

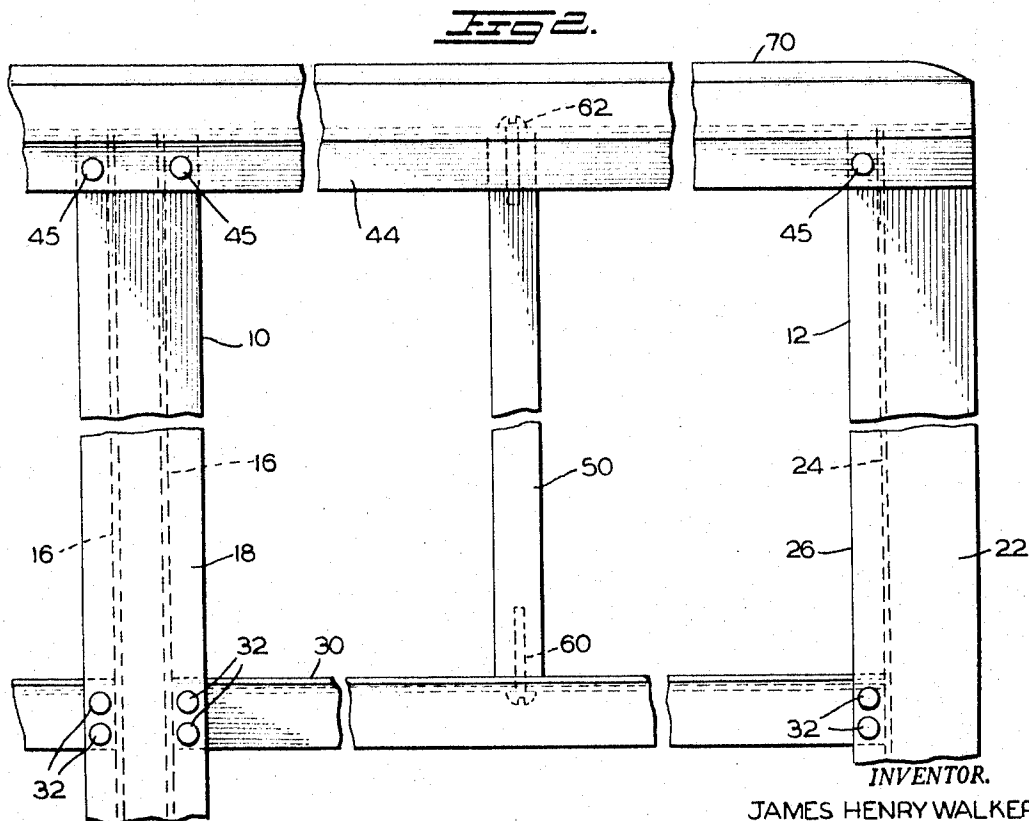
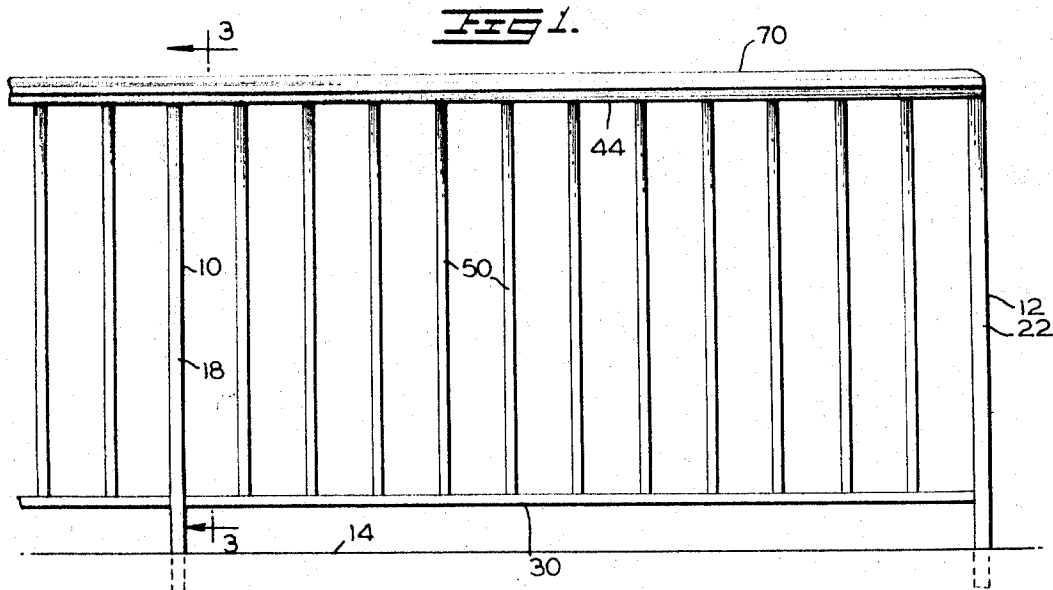
Aug. 26, 1969

