LONGITUDINALLY ADJUSTABLE INTERLOCKING RAILING CONSTRUCTION

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Filed: Apr. 10, 1972

Appl. No.: 242,315

U.S. Cl.................. 256/21, 256/22, 256/65, 287/54 C

Int. Cl.................. E04h 17/14

Field of Search.............. 256/21, 22, 24, 65, 256/66-70, 59; 287/54 C

References Cited

UNITED STATES PATENTS

2,835,475 5/1958 Enghauser ................................ 256/22
2,930,638 3/1960 Morrissey.......................... 256/65 UX

ABSTRACT

An interlocking construction for metal railings which is adjustable for variations in designed spacing between vertical walls. The construction includes a top rail which comprises a locking bar supported at both ends by angle clips bolted to the walls, a top rail which snaps onto grooves in the locking bar, and expansion filters inside both ends of the top rail which extend to the walls and are held in place by the spring tension of the top rail. The construction also includes an adjustable bottom rail with adjustable supporting deck brackets, and vertical, spaced, tubular members extending between the top and the bottom rail.

13 Claims, 8 Drawing Figures
LONGITUDINALLY ADJUSTABLE INTERLOCKING RAILING CONSTRUCTION

BACKGROUND OF THE INVENTION

Metal railings such as tubular aluminum railings are in great demand for protecting areas between bearing walls or party walls, such as balcony openings or the like, because of their strength, simplicity, beauty, and minimum maintenance requirements. In the past, however, these installations have presented many problems because the separation of the walls often varied from the design dimension by as much as several inches. Because of the variations in separation, precut modular railings often underwent expensive on-site alterations at the time of installation, and therefore their use was limited. Railings which were cut to size, assembled, and installed on-site required a great amount of labor, and often lacked uniformity with other nearby installations.

It is therefore an object of this invention to provide a modular pre-assembled railing construction which is adjustable to varying span lengths.

It is another object of this invention to provide an adjustable modular railing construction which is quick to assemble, easy to install, and handsome and secure when in place.

It is another object of this invention to provide a modular, adjustable railing construction which is tamper proof when installed.

THE DRAWING

FIG. 1 is an elevation view of a railing structure constructed according to the present invention.

FIG. 2 is an exploded perspective view of the top and bottom rails mounted on a wall.

FIG. 3 is a partial sectional side view of the top rail secured to the wall.

FIG. 4 is a cross-sectional view taken along line 4–4 of FIG. 3.

FIG. 5 is a partial sectional side view of the bottom rail secured to a wall.

FIG. 6 is a cross-sectional view taken along line 6–6 of FIG. 5.

FIG. 7 is a perspective view of a deck bracket.

FIG. 8 is a perspective view of a portion of a modification of top rail.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The metal railing construction of the present invention, generally referred to by reference numeral 10, is shown in FIG. 1. It is shown secured to the walls 11 and 12 with expansion assemblies 9 to protect the space therebetween. It consists of a top rail 13, vertical bars 14, a bottom rail 15, and the deck brackets 16. The rails 13 and 15 may be assembled to the bars 14 according to the construction described in U.S. Pat. No. 3,498,589, “Interlocking Railing Construction”, issued Mar. 3, 1970 to the inventor of the present invention.

In typical installations, the separation of the walls 11 and 12 may vary as much as 4 inches from the designed separation. Because the railing 10 can be adjusted quickly to such variations while being installed, and because no supporting posts are used, great savings in the elimination of measuring, field or shop trimming, marking or coding, and in the setting of post holes in proper alignment and spacing can be realized.
rail and bolted to the deck, to provide additional support as required in each installation.

The quick installation of the assembled railing system follows these steps:
1. The expansion shields are appropriately placed in the walls 11 and 12;
2. The bottom cap screws 40 with bushings 41 are set into the bottom expansion shields;
3. The expansion fittings 38 are telescoped out of the bottom railing 15 to the walls 11 and 12, and the railing structure 10 is set onto the cap screws 40;
4. The angle clips 18 are extended from the locking bar 25 to the walls 11 and 12, and bolted in place with screws 20;
5. The expansion fillers 33 are extended to the walls 11 and 12 with the tabs 34 engaging the grooves 21, and the hand rail 29 containing the fillers 33 is snapped onto the locking bar 25;
6. The horseshoe wedges 43 are driven into the grooves of the expansion fittings 38, locking them in place;
7. The deck brackets 16 are added as required.

Thus the present invention can be installed with no time-consuming measuring, cutting, trimming or post setting, and no chance for incorrect or faulty installation. There are no rough edges exposed, no fittings can be exposed to tampering, and the railing is sturdy and rattle-free.

For extremely long spans, a re-inforcing bar 50 is added to the top rail 13 to assure maximum safety. The bar 50 shown in FIG. 8, is contoured to fit inside the assembled hand rail 29, below the rail 29 and above the locking bar 25. The bar provides additional rigidity to the top rail assembly, and thus strengthens the entire railing structure.

It may be required in some situations that the railing 10 be installed using post supports in place of the walls 11 and 12. In that case posts are set at the nominal span distance of the railing 10, which is secured to the posts with the same assemblies employed for wall mounting. Posts may also be employed in conjunction with the re-inforcing bar, to strengthen extremely long spans, as required.

