

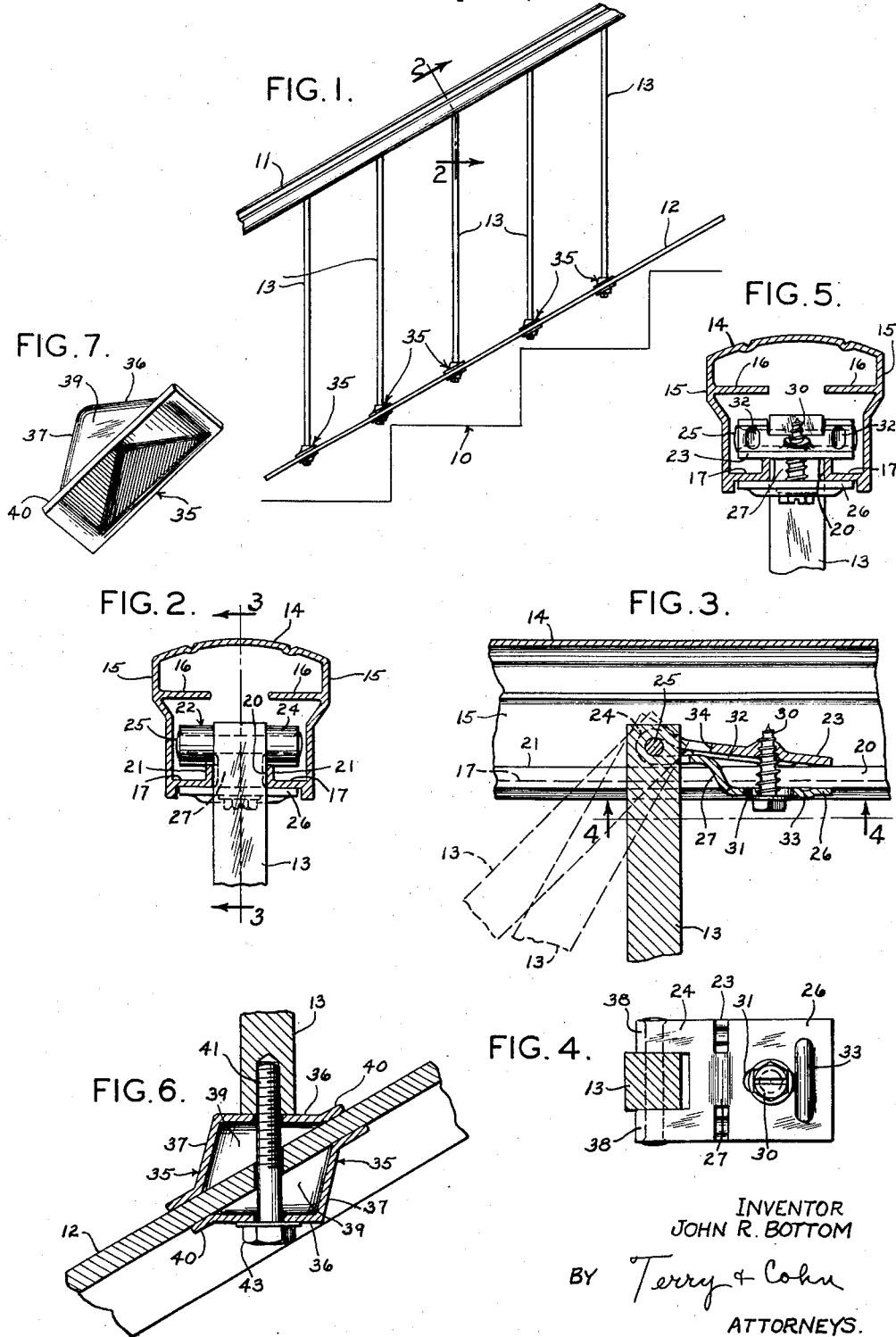
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RAILING ASSEMBLY

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RAILING ASSEMBLY

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6 Claims. (Cl. 287—9)

This invention relates to improvements in a railing assembly, and more particularly to improved means for detachably connecting a spindle to a rail of the assembly.

