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Patented June 13, 1899.

F. PEARSON & C. F. ROSS.
GUIDE FOR ROUTING MACHINES.

(Application filed Feb. 24, 1898.)

(No Model.)

2 Sheets—Sheet 1.

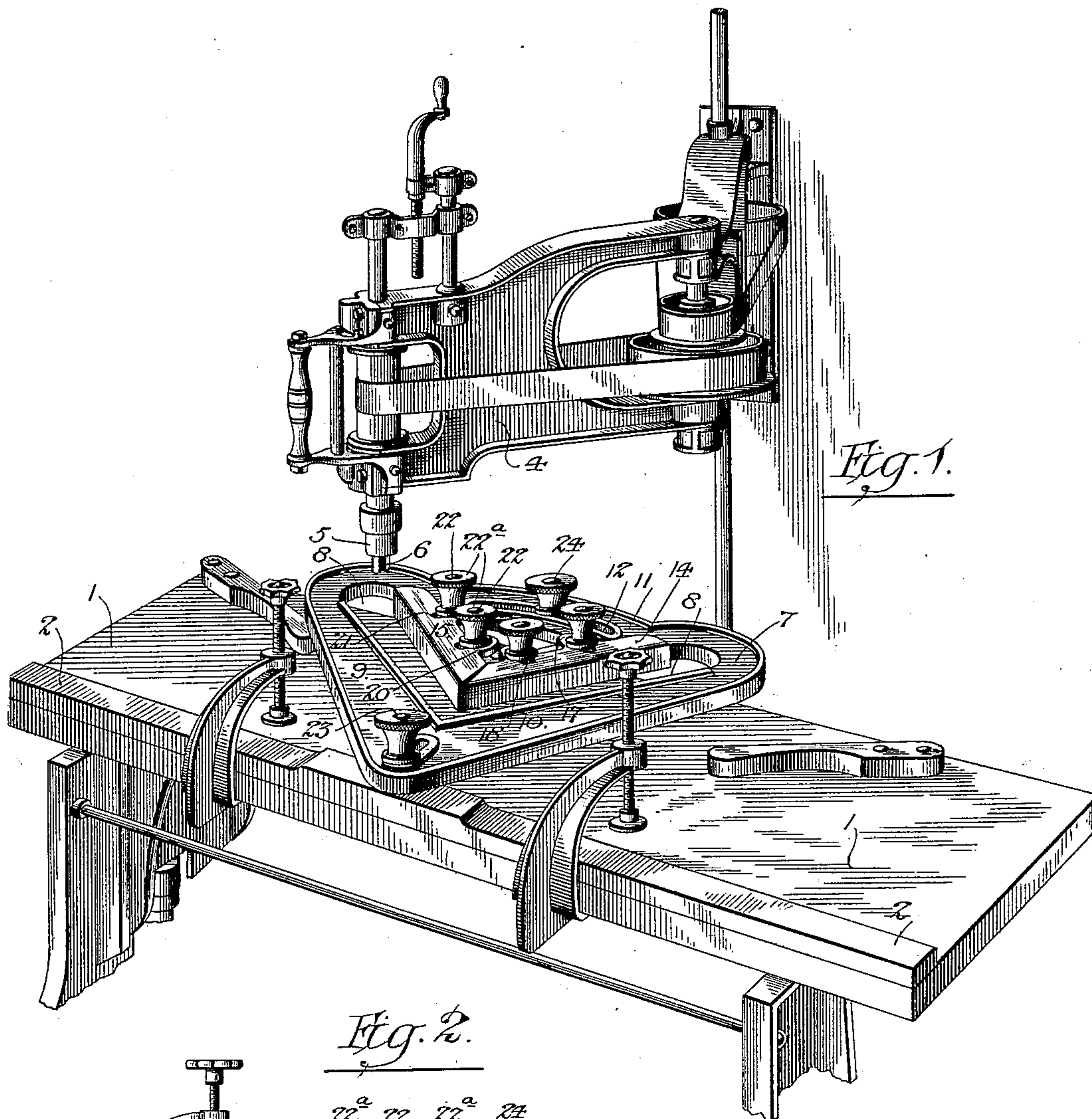
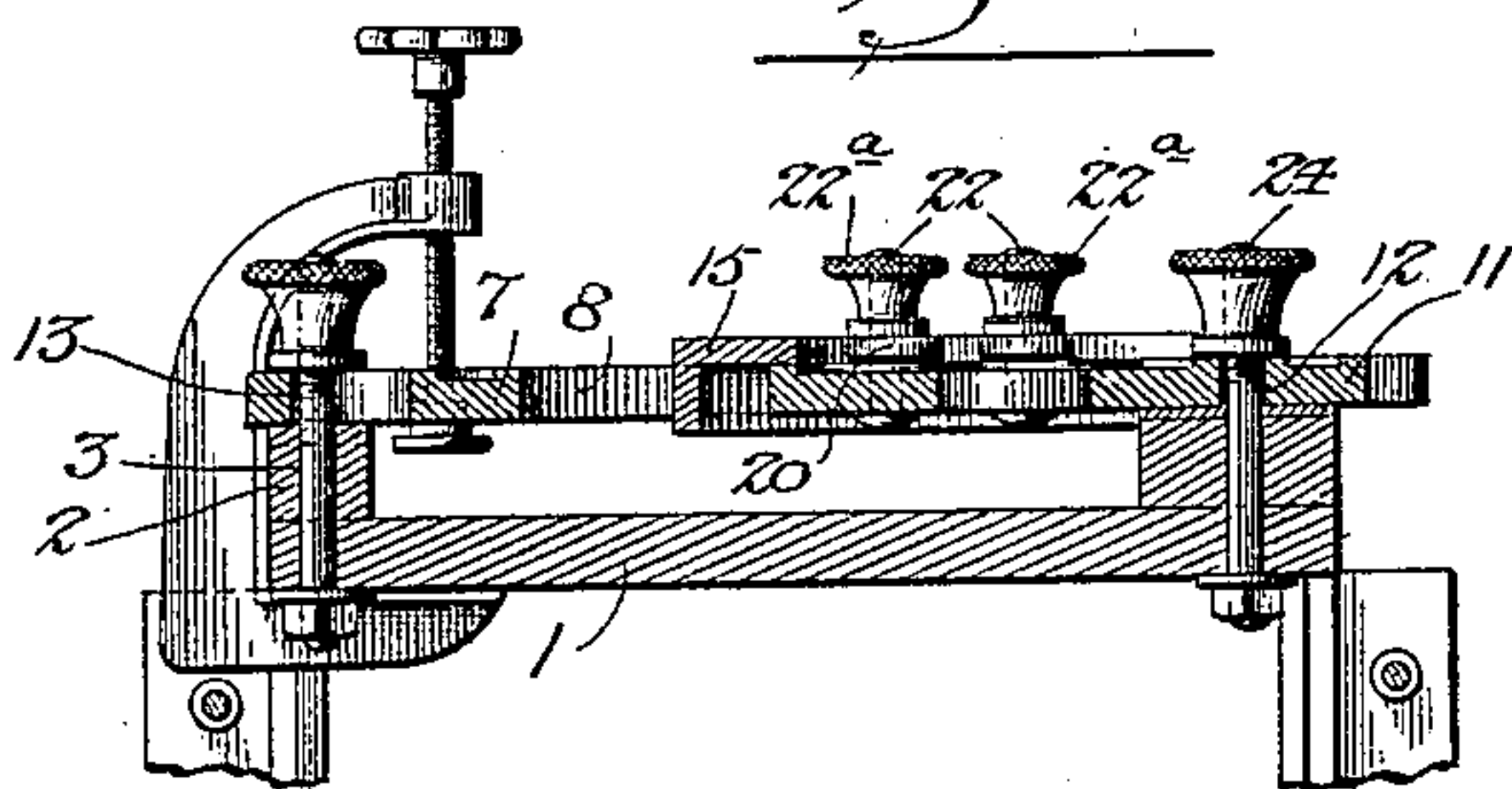


Fig. 2.



Witnesses:-

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UNITED STATES PATENT OFFICE.

