S. HUNTER.

ELECTRIC ROUTING MACHINE.

APPLICATION FILED APR. 21, 1919.

1,352,196.

Patented Sept. 7, 1920.

3 SHEETS—SHEET 1.

FIG. 1.

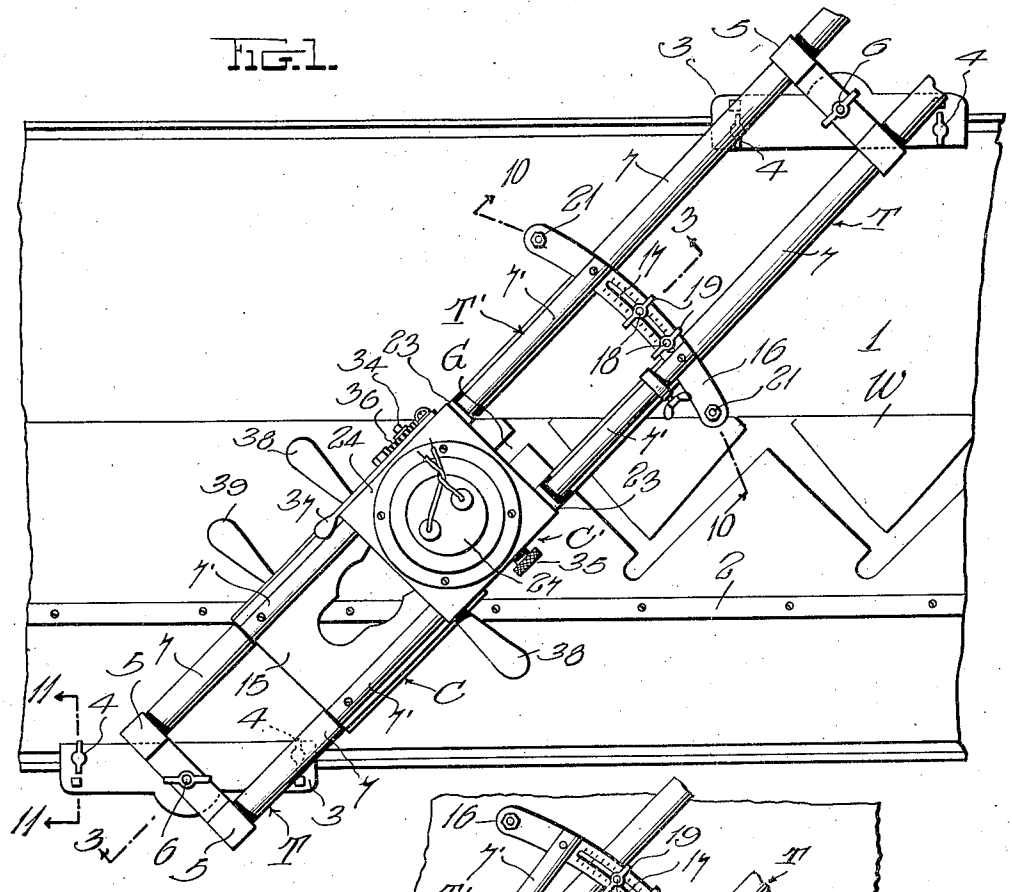
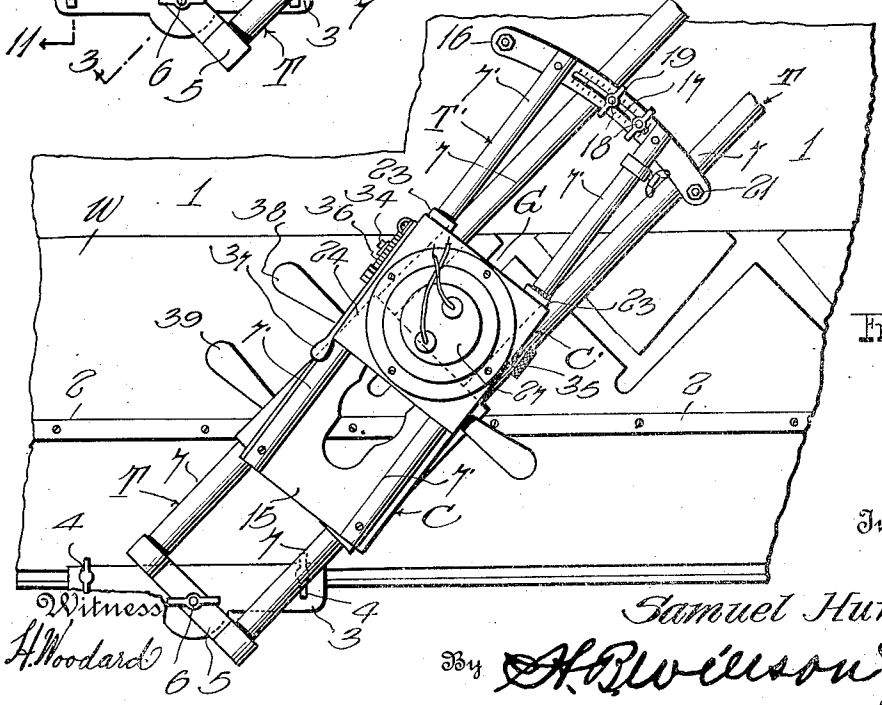


