14, 1943 2 Sheets-Sheet 1

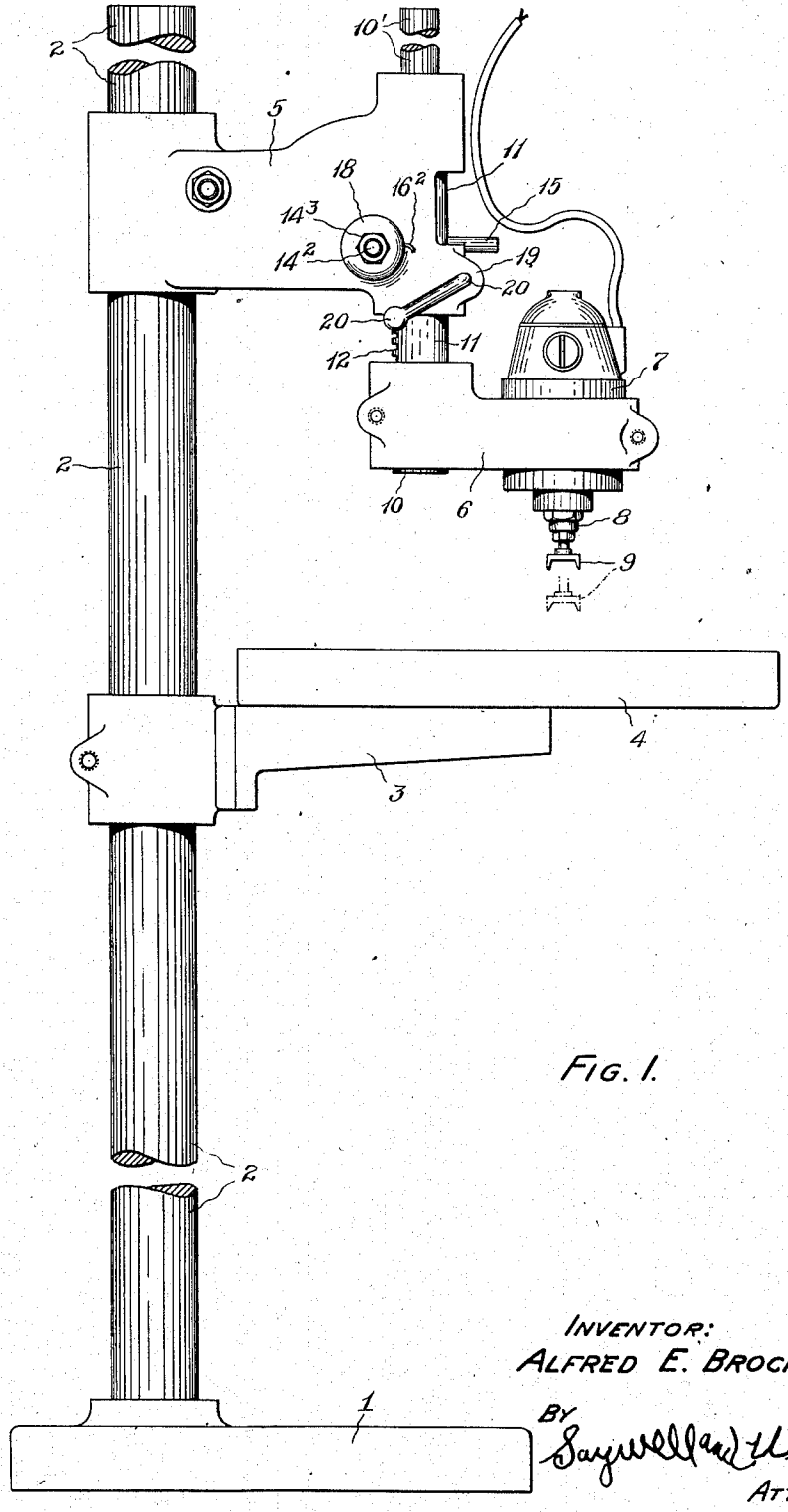

FIG. 1.

INVENTOR:
ALFRED E. BROCKLEBANK
BY Sayrwell and Wessler
ATTORNEYS

Nov. 21, 1944. A. E. BROCKLEBANK 2,363,115

ROUTING MACHINE

Filed June 14, 1943 2 Sheets-Sheet 2

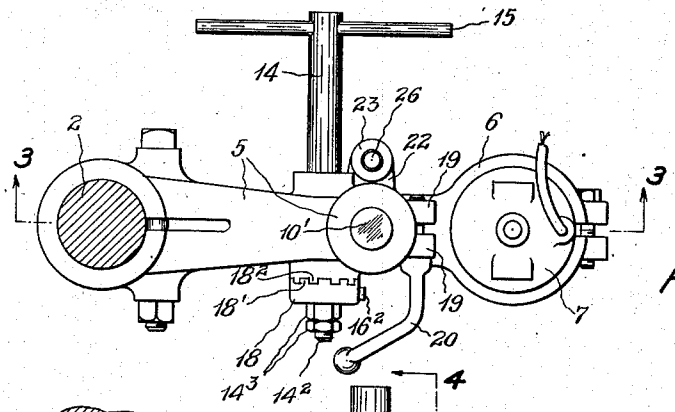

FIG. 2.