FRANK PEARSON AND CHARLES F. ROSS, OF BEAVER FALLS, PENNSYLVANIA.

GUIDE FOR ROUTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 626,718, dated June 13, 1899.

Application filed February 24, 1898. Serial No. 671,515. (No model.)

To all whom it may concern:

Be it known that we, FRANK PEARSON and CHARLES F. ROSS, citizens of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented a new and useful Guide for Routing-Machines, of which the following is a specification.

This invention relates to a guide for routing-machines adapted for producing gains in stair-stringers; and one object of the invention is to provide a simple construction by which the rotating cutter-tool may be accurately adjusted to produce in the stringer gains adapted to receive the treads and risers of a staircase.

A further object of the invention is to provide a guide which may be adjusted to variable angular positions across the stringer to guide the cutting-tool in paths to produce gains in the stringer at variable pitches or inclinations across the face of said stringers.

A further object of the invention is to provide a guide with means by which the width and contour of the gain for the riser or the tread may be varied as desired to suit the demands of the work.

With these ends in view the first part of the invention consists of a guide of a substantially right-angular form applied to the bed of a routing-machine, combined with means for adjusting said guide to variable positions across the line of feed of the work on said bed.

The invention further consists of a guide having an adjustable gage or gages to vary the width or inclination of the guideway or slot in the guide-plate.

The invention further consists in the combination, with a substantially right-angular guide-plate, of adjustable gages, which may be moved to variable positions with relation to the slot or guideway in the plate either to regulate the width or the inclination of the guide-slot, such variations being effected in the guideway for the tread or for the riser, or for both the tread and riser.

To enable others to understand our invention, we have illustrated the same in connection with part of a routing-machine in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of a part of

the routing-machine with the adjustable and variable guide for producing gains in stair-stringers applied to the bed of said machine. Fig. 2 is a vertical transverse sectional view through a part of the routing-machine, illustrating more particularly the means by which the guide-plate may be clamped and adjusted on the bed of said routing-machine. Fig. 3 is an enlarged perspective view of the guide detached from the routing-machine. Fig. 4 is a detail perspective view of the gage-plates. Fig. 5 is a cross-sectional view through the guide-plate and one of the gages, illustrating the means by which the gage is adjustably fastened to the plate. Fig. 6 is a detail plan view of the substantially triangular plate with the gages detached therefrom and illustrating the slots in said guide-plate.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

In Figs. 1 and 2 of the drawings we have illustrated so much of a routing-machine as is necessary to enable others skilled in the art to understand the application and method of using our improved guide for directing the cutting-tool of the routing-machine to produce gains in a stair-stringer, and in said figures the numeral 1 indicates the bed of the routing-machine, which is provided at one edge with a longitudinal rail 2, having the series of holes 3 therein. Over this bed operates the swinging arm or crane which forms the carrier 4 for the rotating spindle 5, that is journaled in vertically-alined bearings at the free end of said carrier, the lower extremity of said spindle being provided with a rotating cutter-tool 6. These elements may be of any suitable or preferred construction known to those skilled in the art, as the routing-machine forms no part of the present invention.

The improvement involved in this invention resides in the guide 7, which is shown in the accompanying drawings as embodied in a substantially triangular plate, which is formed with a right-angled slot or guideway 8. The members 9 10 of the plate forming the right-angled guideway may be slightly tapered; but the slot or guideway 8 is of uniform width throughout its length. The plate has a web 11, which is integral with and joins

the members 9 10, and in said web is produced a segmental slot 12, situated near one edge of the plate. This segmental slot is struck from a center which is concentric with the pivot-hole 13, formed in the plate at the angle or corner produced by the right-angled members 9 10, and said plate is adapted to be clamped by two screws or bolts to the bed 1 of the routing-machine, one of said bolts passing through the pivot-hole 13 and the other bolt fitted in the segmental slot 12, whereby the plate may be swung on the bolt in its aperture 13 to different or variable positions across the face of a stair-stringer to adapt said plate to direct the rotating cutter-tool in different paths on the stair-stringer.

