

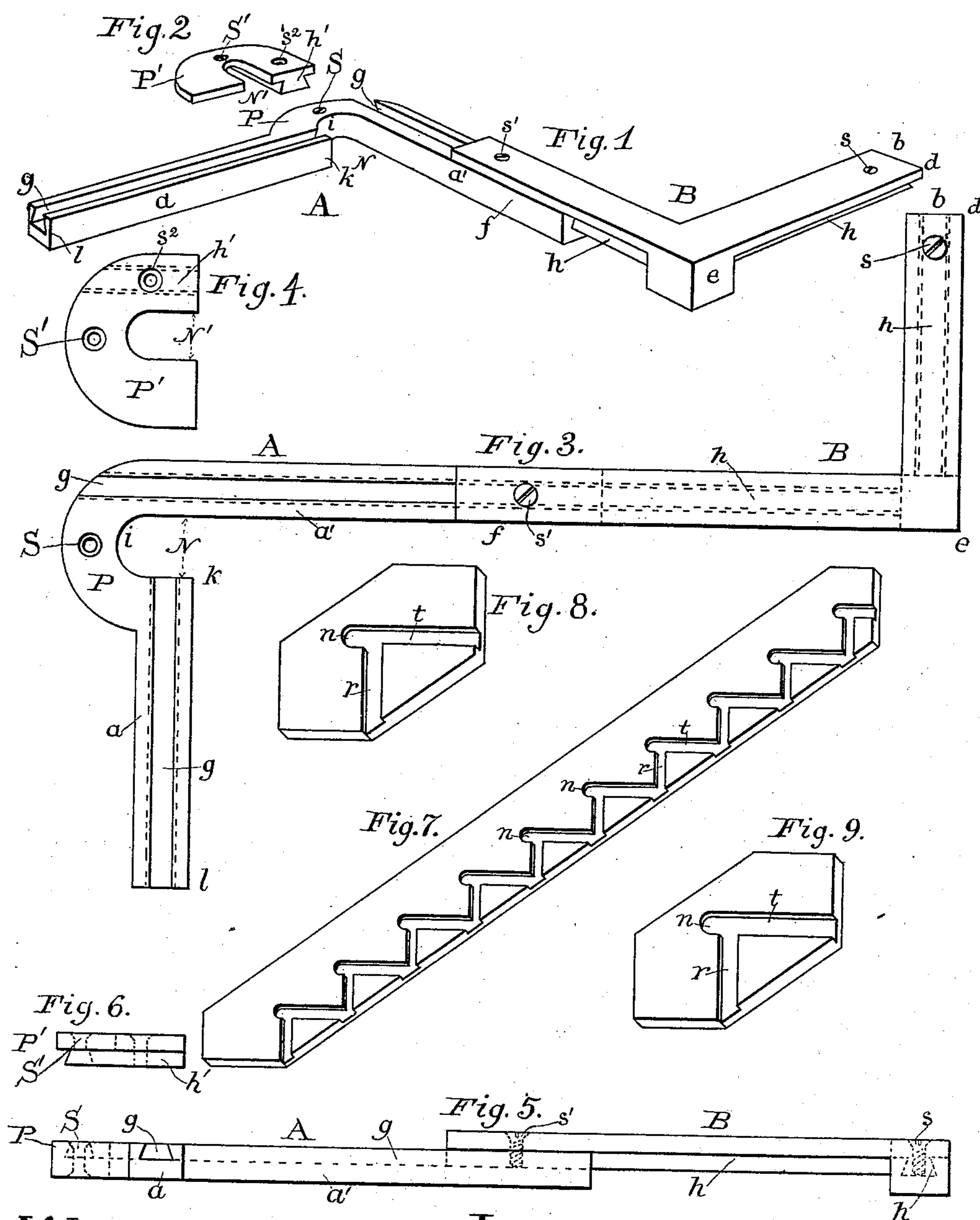
(No Model.)

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GUIDE FOR USE IN GAINING STAIR STRINGERS.

No. 487,889.

Patented Dec. 13, 1892.



WITNESSES

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GUIDE FOR USE IN GAINING STAIR-STRINGERS.

SPECIFICATION forming part of Letters Patent No. 487,889, dated December 13, 1892.

Application filed May 17, 1892. Serial No. 433,295. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MARTIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Guides or Gages for use in Gaining Stair-Stringers.

The object of my invention is to render the manufacture of stair-stringers economical, uniform, and rapid by gaining them with a machine-cutter or routing-tool of simple and uncomplicated construction and doing away with the previous marking out of the work.

My invention consists, first, in a guide or gage of the outline of one complete step, capable of being joined to as many other similar gages as may be required, and the whole guiding a cutter pressed against their sides in gaining a complete stringer at one continuous operation.

It also consists in forming the gage in two pieces, one being of the outline of the edge of the step and the other of the outline of the inner corner of the step, and making the two pieces adjustably attachable to each other, so that the length of the tread-gains and rise-gains may be varied as desired.

It also consists in means for fastening the series of gages to the plank to be gained, so that the whole may be moved by hand under a stationary cutter mounted on a vertical shaft.

It also consists in an attachable piece for use when the tread-gains are desired to be as narrow as the rise-gains.

