April 16, 1963 F. L. HAWKINS 3,085,788

RAIL CONNECTOR

Filed Oct. 23, 1959

FIG - 1

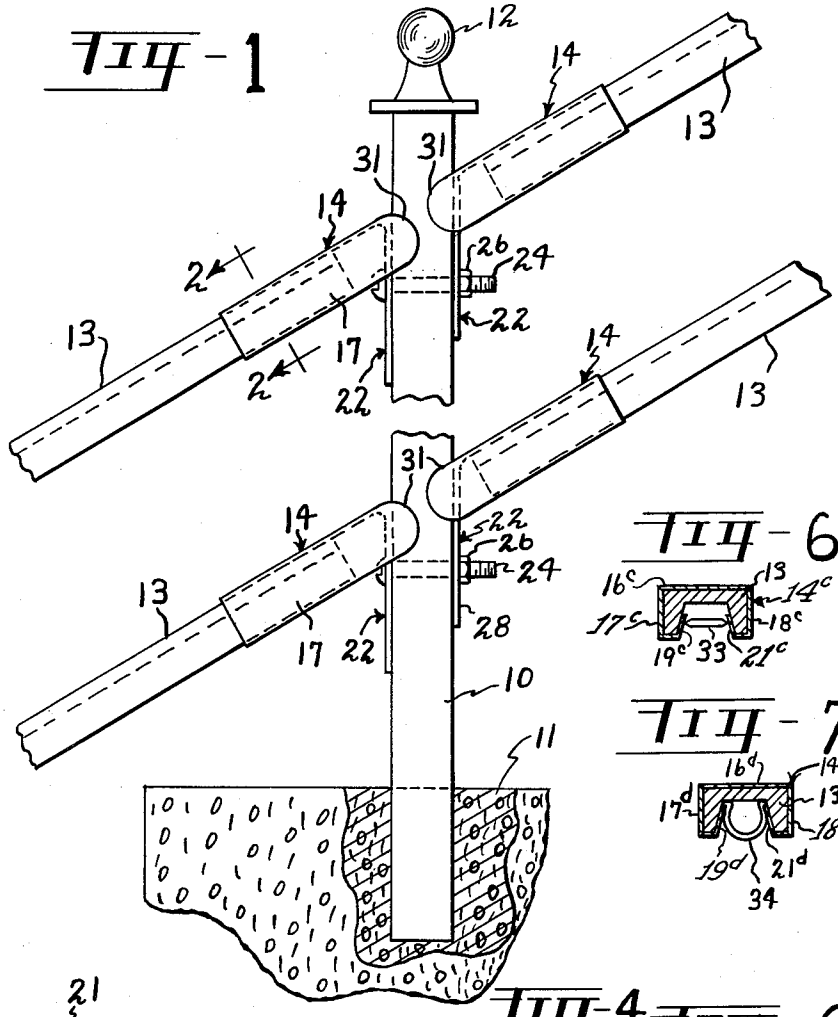


FIG - 6

FIG - 7

FIG - 4

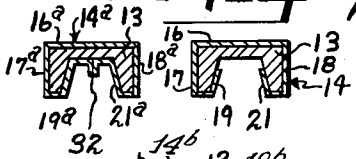


FIG - 2

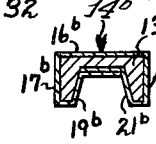


FIG - 5

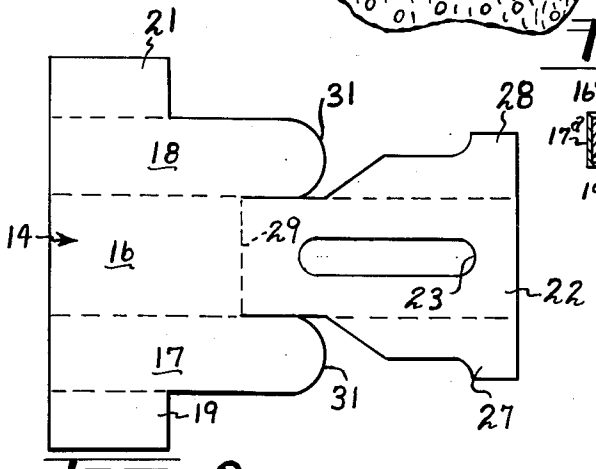


FIG - 3

INVENTOR.
FLOYD L. HAWKINS

BY
Jennings, Carter & Thompson

ATTORNEYS

United States Patent Office 3,085,788 Patented Apr. 16, 1963

3,085,788

RAIL CONNECTOR

Floyd L. Hawkins, Rte. 1, Box 103, Montevallo, Ala.