J. H. WALKER
RAILING CONSTRUCTION

3,463,456

Filed Jan. 25, 1968

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG 3.

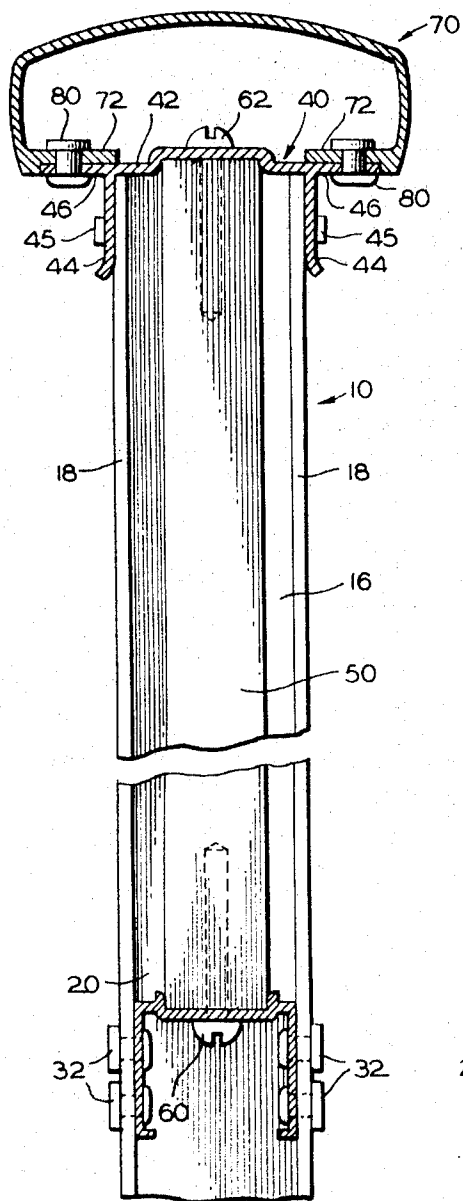


FIG 4.

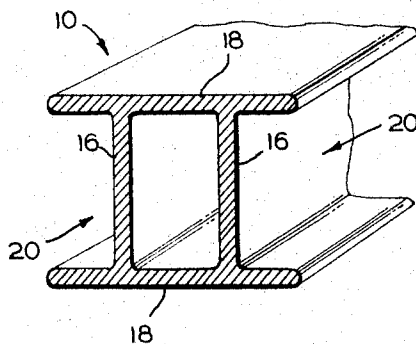


FIG 5.

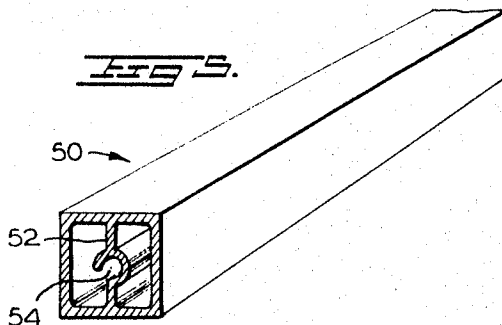
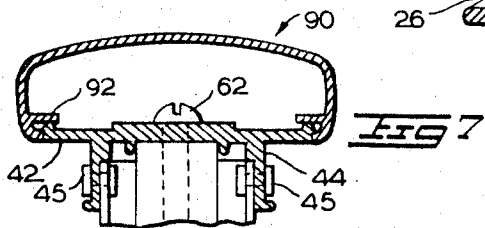
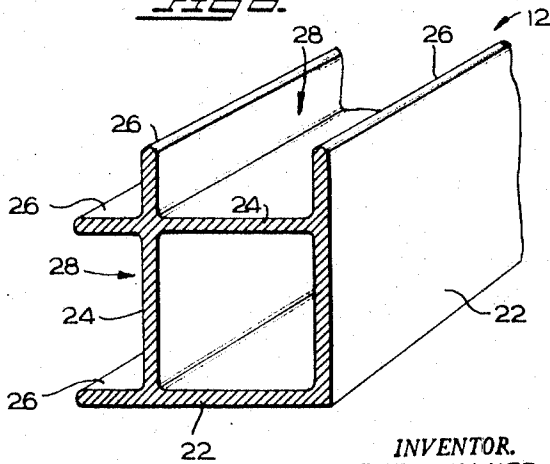


