Sept. 23, 1947. F. L. HAWKINS ET AL 2,427,723

ORNAMENTAL BALUSTRADE

Filed Sept. 25, 1944 3 Sheets-Sheet 1

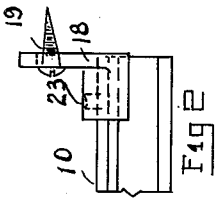


Fig 2

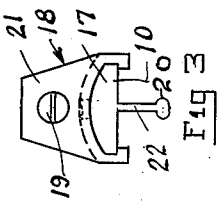


Fig 3

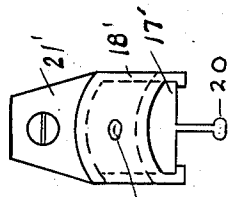


Fig 5

Fig 1

Fig 4

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ORNAMENTAL BALUSTRADE

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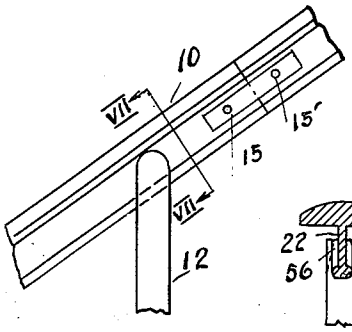


Fig 6

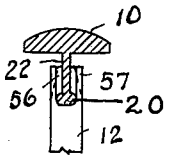


Fig 7

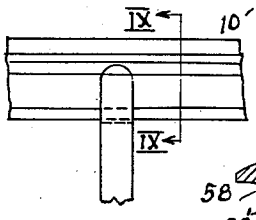


Fig 8

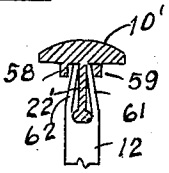


Fig 9

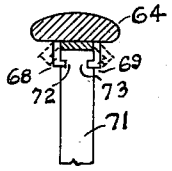


Fig 10

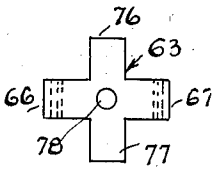


Fig 11

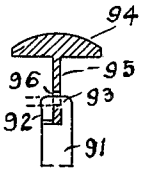


Fig 12

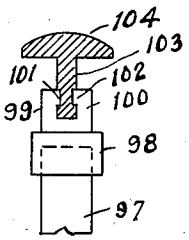


Fig 13

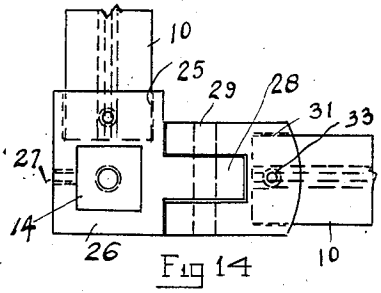


Fig 14

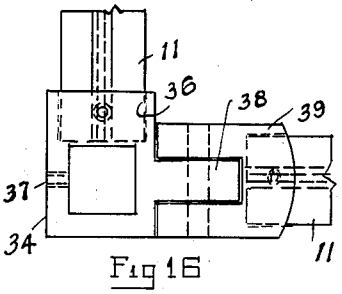


Fig 16

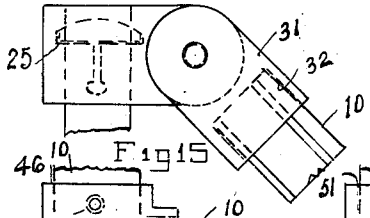


Fig 15

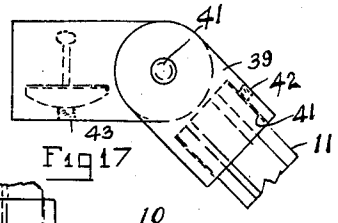


Fig 17

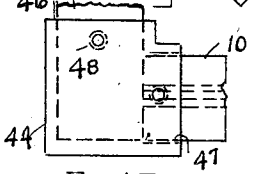


Fig 18

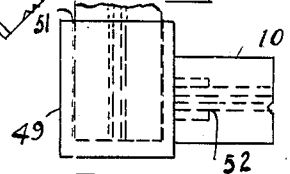


Fig 20

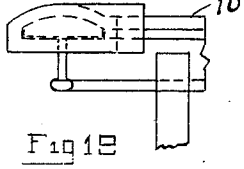


Fig 19

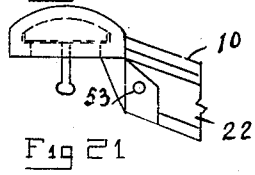