Filed Oct. 23, 1959, Ser. No. 848,290
9 Claims. (Cl. 256—65)

This invention relates to a rail connector and more particularly to a device for connecting a rail to a post in a balustrade, staircase or the like.

An object of my invention is to provide a connector of the character designated which may be of a standardized form whereby the connector may be easily and quickly attached to both the rail and the post with a minimum of effort and without having to disconnect the connector from the rail or post as the angle of inclination of the rail relative to the horizontal is varied.

A further object is to provide a connector of the character designated which eliminates the necessity of having to cut the end of the rail adjacent the post whereby that end of the rail fits the post.

A further object of my invention is to provide a connector of the character designated which shall be simple of construction, economical of manufacture and one which is neat in appearance and durable in operation.

Heretofore in the art to which may invention relates, various devices have been devised for attaching a rail to a post. However, so far as I am aware, such devices have been complicated in construction and have required highly skilled labor to assemble the composite balustrade. To overcome these and other difficulties, I provide an improved connector which fits over and is secured to the end of the rail. The connector is provided with a relatively flat bendable member which is disposed to lie alongside the post, whereby upon securing the bendable member to the post, the connector rigidly connects the rail to the post.

Apparatus embodying features of my invention is illustrated in the accompanying drawing, forming a part of this application, in which:

FIG. 1 is a side elevational view, partly broken away and in section, showing the rails attached to a vertical post, the rails being inclined from the horizontal;

FIG. 2 is a sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is a plan view of the blank in enlarged scale from which the connector shown in FIGS. 1 and 2 may be formed;

FIG. 4 is a sectional view corresponding generally to FIG. 2 of the drawings and showing a modified form of construction; and,

FIGS. 5, 6 and 7 are sectional views corresponding generally to FIGS. 2 and 4 and showing still further modified forms of my invention.

Referring now to the drawing for a better understanding of my invention, I show a vertical post **10** which is anchored in a suitable supporting material, such as concrete **11**. Preferably, the post **10** is square, as viewed in cross section, and may be provided with an ornamental top portion indicated generally at **12**. In FIG. 1 of the drawing, I show the rails **13** as being connected to the post **10** at an angle relative to the horizontal, such as occurs where the rails are mounted alongside steps. However, it will be apparent as the description proceeds that the rails **13** could extend in a horizontal direction whereby they extend in a direction substantially normal to the post **10** or could be attached to the post at any selected angle relative thereto.

The connector comprises a generally channel-shaped body portion **14** having a web **16** and flanges **17** and **18**. The channel-shaped body portion **14** is of a size to fit over or telescope over the end of the rail **13** with a snug fit, as shown in FIG. 2. Formed integrally with the flanges **17** and **18** are inturned locking members **19** and **21**, respectively. That is, the locking members **19** and **21** extend inwardly and upwardly to engage the inner surface of the channel-shaped rail **13**, whereby the channel-shaped body portion **14** is secured to the rail **13**.

Formed integrally with the web **16** of the channel-shaped body portion **14** is a relatively flat bendable member **22** which is adapted to extend alongside the post **10**, as shown in FIG. 1. A longitudinally extending slot **23** is provided in the bendable member **22** for receiving a bolt **24** which passes through a suitable opening in the post **10**. By providing the elongated slot **23** in the bendable member **22** which extends in a generally vertical direction, when assembled, a single bolt **24** may attach two oppositely disposed bendable members **22** to the post **10**, as shown in FIG. 1. A nut **26** engages the bolt **24** whereby the bendable members **22** are attached to the post **10**. To further reinforce the bendable member **22**, I provide inwardly extending flanges or flaps **27** and **28** at opposite sides of the bendable member **22** which are folded back onto the member **22**.