I claim:
1. An interlocking construction for railings and the like, an easily extendable fastening assembly for joining the ends of a pair of longitudinally aligned members to vertical supporting means disposed generally normal to the ends of said pair of members in a tamper proof and rattle free manner, comprising a pair of angle brackets each having a vertical portion fastened to said vertical supporting means, and a horizontal portion for slidably engaging a longitudinal, horizontal slot in the first of said pair of members, expansion filler means slidably housed within the second of said pair of members, to slidably extend from the ends of said second member to flush relationships with said vertical support means, said expansion filler means comprising a pair of open mouthed channel members each having a locking tab depending vertically from the interior transverse portion of said open mouth channel members at the ends adjacent said vertical support means, said vertical portions of said angle brackets lockingly receiving said locking tabs to secure the expansion filler means in flush relationship with the vertical support means and in covering relationships with said angle brackets.

2. The interlocking construction of claim 1 wherein the first of said pair of members comprises a locking bar having upwardly projecting side portions having a longitudinal horizontal slot therebetween, said second of said pair of members comprises an elongated open mouthed channel upper rail member having inwardly projecting reentrant flanges adjacent the mouth thereof, said locking bar side portions and said reentrant flanges having cooperating shoulders and grooves adapted to lockingly engage in a non-removable snapping fit to rigidly secure said upper rail member to said locking bar and said expansion filler means inside said upper rail member.

3. The interlocking construction of claim 2 further including a lower rail member spaced uniformly apart and below said pair of members, a plurality of uniformly spaced vertical bars secured to said locking bar and said lower rail member, said lower rail member comprising an elongated open mouthed channel rail member having inwardly projecting reentrant flanges, and shoulder and groove portions adjacent the mouth thereof, a pair of grooved expansion bars adapted to slidably extend from within the ends of said lower rail member, to a flush relationship with said vertical support means, said expansion bars each having a longitudinal seating slot opening downwardly, and seating pin means, secured to said vertical support means and received by said seating slots, to support said lower rail member.

4. The interlocking construction of claim 3, further including a pair of wedges to frictionally engage said grooves of said expansion bars and said reentrant flanges of said lower rail member to prevent movement of said expansion bars from said flush relationship with said vertical support means.

5. The interlocking construction of claim 3, further including a plurality of T-shaped deck brackets, each of said brackets having an elongated foot with a hole therethrough for securing said bracket to a horizontal surface, the upper, horizontal portion of said bracket having bevelled and fitted edges cooperating with said shoulder and groove portions of said lower rail member to lockingly engage in a non-removable snapping fit to rigidly secure said deck bracket to said lower rail member in a supporting relationship.

6. The interlocking construction of claim 2, further including a reinforcing bar adapted to fit inside said upper rail member and to extend the length of said upper rail member, said reinforcing bar being held securely in place by said snapping fit of said upper rail member to said locking bar.

7. In an interlocking construction for railings and the like, an easily-extendable cosmetic fastening assembly for joining the free ends of a longitudinally extending handgrip member to vertical supporting means disposed generally normal to said ends of said hand-grip member in a tamperproof and rattle-free manner, and such that no rough edges or fitting means are exposed, said assembly comprising a locking bar subjacent to, coterminous with, and longitudinally-extending in contact with said hand-grip member, said assembly further comprising a pair of right-angle brackets having their vertical portions fastened by fastening means to said vertical supporting means, and their horizontal portions for slidably engaging a longitudinal, horizontal slot in said locking bar, a pair of expansion filler means slidably housed within said hand-grip member to slid-
ably extend from the ends of said hand-grip member to flush relationships with said vertical support means, said fastening means being hidden from view by said expansion filler means.

8. The interlocking construction of claim 7 wherein said expansion filler means comprise open-mouthed channel members having locking tabs depending vertically from the interior transverse portions of said open mouth channel members at the ends adjacent said vertical support means, said vertical portions of said angle brackets lockingly receiving said locking tabs to secure said expansion filler means in flush relationships with said vertical support means and in covering relationships with said angle brackets.

9. The interlocking construction of claim 8 wherein said hand-grip member comprises an elongated open-mouthed channel upper rail member having inwardly projecting reentrant flanges adjacent the mouth thereof, and wherein said locking bar has upwardly projecting side portions having a longitudinal slot therebetween, said side portions and said flanges having co-operating shoulders and grooves to lockingly engage in a non-removable snapping fit to rigidly secure said upper rail member to said locking bar and said expansion filler means inside said upper rail member.

10. The interlocking construction of claim 9 further including a lower rail member spaced uniformly apart and below said hand-grip member and said locking bar, a plurality of uniformly-spaced vertical spindle bars secured to said locking bar and said lower rail members, said lower rail member comprising an elongated open-mouthed channel rail member having inwardly-projecting reentrant flanges, and shoulder and groove portions adjacent the mouth thereof, a pair of grooved expansion bars adapted to slidably extend from within the ends of said lower rail member to flush relationships with said vertical support means, said expansion bars each having a longitudinal seating slot opening downwardly, and seating pin means, secured to said vertical support means and received by said seating slots, to support said lower rail member.

11. The interlocking construction of claim 10, further including a pair of wedges to functionally engage said grooves of said expansion bars and said reentrant flanges of said lower rail member to prevent movement of said expansion bars from said flush relationships with said vertical support means.

12. The interlocking construction of claim 10, further including a plurality of T-shaped deck brackets, each of said brackets having an elonated foot with a hole therethrough for securing said bracket to a horizontal surface, the upper, horizontal portion of said bracket having beveled and lipped edges cooperating with said shoulder and groove portions of said lower rail member to locking engage in a nonremovable snapping fit to rigidly secure said deck bracket to said lower rail member in a supporting relationship.

13. The interlocking construction of claim 9, further including a reinforcing bar adapted to fit inside said upper rail member and to extend the length of said upper rail member, said reinforcing bar being held securely in place by said snapping fit of said upper rail member to said locking bar.

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