Fig 21

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ORNAMENTAL BALUSTRADE

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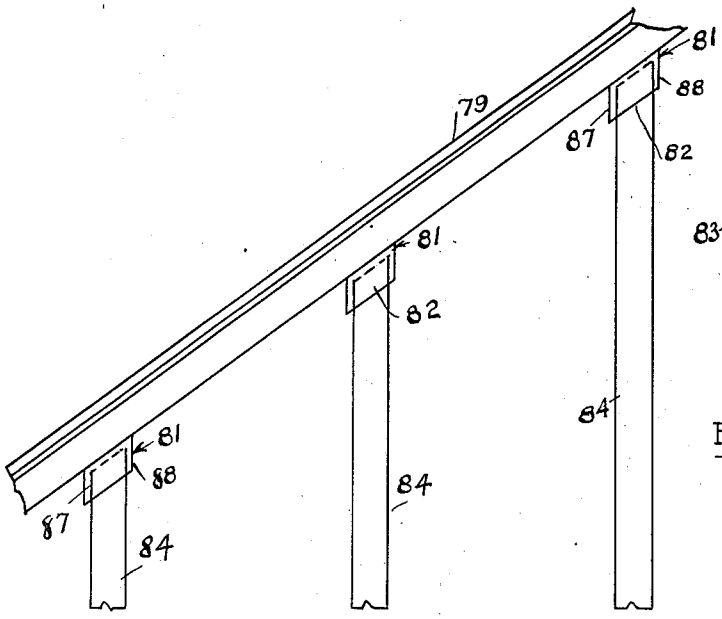


Fig 24

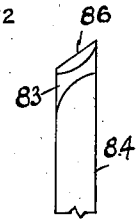


Fig 25

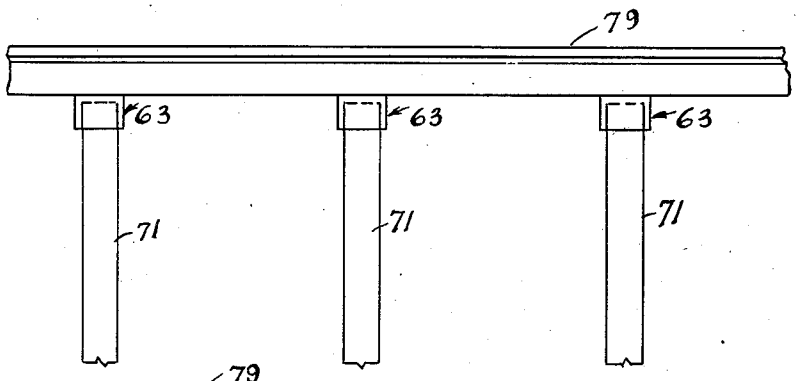


Fig 22

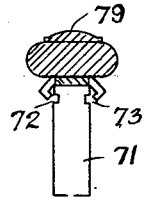


Fig 23

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Patented Sept. 23, 1947

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UNITED STATES PATENT OFFICE

2,427,723

ORNAMENTAL BALUSTRADE

Floyd L. Hawkins and William D. Phillips,
Birmingham, Ala.

Application September 25, 1944, Serial No. 555,735

5 Claims. (Cl. 256—22)

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This invention relates to ornamental metal banisters or balustrades and has for an object the provision of such a structure made up of elements which may be cut, fitted and erected in the desired location on the job.

A further object of our invention is to provide an improved rail for ornamental banisters and balustrades in combination with an improved picket or baluster which can be fitted and erected with a minimum of labor and in a minimum of time.