FIG 6.



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3,463,456

RAILING CONSTRUCTION

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9 Claims

ABSTRACT OF THE DISCLOSURE

A railing construction comprises laterally spaced apart vertical posts, each providing a pair of oppositely laterally outwardly facing channels into which the ends of horizontally endwise aligned downwardly facing channel shaped lower rail members are fitted and riveted, with the tops of the posts fitted into horizontally aligned downwardly facing channel shaped upper rail members having horizontally projecting top side flanges to the top of which are riveted the inwardly directed flanges of horizontally aligned cap members, and a series of parallel upright pickets span the vertical opening between the rails and have their ends fixed to the rails by screws threaded into axial bores in the pickets.

Summary of the invention

The invention provides a plurality of simple structural elements, which are preferably extrusions of suitable aluminum alloys, that are adapted for ready assembly on a building site by unskilled labor to produce a railing composed of horizontally spaced posts connected by upper and lower rails, with spaced pickets spanning the space between the rails, all connected together by screw or pop rivet means, with a hand rail capped over the upper rail trimming and concealing the picket and upper rail connections.

Description

The present invention comprises a railing construction well adapted to be made entirely of suitable metallic material such as extruded aluminum and alloys thereof and of like metals for use in connection with a variety of building structures.

The railing construction involves a plurality of simple structural shapes which are prefabricated preferably as metallic extrusions, desirably formed in the shop to predetermined final lengths for assembly quickly and inexpensively on the construction site by unskilled labor using only simple hand tools.

The railing may be assembled and erected in substantially any type of location where a strong open picket type of personnel barrier or enclosure is needed, such as along a walkway or roadway, a stairway or landing, and particularly along the edges of balconies, porches and other similar outdoor adjuncts of residences, apartments and other multi-unit buildings for residential, office and substantially any other use where ornamental, durable and substantial fencing of this general type is required.

The novel structure provided by the invention includes laterally spaced apart upright posts which can have their lower end portions securely embedded in floor concrete (or otherwise mounted on floors of other material). These posts are of double opposed channel shape. Downwardly facing channel members have their ends fitted into the channels with their flanges riveted to the channel flanges to form lower rails. Upper rails are provided by downwardly facing channel members into which the upper ends of the posts project for riveting. An elongated cap piece covers the upper rail, and a series of parallel pickets

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spanning the vertical space between the two rails are secured in place by being screwed at their tops and bottoms to the webs of the rails.

The principal object of the invention is to provide a railing construction of the type indicated which will be simple and inexpensive to make, by aluminum extrusion or otherwise, which will be stout and strong when assembled and erected, which will be ornamental and durable, and which can be provided in standard pre-cut component lengths and be erected by relatively unskilled labor using only simple conventional tools with minimal opportunities for error.

Particular embodiments of the invention which have been reduced to actual commercial practice and been found to be entirely satisfactory in use, and which are accordingly presently preferred, are shown in the accompanying drawings in order to illustrate the best mode of practicing the invention as required by Section 112 of the Patent Act.

In these drawings,

FIGURE 1 is a front elevational view of a section of completed, erected railing, including one corner post and one intermediate post and the cooperating rails, cap and picket components;

FIG. 2 is a relatively enlarged front elevational view, partly broken away for economy of space on the sheet, showing the structure of FIG. 1 in greater detail;

FIG. 3 is a vertical cross sectional view, taken on the line 3—3 of FIG. 1, showing the combination of intermediate post, upper and lower rails, picket and cap components in greater detail;

FIG. 4 is a fragmentary perspective view, partly in cross section, of one of the intermediate posts;

FIG. 5 is a similar view of one of the pickets;

FIG. 6 is a similar view of one of the corner posts; and

FIG. 7 is a vertical cross sectional view, like that of the upper portion of FIG. 3, showing a modified form of upper rail and cap structure.