It is a major objective of the present improvements to realize a connection that affords quick and easy assembly of a spindle to a rail, all without the use of any special tools or skill. This improved connection enables ready assembly of a railing by a mechanic or by any average person of ordinary skill, and does not require any detailed or otherwise involved directions. This connection means permits the spindle to be longitudinally adjusted along the rail, and enables the spindle to be angularly adjusted to any desired position.

Briefly summarized, the invention consists of a railing having a transverse ledge adapted to receive and engage a clip. The clip includes spaced plates normally retained contiguous with the ledge. A spindle is pivotally connected to the clip, and is adapted to be angularly displaced to a desired location depending upon the inclination of the rail. The clip, and hence the spindle connected thereto, is adapted to be longitudinally displaced along the rail, and is adapted to be fixed in position upon clamping the plates to the ledge.

Another important object is realized by the cooperating rail and clip structure that permits the clip to be slidably connected from the end of the rail, and subsequently moved longitudinally along the rail to the proper position. The clip includes an intermediate portion connecting opposed plates that engage opposite sides of the ledge, the intermediate portion extending through an elongate slot formed in the ledge, the slot being open at one end of the rail to facilitate assembly as discussed previously. Further, the spindle connected to and carried by the clip is adapted to extend through the slot, and is longitudinally and angularly adjustable therein to realize the functional advantages noted above.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of a preferred embodiment, particularly when considered in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view of a railing assembly;

Fig. 2 is an enlarged cross sectional view of the assembly as seen along line 2—2 of Fig. 1, showing the connection of a spindle to the rail;

Fig. 3 is a fragmentary view in cross section as taken along line 3—3 of Fig. 2, the dashed lines indicating various angular positions of the spindle;

Fig. 4 is a view, partly in cross section, as taken along line 4—4 of Fig. 3;

Fig. 5 is a cross sectional view of the rail showing the opposite end of the clip from that shown in Fig. 2;

Fig. 6 is an enlarged fragmentary view in cross section showing the connection of the spindle to the lower rail of the assembly, and

Fig. 7 is a perspective view of the connecting bracket shown in Fig. 6.

Referring now by characters of reference to the draw-

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ing, and first to Fig. 1, there is disclosed a fragmentary portion of a railing assembly located on a stairway or steps generally indicated at 10. The railing assembly consists of an upper rail 11 arranged parallel to and in the same vertical plane with a lower rail 12. The rails 11 and 12, in the assembly shown, are inclined at an angle that substantially conforms to the pitch of the stairway. A plurality of spindles 13 are secured to the upper and lower rails 11 and 12 by connecting means that are later fully described in detail, the spindles 13 serving to retain the rails in rigid, spaced alignment. Of course, the rails 11 and 12 may be disposed horizontally or in any other angularly related position depending entirely upon the particular usage, as for example in a railing on a porch, a stairs or landing.

The rail 11 is preferably formed of an extruded metal such as aluminum. However the particular material is not to be understood as restrictive, the functional results of the invention being also realized if other materials are utilized. The configuration of rail 11 is best shown in cross section in Figs. 2 and 5. The rail 11 consists of a top wall 14, and depending side walls 15. A pair of projections 16 extend inwardly from side walls 15, immediately below, yet spaced from top wall 14, the projections affording a rigid structure that can withstand severe bending and torsional stresses.

Extending inwardly from side walls 15 is a transverse horizontal ledge 17 that is slightly spaced above the lower margins of walls 15. The ledge 17 is divided into two parts or sections by an elongate longitudinal slot 20, the slot 20 being of a width that closely approximates the width of spindles 13. An upstanding vertical flange 21 (Fig. 2) is provided at the inner margin of each ledge section, the flanges 21 constituting rails that guide and direct a clip structure, referred to at 22, incident to assembly of spindles 13. As will later appear, the slot 20 is open at least at one end of rail 11 in order to facilitate slidable endwise assembly of clip 22 onto the rail.