Other objects of our invention are to provide simple, economical means for joining metal pickets or balusters to a metal rail, together with means for connecting the rails at their terminals and at posts and corners in the structure of the banister or balustrade.

As is well known in the art to which our invention relates, metal banisters and balustrades are usually fabricated to order in shops and transported to the place of installation and erected. This necessitates a workman first going to the place where the banister or balustrade is to be installed and taking careful measurements. He then returns to the shop and the banister or balustrade is fabricated and then is carried to the place it is to be erected. This requires very careful, skillful workmanship and considerable time. These difficulties are avoided by means of our invention in which the rails of the banister or balustrade are rolled to indeterminate lengths and are cut and fitted on the job. The rails include improved means for joining them to the pickets or balusters, and the pickets are especially designed for coupling to the rails. Posts are provided for the terminals and connectors which may be readily attached to the rails and serve to join the rails to the posts as well as to the walls of the building.

An ornamental metal banister made in accordance with our invention, and details of its construction are illustrated in the accompanying drawings, forming a part of this application, in which

Fig. 1 is an elevational view showing an ornamental banister for a stairway;

Fig. 2 is a side elevation showing a level connection for a top rail to a wall;

Fig. 3 is an end view of Fig. 2;

Fig. 4 is a side elevation showing a sloping connection for a top rail to a wall;

Fig. 5 is an end view of Fig. 4;

Fig. 6 is a side elevation showing the connection of a picket or baluster to a rail;

Fig. 7 is a transverse sectional view along the lines VII—VII of Fig. 6;

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Fig. 8 is a side elevational view showing an alternative form of connection between a picket or baluster and a rail;

Fig. 9 is a sectional view taken along the lines IX—IX of Fig. 8;

Figs. 10 to 13 inclusive show various other modified forms of connecting a picket and rail;

Figs. 14 and 15 are respectively a plan view and a side elevation showing a top corner sloping fitting;

Figs. 16 and 17 are, respectively, a plan view and a side elevation showing a bottom corner sloping fitting;

Figs. 18 and 19 are, respectively, a plan view and a side elevation showing a level corner fitting;

Figs. 20 and 21 are similar views showing an alternative form of sloping corner fitting;

Fig. 22 is a detail elevational view of a horizontal balustrade employing the fastening means of Figs. 10 and 11;

Fig. 23 is a detail sectional view through the balustrade shown in Fig. 24;

Fig. 24 is a view similar to Fig. 22 showing an inclined balustrade;

Fig. 25 is a detail view of a picket adapted for use in an inclined balustrade.

Referring now to the drawings for a better understanding of our invention, we show in Fig. 1 a balustrade embodying a top rail 10, a bottom rail 11, and pickets or balusters 12 joined to the top and bottom rails. The rails 10 and 11 are supported at their ends by means of posts 13 and 14 and where the rail terminates at a wall, it is supported by means of an end support 16. The rails 10 and 11 may be of any convenient length for handling and cut to fit: where too short, they may be spliced by means of straps 15 and screws 15'. See Fig. 6. The means of supporting the balusters 12 in the rails 10 and 11 and of supporting the rails 10 and 11 at their ends, form a most important feature of our invention. It will be understood, however, that a baluster may be constructed in accordance with our invention with a top rail only, and with the lower ends of the pickets secured in concrete or masonry.

In Figs. 2 to 5 inclusive we show end supports for a top rail. In Figs. 2 and 3, the rail 10 fits into a socket 17, in a supporting member 18, which is adapted to be attached to a wall by any suitable fastening means such as the screw 19 passing through an upwardly extending flange 21, which may be shaped to give the desired ornamental effect. It will also be noted that the rail 10 is formed with an upper ornamental body

portion and a lower T web 22 having an enlargement, or bead 20 along its lower edge. A set screw 23 is mounted in the wall of the socket 17 and bears against the upper surface of the rail 10 to hold it in place in the socket. The device shown in Figs. 4 and 5 is in all respects similar to that shown in Figs. 2 and 3 except that the socket member 17' is inclined downwardly with respect to the flange 21'. With this form of support the upper rail 10 extends into the socket 17' and is held in place in the socket by means of a set screw 23'. Also the device may be secured to the wall by a screw 19'.

