No. 763,204. PATENTED JUNE 21, 1904.

C. R. PRATT.

MOVING STAIRWAY.

APPLICATION FILED NOV. 12, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

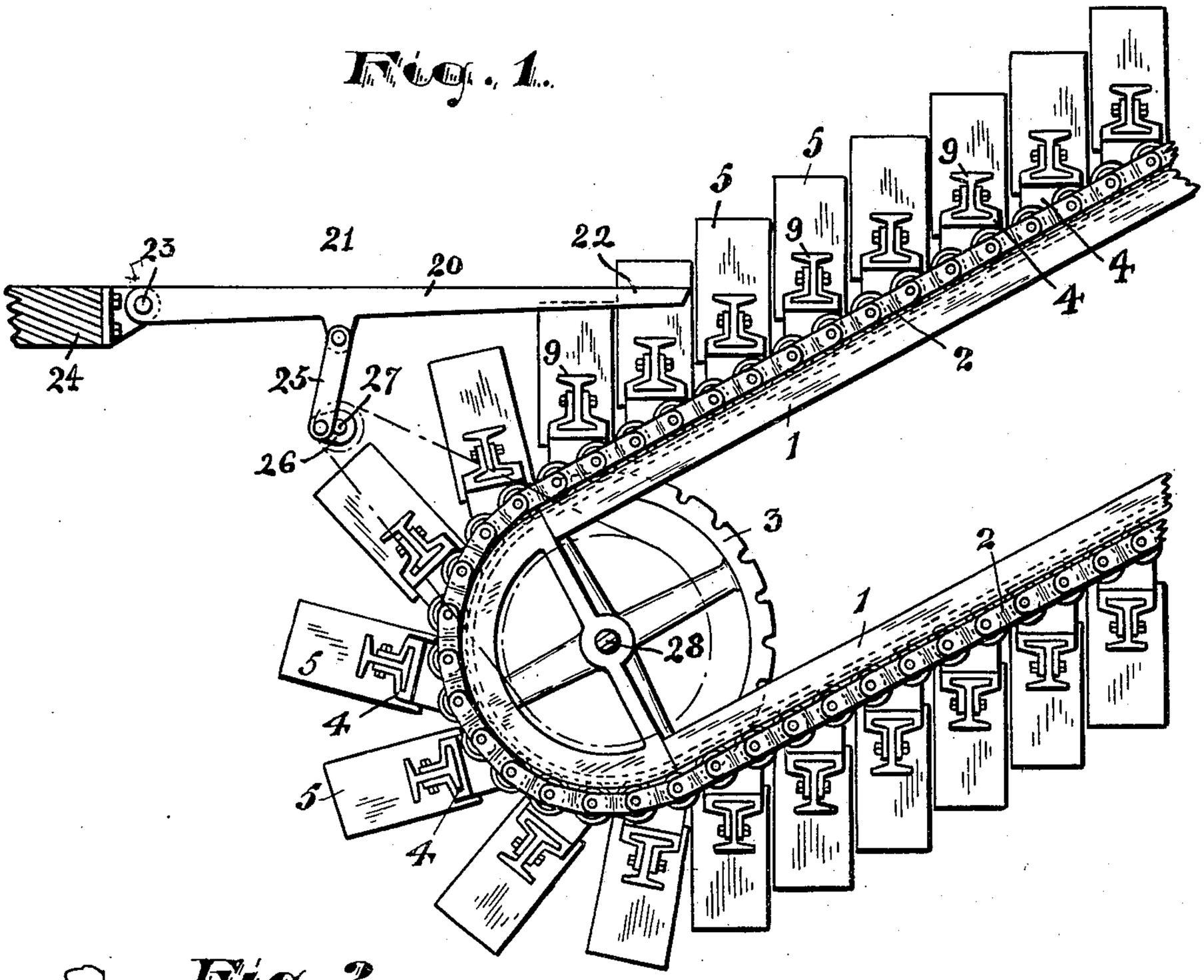
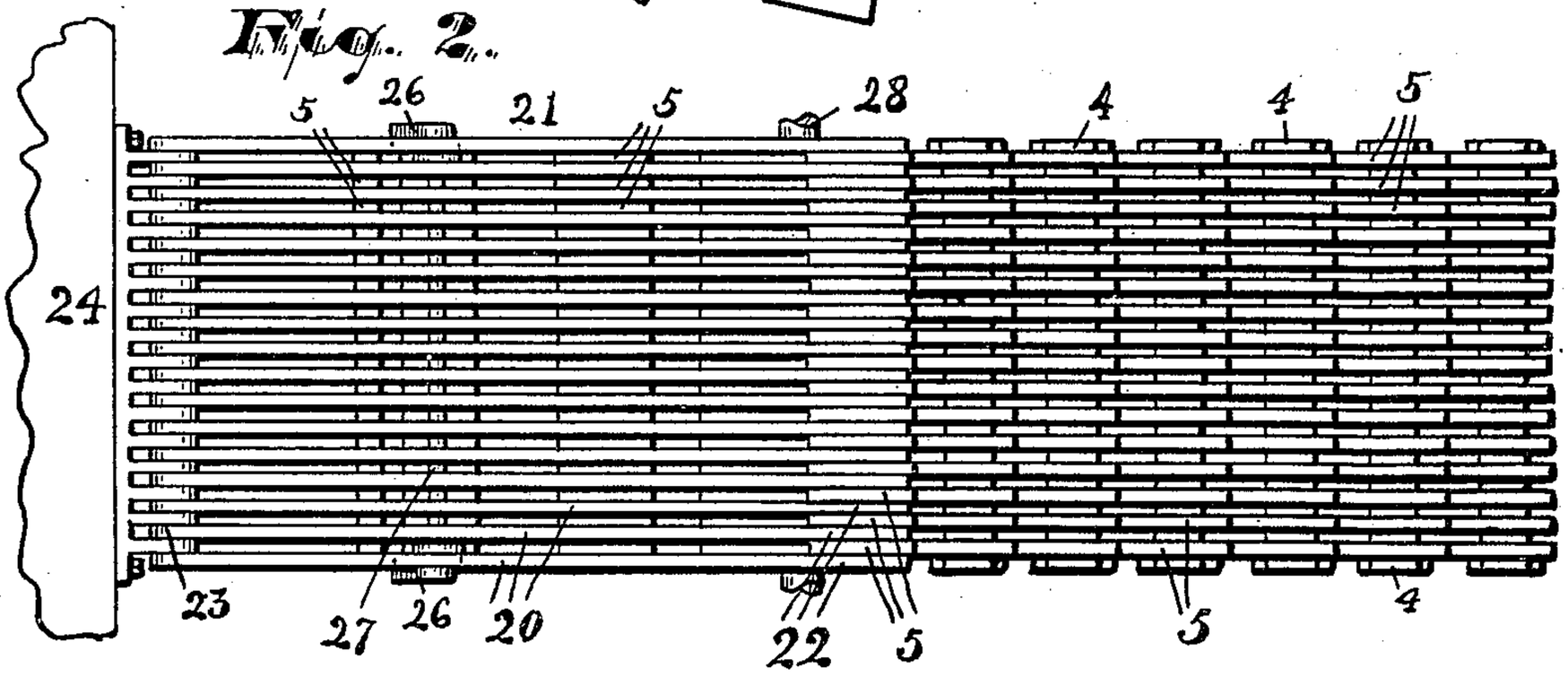


