

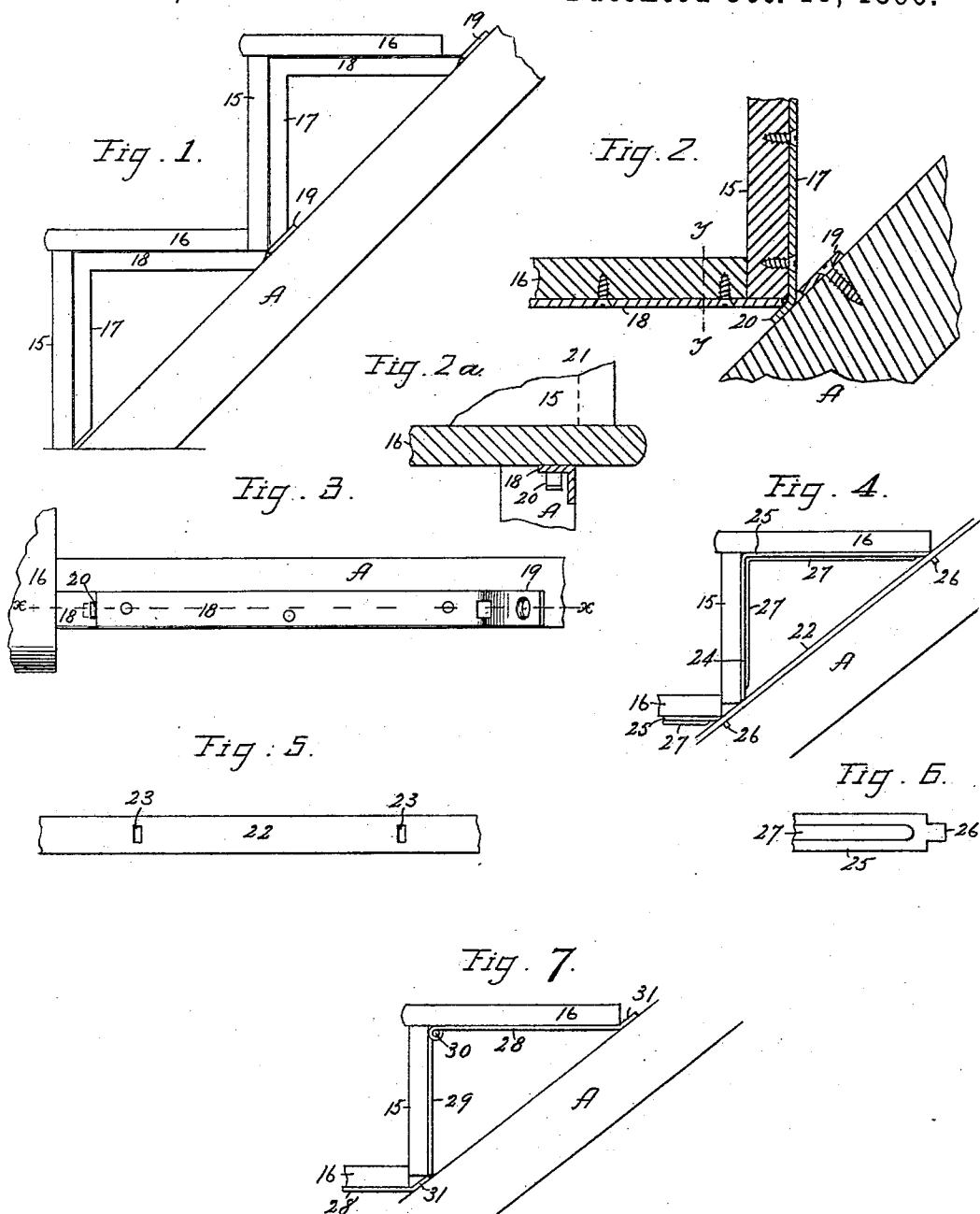
(No Model.)

2 Sheets—Sheet 1.

E. A. MOORE.
STAIRS.

No. 569,464.

Patented Oct. 13, 1896.



WITNESSES

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INVENTOR

Ethelbert Allen Moore

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Att'y.

(No Model.)

