HALUSTRADE FOR MOVING HAND RAILS

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This invention relates to improvements in balustrades for moving hand rails and its object is to provide a simple metallic structure at the side of a walk or of a stationary ramp or moving stairway, which will form a support for a moving hand rail and a housing for enclosing the hand rail mechanism.

The specific objects and advantages of the invention will appear in the following specification in which I will describe an embodiment of the invention and point out its novel features in claims.

Referring to the drawings in which like characters of references designate similar parts in the various figures,

Fig. 1 is a side elevation of a structure made according to and embodying the invention as used in connection with moving stairs, with certain parts removed in order to show the construction more clearly;

Fig. 2 is a side elevation on a larger scale of a stanchion of special construction;

Fig. 3 is an elevation, partly in section, of the stanchion shown in Fig. 2, together with the parts which are attached thereto or supported thereby, the section being taken on the line 3, 3 of Fig. 1;

Fig. 4 is a similar sectional elevation of similar parts, the section being taken on the line 4, 4 of Fig. 1;

Fig. 5 is a sectional elevation on a still larger scale of the upper portions of the parts shown in Fig. 3;

Fig. 6 is a transverse sectional elevation of the juncture of one of the outer shields and an outer panel and its molding;

Fig. 7 is a perspective view on an enlarged scale of some of the lower parts shown in the lower portion of Fig. 3;

Fig. 8 is a sectional plan view of the clamps shown in Fig. 7;

Fig. 9 is an elevation of the lower end of the structure, with the inside cover plates removed;

Fig. 10 is a perspective view of a supporting block shown in Fig. 9;

Fig. 11 is an end view of the parts shown in Fig. 9; and

Figs. 12 and 13 are side elevations of the two side members shown in Fig. 11.

Like characters of reference designate similar parts on the various figures of the drawings.

10 designates a lower floor and 11 designates an upper floor between which is a balustrade supporting a movable hand rail 12 and enclosing its driving mechanism which is no part of the present invention. 13 is an angle iron upon which the parts hereinafter described are supported. In the structure illustrated this angle iron forms one of the corners of the housing 14 of a moving stairway and its mechanism.

20 is a stanchion, a plurality of which are affixed to the angle iron 13, preferably at right angles to one of its flanges. The end stanchions are secured to horizontal extensions of the angle iron 13. Each stanchion is shown with a base 21 which rests upon and is secured to the angle iron 13 by bolts 22. It comprises a post 23 on one side of which are finished surfaces 24, 25 and 26. On the other side near the base is a projecting arm 27 on which are spaced finished faces 28, 29, 70 through the center of each of which is a vertical slot 30. At the top of the post another arm 31 projects laterally, the outer face 32 of which is also finished, and an arm 33 projects upwardly which has a finished face 34. The frame of the balustrade is completed by securing strips 35, 36, 37 to the faces 24, 28, 29 respectively and an angle iron 38 to the face 34.

The hand rail 12 runs on a track 15 which has a flat upper surface and intumet edges spaced therefrom. The track 15 is secured to the angle iron 38 by bolts 17 and spacers 18. Between the spacers 18 and the upper flange of the iron, sheet metal pieces 70 are interposed which will be described later. At the ends of the balustrade the hand rail runs around a wheel such as that shown at 19. Fig. 5.

I will now describe the manner in which the wheel 19 at the lower end of the balustrade is supported, it being understood that there is a similar structure at the upper end. 40 is a block secured to the angle 13A. Its sides 41, 42 are finished, as is also one of its ends 43. Through the latter is a vertical slot 44. 45 and 46 are angle irons secured to the other end of the block. Angle irons 47 and 48 are secured to the upper ends of the angle irons 45, 46 and are also secured to two of the stanchions 20A, as shown in Figs. 4 and 9. The bearings 49 for wheel 19 are secured to the angle irons 47 and 48.

The inner side of the framework thus described is covered in the following manner: a base board is made up in sections 50 of sheet metal, the ends of which are flanged as at 51 and adapted to be fastened together by machine screws 52. These end flanges lie in the slots 30. Clamps 53 are welded to the sections 50 and screws 54 threaded in the clamps are arranged to engage the stanchion to draw the sections 50 tightly against their faces 28 and 29. The face 29 is
offset back of face 28 and the upper edge of sections 50 are offset a like amount, forming a shoulder 55. The upper part of the sections 50 are further secured to the stanchions by screws 56. This construction is important for when it is used as intended with moving stairs, it forms a continuous surface with no edges or screw heads to catch on the stairs.

Upper sections 60 have end flanges 61 which may be fastened together by screws 62. The upper part of these sections rest upon downwardly extending lips 71 of members 70, above which the edges of the sections are bent outwardly, as shown at 63, Fig. 5.

These upper sections are put in place by inserting their upper edges between the lips 71 of pieces 70 and edges 16 of track 15 and then swinging the sections down until their lower edges rest on shoulder 55. The screws 56 are inserted after this. An intermediate part of the section will then be pressed against the face 28 and, if desired, a soft washer 64 may be interposed to absorb vibrations.