The point of juncture **29** between the web **16** of the channel-like member **14** and the bendable member **22** is inwardly of the adjacent ends of the flanges **17** and **18** whereby the web portion **16** actually forms a portion of the bendable member **22**, as clearly shown in FIG. 3. That is, with the connector mounted on the post **10**, as shown in FIG. 1, the flanges **17** and **18** project outwardly along opposite sides of the post **10** as at **31**. The outwardly projecting portions **31** thus form guide members which extend along opposite sides of the post **10** whereby the bracket is held in proper alignment with the post. The outwardly projecting portions **31** also hide the bent portion of the member **22** and prevents there being an unsightly gap adjacent the post **10**, thereby providing a connection which is neat in appearance. It will be apparent that where the connector **14** is employed to connect a pair of rails to a corner post, the outwardly projecting portions **31** adjacent the inside of the corner are cut away so that the two rails can be joined to the post **10** at the same elevation.

From the foregoing description, the assembly of my improved connector will be readily understood. The channel-like body portion **14** is attached to the end of the rail **13**, as shown in FIG. 2, by forcing the channel-like body portion **14** over the end of the rail or by inserting the body portion **14** over the rail and then deforming it to form the inturned locking members **19** and **21**. The bendable member **22** is then attached to the post **10** by the bolt **24**, as shown in FIG. 1. The rail **13** may then be moved to any inclination relative to the horizontal by bending the connector about the point of juncture **29** between the web **16** and the bendable member **22**. As pointed out hereinabove, the rails **13** may extend in a horizontal direction rather than being at an angle relative to the post **10** as shown in FIG. 1.

Referring now to FIG. 4 of the drawing, I show a modified form of my invention in which the connector comprises a channel-like body portion **14a** having a web portion **16a** and depending flanges **17a** and **18a**. The channel-like body portion **14a** is also of a size to fit snugly

about the channel-shaped rail 13, as shown, whereby the web and flanges of the connector are in contact with the web and flanges, respectively, of the rail 13. Inturned locking members 19^a and 21^a are provided which abut each other as at 32 adjacent the inner surface of the web 16^a. That is, by providing abutting edges for the locking members 19^a and 21^a, the locking members are held in firm engagement with the inner surface of the rail 13 whereby the connector is secured to the rail 13.

Referring now to FIG. 5, I show a further modified form of my invention in which the connector comprises a channel-like body portion 14^b having a web 16^b and depending flanges 17^b and 18^b. The flanges 17^b and 18^b carry inwardly extending locking members 19^b and 21^b which overlap each other adjacent the web of the channel 13, as shown, whereby the innermost locking member 21^b is held in firm engagement with the inner surface of the web of the rail 13.

In FIG. 6 of the drawing I show a further modified form of my invention in which the connector comprises a channel-like body portion 14^c having a web 16^c and depending flanges 17^c and 18^c. The flanges 17^c and 18^c carry inwardly extending locking members 19^c and 21^c which engage the inner surface of the rail 13, as shown. The locking members 19^c and 21^c are forced into firm engagement with the rail by a clip member 33 having pointed end portions which engage the locking members 19^c and 21^c, as shown. Suitable recesses may be provided in the locking members 19^c and 21^c for receiving the end portions of the clip member 33.

In FIG. 7 I show a still further modified form of my invention in which the connector comprises a channel-like body portion 14^d having a web 16^d and depending flanges 17^d and 18^d. The flanges 17^d and 18^d carry inwardly extending locking members 19^d and 21^d which engage the inner surface of the rail 13, as shown. The locking members 19^d and 21^d are forced into firm engagement with the rail by a clip member 34 which engages the free ends of the locking members 19^d and 21^d, as shown. That is, the ends of the clip member 34 fit between the ends of the members 19^d and 21^d and the adjacent inner surface of the web of the rail 13, while the portions of the clip member 34 adjacent the ends thereof bear against the inner surface of the members 19^d and 21^d.

From the foregoing, it will be seen that I have devised an improved connector for attaching a channel-like rail to a post. By providing inturned locking members which firmly engage the inner surface of the channel-like rail, the connector can be attached to the rail with a minimum of time and effort and without having to cut the rail. Also, the connection between the bracket and the rail, as well as the connection between the connector and the post, is neat in appearance and holds the composite balustrade rigidly in assembled position.