The guide-plate having the substantially right-angular guideway or slot 8 therein carries two independent gages 14 15, which are fitted in the guideway or slot against one edge of each of the members 9 10 of the plate 7. These gages are adjustable independently of each other within the respective sections or parts of the right-angular slot or guideway to enable the width of either part of the slot to be varied according as it is desired to produce gains of greater or less width for the riser or tread in the stair-stringer, and each gage is furthermore adjustable independently at either end, so that the gage may be moved to present its edge at an angle to the opposite edge of the guideway or slot 8, and thus direct the cutter-tool in an inclined path for cutting a longitudinally-tapered gain in the stair-stringer. The guide-plate 7 is provided adjacent to one length or section of the slot 8 with the longitudinal slots 16, and adjacent to the other length or section of the guideway said plate is similarly provided with the longitudinal slots 16^a. The gage 14 is flanged at one edge to enable it to lap the vertical edge and face of the guide-plate, and said gage is furthermore provided on its inner edge with the laterally-extending arms 17, in which and in the gage proper are produced the transverse slots 18, through which pass the bolts or screws 19, that adjustably confine the gage to the plate 7 along one length of the slot 8 therein. The heads of the bolts or screws 19 are fitted in the longitudinal slots 16 and through the transverse slots 18 in the gage-plate 14, and its arms 17 and the upper extremities of said bolts receive the clamping-nuts 19^a, which are adapted to bind against the upper face of the gage or its arms 17. The gage may be moved with its bolts longitudinally in the direction of the slots 16 of the guide-plate 7, or said gage may be moved transversely more or less into the guide-slot 8, because the gage-plate is adapted to be moved edgewise on the bolts 19. The gage is thus universally adjustable on the guide-plate, and either end thereof may be moved to make the gage assume variable positions with relation to the straight edge of the guideway or slot. The gage is held firmly in place by the two clamping-bolts, which are

attached to the plate and carry the clamping-nuts adapted to draw the bolts and gage firmly together. The other gage 15 is similarly constructed, applied, and clamped to the other length or section of the right-angular guideway or slot 8, and to this end the gage 15 is flanged to a right-angular form in cross-section, provided with the laterally-extending arms 20 and with the transverse slots 21 and held in place by the independent bolts 22, having the clamping-nuts 22^a. The transversely-slotted part and arms 20 of the gage 15 are adapted to lap the longitudinal slots 16 in the plate, and the headed bolts 22 pass through the slots 16^a and 21 to receive the clamping-nuts, by which the bolts and gage 15 are held firmly in position. The two gages are connected by the described means to the respective lengths or sections of the right-angular slot in the guide-plate 7, and at their meeting ends the gages 14 15 are beveled reversely to adapt them to fit snugly to each other in their variable positions with relation to the guideway or slot in the plate. The independently-adjustable gages present a substantially continuous edge for the collar of the rotating cutter-tool to have traveling contact therewith when the swinging carrier is moved by hand to adjust the cutter-tool in the guide-plate for producing the gains for the tread and riser in the stair-stringer.

Our improved guide, constructed as described, is adapted to be applied transversely across the work-bed 1 of the routing-machine and is adjustably and firmly attached thereto by means of the screw-bolts 23 24. The screw-bolt 23 is suitably attached to the rail 2 at one side of the bed by fitting the same in one of the holes 3, and said bolt passes upwardly through the pivot-hole 13 at the angle or corner of the triangular guide-plate 7. The binding screw or bolt 24 is suitably fitted in or attached to the work-bed 1 directly opposite to the pivotal and clamping bolt 23, and it passes upwardly through the segmental slot 12 in the guide-plate 7, the protruding ends of the bolts or screws 23 24 being provided with suitable clamping-nuts. The guide-plate is suspended in a horizontal position a suitable distance above the upper face of the work-bed for the stair-stringer to pass beneath the same, and said guide-plate is clamped rigidly in place by its bolts or screws 23 24, so as to occupy a fixed relation to the stair-stringer. The position of the guide-plate having been determined with relation to the work, the latter is moved beneath said plate and clamped in position by the usual devices on the routing-machine. The work on the bed is now brought in operative relation to the rotary cutter-tool of the swinging carrier, and the latter is guided by hand to cause the rotating tool to travel in the direction of the length of the right-angular guideway or slot 8 of said guide-plate, the collar of the rotating tool being held in contact with the gages 14 15 of the plate. The gain for the riser and tread having been