FIG. 2.



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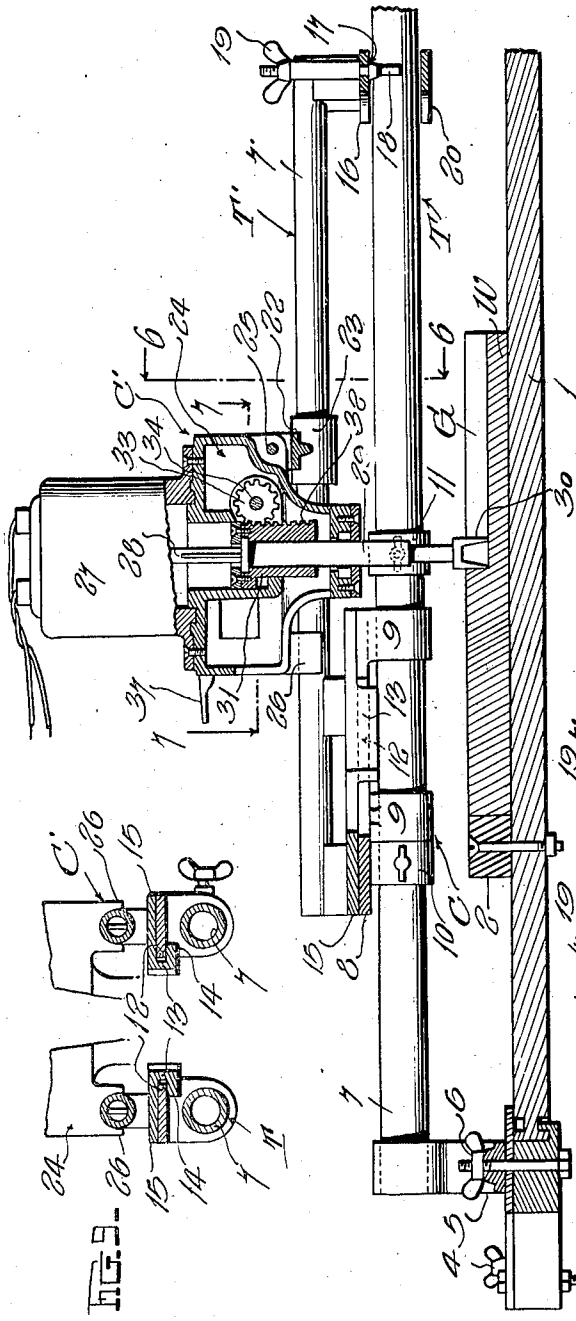


FIG. 9.

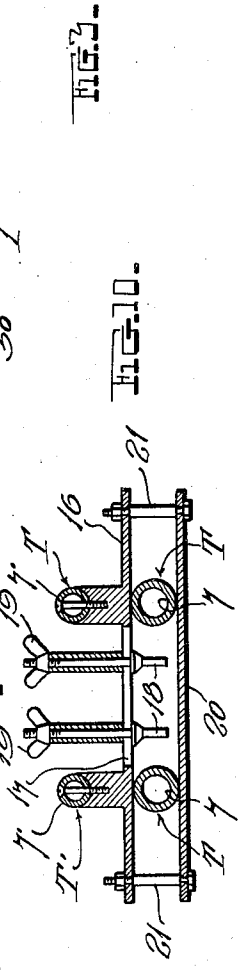


FIG. 10.

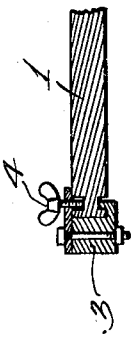


FIG. 11.