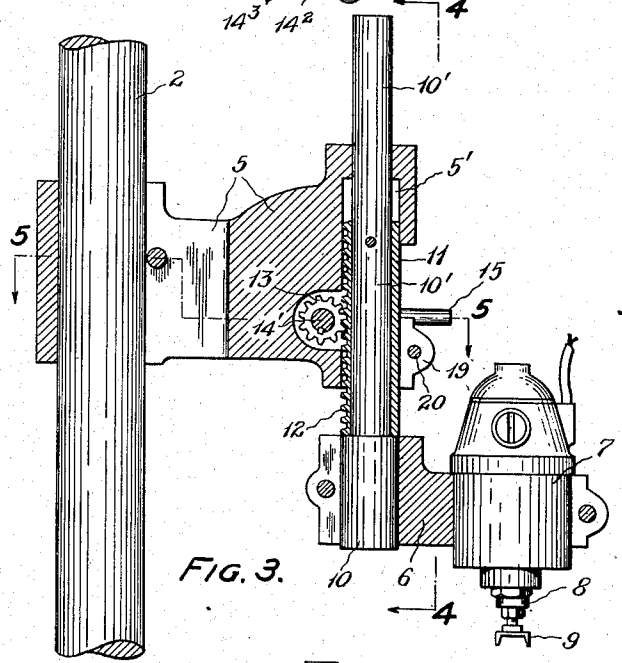

FIG. 3.

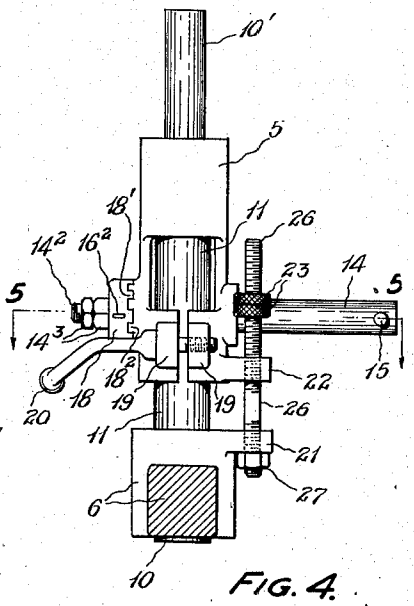

FIG. 4.

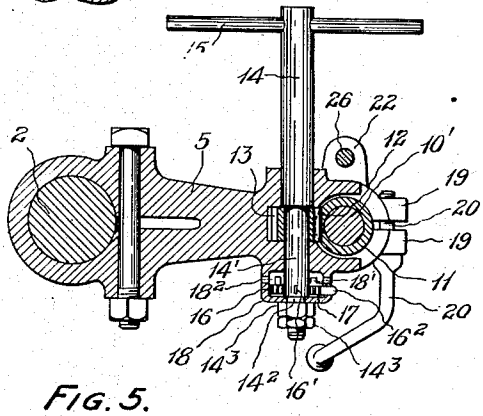

FIG. 5.

INVENTOR:
ALFRED E. BROCKLEBANK

BY Sayrell and Wessler
ATTORNEYS

Patented Nov. 21, 1944

2,363,115

UNITED STATES PATENT OFFICE

2,363,115

ROUTING MACHINE

Alfred E. Brocklebank, Cleveland, Ohio, assignor to The Wellman Bronze & Aluminum Company, Cleveland, Ohio, a corporation of Ohio

Application June 14, 1943, Serial No. 490,786

1 Claim. (Cl. 90—16)

The invention relates to routing machines, and is particularly serviceable for small work.

The purposes of the invention are to provide a machine of the character noted which may be conveniently operated, is readily adjustable to a large number of relative positions of its several parts and of the machine and the work, and which is unusually capable of rapid production in the field for which it is particularly adapted.

The annexed drawings and the following description set forth in detail certain means illustrating the improved routing machine, such means constituting, however, but one of the various forms in which the principle of the invention may be embodied.

In said annexed drawings:

Figure 1 is a broken side view of the complete improved machine;

Figure 2 is a plan view, partly in section;

Figure 3 is a vertical section, taken in the plane indicated by the line 3—3, Figure 2, the actuating motor being shown in elevation;

Figure 4 is a vertical section, taken in the plane indicated by the line 4—4, Figure 3; and

Figure 5 is a plan section, taken in the planes indicated by the line 5—5, Figures 3 and 4.