Fig. 2.



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No. 763,204. PATENTED JUNE 21, 1904.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

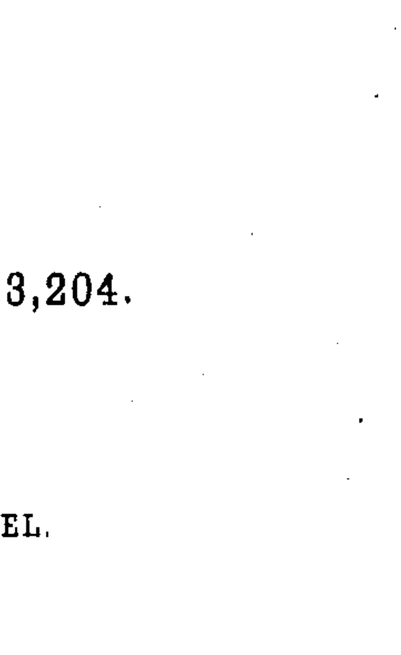
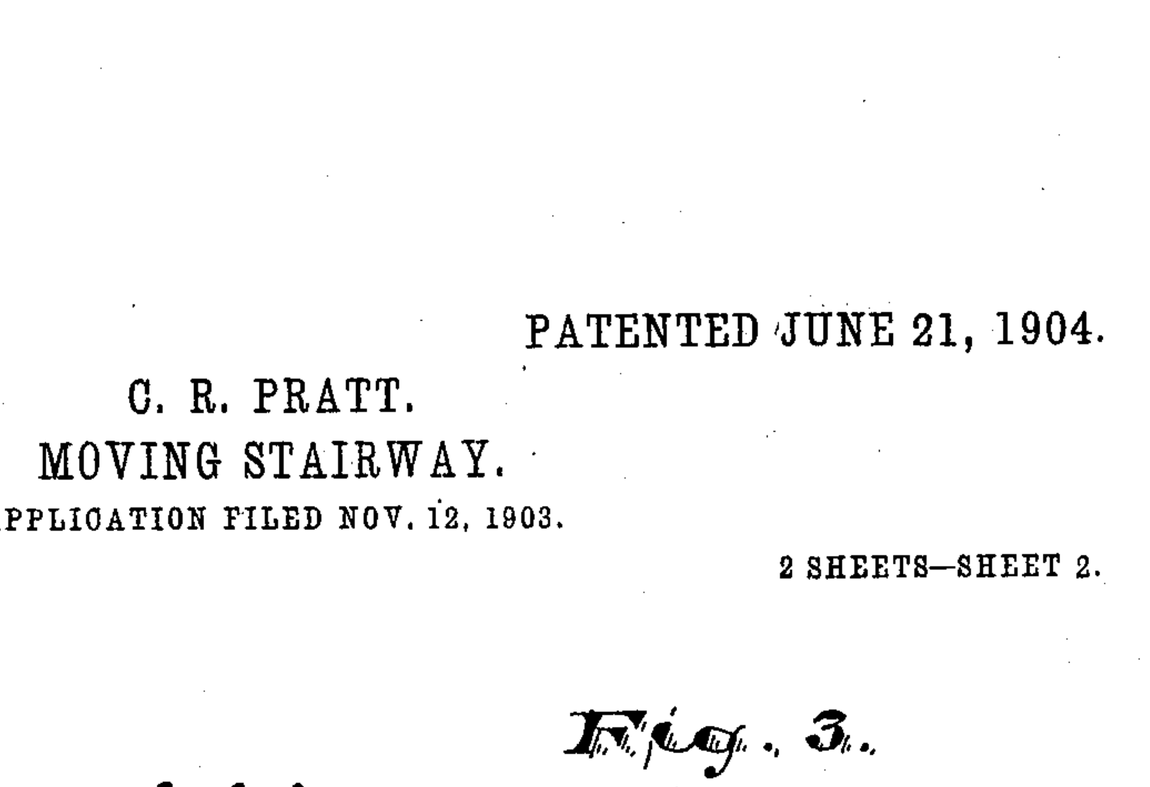


Fig. 3.



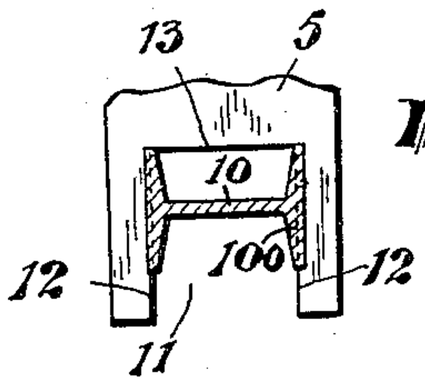


Fig. 7.

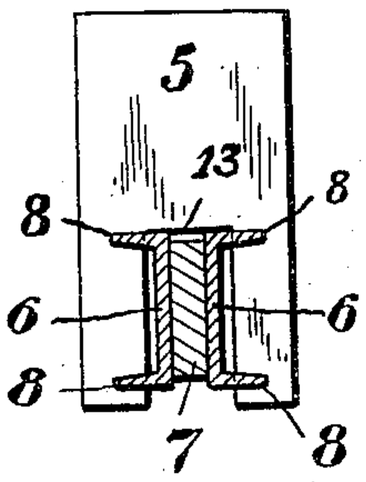


Fig. 5.

Fig. 6.

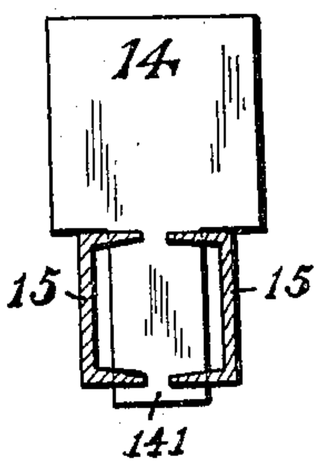


Fig. 8.