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3 SHEETS—SHEET 3.

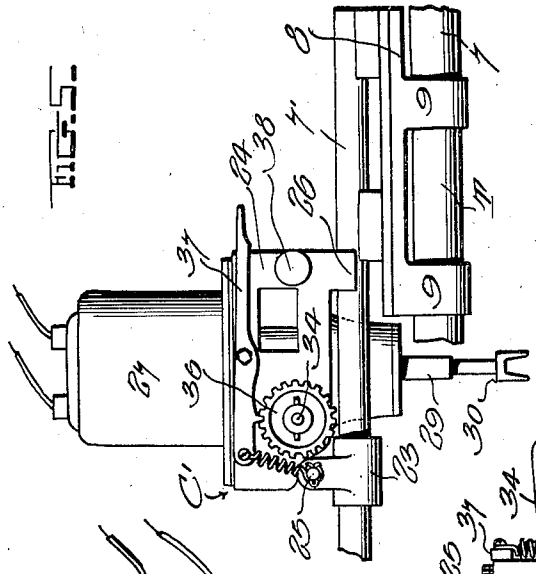


FIG. 5.

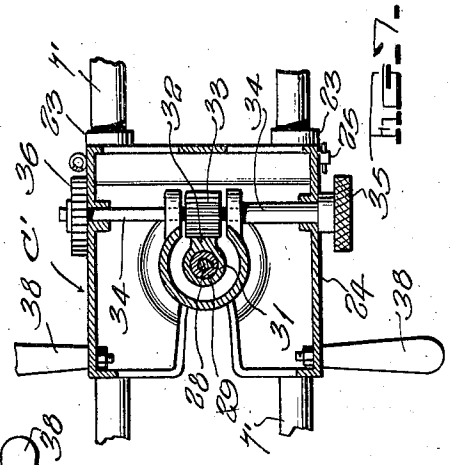


FIG. 7.

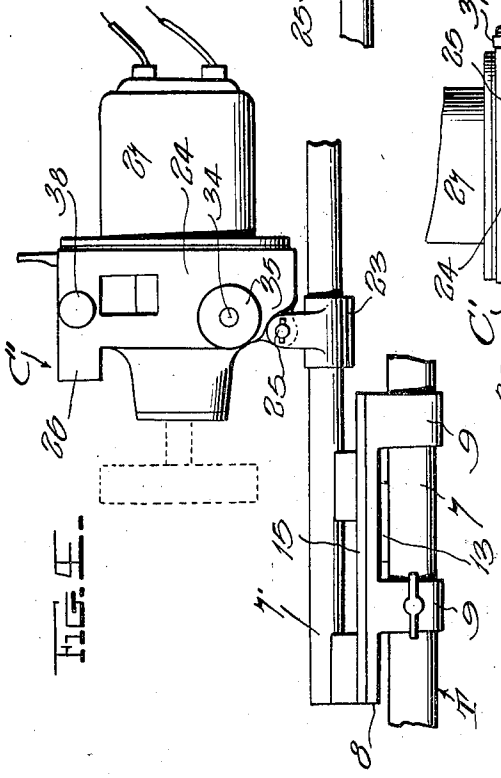


FIG. 4.

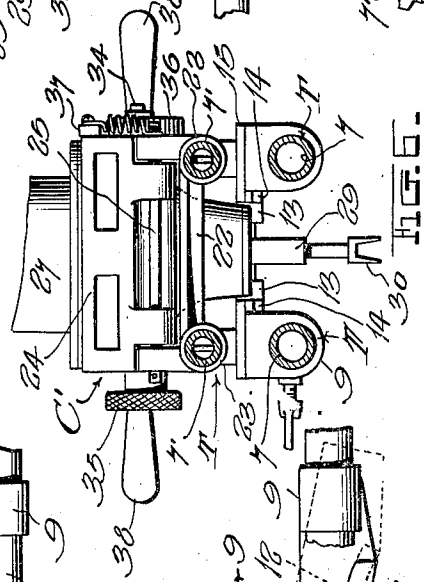


FIG. 6.