Referring to the annexed drawings in which the same parts are indicated by the same several numbers in the different views, upon a base 1 is mounted a vertical standard 2 to which are vertically adjustably secured superimposed table bracket 3 and working head 5, both laterally extended from the standard 2, and the bracket 3 of which supports a working surface or table 4. Vertically slidably mounted in the extended end of the head 5 is an upper reduced portion 10^1 of a vertical post 10 to whose lower end is clamped one end of a motor bracket 6. In the other end of the bracket 6 is clamped a motor 7 to whose depending spindle 8 is secured the routing cutter 9 disposed vertically above the work table 4.

An intermediate part of the reduced post portion 10^1 is tightly secured with a driving fit in a sleeve 11 whose upper end is vertically slidable on the wall of a recess 5^1 formed in the outer upper end of the head 5. The vertical adjustment of the sleeve 11 relative to the working head 5 is effected by a vertical rack segment 12 formed on the outer side of the rear wall of the sleeve 11 which is engaged by a pinion 13 secured to a reduced portion 14^1 of a laterally-extended shaft 14 formed at its outer end with a turning actuating bar 15.

The shaft $14—14^1$ is journalled in the head 5 and a reduced extension 14^2 of the portion 14^1 extends beyond the journal on the end opposite the turning bar 15, to which extension is secured the inner end 16^1 of a spiral or torsion spring 16.

The spiral spring 16 is contained within a recess 17 formed in an adjustable lock cap 18 and the other end 16^2 of the spring 16 is anchored to the periphery of the cap 18. This cap 18 is formed with spaced inwardly extended tongues or teeth 18^1 alternating in staggered relation with opposed tongues 18^2 formed on and outwardly extended from the opposed surface of the head 5.

The cap 18 is rotatably mounted on the reduced extension 14^2 of the shaft portion 14^1 and the relatively staggered tongues 18^1 and 18^2 are normally held in engaged position by nuts 14^3 having screw threaded engagement with the outer end of the shaft portion 14^2.

The spring 16 is so mounted with relation to the shaft 14 and the cap 18 that the tension of the spring tends to rotate the shaft 14 and the pinion 13 in a direction to lift the sleeve 11 and associated parts such as post 10, motor bracket 6, motor 7, etc., and the spring 16 thus serves as a means to counterbalance the weight of these parts. The tension exerted by the spring 16 can readily be adjusted by slacking off on the nuts 14^3 sufficiently to permit the tongues 18^1 to be disengaged from the tongues 18^2 and by rotating the cap 18 in a direction to increase or decrease the tension on the spring 16, after which the tongues 18^1, 18^2 are re-engaged and the nuts 14^3 tightened. Thus the motor 7 and hence the routing cutter 9 can be quite accurately counterbalanced and hence vertically adjusted toward and from the work table 4 with a minimum of effort.

The sleeve 11 is releasably clamped in the head 5. It will be noted in Figures 4 and 5 that the extended lower outer part of the head 5 is split into arcuate parts which engage the sleeve 11 and these parts are formed with opposed ears 19. Clamping bar 20 is formed with a cylindrical shouldered portion and a terminal threaded portion, which portions respectively engage these ears 19 and the actuation of this clamping bar 20 results in a tightening or loosening of the ears 19 relatively to each other and, hence, of the clamping pressure of the head 5 upon the sleeve 11. The split parts of the head 5 are loosened by the turning of the bar 20 previously to the vertical adjustment of the sleeve 11, and then after the desired vertical adjustment of the sleeve 11 and, hence, of the cutter 9 is effected, the several parts are tightly clamped again through actuation of the bar 20. A lower adjusted posi-

tion for the routing cutter 9 is suggested by the dot-and-dash showing thereof in Figure 1.

A vertical stop to limit the extent of downward travel of the cutter 9 is provided as between the head 5 and the motor bracket 6. This is particularly illustrated in Figure 4. For this purpose the motor bracket 6 is formed with a laterally extended ear 21 and the head 5 with a corresponding ear 22 in vertical alignment with the ear 21, and these ears are engaged by a threaded adjusting bolt 26 screw threaded in the ear 21 and slidable in the ear 22. The bolt 26 is provided adjacent its upper portion with a pair of adjustable nuts 23, which engage the ear 22 when the motor bracket 6 and cutter 9 have been lowered to the lowest desired position. The nut 27 engaging the bolt 26 locks the bolt 26 with reference to the ear 21 and bracket 6.

What I claim is:

A routing machine having an upright standard, a work head and a table bracket vertically adjustably secured to the standard and transversely extended therefrom in superposed relation, a vertical post having a motor bracket secured adjacent its lower end, a sleeve slidably mounted in the work head and within which the post has tight fitting engagement, one side of said sleeve being formed with a vertical rack portion, a transverse shaft journalled in the work head and provided with a pinion having engagement with the rack, means for turning the shaft, a counterbalance tending to hold the post and motor bracket in upper position, and a motor mounted in the motor bracket and having a vertical cutter spindle extended toward the table bracket.

ALFRED E. BROCKLEBANK.