Referring to the drawings, Figure 1 is a perspective view of one of my improved gages of the preferred form. Fig. 2 is a perspective view of the attachable piece for use when cutting narrow tread-gains. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a plan view of Fig. 2. Fig. 5 is an elevation of Fig. 3. Fig. 6 is an elevation of Fig. 4. Fig. 7 is perspective view of a complete stair-stringer, and Figs. 8 and 9 are perspective views of the gains for one step to illustrate the method of cutting.

Stair-stringers have heretofore been gained by hand or by a movable cutter working in the slots of a templet adapted to cut the gains for one step only and requiring the stringer to be marked out and to be moved and fastened at each step, as shown in patent to Wil-

liam H. Parry, No. 374,493, dated December 6, 1887.

A stair-stringer is a plank grooved or gained, as shown in Fig. 7, to receive the ends of the boards forming the steps of a flight of stairs. The tread-gain *t* receives the tread or horizontal board of the step and the rise-gain *r* receives the end of the rise-board of the step. The tread extends slightly beyond the end of the rise and is molded or rounded to form what is termed a "nosing," the gain for which is shown at *n*.

My improved gage consists of two main portions A and B, in general of approximately-rectangular cross-section, the part B being a simple right angle and the part A having two legs *a* and *a'* substantially at right angles with each other, but connected by an intermediate rounded portion P to form the nosing of the gains. The part A is provided with dovetail grooves *g g*, and the part B is provided with corresponding dovetail tongues *h h*.

In use a piece similar to A is attached to the end *b* of the piece B, and so on until a series of gages are joined together sufficient to gain the entire stringer. By means of the dovetail tongues and grooves the gages and portions of gages are slid upon each other until adjusted to the length of tread and rise required and then fastened in their adjusted positions by flat-headed set-screws at *s* and *s'*. The whole series of gages is then fastened to the work or plank to be gained by screws passing through holes at S. After fastening the series of gages to the planks I pass the plank, with the gages attached, under a cutter mounted on the lower end of a rotating vertical shaft and at the proper height above the operating-table to give the desired depth of gain and move the work by hand, so that the cutter or routing-tool shall always be pressed firmly against the inner edge *d e f i k l* of the series of gages until all the grooves or gains are cut out.

In practice it is usual to cut the tread-gain wider than the rise-gain for obvious reasons. I therefore prefer to go over the entire work first with a narrow cutter having a diameter equal to the rise of the step, cutting a gain of the form shown in Fig. 8, in which the nosing only of the tread is of the required width. Then, using a wider cutter of a diameter

equal to the required width of tread, I cut a single straight line along $e f i$, making the gain as shown in Fig. 9. Of course it is obvious that the width of the space N must
 5 equal the diameter of the wide cutter or the width of the required tread. I therefore provide an extra piece P', having a space N' equal to the diameter of the narrow cutter, to be used in cases where the tread is desired
 10 to be narrower or only of the width of the rise. This piece P' has a dovetail tongue h' and is fastened to the gage by a set-screw at s^2 . It has, also, a countersunk hole at S' to register with the hole S in the main gage.

15 I prefer to make my improved gages of brass. In gaining stringers on the reverse side I merely turn the gages upside down. Of course it is obvious that the part A may be provided with tongues and the part B with
 20 grooves, or each may have one tongue and one groove, without departing from the spirit of my invention.

Having, as above, fully described my invention and the best method known to me of
 25 using the same, what I claim, and desire to secure by Letters Patent, is—

1. A guide or gage for use in gaining stair-stringers, the inner or working edge of which is of the outline of the outer and upper sides
 30 of the stringer-grooves, provided with means for attaching a number of the gages together for gaining stringers for a number of steps at one operation, substantially as described.

2. A gage for the purpose set forth, consisting of two pieces A and B, together forming
 35 the outline of one rise and one tread, adjustably attachable to each other, and capable of being adjustably attached to other similar gages for varying the length of tread and rise
 40 of the steps and guiding a cutter in gaining a stringer for the number of steps required in one continuous operation.

3. A gage for use in gaining stair-stringers, consisting of two pieces A and B, together
 45 forming the outline of one rise and one tread,

sliding on each other by means of dovetail tongues and grooves, substantially as shown and described.

4. In a gage for use in gaining stair-stringers, the combination of a piece of the outline
 50 of the outer edge of the steps, another piece of the outline of the inner corner of the steps, dovetail tongues and grooves by which the two pieces may be adjusted, set-screws for securing them in their adjusted position, and
 55 means for attaching the whole to the plank to be gained, substantially as shown and described.

5. An adjustable gage for gaining stair-stringers, in combination with a detachable
 60 piece P', in which the width of the space for gaining the nosing of the tread-gains is less than the corresponding space in the main gage, substantially as shown and described.

6. A gage for gaining stair-stringers, consisting of two pieces, each piece being substantially a right angle formed in a bar of
 65 substantially-rectangular cross-section, one of said pieces having a rounded offset at the corner for forming the nosing on the tread-gain
 70 and both legs of each piece provided with dovetail tongues or grooves, so that either one piece may be adjustably attached to either end of the other piece, substantially as shown
 75 and described.

7. The combination of two or more gages A of the shape of the outline of the outer corner and nosing of the steps, two or more gages
 80 B of the shape of the inner corner of the steps, dovetail tongues and grooves by means of which the gages may be alternately attached and adjusted, set-screws for securing them in their adjusted position, and means
 85 for fastening the whole series of gages to the plank to be gained, substantially as shown and described.

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Witnesses:

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