E. A. MOORE.
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2 Sheets—Sheet 2.

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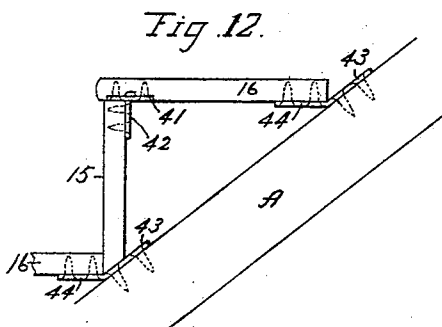
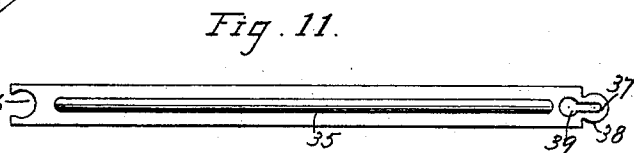
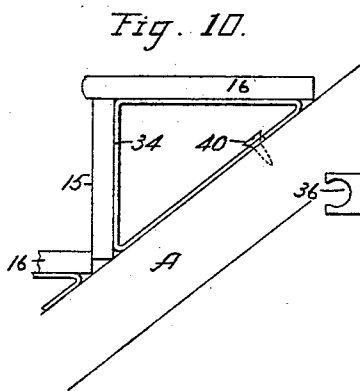
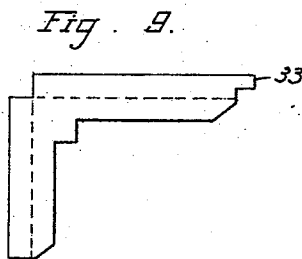
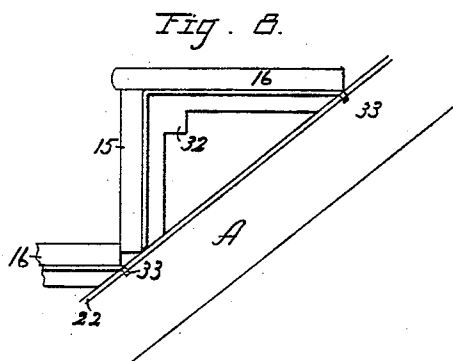


Fig. 13.



Fig. 14.



Witnesses

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UNITED STATES PATENT OFFICE.

ETHELBERT ALLEN MOORE, OF NEW BRITAIN, CONNECTICUT.

STAIRS.

SPECIFICATION forming part of Letters Patent No. 569,464, dated October 13, 1896.

Application filed July 3, 1895. Serial No. 554,807. (No model.)

To all whom it may concern:

Be it known that I, ETHELBERT ALLEN MOORE, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Stairs, of which the following is a specification.

My invention relates to improvements in stairs, and the chief object of my improvement is to enable the stairs to be mainly built in sections and afterward set up for use.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a flight of stairs containing my improvements, the facing-board for the sides being omitted. Fig. 2 is a vertical section of a portion of the same, the plane of section being indicated by the line *x x* in Fig. 3. Fig. 2^a is a sectional view on the line *y y* of Fig. 2. Fig. 3 is a plan view showing a portion of one stringer, one bracket, and a portion of the next lower bracket and tread. Fig. 4 is a side elevation showing a modified construction. Fig. 5 is a plan view of a portion of the stringer-plate for the construction shown in Fig. 4. Fig. 6 is a plan view of the blank for the upper end of the bracket of Fig. 4. Fig. 7 is a side elevation showing another modification. Fig. 8 is a side elevation showing another modification. Fig. 9 is a plan view of the blank for making the bracket for the construction shown in Fig. 8. Fig. 10 is a side elevation showing another modification. Fig. 11 is a plan view of the blank for the bracket for said modification Fig. 10. Fig. 12 is a side elevation showing another modification. Figs. 13 and 14 are plan views of the hook-and-mortise plates for connecting the risers and treads in said modification Fig. 12.

A designates a stringer or supporting-timber, two of which should be provided and set in position at the proper incline for the stairs and at the proper distance apart. The risers 15 and treads 16 are secured upon the respective arms 17 and 18 of the brackets, one bracket being secured at each end, thereby securing the risers and treads together. The horizontal arms 18, to which the treads are secured, are provided with a rearwardly and upwardly projecting lip 19, perforated near

the end for the reception of a screw and at its junction with the arm 18 to receive the tongue 20 of the vertical arm 17 of the bracket which is immediately above it. Said tongue projects from the lower end of each vertical bracket-arm and is bent to extend obliquely downward, as shown in Figs. 2 and 2^a. Each bracket-arm in cross-section is in the form of an angle-plate. The ends and front edge of the treads are rounded off, and the ends of the risers should be beveled on a miter, as indicated by the broken line 21, Fig. 2^a. The treads and risers are secured to the brackets and may be finished in any proper manner at the factory. After the stringers are set in place the steps are secured thereto one by one.

The bottom step (consisting of one riser and tread with connecting-brackets) is first set, the tongue 20 being first broken off or projected into a hole in the floor at the lower end of the stringer, while the step is firmly secured to the stringer by screws or nails inserted through holes in the lips 19. The next step is then placed in position with the tongues 20 of the vertical arms of the brackets inserted into a mortise or tongue-receiving perforation of the lips 19 last secured in place, after which this step may be secured by screws through its lips, as before, and so on until the flight of steps is completed, the lips of the last step being bent down level, if desired, so that the floor may be laid up to the rear edge of the last tread. In some cases the floor will take the place of the upper or last tread, and, if so, a special riser can be inserted between the upper tread proper and the floor. A facing-board can now be fitted to the spaces inside of the risers and treads and over the side of the stringers for giving the proper finish.

While I prefer the construction hereinbefore described for general use, I may employ other constructions and still carry out the general idea of ready-made steps to be put together after shipment.