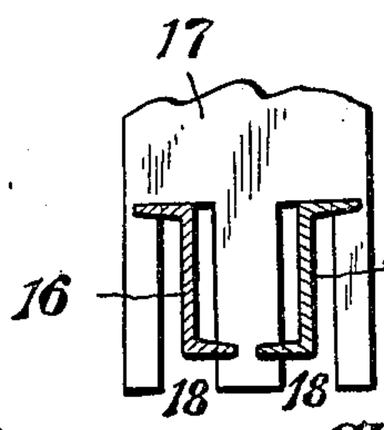


Fig. 9.

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No. 763,204. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

CHARLES R. PRATT, OF MONTCLAIR, NEW JERSEY.

MOVING STAIRWAY.

SPECIFICATION forming part of Letters Patent No. 763,204, dated June 21, 1904.

Application filed November 12, 1903. Serial No. 180,831. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. PRATT, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Moving Stairways; and I do hereby 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, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

This invention relates to the construction of moving stairways; and the particular objects of the construction herein shown are to lessen the jar or bolt in picking up passengers, and thereby increase the comfort and convenience of using the stairway, to obtain a simple, inexpensive, and durable formation of individual steps, and to secure other advantages and results, some of which may be hereinafter referred to in connection with the description of the working parts.

The invention consists in the improved moving stairway and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 shows in side elevation a portion of a stairway illustrating my improvements, and Fig. 2 is a plan of the same. Fig. 3 is a front elevation of a single step, and Fig. 4 is a view of the same from the side. Fig. 5 shows a preferred arrangement of vertical plates upon a cross piece or support in the construction of an individual step, and Figs. 6, 7, 8, and 9 illustrate other modified arrangements which may be used under some conditions.

In said drawings, 1 indicates a track or way of any usual construction suitable for the trucks or rollers of endless belts or chains 2, driven as by wheels 3. Two of such belts are employed, one at each side of the stairway, and in my improved construction I arrange between them transversely-extending cross pieces or supports. Each of said cross-supports suffices for a single step and is clamped at its ends in suitable carriers 4, each mounted upon two wheels of the chain or belt 2, as will be understood. Said cross-supports are formed of flanged beams having notches or recesses adapted to receive the edges of vertical plates 5, arranged in horizontal series upon the support and forming at their tops a tread-surface. Preferably two channel-beams 6, placed back to back, as shown in Fig. 5, and held apart by filling-pieces 7 between, constitute each cross-support, the flanges 8 being notched at suitable intervals to hold the plates 5 at proper distances apart, as will be understood. Under some conditions, however, a single I-beam 9 could be used, as in Fig. 6, its opposite flanges being disposed like the independent flanges of two channel-beams in Fig. 5, and notched, as at 91, to receive the vertical plates 5, or a single I-beam 10 may be placed horizontally, as illustrated in Fig. 7, and the outer vertical faces of the flanged edges notched, as at 100, to receive the edges of the plate 5. In any of the above cases the said plates 5 are each recessed at the middle of its lower end, as at 11, to straddle the supporting beam or beams, the said recess being of different width, according to the form of the beam, and in any case the lateral edge walls 12 of the recess enter the notches of the beam or beams, while at the inner end 13 of the recess the plate sits upon said beam or beams. A very firm and rigid holding of the plates is thus secured and perfect spacing obtained.

Obviously two channel-beams 15 could be placed with their notched flanges facing each other, as shown in Fig. 8, and in that case plates 14, having a narrowed extension or tongue 141 from the middle of the lower end adapted to enter between the channel-beams, are provided, or two Z-beams 16, as shown in Fig. 9, may be placed side by side, and each plate 17 has two recesses 18 at its lower end, one to receive each beam. Other forms of beams might also be used without departing from the spirit and scope of my invention,

which is, broadly, to mount a series of vertical plates upon a notched support.