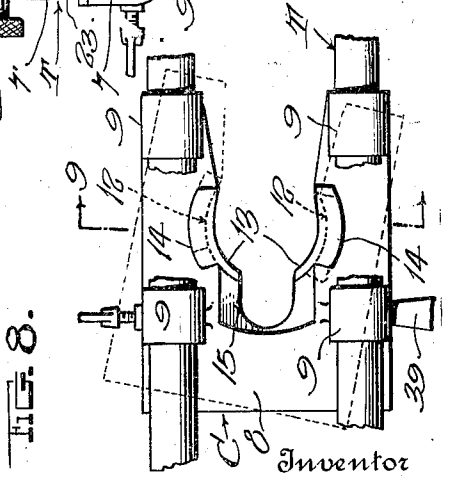


FIG. 8.

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UNITED STATES PATENT OFFICE.

SAMUEL HUNTER, OF BELLEVUE, PENNSYLVANIA.

ELECTRIC ROUTING-MACHINE.

1,352,196. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed April 21, 1919. Serial No. 291,525.

To all whom it may concern:

Be it known that I, SAMUEL HUNTER, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Routing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved machine for routing the side boards or stringers of stairways so as to receive the ends of the steps and risers, provision being made whereby the numerous vertical and horizontal cuts may be tapered to permit the usual wedges to be employed for forming tight joints at the ends of said steps and risers.

With the foregoing general object in view, the invention resides in certain novel features of construction and unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figures 1 and 2 are top plan views of the improved machine, showing the two positions of the same in cutting a tapered groove across a board or stringer;

Fig. 3 is a longitudinal section on the plane of the line 3—3 of Fig. 1;

Fig. 4 is a detail side elevation showing the two carriages, the tracks upon which they are mounted and the manner in which a part of the upper carriage may be tilted vertically;

Fig. 5 is a view somewhat similar to Fig. 4, with the parts in operative position and disclosing more particularly the latch for holding the tool adjusting wheel against movement;

Fig. 6 is a vertical transverse section on the plane of the line 6—6 of Fig. 3;

Fig. 7 is a horizontal section on substantially the plane indicated by the line 7—7 of Fig. 3;

Fig. 8 is a fragmentary bottom plan showing more particularly the manner in which the upper track is pivotally connected with the lower carriage;

Fig. 9 is a vertical transverse section on the plane of the line 9—9 of Fig. 8;

Fig. 10 is a transverse section on the plane of the line 10—10 of Fig. 1; and

Fig. 11 is a similar view on the plane of the line 11—11 of Fig. 1.

In the drawings above briefly described, the numeral 1 designates a suitable table or work support having a rest 2 which the work W abuts, the edges of said table being suitably shaped to guide a pair of slides 3 which may be locked against movement by set screws or the like 4. Track supports 5 are pivotally mounted on the slides 3 and by means of clamping screws 6 may be locked against turning thereon, said supports upholding the ends of a lower track T which consists of a pair of side rails 7 rigidly secured to one of said supports and slidable through the other so that the angular relation of the track T in respect to the work may be varied as occasion may demand.

Mounted slidably on the track T is a lower carriage C which consists of a horizontal U-shaped plate 8 and bearings 9 depending therefrom and mounted slidably on the tracks 7, said carriage being limited in its movement by means of adjustable stop collars 10 and 11 mounted on one of said rails 7. The U-shaped plate 8 is provided with opposed arcuate seats 12 adjacent the inner edges of its arms and similarly shaped flanges 13 engage said seats and are provided on their lower edges with lateral extensions 14 as shown clearly in Figs. 8 and 9, said flanges depending from a second U-shaped plate 15 which rests on the plate 8. The flanges 13 establish a pivotal connection between the two plates 8 and 15 to permit the latter to move horizontally upon the former and when turned to the required amount, the extensions 14 are freed so that the plate 15 may be entirely removed.

A second track T′ is disposed above the track T and consists of a pair of side rails 7′ secured at one end to the plate 15, the other end of said tracks being provided with a transverse shoe 16 which rests slidably on the rails 7 for transverse movement thereon, said shoe having a longitudinal slot 17 in which a pair of stops 18 are adjustably mounted, said stops having thumb nuts or the like 19 by means of which they may be set in any required position so as to strike the rails 7 to limit the horizontal movement of the rails 7′ which move bodily with plate

15. A second shoe 20 extends beneath rails 7 and by any suitable means such as that shown at 21 in Fig. 10, said shoe is connected with and spaced from the shoe 16 so that the two and said connecting means constitute a yoke to prevent relative vertical movement of the two tracks T and T'.