While I have shown the channel-like body portion as having a relatively flat top and having relatively flat side flanges, it will be apparent that the top and flanges could be of a rounded shape.

While I have shown my 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 I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a metallic railing structure, a generally vertically extending post, a channel-shaped rail having a web and side flanges with an end thereof disposed closely adjacent said post, a connector to attach said end of the rail to the post, said connector comprising a channel-shaped body portion having a web and side flanges of a size to fit over the end of the rail with the web and flanges of the connector being in contact with the web and flanges of the rail, inwardly locking members carried by the free edges of the flanges of said body portion and disposed to engage in gripping relation the inner surface of the flanges on said rail to secure the body portion to the rail solely by said gripping relation, a relatively flat member bendably connected to the web of said body portion and disposed to contact in face-to-face relation the adjacent vertically extending side of the post, and means to secure the relatively flat member to the post.

2. In a metallic railing structure as defined in claim 1 in which the inturned locking members are inturned flange portions disposed to engage the inner surfaces of the flanges of the channel-shaped rail.

3. In a metallic railing structure as defined in claim 1 in which the inturned locking members are inturned members disposed to engage both the inner surfaces of the flanges and web of the channel shaped rail.

4. In a metallic railing structure as defined in claim 1 in which a clip member is interposed between the free ends of the inturned locking members whereby said locking members are urged into firm engagement with the rail.

5. In a metallic railing structure as defined in claim 3 in which the ends of the inturned members abut each other adjacent the web of the channel-shaped rail, whereby the inturned members are forced into firm engagement with the channel-shaped rail.

6. In a metallic railing structure as defined in claim 3 in which the end of one inturned member overlaps the end of the other inturned member, whereby the innermost inturned member is forced into firm engagement with the web of the channel-shaped rail.

7. In a metallic railing structure, a generally vertically extending post, a channel-shaped rail having a web and side flanges with an end thereof disposed closely adjacent said post, a connector to attach said end of the rail to the post, said connector comprising a channel-shaped body portion having a web and side flanges of a size to fit over the end of the rail with the web and flanges of the connector being in contact with the web and flanges of the rail, inturned locking members carried by the free edges of the flanges of said body portion and disposed to engage in gripping relation the inner surface of the flanges on said rail to secure said body portion to the rail solely by said gripping relation, a relatively flat member bendably connected to the web of said body portion and disposed to contact in face-to-face relation the adjacent vertically extending side of the post, the point of juncture between the web of the body portion and the relatively flat member being inwardly of the adjacent ends of the flanges of the body portion so that the web of the body portion forms a portion of the flat member and the adjacent end of at least one of the flanges of the body portion projects beyond the point of juncture to lie alongside the post, and means to secure the flat member to the post.

8. In a metallic railing structure, a generally vertically extending post, a channel-shaped rail having a web and side flanges with an end thereof disposed closely adjacent said post, a connector to attach said end of the rail to the post, said connector comprising a channel-shaped body portion having a web and side flanges of a size to fit over the end of the rail with the web and flanges of the connector being in contact with the web and flanges of the rail, inturned locking members carried by the free edges of the flanges of said body portion and disposed to engage in gripping relation the inner surface of the flanges on said rail to secure the body portion to the rail solely by said gripping relation, a relatively flat member bendably connected to the web of said body portion and disposed to contact in face-to-face relation the adjacent vertically extending side of the post, there being an elongated slot in said flat member disposed to extend longitudinally of said post when said flat member is in contact with said post, and a bolt passing through said slot and

connected to said post to secure the flat member rigidly to said post.

9. In a metallic railing structure as defined in claim 7 in which the ends of both flanges of the channel-like member adjacent the bendable member project beyond said point of juncture to lie alongside opposite sides of the post.

References Cited in the file of this patent

UNITED STATES PATENTS

853,810	Lindenschmidt	May 19, 1907
2,409,966	Voity	Oct. 22, 1946
2,563,529	Hawkins	Aug. 7, 1951
2,754,092	Cremens	July 10, 1956