In these views, FIG. 1 shows in front elevation a typical section of erected railing embodying the invention. As there seen, the assembly includes a pair of laterally spaced apart vertical posts 10, 12, which in the present instance have their lower end portions firmly embedded in the concrete 14 of a floor, walkway, stairway, landing or the like. Where the railing is to be installed on a wood floor, the specific mounting means for the posts, which forms no part of the invention, will be modified appropriately. In any event, the posts are set at some suitable uniform distance apart, say five or six feet, which for the sake of good appearance should be some aliquot part of the length of the installation that is to be erected.

In FIG. 1 the post 12 is a corner post, and the post 10 is an intermediate post. One corner post will be erected at the vertex of the angle of a corner of fencing, and all the rest of the posts in a given installation will be intermediate posts. Like all the other components of the railing, the posts are best made as aluminum alloy extrusions or equivalent metallic members. FIGS. 4 and 6 illustrate respectively the cross sections of the intermediate post and the corner post. As there shown, the intermediate post 10 is of generally box-shaped section, having double spaced parallel webs 16 and flanges 18 which form a pair of channels facing in opposite directions.

The corner post 12, as shown in FIG. 6, is also of generally box-shape in cross section, being formed with two right angularly related outer webs 22 and two inner webs 24, with flanges 26 extending from the webs to provide two channels 28 which are individually like the channels 20 of the intermediate post 10 but differ therefrom in being right angularly related instead of directly opposed.

The posts are extruded in long lengths and are cut in the shop to such lengths as may be specified by the architect or builder. Dimensions of course form no part of the invention, but it may be said by way of a practical example that posts three feet nine inches long are typical, allowing some three inches to be embedded in the concrete and providing a height of three feet six inches for capping, as hereinafter to be described, to constitute a railing having a total height of some three feet eight inches.

With the posts set up in spaced series, they are connected by a line of lower rails 30, each of which is preferably of simple channel shape having an outer width equal to the inner width of the post channels 20, 28. These lower rails are cut to lengths more or less accurately fitting the spaces between adjacent posts 10, 12 or 10, 10, and are installed in such spaces with the channel webs uppermost, the flanges downwardly directed, and the ends abutting the webs 16 or 24 of the post channels. The rails may be secured to the posts by such means as the pop rivets 32 standing through the flanges of the rails and the flanges of the posts, so as to mount the rails in endwise alignment, conveniently at a height of some five inches above the floor 14.

The posts, thus connected by the series of endwise aligned lower rails 30, are further connected by a series, similar to the lower rail series, of endwise aligned upper rails 40. Each of these latter rails is of generally channel shape and is mounted on the tops of the posts with the web 42 of the channel uppermost and the channel flanges 44 extending downwardly in snug engagement with the post flanges 18 (of the intermediate posts) and/or 22 (of the corner posts). Fastening means, such as the pop rivets 45, may be used like the rivets 32 to secure the rail flanges 44 to the post flanges 18 and/or 22.

The upper rails, while of generally inverted channel shape, have oppositely extending horizontal flanges 46 in the general plane of the web 42 for a purpose hereinafter to be explained.

With the posts thus connected at their tops by the upper rail sections and down near their bottoms by the lower rail sections, with the respective sections in endwise alignment, a series of pickets 50 are installed. Each of these pickets, as shown in FIG. 5, is an extrusion or the equivalent of tubular, preferably rectangular box-like section, having an internal web 52 which is centrally enlarged to provide a more or less completely tubular axial bore 54. The picket length is such as to fit snugly between the upper, outer surface of the web of a lower rail 30 and the lower, inner surface of the web of an upper rail 40.

The pickets are fixed in the foregoing position, at whatever lateral spacings may be desired, say five inches on centers or some more or less similar aliquot part of the spacing between posts, by means of screws 60 standing up through the webs of the lower rails and self-threaded into the axial bore 54 at the bottom of each picket web 52, and by similar screws 62 standing down through the webs of the upper rails and self-threaded into the bore 54 at the top of each picket. It will be recognized that the rails preferably have their webs pre-drilled for this purpose—an operation having the added advantage of predetermining picket locations and spacing without requiring measuring by the installing workman and resultant likelihood of un-uniform spacing.

