

Nov. 14, 1967

W. W. THOM
RAILING ASSEMBLY

3,352,541

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2 Sheets-Sheet 1

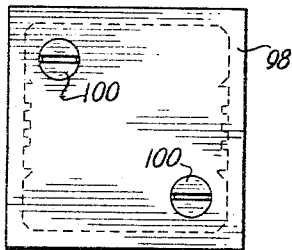


Fig. 7.

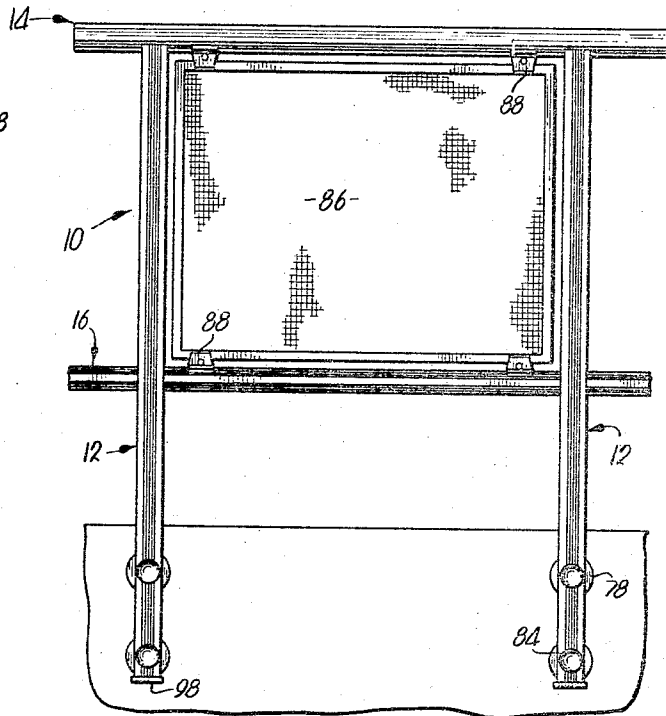
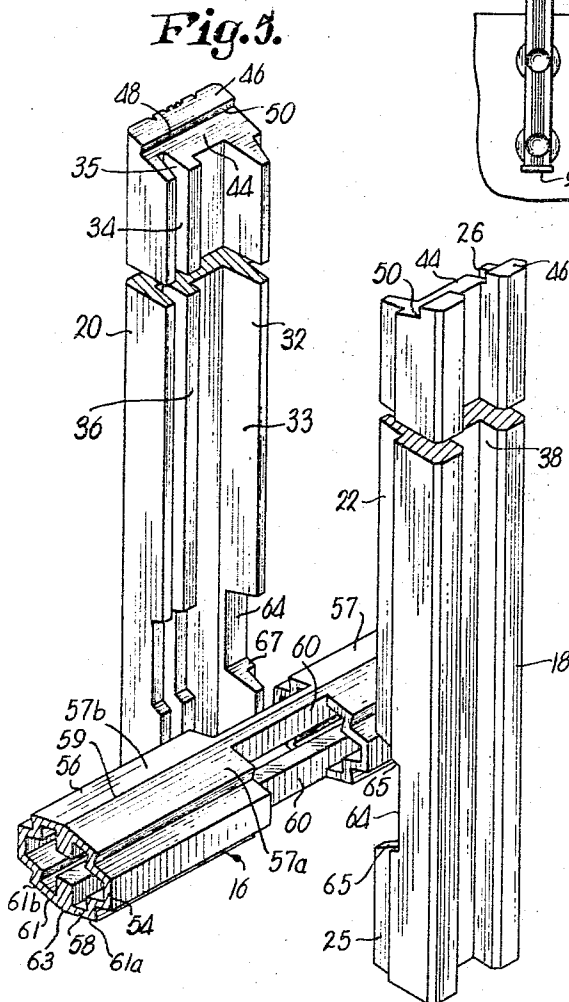


Fig. 1.