The clip 22 includes an upper plate 23 (Fig. 3) that normally engages the upper marginal portions of flanges 21 of ledge sections 17, the plate bridging slot 20. One end of plate 23 is reversed to form a substantially closed loop portion 24 adapted to carry a transverse pivot pin 25. The clip 22 includes a second plate 26 that normally underlies and engages the lowermost surfaces of ledge sections 17 on each side of slot 20. An extension 27 integrally interconnects the reversed portion 24 of plate 23 with the second plate 26, the extension 27 being of reduced width whereby to extend through slot 20. The plates 23 and 26 constitute opposite arms of a loop spring, and are normally urged apart for a distance so as to receive therebetween the ledge 17 and flanges 21.

A screw 30 (Figs. 3 and 5) constituting a threaded member interconnects the plates 23 and 26. The screw 30 extends freely through an aperture 31 formed medially of plate 26, and operatively engages in threaded relation the plate 23, the screw extending between the ledge sections 17 and through slot 20. Upon actuation of the screw in one direction, the plates 23 and 26 are clamped tightly to ledge 17, thus fixing the location of the clip and hence pivot pin 25 longitudinally of rail 11. Upon actuation of screw 30 in the other direction, the plates 23 and 26 are released from ledge 17, whereby the clip may be subsequently, longitudinally adjusted along rail 11.

The screw 30 may be retained at all times by clip 22, the threads engaging plate 23 even when the plates 23 and 26 are not held in fixed relation with ledge 17. Since the slot 20 is open at least at one end of rail 11, and preferably at both ends, the clip 22 and assembled clamping screw may be quickly and easily slipped into position on ledge 17 without first requiring disassembly

of any of the component parts. The slot 20 is adapted to receive and accommodate the shank of screw 30 and the extension 27. Obviously, this structural arrangement facilitates assembly of the railing, and provides a more compact unit.

A pair of spaced longitudinally arranged ribs 32 (Figs. 3 and 5) are provided on plate 23, one of ribs 32 being located immediately outwardly of each flange 21. These ribs 32, in addition to strengthening plate 23 to resist the resulting bending stresses, coact with adjacent flanges 21 and serve to position clip 22 on ledge 17 incident to clamping of the plates. A transverse rib 33 (Figs. 3 and 4) is located on plate 26 adjacent aperture 31, and is adapted to increase the strength and rigidity of the plate.

The reversed portion 24 of plate 23 is medially recessed in the region of pivot pin 25, and in the zone immediately overlying slot 20. A spindle 13 is located in this recessed region 34 and is carried by pin 25 between the spaced arms 38 of portion 24, the spindle 13 extending through slot 20 and between ledge sections 17. The recessed region 34 is of sufficient dimension to permit spindle 13 to be pivotally displaced to various angular positions such as those indicated in dashed lines in Fig. 3.

It is thought that the assembly of the clip and cooperating parts to rail 11, and the functional results realized, have become apparent from the foregoing description of structure, but for completeness of disclosure, it will be noted that clip 22 is inserted into operative relation with rail 11 from one end thereof. The plates 23 and 26 are spaced sufficiently so that ledge 17 may be located therebetween, the slot 20 accommodating the shank of screw 30, the reduced intermediate extension 27, and the spindle 13. The clip is slidably, longitudinally displaced along ledge 17 until spindle 13 is located in the desired location. The spindle 13, and hence the position of pivot pin 25, is fixed by clamping the plates 23 and 26 to the ledge 17 by actuation of screw 30.

The lower end of spindle 13 is fastened to lower rail 12 by a connecting bracket indicated at 35. This bracket 35 includes angularly related walls 36 and 37, side walls 39, and peripheral flanges 40 that seat contiguously with rail 12. As is best shown in Fig. 6, the bracket 35 is located on the upper surface of rail 12 so that one of the walls 36 or 37, in this instance wall 36, is located in a horizontal plane. A matching bracket 35 is located on the lower surface of rail 12 so that its corresponding wall 36 is disposed horizontally. The lower end of spindle 13 abuts wall 36 of upper bracket 35, and is retained in a vertical position. A threaded member 41 extends freely through vertically aligned apertures 42 formed in walls 36 of brackets 35 and in rail 12, the member 41 operatively engaging a tapped recess formed in the end of spindle 13. The head 43 of member 41 abuts the wall 36 of lower bracket 35. The walls 36, 37 and 38 form a complete enclosure about member 41.