The other side of the balustrade frame is covered as follows: A deck 72 is affixed to the lower bar 38 by screws 73 and to the angle iron 13 by bolts 74, separated from the latter by spacers 75. In Fig. 3, 7 designates wire lath and 8 plaster. 76 is a base board which overlaps the deck 72 and is fastened to the bars 35 and 36 by the screws 73 and the flillator head screws 77 respectively. The upper part of this base board is bent inwardly and upwardly to form a deep shoulder 78. 90 designates upper outer sections with flanges 91 fastened together by screws 82. The upper ends 93 are bent to be inserted between the pieces 70 and the rail edge 15 in the manner previously described, resting against the lip 84 of said pieces. Their lower edge is bent inwardly and downwardly to form deep shoulders 85 and overlaps and is secured to the rail 37 by flillator head screws 86.

Stiles 90 are secured at spaced intervals to the base board 76 and the upper sections 80. These stiles are made with inturned edge flanges 92, the lower and upper of which fit between the shoulders 78 and 85 and are fastened thereto by bolts 82, as shown in Fig. 4.

Between the stiles and the shoulders 78 and 85, panels 99 are fitted. These are flat metal sheets 99 of a molding strip 94 folded around their edges, as shown in Figs. 3 and 6, and are secured in place by the flillator head screws 77 and 86.

The ends of the balustrade frame and the wheel 19 are covered by the stampings 100 and 101 shown in Figs. 11, 12 and 13. The lower outer ends of these stampings are provided with flanges 102 and 103 by means of which they are fastened together by bolts 104. The stampings are affixed to the sides of block 49 and the slot 44 provides for the reception of these flanges. They are formed with out-turned edges 105 and 106 which project under the edges of the hand rail 13. The rear edges of the stampings are flanged to provide for their being secured to the adjacent parts which cover the balustrade frame and the intermediate portions of the stampings are shaped to conform to these adjacent covering members.

The construction shown as applied to moving stairs is not applicable to movable hand rails used with stationary stairs or ramps or movable or stationary sidewalks and many structural modifications may be made which embody this invention. I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions, a post at one side of the upper run of the hand rail and a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, and cover plates fastened to said frame.

2. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, interconnecting longitudinal bars affixed to one side of the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, and cover plates, those on one side being fastened to the longitudinal bars and those on the other side to said projecting arms.

3. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, cover plates fastened to said frame, a block at the end of the frame, and side pieces forming the end of the balustrade affixed to said block and to adjacent ends of said cover plates.

4. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, and cover plates, the upper edges of which are interposed between the sides of the interconnecting member and the edges of the track, said cover plates being fastened to the frame.

5. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the longitudinal member and from each other, and cover plates, the upper edges of which are interposed between the sides of the longitudinal member and the edges of the track, parts of said cover plates below the longitudinal member being fastened to the frame.

6. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, and cover plates fastened to said frame.
return run, a track supported on the top of said frame having inturned edges spaced from the longitudinal member and from each other, and the upper plates of which are arranged to be sprung between the sides of the longitudinal member and the edges of the track, and pieces interposed between the edges of the longitudinal member and the cover plates, parts of said cover plates below the longitudinal member being fastened to the frame.

7. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, and cover plates fastened to said frame, said plates having inturned flanges and means for fastening said flanges together.

8. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a base plate over the lower projecting arms of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, and means for fastening the cover plate and base plate to said lower arm.

9. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, a longitudinal member interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a base plate over the lower projecting arms of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, and means for fastening the cover plate and base plate to said lower arm, said base plate and cover plate comprising sections having inturned flanges and means for fastening said flanges together.

10. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an interconnecting longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a base plate over the lower projecting arms of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, and means for fastening the cover plate and base plate to said lower arm.

11. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a base plate over the lower projecting arm of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, its upper portion forming a shoulder, its lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base plate and to the cover plate, and means for fastening the panels, the base plate and the cover plate to the longitudinal bars.

12. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a base plate over the lower projecting arm of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, means for fastening the cover plate and base plate to said lower arm, another base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate extending from the top of the frame to an intermediate longitudinal bar, its lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base plate and cover plate, and means for fastening the panels, the base plate and the cover plate to the longitudinal bars.

13. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an interconnecting longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower projecting arm of the stanchions, a cover plate, the upper edge of which is interposed between the sides of the longitudinal member and the edges of the track, the lower edge of said cover plate extending to and overlapping the base plate, and means for fastening the cover plate and base plate to said lower arm.

14. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an interconnecting longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a base plate at one side of the return run of the hand rail and two spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower projecting arm of the stanchions, a cover plate, the upper edge of which is arranged to be sprung between the sides of the longitudinal member and the edges of the track, the lower edge of said cover plate extending to and overlapping the base plate, an intermediate portion of said cover plate engaging the upper of said extending arms, and means for fastening the cover plate and base plate to said lower arm.

15. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an interconnecting longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate extending from the top of the frame to an intermediate longitudinal bar, its lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base plate and to the cover plate, and means for fastening the panels, the base plate and the cover plate to the longitudinal bars.
having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate, the upper edge of which is interposed between the sides of the upper bars and the edges of the track, said cover plate extending from the top of the frame to and overlapping the base plate, means for fastening the cover plate and base plate to said lower arm, another base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate extending from the top of the frame to and overlapping the base plate, means for fastening the cover plate and base plate to said lower arm, a block at the end of the frame, and side pieces forming the end of the balustrade affixed to said block and to adjacent ends of said base plates and cover plates.

16. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, longitudinal bars interconnecting the stanchions, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate, the upper edge of which is arranged to be sprung between the sides of the upper bar and the edges of the track extending to an intermediate longitudinal bar, its lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base plate and cover plate, and means for fastening the panels, the base plate and the cover plate to the longitudinal bars.

17. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a post at one side of the return run of the hand rail and two spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower longitudinal bars, its upper portion forming a shoulder, a cover plate extending from the top of the frame to and overlapping the base plate, means for fastening the stiles to the base plate and cover plate, and means for fastening the panels, the base plate and the cover plate to the longitudinal bars.

18. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions having an upper portion arranged to support the upper run of the hand rail, interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, a post at one side of the return run of the hand rail and two spaced arms projecting laterally beyond the other side of said return run, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base plate over the lower projecting arm of the stanchions, a cover plate extending from the top of the frame to and overlapping the base plate, means for fastening the cover plate and base plate to the longitudinal bars, a block at the end of the frame, and side pieces forming the end of the balustrade affixed to said block and to adjacent ends of said base plates and cover plates.
end of the post, surfaces on the ends of said arms for supporting a cover, and a track supporting extending upwardly from the outer arm intermediate the post and the cover supporting end of said upper arm.

22. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a post at one side of the return run of the hand rail and spaced arms projecting laterally beyond the other side of said return run, cover plates fastened to said frame, a block at the end of the frame, and side pieces forming the end of the balustrade affixed to said block.

23. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an intermediate longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having downturned edges spaced from the longitudinal member and from each other, and cover plates, the upper edges of which are interposed between the edges of the longitudinal member and the edges of the track, parts of said cover plates being fastened to the frame.

24. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an intermediate longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having downturned edges spaced from the longitudinal member and from each other, and cover plates, the upper edges of which are arranged to be sprung between the sides of the longitudinal member and the edges of the track, parts of said cover plates below the longitudinal member being fastened to the frame.

25. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an intermediate longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having downturned edges spaced from the longitudinal member and from each other, and cover plates, the upper edges of which are arranged to be sprung between the sides of the longitudinal member and the edges of the track, and members to support the cover plates interposed between the edges of the longitudinal member and the cover plates, parts of said cover plates below the longitudinal member being fastened to the frame.

26. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and an intermediate longitudinal member, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a base cover plate over the lower longitudinal bars, its upper portion forming a shoulder, an upper cover plate extending from the top of the frame to an intermediate longitudinal bar, a lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base cover plate and to the upper cover plate, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.

27. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a base cover plate over the lower longitudinal bars, its upper portion forming a shoulder, an upper cover plate extending from the top of the frame to an intermediate longitudinal bar, a lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base cover plate and to the upper cover plate, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.

28. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a base cover plate over the lower longitudinal bars, a lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base cover plate and to the upper cover plate, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.

29. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having downturned edges spaced from the upper bar and from each other, a base cover plate over the lower longitudinal bars, its upper portion forming a shoulder, an upper cover plate, the upper edge of which is interposed between the sides of the upper bar and an edge of the track, said upper cover plate extending to an intermediate longitudinal bar, its lower portion forming a shoulder, panels interposed between said shoulders, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.

30. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having downturned edges spaced from the upper bar and from each other, a base cover plate over the lower longitudinal bars, its upper portion forming a shoulder, an upper cover plate, the upper edge of which is arranged to be sprung between the side of the upper bar and an edge of the track extending to an intermediate longitudinal bar, its lower portion forming a shoulder, stiles and panels interposed between said shoulders, means for fastening the stiles to the base cover plate and to the upper cover plate, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.
plate and upper cover plate, and means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars.

31. In combination with an endless movable hand rail, a balustrade comprising a frame having a plurality of spaced stanchions and interconnecting upper and lower longitudinal bars affixed to one side of the stanchions, some of said stanchions having an upper portion arranged to support the upper run of the hand rail, a track supported on the top of said frame having inturned edges spaced from the upper bar and from each other, a base cover plate over the lower portions of the stanchions, a cover plate extending from the top of the frame to and overlapping the base cover plate, means for fastening the upper cover plate and base cover plate to said lower portions of said stanchions, another base cover plate over the lower longitudinal bars, its upper portion forming a shoulder, an upper cover plate extending from the top of the frame to an intermediate longitudinal bar, its lower portion forming a shoulder, the upper edges of both of said cover plates being arranged to be sprung between the sides of the upper bar and the edges of the track, stiles and panels interposed between said shoulders, means for fastening the stiles to the base cover plate and upper cover plate, means for fastening the panels, the base cover plate and the upper cover plate to the longitudinal bars, a block at the end of the frame, and side pieces forming the end of the balustrade affixed to said block and to adjacent ends of said base cover plates and upper cover plates.

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