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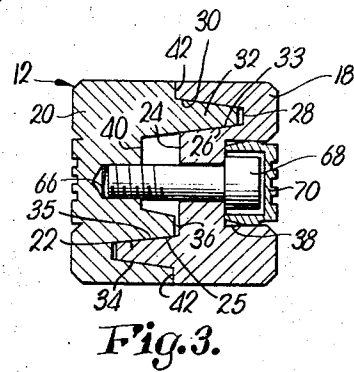
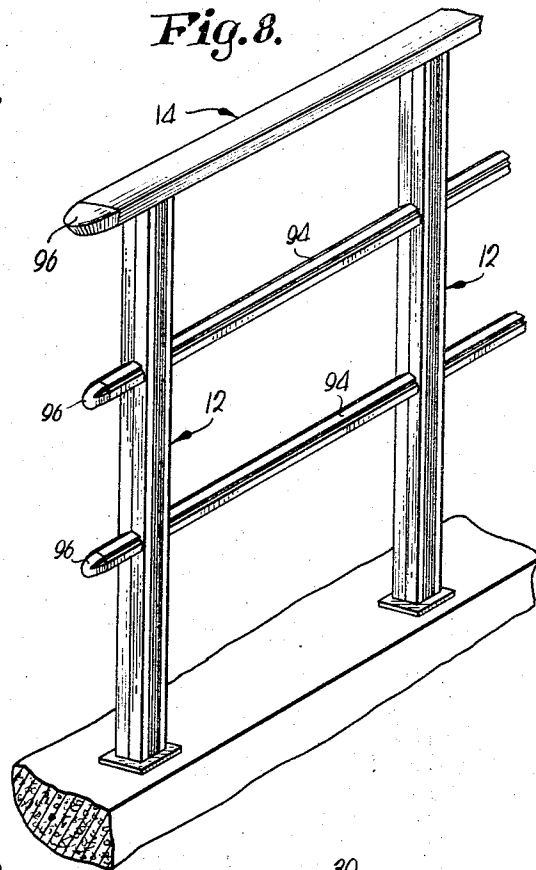
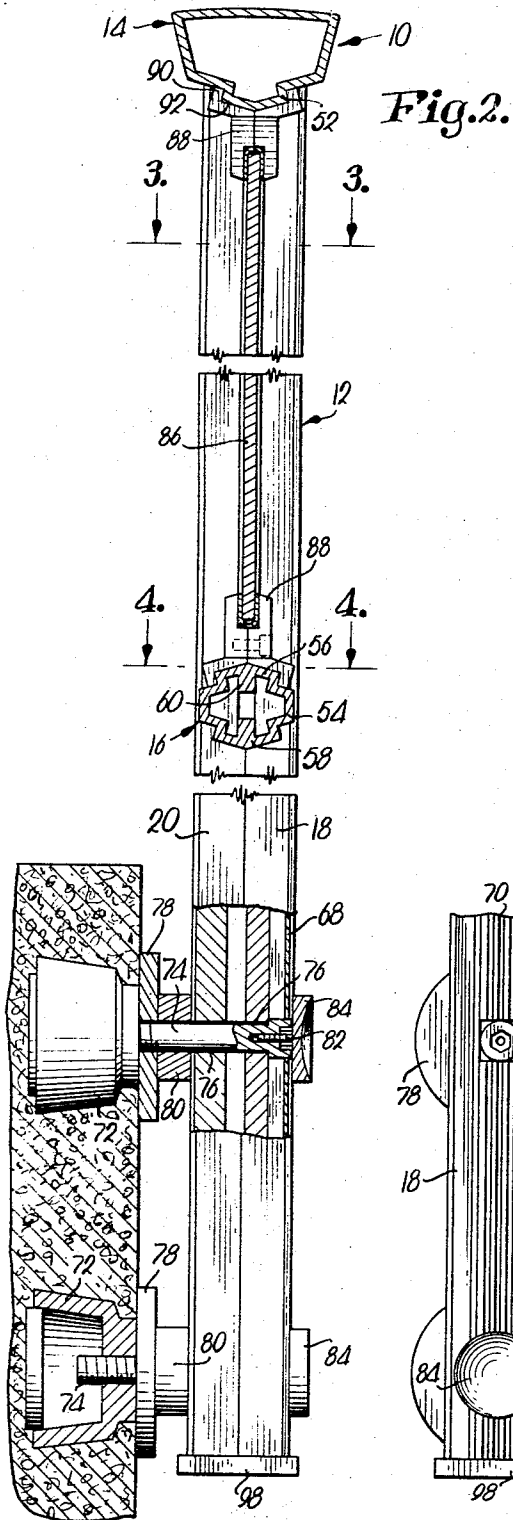


Fig. 6.