It will be understood that the fittings just described and shown in Figs. 2 to 5 inclusive, may be employed to support the bottom rail 11 by simply inverting them, as the bottom rail 11 has the ornamental molding portion downward and the web 22 extending upward. In Figs. 14 and 15 we show the fitting we employ for joining a horizontal top rail and a downwardly inclined top rail to the corner post 14. For this purpose we employ a fitting 26 which fits over the post 14 and which is provided with a horizontal socket 25 in which the top rail 10 fits. The fitting 26 is held in place on the post 14 by means of a set screw 27. On one side of the fitting 26 is a lug 28 to which is hinged, by means of a pin 29, a socket member 31 having a socket 32 therein adapted to receive the downwardly inclined top rail 10. A set screw 33 holds the rail 10 in place in the socket 32.

In Figs. 16 and 17, we show the corresponding fitting 34 for supporting the lower rail 11. The fitting 34 is provided with an inverted socket 36 for receiving the lower rail 11 and which extends horizontally from the post 14 and is held on the post 14 by means of a set screw 37. On one side of the fitting 34 is a lug 38 to which the lateral inclined socket member 39 is pivoted by means of a pivot pin 41. The inclined lower rail 11 fits into the socket 41 in the socket member 39 as shown in Fig. 17. The ends of the rails in all the fittings shown in Figs. 14 to 20 inclusive are held in place by means of set screws such as shown at 42 and 43 in Fig. 17. The said set screws, when screwed down, have their outer ends flush, or slightly below, the surface of the fitting.

In Figs. 18 to 21 inclusive, we show fittings which are adapted for connecting the rails at a right angle to each other without a post such as is shown in Figs. 14 to 17 inclusive. The fittings shown in Figs. 18 to 21 inclusive comprise an elbow 44 having sockets 46 and 47 therein for receiving the top rail 10, the rails being held in place by means of set screws 48. Figs. 20 and 21 show a similar elbow fitting 49 having a horizontally extending socket 51 and a downwardly inclined socket 52. The socket 52 is open at the top so that the T shaped web 22 only is engaged in the socket. The rail 10 in this instance is cut to be fit snugly against the adjacent side of the fitting and is pivotally secured to the fitting by means of a screw 53.

One of the most important features of our invention is the manner in which we connect the picket 12 to the rails 10 and 11. In order for an ornamental balustrade of the character illustrated herein to be erected and constructed on the job, it must be possible to connect the pickets firmly to the top and bottom rails with simple devices which may be readily joined together so that when finished they will present a neat, ornamental appearance. In order to accomplish this purpose, we preferably employ cooperating

securing means which are deformable by pressure to join the parts together. The deformable members may be carried either by the rail or by the pickets and we show in Figs. 6 to 13 inclusive and 22 to 24 inclusive various modifications of such means. In Figs. 6 and 7 we show a picket 12 which is provided at its ends (only one end being shown) with deformable fingers 56 and 57 which are adapted to straddle the T section 22 of the rail 10 and be deformed by pressure over the bead 20 to the dotted position shown, to clamp the T section 22 of the rail.

In Figs. 8 and 9, we show a modified form of rail having an ornamental molding portion 10', a web portion 22' and depending flanges 58 and 59. The flanges 58 and 59 may be formed integrally on the rail or form the sides of a channel member which is welded to the rail. The picket 12 in this instance is provided with relatively long fingers 61 and 62 which straddle the T web portion 22' and which are squeezed inwardly by pressure at the same time that the rail is being forced downwardly so that the fingers take a position behind the flanges 58 and 59 as shown in Fig. 9.