In combination with a moving stairway having steps of my improved construction I prefer to employ a rising-and-falling landing 21, so that as a passenger is picked up by one of the steps there will be less of a jar or shock. To this end, referring more particularly to Figs. 1 and 2, the bars or slats 20 of the landing 21, and between the free ends 22 of which the plates 5 of each step pass, as is common, are hinged at their outer ends, as at 23, to a stationary portion 24 of the floor and at a point intermediate of said points of hinging and their free extremities are connected, as by links 25, to eccentrics or cranks 26 upon a transverse shaft 27 beneath the landing. This shaft is rotated by any suitable means, although preferably and most economically by connection to the same shaft 28 which carries the wheels 3 for the chain-belts 2. In any event, however, the speed of the said shaft 27 is so related to that of the shaft 28 that the hinged landing 21 rises with each tread of the stairs or, in other words, is moving in an upward direction as the top of each step rises through it. Then the landing drops again in time to rise with the next tread-surface. By this means a slight upward motion is imparted to the passenger previous to his getting upon the stairway, so that he is merely picked off of one moving part by a second one moving at that moment at the same rate of speed. Greater comfort and ease to the passenger is thus secured. The motion of the landing or grating furthermore varies from a minimum at the base or pivoted ends of the bars 20 to a maximum at the free extremities where the passenger is picked up, and thus the passenger in coming upon the landing is gradually introduced to the motion thereof.

Obviously various modifications and changes of construction could be made without departing from the spirit and scope of the invention as set forth in the claims, and I do not, therefore, wish to be limited by any of the positive descriptive terms employed, except as the state of the art may require.

Having thus described the invention, what I claim as new is—

1. In a traveling stairway having transversely-slotted steps, a landing with bars or fingers adapted to enter the slots of said steps, and means for moving said landing upward with each tread-surface.

2. In a traveling stairway having transversely-slotted steps, a landing with bars or fingers adapted to enter the slots of said steps, and means for moving said landing, independently of the steps, upward with each tread-surface and alternately downward between successive tread-surfaces.

3. The combination in a traveling stairway having transversely-slotted steps, of a hinged landing having bars or fingers adapted to enter the slots of said steps.

4. The combination with a traveling stairway having successive steps with independent transversely-slotted tread-surfaces, of a landing having bars or fingers adapted to project into the slots of said tread-surfaces, and means for reciprocating said bars or fingers.

5. In a traveling stairway, the combination with successive steps each having a transversely-slotted tread-surface, of a landing having its end next the steps slotted to intermesh therewith, and means for vertically reciprocating said slotted end of the landing.

6. In a moving stairway, the combination with successive steps each providing a transversely-slotted tread-surface, of a landing having its end next the steps slotted to intermesh therewith and being hinged at its other end, and means for oscillating said landing.

7. In a traveling stairway, the combination with successive steps each providing a transversely-slotted tread-surface, of a landing comprising a horizontal series of parallel bars or slats free at one end to enter the slots of said tread-surface and being hinged at their opposite ends, a rotary shaft beneath said bars or slats, links extending from the bars or slats intermediate of their ends and being eccentrically connected to said shaft, and means for driving said shaft.

8. A stair-step comprising in its construction a beam or supporting-piece having lateral vertically-notched portions, and plates adapted to enter edgewise said notches.

9. A stair-step comprising in its construction a cross-piece or beam with vertically-notched faces, and plates recessed or slotted at their lower ends to receive said cross-piece or beam and being adapted to enter at their edges said notches.

10. A stair-step comprising in its construction a supporting-beam having a vertical portion or web and flanges projecting laterally therefrom and being vertically notched, and a series of vertically-disposed plates mounted edgewise in said notches.

11. A stair-step comprising in its construction longitudinal supporting means presenting opposite vertically-notched flanges, and plates adapted to enter at their edges said notches.

12. A stair-step comprising in its construction a beam having upper and lower horizontal flanges notched in alinement with each other, and vertical plates supported by said beam and entering at upper and lower points of their edges said notches.

13. In a stair-step, the combination with horizontal supporting means extending longitudinally of the step and presenting opposite upper and lower series of vertical notches, of a series of vertical plates recessed to receive

said supporting means, said plates resting at the upper end walls of said recesses upon the supporting means and entering at the vertical walls of said recesses the notches of said supporting means.

14. In a stair-step, the combination of longitudinally-extending horizontal channel-beams placed back to back and having their flanges vertically notched, and vertical plates recessed to straddle said channel-beams and enter at their edges said notches.

15. In a moving stairway, the combination with inclined tracks or guideways and endless belts adapted to travel adjacent thereto, of wheeled carriers connected to said belts and adapted to travel on said tracks, cross beams or supports clamped at their ends in said carriers and presenting opposite longitudinal series of vertical notches, and vertically-disposed plates mounted edgewise in said notches.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of October, 1903.

CHARLES R. PRATT.

Witnesses:
CHARLES H. PELL,
RUSSELL M. EVERETT.