Obviously, the bracket connection shown is particularly useful when the rails are angularly disposed as in a stairway arrangement shown in Fig. 1. From Fig. 6, it is seen that surfaces 36 and 37 of each bracket 35 are of different lengths so as to accommodate different angular positions of rail 12. In other words, if surfaces 37 of the matching upper and lower brackets 35 were arranged in a horizontal position, the brackets would then accommodate a rail 12 arranged at a different inclination than that shown in Fig. 6.

Although the invention has been described by making detailed reference to a single preferred embodiment, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. A connection between a spindle and a rail of a railing assembly, the connection comprised of a transverse

ledge on said rail, said ledge being separated into two parts by an elongate slot through which the spindle extends, a clip including a pair of spaced plates, one of said plates being disposed on each side of said ledge, said plates being pivotally connected to the spindle for permitting angular adjustment of the spindle in said slot, and clamping means interconnecting said plates and extending through said slot for detachably fastening said plates to said ledge.

2. A connection between a spindle and a rail of a railing assembly, the connection comprising a transverse ledge on said rail, said ledge being provided with an elongate slot that separates the ledge into spaced sections and through which the spindle extends, a clip including an upper plate normally engaging the top of said ledge, and including a lower plate normally engaging the bottom of said ledge, said plates being normally disposed in spaced relation, means for pivotally connecting said clip to the spindle, said pivot means extending transversely of the slot for permitting angular adjustment of the spindle in said slot, and an adjustable member interconnecting said plates and extending through said slot, said member being adapted to clamp said plates to said ledge, whereby to fix the pivotal connection of the spindle relative to said rail.

3. A connection between a spindle and a rail of a railing assembly, the connection comprising a transverse ledge on said rail, said ledge being provided with an elongate slot that is open to at least one end of said rail, a clip including a plate normally disposed on and engaging one side of said ledge, a pivot pin carried by said plate and disposed transversely of said slot, said pin being connected to the spindle, said spindle extending through said slot, a second plate disposed on and normally engaging the other side of said ledge, an extension of the clip connecting and retaining said plates in spaced relation, said extension being received in and extending through said slot, and threaded means extending through said slot and interconnecting said plates, said means being adapted to clamp said plates to said ledge.

4. A connection between a spindle and a rail of a railing assembly, the connection comprising a transverse ledge on said rail, said ledge being provided with an elongate slot open at one end of said rail, a clip including a plate having a reversed portion, said plate normally engaging the top of said ledge, a pivot pin received by and retained in said reversed portion, the pin being located above the ledge and extending transversely of said slot, said pin being pivotally connected to the spindle, said spindle extending through said slot, said clip including an extension extending through said slot, and including a second plate normally engaging the other side of said ledge, said extension connecting the second plate with the reversed portion of the first said plate, and means interconnecting said plates for clamping said plates to said ledge.

5. A connection between a spindle and a rail of a railing assembly in which the rail includes a top wall and side walls, the connection comprising a ledge section extending inwardly from each side wall, said ledge sections being spaced from said top walls, and being separated from each other by an elongate slot open at one end of said rail, a clip including a plate normally engaging the top side of each ledge section, a pivot pin carried by said plate and located above and supported on said ledge sections, the spindle extending between said ledge sections and through said slot, said pin being pivotally connected to the spindle, said slot being of a width closely approximating the width of said spindle, said clip including a second plate normally engaging the lower side of each ledge section, and an intermediate portion integrally connecting said plates, said portion being of reduced width and extending between said ledge sections and extending through said slot, and a threaded member interconnecting said plates and extending between said ledge

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sections and extending through said slot, said member being adapted to clamp said plates to said ledge sections in any desired position longitudinally of the rail.

6. A connection between a spindle and a rail of a railing assembly, the connection comprising a transverse ledge on said rail, said ledge being provided with an elongate slot, a clip including a plate engaging one side of said ledge, means pivotally connecting the spindle to said plate, said spindle extending through said slot, said clip including a second plate engaging the other side of said ledge, means interconnecting said plates for clamping the plates to said ledge, said interconnecting means extending through the slot, said plates being slidably adjustable on said ledge, so as to locate the spindle in the desired position longitudinally of the rail, the spindle

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being angularly movable in the slot about said pivot means.

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