Reference to FIG. 3 shows preferred web designs for both upper and lower rails. These include longitudinally extending slight channel depressions forming shallow seats for centering the pickets laterally of the rail webs, which are best made somewhat wider than the width or thickness of the pickets.

The assembly of posts, rails and pickets is now finished off by installation of the hand rail or cap 70. This member is of generally elongated channel shape with narrow

lips 72 extending inwardly from the channel flanges, or the cap may be considered to be an elongated rail of incompletely oblong box-shape in cross section, the box being incomplete by reason of lacking the central zone of one of the wider sides. As shown in FIG. 3, the cap side opposite the open bottom side is desirably crowned or rounded for the sake of appearance, and the cap is set in superposed relation on the upper rail 40 with its lips 72 overlying the horizontally extending flanges 46 of the upper rail. In the embodiment of the invention shown in FIG. 3, a neat fit is assured by recessing or rabbeting the under side of each of the lips 72 for accurate reception of the rail width, and fastening means 80, of the kind known as pop rivets, may be used to secure the lips 72 to the flanges 40, and hence the cap to the upper rail. Of course adjacent lengths of rail caps are endwise aligned, like the rails themselves.

In the alternative embodiment shown in FIG. 7, the cap 90 has its under side lips 92 somewhat shortened and divided to form a snap fit with the flanges 42 of the upper rail, which may in this case be formed with a slight edge bead to enhance the tightness of the connection and thus dispense with the need for rivets or other fastening means.

Having thus described the invention, what I claim is:

1. A railing construction comprising

a pair of laterally spaced apart vertical posts each having a vertical web and a pair of spaced parallel side flanges forming an open channel facing the similar open channel of the other post,

a lower rail having a horizontal web and a pair of spaced depending parallel side flanges forming an inverted channel having its end portions fitted into the channels of said posts,

fastening means securing together the overlapping portions of said rail flanges and said post flanges,

an upper rail having a horizontal web and a pair of spaced parallel side flanges depending therefrom inwardly of the outer edges of the web, forming an inverted channel having front and rear flanges extending horizontally from the juncture of said web and side flanges,

the upper ends of said posts being fitted into the channels of said upper rail,

fastening means securing the depending side flanges of said upper rail to the overlapped outer surfaces of the side flanges of the posts,

a series of pickets each of closed tubular shape formed with an internal central web in at least its end portions,

said pickets being disposed in spaced parallelism spanning the space between the rails and having their upper and lower ends engaged with the webs of the upper and lower rails respectively,

screws standing through openings in said rail webs into the webs of the pickets,

and a cap member of inverted general U-shape having inwardly extending horizontal lower edge flanges engaged with the horizontally extending front and rear flanges of the upper rail and secured thereto to cover and conceal the screws connecting the upper rail to the pickets.

2. The railing construction claimed in claim 1 in which

one of said vertical posts is an end post having a second channel facing a direction 90° removed from the direction in which the first channel of said post faces,

and in which said rails engaged with said second channel extend right angularly to said rails engaged with said first channel.

3. The railing construction claimed in claim 1

in which said fastening means securing the rail flanges to the post flanges are pop rivets.

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4. The railing construction claimed in claim 1 in which said cap member flanges are secured to the front and rear flanges of the upper rail by pop rivets.
5. The railing construction claimed in claim 1 in which the cap member flanges are secured to the front and rear flanges of the upper rail by pop rivets. 5
6. The railing construction claimed in claim 1 in which the cap member flanges are snap fitted onto the edges of the front and rear flanges of the upper rail. 10
7. The railing construction claimed in claim 1 in which the pickets are metallic extrusions, the webs thereof are preformed with axial bores to receive said screws, 15 and said screws are self-threaded into said bores.
8. The railing construction claimed in claim 1 in which at least one of said posts is of double channel shape having a pair of channels each facing laterally in a direction 180° removed from the direction in which the other channel faces, 20
- and in which said rails are engaged with both of said channels and extend in directly opposite directions from said post.

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9. The railing construction claimed in claim 1 in which both of said posts are of double channel shape, each having a pair of channels facing laterally oppositely, and in which said rails are engaged with both of said channels and extend in directly opposite directions from the post.

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