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RAILING ASSEMBLY

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2 Claims. (Cl. 256—21)

This invention relates to railing structure and, more particularly, to an improved railing assembly suitable for use to enhance the aesthetic appearance of a structure, as a partitioning means, or as a safety device.

The advantages in structural railing assemblies of using posts comprised of two initially separate members fastened together for supporting rails have heretofore been recognized. One big advantage attainable with such construction is the ability to adjust the relative positions of the components at the installation site, permitting ready compensation for irregularities which may occur in the structural surfaces to which the structure is to be attached.

Although assemblies of this kind have generally been quite successful in achieving the desired advantages and have met with widespread commercial acceptance, the manufacturing cost of the components has been relatively high, and a need for increased structural strength of the assemblies has been recognized. The wide variety of uses which may be made of railing structures has created a demand for assemblies having characteristics of increased versatility of construction, as well as further simplification of the components to permit assembly and installation by relatively unskilled workmen utilizing simple, commonly available tools.

The present invention provides a railing assembly including a post adapted to be secured to a support, and railing structure in the form of an elongated rail utilized with the post to provide a safety device, partition, or decorative structure. The post includes a pair of elongated members having interengageable sections to frictionally hold the members against relative movement. These sections include tongue and groove means and the members are configured to permit slight deformation thereof after the tongues are seated in their respective grooves to enhance the bond effected between the members.

The rails are provided with ribs configured to fit in notches formed in an extremity of the post and to present means for mounting decorative or screening panels between the rails. The intermediate rails are of tubular construction and have inwardly projecting, centrally located flanges to permit the side wall of the rail to be machined away to present suitable openings for receiving the post members, yet maintaining the structural integrity of the rail throughout its entire length. The configuration of the post members is such as to permit the forming of recesses therein for receiving the rail flanges with the rails in intersecting relationship to the posts without substantially weakening the post members.

The post members, as well as the rails, are generally formed from extrusions to effect economies in fabrication and so that the external appearance of the components of the railing assembly may be varied. Such components are also designed to permit their disposition in a variety of relationships for fabrication of various shapes and designs.

Accordingly, it is the primary object of this invention to provide a railing assembly comprising simplified components which may be economically manufactured, may be quickly and easily assembled in a variety of relative dispositions, and possess substantial strength characteristics when assembled into a structural unit.

Another important object of this invention and contributing to the achievement of the foregoing object, is to provide a railing assembly having novel, rail-supporting posts comprising two members having interengageable sec-

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tions which insure against any relative movement between the members after they are installed in the assembly.

A further important object of the invention is to provide posts which may be used to support the rails in intersecting relationship therewith without decreasing the strength of the posts.

Still another very important object of the present invention is to provide such posts and rails having novel mutually cooperating means to permit ready attachment of the posts to the rails at substantially an infinite number of positions so that the components may be readily assembled in a wide variety of relative positions and which are configured to enhance the structural rigidity of the railing assembly.

A yet further important object of the instant invention is to provide railing elements having novel rib formations for imparting strength to the rails and presenting means for securely mounting a wide variety of accessories in substantially any desired position between the rails.

Another object of the invention is to provide railing components which may be fabricated by inexpensive extrusion methods and which may be configured for assembly in mutually interlocking relationship by simple shop operations without detracting materially from the inherent strength of the components.

A still further object of this invention is to provide a railing assembly having rails of novel, tubular construction to minimize the amount of material required for fabricating the rails, yet maintaining the necessary rigidity thereof.

Another significant object of the invention is to provide a railing assembly wherein all of the components thereof may be precut and shaped at the factory by a minimum of operations prefabricated at the factory and then shipped to the site for ready installation.