In Figs. 10 and 11 and 22 to 25 inclusive, we show still another form of connection for the pickets to the rail. In accordance with this modification, we provide clip members 63 at intervals on the under side of the rail 64, which clip members are formed with lateral fingers 66 and 67, said fingers being turned inwardly to form lugs at 68 and 69 as shown in Fig. 10. Also, the sides of the picket 71 are provided with notches 72 and 73 along the sides thereof into which the lugs 68 and 69 are adapted to enter. The clip members 63 are also provided with front and rear fingers 76 and 77 which are straight and which are deformable to extend downward forwardly and rearwardly of a picket 71 and thus aid in holding it in place. It will be understood that the rails 64 are provided with the clip members 63 at regular spaced intervals suitable for the pickets 71 and may be secured to the rail 64 in any suitable manner such, for example, as by plug welding through a central hole 78.

Where the top and bottom rails must assume an inclined position as in the banister of a stairway, clips of a modified form such as shown in Fig. 24 and pickets having modified grooves in the sides thereof, such as shown in Fig. 25, may be employed. In Fig. 24 we show a rail 79 having clip members 81 secured on the under side thereof, the clip members each having downwardly extending lateral fingers 82 with inwardly turned lugs which are adapted to enter recesses 83 in the upper end of a picket 84. It will be seen from Fig. 25 that the recesses 83 are wider at their ends than at the middle so as to compensate for variations in the angle of inclination of the rail 79. Also, the upper end 86 is cut to the inclination of the rail 79 whereby to have a longer bearing upon the rail. In this modification, the clip member 81 is provided with front and rear fingers 87 and 88 which are pressed downwardly to engage the picket 84 at the front and at the rear.

In Fig. 12 we show a still further form of our invention in which pickets 91 are each constructed with a lateral recess 92 therein and with a horizontally extending overhanging finger 93. The rail 94 is provided with spaced holes 96 therein through which the fingers 93 are inserted and are then bent downwardly to the dotted position shown in order to hold the pickets firmly in place.

In Fig. 13 we show another form in which pickets 97 are provided with cuffs 98 which fit over the ends thereof and which are provided with deformable fingers 99 and 100 having inwardly extending lugs 101 and 102 which are adapted to engage in complementary grooves formed in the sides of the web 103 of the rail 104. It will be understood that the cuffs 98 will be made of some deformable metal such as soft steel, malleable iron, or wrought iron. Also, the fingers 99 and 100 may be constructed with lugs 101 and 102 of various inclinations to adapt the fitting for the inclination of the rail to which they are to be connected.

In all the modifications of the connecting means hereinbefore shown and described, they have been illustrated in association with a top rail member only. It will be understood however that the same connection may be employed for the lower rail which is inverted with respect to the upper rail. It will also be seen, by means of the construction hereinbefore described and illustrated in the drawings, an ornamental balustrade may be constructed and erected in a minimum of time and at a minimum of expense.

While we have shown our invention in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and we desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What we claim is:

1. In a metal balustrade embodying a rail member and vertical picket members joined to the rail member, fastening means comprising depending deformable fingers mounted on opposite sides of the rail member and adapted when deformed to engage on opposite sides and hold the ends of the picket members.

2. In a metal balustrade embodying a rail member and vertical picket members joined to the rail member, fastening means comprising recesses formed in the sides of the picket members, deformable fingers carried by the rail member and adapted to be bent into engagement with the picket members, and flanges on the ends of the fingers adapted to enter the recesses when the fingers are deformed.

3. In a metal balustrade embodying a rail member and vertical picket members, fastening means for securing the rail members to the picket members comprising clips carried by the rail members, deformable fingers on the clips adapted to be bent into engagement with the ends of the picket members, said picket members having recesses along two sides, and flanges on the associated deformable fingers adapted to engage in the recesses.

4. A construction as defined in claim 3 in which the recesses are inclined and the flanges on the fingers are inclined to accommodate an inclined rail.

5. In a metal balustrade embodying a rail member and vertical picket members in abutting relation with the rail member, one of said members having recesses in the sides thereof, fastening means comprising deformable fingers mounted on opposite sides of the other of said members and adapted to grip the sides of the first mentioned member and to enter said recesses.

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WILLIAM D. PHILLIPS.

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