A second carriage C' is mounted on the track T' and includes a transverse bar 22 having slides 23 on its ends mounted on the rails 7', a support 24 in the form of a housing being hinged at 25 to said slides 23 so that it may tilt as shown in Fig. 4 when required. The end of the support 24 opposite the hinge 25 is provided with pairs of depending fingers 26 which straddle the rails 7' as shown most clearly in Figs. 3 and 9.

An electric motor 27 is mounted on the support 24 and the shaft 28 of said motor extends slidably but non-rotatably into a vertically disposed arbor 29 carrying any appropriate routing tool 30 at its lower end, the upper end of said arbor being rotatably mounted in a collar 31 having a rack 32 on one side meshing with a pinion 33 on the inner end of a transverse shaft 34. One end of said shaft is provided with an operating knob 35 by means of which it may be rotated while a toothed wheel 36 is carried on the other end of said shaft and coöperates with a spring pressed latch 37, whereby the shaft 34 may be held against further movement after being rotated to set the tool 30 at the proper elevation.

In operation, the work W is placed on the table 1 against the rest 2 and the machine is set at the required angle, the clamping screw 6 being then tightened. The carriage C' is now moved along the track T' by means of handles 38 with which it is provided so as to bring the routing tool 30 against the edge of the work. This carriage is then fed forwardly at an appropriate rate of speed without overworking the tool 30 so that a groove G with parallel sides is formed, the rails 7' of the track T' being then disposed in the same vertical planes with the rails 7 of the track T with one of the stops 19 abutting one rail 7 to retain the parts in this position as indicated in Fig. 1. When the groove G has been cut of sufficient length, a handle 39 on the carriage C is grasped and said carriage is fed rearwardly along the rails 7 until limited by the stop 11 (Fig. 3). During this movement, the tool 30 will travel in the cut previously made but the track T' is now swung laterally to the position shown in Fig. 2 so that as the carriage C' is returned along said track, one side of the groove will be removed to impart a taper to the finished groove which permits insertion of the usual wedges beneath the steps and behind the risers. One of the stops 19 limits the lateral swinging of the track T' as shown in Fig. 2 and since this stop is adjustable, the amount of material cut away from the side of the grooves may be easily regulated. After first cutting all of the grooves for the steps or the risers, as the case may be, the angular relation of the machine to the work is reversed and the other grooves are then formed. The grooves for the risers are tapered throughout their lengths and the operation of the machine in cutting them is therefore slightly different from that when cutting the step grooves.

By tilting the support 24 and the motor 27 to the horizontal position shown in Fig. 4, an emery wheel or the like may be substituted for the routing tool and used to advantage. Similarly, when the parts are in this position, the machine may well be used for other purposes by applying any desired tool. Also, it will be understood that although I have herein described a routing tool applied to the machine, any other appropriate type of tool may be employed according to the use to which the machine is to be put.

From the foregoing, taken in connection with the accompanying drawings, the construction, manner of operation and advantages of the improved machine will be readily understood without requiring a more extended explanation but I wish to state that although certain specific details have been shown and described for illustrative purposes, numerous changes may be made without sacrificing the principal advantages.

I claim:

1. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a second carriage slidable on said second track, and a routing tool carried by said second carriage.

2. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a shoe carried by said second track and slidable transversely on the other, stop means carried by said shoe for limiting the swinging movement of said second track in both directions, a second carriage slidable along said second track, and a routing tool carried by said second carriage.

3. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a shoe carried by said second track and slidable transversely on the other, a pair of stops adjustable along said shoe for limiting the swinging movement of said second track in both directions, a second carriage

slidable along said second track, and a routing tool carried by said second carriage.

4. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a shoe carried by said second track and resting for transverse sliding on the other, a second shoe extending beneath said first named track, both shoes extending laterally beyond said first track and the upper shoe having a longitudinal slot, means spacing and connecting the ends of the shoes, a pair of stops adjustably mounted in said slot for limiting the swinging movement of said second track, in both directions, a second carriage on said second track, and a routing tool carried by said second carriage.

5. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a second carriage slidable along said second track, and a routing tool having a hinge connection with said second carriage for permitting said tool to swing vertically.

6. A routing machine comprising a track and means for holding it in operative relation to the work, a carriage slidable along said track, a second track pivotally mounted on said carriage for horizontal movement, a slide on said second track, a support hinged to said slide at one end and having depending fingers at its other end straddling said second track, and a routing tool carried by said support.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL HUNTER.

Witnesses:
JOHN C. BREADING,
T. A. MCNARY.