Other objects of the present invention will become apparent as the following specification progresses, reference being had to the accompanying drawings, wherein:

FIGURE 1 is a fragmentary, elevational view on a reduced scale of a railing assembly embodying the principles of this invention and comprised of a pair of spaced, generally upright posts mounted on a supporting structure and having a pair of vertically spaced rails with a wind screen mounted between the rails;

FIG. 2 is an end elevational view of a post and a pair of rails mounted thereon made pursuant to the present invention and illustrating one manner of mounting the post on a supporting structure, parts being broken away and appearing in cross section to illustrate details of construction;

FIG. 3 is a view of the post taken along line 3—3 of FIG. 2;

FIG. 4 is a view of a post and one of the rails taken along line 4—4 of FIG. 2;

FIG. 5 is a perspective view of a post and one rail showing the post members in disassembled relationship to reveal details of construction;

FIG. 6 is a fragmentary, elevational view of the lower end of the post illustrated in FIG. 2 with one of the decorative plates removed to show a mounting bolt;

FIG. 7 is a bottom plan view of the post illustrated in FIG. 2, the periphery of the post appearing in dashed lines; and

FIG. 8 is a fragmentary, end perspective view on a reduced scale of a railing assembly similar to the assembly illustrated in FIG. 1 showing a number of rails supported by the posts and illustrating another manner of mounting the posts on a supporting structure.

A railing assembly 10 is illustrated in FIGS. 1 and 2 and includes a post 12 and a pair of rails 14 and 16 disposed in intersecting relationship with post 12. Post

12 is comprised of a pair of elongated members 18 and 20 which are illustrated in transverse cross section in FIG. 3. Member 18 has a transversely wedge-shaped tongue 22 projecting outwardly from a side wall 24 and presenting a pair of side surfaces 25 extending longitudinally of member 18 throughout substantially the entire length thereof. Tongue 22 is disposed proximal one outer edge of wall 24.

A pair of spaced, converging side wall surfaces 26 and a bottom surface 28 define a longitudinally extending groove 30 in wall 24 proximal the other outer edge thereof as shown in FIG. 3. Member 20 has a longitudinally extending tongue 32 and a longitudinally extending groove 34 which are identical to tongue 22 and groove 30 of member 18 and which respectively present surfaces 33 and 35 identical to surfaces 25 and 26. The tongue 32 projecting outwardly from and the groove 34 in wall 36 of member 20 are disposed in corresponding relationship for interengagement with the respective tongue 22 and groove 30 of member 18, as shown in FIG. 3. Manifestly, surfaces 26 of groove 30 abut surfaces 33 of tongue 32 while surfaces 35 of groove 34 abut surfaces 25 of tongue 22.

An elongated channel 38 in the outer surface of member 18 extends the length of the latter, and another channel 40 extends longitudinally of member 20 in wall 36. Shoulders 42 on members 18 and 20 between tongues 22 and 32, respectively, engage the corresponding walls 24 and 36, for holding the tongues in spaced relationship from the bottom surfaces of the grooves 30 and 34 for a purpose to be hereinafter explained.

As shown in FIGS. 2 and 5, the upper extremity of each member 18 and 20 is shaped to present a flat surface 44 inclined at an angle in the direction of the opposite member. Each surface 44 has a boss 46 projecting upwardly therefrom and is joined therewith by a wall 48 disposed at an acute angle with respect to the corresponding surface 44 to define a V-shaped notch 50. The upper rail 14 is of tubular configuration and has an elongated rib 52 formed thereon. The transverse width of rib 52 decreases as rail 14 is approached to complementarily fit within notches 50 when members 18 and 20 are clamped in mutually interengaging relationship.

It is thus apparent that notches 50 cooperate with the longitudinally extending rib 52 of rail 14 for securely clamping the latter to post 12 at any desired location along rail 14. Intermediate rail 16 is shown best in FIGS. 2 and 5 and is of tubular construction. The outer peripherally extending side wall 54 of rail 16 is formed to present a pair of opposed ribs 56 and 58 which may be identical to rib 52 of rail 14.