In Figs. 4, 5, and 6 I employ stringer-plates 22, having perforations or mortises 23 at regular intervals apart, and secure said plates on the top of the stringers A by nails or screws.

The risers and treads are, as before, secured to the vertical arms 24 and horizontal arms 25 of suitable brackets, the rear ends of the arms 25 being provided with hooks or tongues 26, that enter said mortises 23. I have shown the bracket-arms 24 and 25 as formed of a single strip of metal, bent across its middle portion until the arms stand at right angles to each other, and I prefer to strike therein a central longitudinal strengthening-rib 27, as shown.

In setting up these stairs the lower edge of the bottom riser can rest directly upon the floor while the hook or tongue 26 enters the first mortise 23 in the stringer-plate. The second step is then put in place with its hook in the next mortise and with its riser resting on the stringer-plate and also resting closely against the rear edge of the tread of the first step, so that the hook of the lower step cannot be detached so long as the riser thus rests against said tread. The other steps are secured in like manner to complete the flight.

In Fig. 7 I show the horizontal arm 28 and vertical arm 29 hinged together at their junction by a pintle 30, like an ordinary hinge, and I provide the horizontal arm with a perforated securing-lip 31. In this form the risers and treads, although finished and secured to the hinged bracket ready for being set up, may be folded together for transportation. In setting up they are secured to the stringer by screws through the lips 31, while the lower edge of the tread is merely set in place, as shown.

In Figs. 8 and 9 I follow the general construction shown in Figs. 4, 5, and 6, only I employ a flanged bracket. This bracket is first blanked out, as shown in Fig. 9, then bent on the broken lines to give each arm its angle-plate form in cross-section. The horizontal arm of this bracket 32 is provided with a prong 33, which is hooked into the mortises in the stringer-plate 22, as in the construction shown in Figs. 4, 5, and 6.

In Figs. 10 and 11 I have shown a construction which involves a triangular bracket 34. I form said bracket of a straight strip of metal either with or without a central strengthening-bead 35, Fig. 11. At one end I cut out a curved recess 36 and at the other end a correspondingly-shaped projection 37 for locking into said recess. I also form the narrow slot 38 with an enlargement 39 at its lower end large enough to slip over a screw-head. This strip of metal is then bent transversely at three points to give it the form shown in Fig. 10. The riser and tread are secured thereto by screws, as in the constructions before described. In setting up, a screw 40 is screwed into the stringer at the proper point and left with its head slightly projecting. The enlargement 39 of the slot in the bracket is now brought over said screw-head and the bracket slipped down over said head and upon the face of the stringer. Then the

entire step is slipped downwardly lengthwise of the stringer until the screw is in the narrow end of the slot in the bracket, so as to secure the bracket to the stringer.

In Figs. 12, 13, and 14 I have shown a construction in which the treads are separable from the risers. The treads are provided on their underside, near the front, with mortise-plates 41, secured thereto by suitable screws or rivets, and to the inside of the risers, near their upper edge, I secure hooks 42, the upwardly-projecting portions of which hooks are passed through the mortise-plates 41 before the treads and risers are secured to the stringer. The treads are secured to the stringers by lips 43, similar to the lips 19 of Figs. 1, 2, and 3, only they project from a short plate 44, secured to the under side of the tread, instead of projecting from a bracket. After putting the separable risers and treads together, securing the bottom of the lower riser in any proper manner, and fastening the first tread by the lip 43 to the stringer, it is only necessary to let each riser rest on the stringer at the back edge of the tread immediately below it and then secure the next tread, and so on to the top. The mortise-plate 41 is shown separately in Fig. 13, and the blank for the hooks 42 is shown separately in Fig. 14, the narrow end of which blank is to be bent into the hook form shown in Fig. 12.

I do not wish to confine myself to the precise details of construction herein shown and described, but wish it distinctly understood that I may make such changes and variations as are fairly within the scope of my invention.

I claim as my invention—

1. The finished risers and treads, connected together at their outer angle before setting up, each step consisting of one riser and one tread and fastening-irons, by means of which the successive steps from the bottom up may be secured to a pair of stringers, substantially as described and for the purpose specified.

2. The finished risers and treads permanently connected together in steps before setting up, each separately-completed step having fastening-irons permanently attached thereto by means of which the successive steps may be secured, one by one, to a pair of stringers, substantially as described and for the purpose specified.

3. The finished risers and treads connected together in steps, a pair of brackets inside of each step to which the riser and tread of said step are secured, and means for securing said brackets to a pair of stringers for attaching the several steps one by one, substantially as described and for the purpose specified.

4. The combination of the risers and treads with brackets secured upon the inside of the riser and tread of each step, the vertical arms of said bracket having a tongue at their lower

end and the horizontal arms having an upwardly-inclined securing-lip with a mortise to receive said tongue, substantially as described and for the purpose specified.

5 5. The finished risers and treads connected together in steps before setting up, and provided at the rear edge of each with upwardly

and rearwardly inclined securing-lips, substantially as described and for the purpose specified.

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Witnesses:

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