cut in the stair-stringer, the bed and work are lowered away from the cutter-tool, the work is adjusted beneath the guide-plate to a proper position to present a new surface below said guide-plate, and the operation just described is repeated. When it is desired to change the angle or pitch of the gain in the stair-stringer, the nuts on the bolts 23 24 may be loosened, and the gage-plate is adjusted by swinging the same on the bolt 23 and causing the slotted edge of said gage-plate to travel on the bolt 24, after which the nuts on the bolts 23 24 are tightened to firmly clamp the guide-plate in position on the bed. The gages 14 15 of the slotted guide-plate may be adjusted to the required positions in the slot or guideway of the plate 7, and as the gages are independent of each other and clamped separately to the guide-plate they may be moved to variable positions with respect to the right-angular slot in the guide-plate, so as to direct the tool of the swinging carrier to cut gains for the tread and riser, which may be tapered or of uniform width for either the tread or riser.

Our improved gage is exceedingly simple in construction, readily applied to and adjusted on the work-bed of a routing-machine, and its gages are adjustable in the right-angular slot of the guide-plate, according to the form and dimensions which it is desired to impart to the gains in the stair-stringer.

We are aware that changes in the form and proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of our invention, and we therefore reserve the right to make such modifications as clearly fall within the scope of the invention.

Having thus described the invention, what we claim is—

1. A routing-machine guide comprising a plate having a right-angular slot, gages fitted within the respective lengths of said slot or guideway in the plate, and meeting each other at their contiguous ends opposite to the angle of the slot to provide a continuous face, and means for clamping said gages firmly in their adjusted positions to said plate, substantially as described.

2. A routing-machine guide comprising a plate having a right-angular slot, gages fitted within the respective members of said slot and each gage adjustable independently of the other gage to variable positions with respect to one edge of the slot, and clamping-bolts for holding each gage firmly in place within its member of said right-angular slot, said gages meeting each other at the angle or corner of the slot, substantially as described.

3. A routing-machine guide comprising a plate provided with a right-angular slot or

guideway, independent gages fitted to the inner edge of the guideway or slot and having their adjacent ends beveled to adapt the gages to meet at an angle opposite to the angular corner of the slot or guideway, and means for connecting said gages independently to the guide-plate, substantially as described.

4. In a routing-machine guide, the combination with a slotted plate, of independent gages fitted to said plate within the respective members or sections of the slot therein, and means for clamping each gage near its respective ends to the slotted plate, whereby each gage may be adjusted at one or both ends thereof to vary its position with relation to the adjacent edge of the plate and determine the width or contour of the slot in said plate, substantially as described.

5. A routing-machine guide comprising a plate having, in addition to its right-angled slot, the longitudinal slots which are parallel to the respective lengths or sections of said right-angled slot, a transversely-slotted gage fitted to the guide-plate to overlap the longitudinal slots therein, and independent clamping devices fitted to the longitudinal and transverse slots of the guide-plate and its gage, substantially as described.

6. The combination with a work-bed of a routing-machine, of a guide-plate arranged across said work-bed and provided with a right-angular slot and with a segmental slot near one edge thereof, and the pivotal and clamping bolts connected with said plate near the respective edges thereof, whereby the guide-plate may be swung on its pivotal bolt to adjust it to different angular positions across the work-bed, and said bolts serve to clamp the guide-plate securely in place, substantially as described.

7. In a guide for routing-machines, a single plate having a right-angular guide-slot, a pivotal aperture in said plate at one side of the guide-slot therein, and the arc-shaped slot in said plate on the opposite side of the guide-slot and concentric with the axis of the pivotal aperture, combined with independently-operated clamping-bolts passing through the aperture and the slot of the plate, one of said bolts serving as the pivot on which the plate may be swung to variable positions, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANK PEARSON.
CHARLES F. ROSS.

Witnesses:

J. H. KNOTT,
H. W. MATHEWS.