A pair of longitudinally extending flanges 60 integral with wall 54 project inwardly from ribs 56 and 58 as shown best in FIG. 5. The flanges 60 are centrally located with respect to rail 16 to provide structural integrity for the latter when the outer sections of wall 54 are cut away to present openings 62 on either side of rail 16 as clearly illustrated in FIG. 5 of the drawings. The openings 62 are disposed to receive members 18 and 20 therein when rail 16 is disposed in intersecting relationship with post 12, as shown in FIG. 2. Similarly, the outermost projecting portions of members 18 and 20 are cut from the respective walls 24 and 36 to present inwardly projecting recesses 64 in members 18 and 20 at locations for receiving the flanges 60 of rail 16 throughout when the rail is disposed in such intersecting relationship with post 12. Thus, openings 62 and recesses 64 cooperate to provide means for interlocking rail 16 in intersecting relationship with post 12 as illustrated in FIG. 4. The recess 64 of member 18 defines a pair of opposed, spaced, inner faces 65 which diverge as member 20 is approached thereby. Similarly, the recess 64 of member 20 defines a pair of opposed, spaced, inner faces 67 which diverge as member 18 is approached thereby. Furthermore, ribs 56 and 58 have respective, transversely

V-shaped outer surfaces 57 and 61 presenting corresponding apexes 59 and 63. Surface 57 has a pair of angularly disposed faces 57a and 57b disposed on opposite sides of apex 59 while surface 61 has corresponding faces 61a and 61b similarly disposed on opposite sides of apex 63. The faces 57a and 61a are opposed, spaced and convergent in a direction toward member 18 and the portions thereof between openings 62 are disposed in complementarily engaging relationship to faces 65 of the recess 64 of member 18. Likewise, the faces 57b and 61b are opposed, spaced and convergent in a direction toward member 20 and the portions thereof between openings 62 are disposed in complementarily engaging relationship to faces 67 of the recess 64 of member 20.

Referring now to FIG. 3, it may be seen that member 20 is provided with a bore 66 threaded to receive therein fastening means such as a machine screw 68 for securing members 18 and 20 together. To this end, member 18 is suitably drilled and the head of screw 68 is received in channel 38 as illustrated. For a decorative effect, a transversely U-shaped strip 70 may be inserted in channel 38 concealing the latter and maintaining a uniform external appearance between the members 18 and 20 for enhancing the aesthetic ornamental qualities of the railing assembly.

One means for anchoring posts 12 to a building structure is illustrated in FIG. 2 wherein frusto-conical shaped anchors 72 are cast in a concrete structure. The anchors 72 are drilled to threadably receive therein bolts 74 passing through suitable drilled openings 76 in members 18 and 20. The heads of bolts 74 are disposed in channel 38 of member 18, and a washer 78 cooperates with a spacer 80 to maintain post 12 in properly spaced relationship from the outer wall surface of the building structure. If desired, the outer ends of bolts 74 may be drilled for threadably receiving a stud 82 integral with an ornamental cap 84 to secure the caps in covering relationship with respect to the bolts 74 for improving the appearance of the assembly.

It is often desired to provide wind screens or decorative panels between the intersecting rails and posts. Such a panel 86 is illustrated in FIGS. 1 and 2 and is maintained in position between rails 14 and 16 by means of brackets 88, each bracket 88 being provided with a pair of spaced projections 90 defining a channel 92 therebetween configured to complementarily engage the ribs 52, 56 and 58. Bracket 88 may be formed from two identical sections secured together by any suitable fastening means such as machine screws or the like. One end of each bracket 88 is bifurcated to receive therebetween the peripheral edges of panel 86 as shown in FIGS. 1 and 2 and supporting the latter between the rails.

It will be readily understood that panels 86 may be of a variety of shapes, colors, textures, etc., as desired, for use in the construction of the railing assembly. The configuration of rail 16 with rib 56 on one side and rib 58 on the other side thereof, permits the utilization of a number of rail elements in the railing assembly with panels 86 positioned between any or all of the rails. A railing assembly utilizing a number of rail elements 94 is illustrated in FIG. 8 with the elements 94 being identical in configuration to rail 16 and disposed in intersecting relationship with a number of posts 12. It can be seen that, if desired, the ribs of the elements 94 are in disposition to permit the fastening of panels 86 between the top rail 14 and the upper element 94, or between the upper and lower elements 94 as desired. Further, the lowermost rib 58 of the lower element 94 could be used to cooperate in securing a panel between the rail element 70 and the building structure.

In the embodiment of railing assembly illustrated in FIG. 8, the ends of the rails are shown closed by suitable caps 96 configured to blend with the external appearance of the rails. Caps 96 may be held in place by suitable projections (not shown) which extend into the tubu-

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lar rails for frictional engagement therewith. Additionally, the posts 12 may be closed at their lowermost extremity by a plate 98. As illustrated in FIG. 7, plate 98 may be fastened to members 18 and 20 by screws 100 received in suitable drilled openings in members 18 and 20.

Referring now particularly to FIG. 3, it may be seen that when members 18 and 20 are disposed in interengaging relationship to form post 12, shoulders 42 initially maintain the components in relative dispositions as illustrated. However, continued tightening of fastening means 68 tends to draw members 18 and 20 more closely together. The initial spacing between the members at all surfaces thereof, except shoulders 42 and the converging side wall surfaces 26 of the respective grooves which engage the outer surfaces of the wedge-shaped tongues 22 and 32, permit a great wedging pressure to be applied between the members at these contacting surfaces. Additionally, tightening of screws 68 wedges faces 57a and 61a into tight frictional engagement with faces 65 and wedges faces 57b and 61b into tight frictional engagement with faces 67 to preclude shifting of rail 16 relative to post 12. These wedging pressures cause a strong frictional bond to be created between the post members and between the post and the rail to insure against any mutual slippage between the members or between the post and the rail when the post is assembled. This bond is enhanced in part by the fact that the spacing between the opposed contacting surfaces of the members and between the flanges of the rail permits some deformation to the members and the rails under the extreme forces applied by the fastening means. This deformation of the members and the rail increases the bond and eliminates any tendency of the members or the rail to separate or become loose. Thus, the novel configuration of the members and the rail presents posts of initially separate members to permit dispositions in mutually intersecting relationship with the rails, yet insures that the assembly is extremely strong.

The provision of the flanges on the rails 16 provides an easy means for interconnecting the rails with the posts without substantially decreasing the structural strength of the assembled unit. The openings 62 may be precut at desired locations along rail 16 without the necessity of skilled workmen or complicated machinery. Recesses 64 in the members 16 and 18 may be formed in like manner. A substantial amount of the material of members 18 and 20, as well as rail 16, remains after these operations so that the strength of the unit is preserved, yet permits the rails to be disposed in intersecting relationship with the posts to present a pleasing appearance.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A railing assembly comprising:

an elongated rail having a pair of spaced, longitudinally extending, outwardly facing side surfaces, and a longitudinally extending face joining the normally lowermost edges of said side surfaces, said side surfaces being located to diverge as said face is approached presenting a rib having a transversely dovetail configuration;

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a pair of elongated, separate members cooperable to define a post and supporting the rail in intersecting relationship thereto, each member having an upper extremity provided with a normally, generally upwardly facing first surface and a second surface extending generally upwardly from said first surface, said second surfaces being located on said members to generally face one another when said members are disposed to define said posts and to diverge as said first surfaces are approached presenting a transversely dovetail configured groove extending laterally across said post at said upper extremity thereof, said first and second surfaces being located to cause said groove to be configured to complementally receive said rib; and

fastening means maintaining said members in post-defining disposition and said second surfaces in engagement with said side surfaces.

2. A railing assembly comprising:

an elongated rail;

a pair of elongated, separate members having respective, interengageable surfaces extending longitudinally thereof, at least one of said members having an inwardly projecting rail receiving recess therein extending laterally across said surface thereof; and adjustable fastening means maintaining the members in parallelism with said surfaces in substantial abutment and with said rail in said recess whereby said members present a post supporting the rail in intersecting relationship thereto,

the recess in said one member defining a pair of opposed, spaced, inner faces diverging as the other member is approached thereby,

said rail having a pair of opposed, spaced, outer, convergent faces complementally engaging said inner faces whereby upon tightening of said fastening means said faces are wedged into tight frictional engagement to preclude shifting of the rail relative to the post.

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