June 28, 1932. S. J. GULESIAN 1,864,534

ADJUSTABLE RAIL FITTING

Filed May 14, 1928

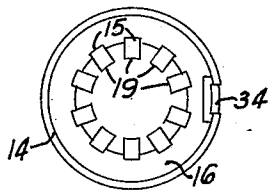


Fig. 1

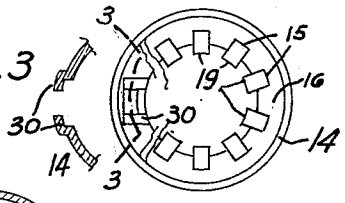


Fig. 2

Fig. 3

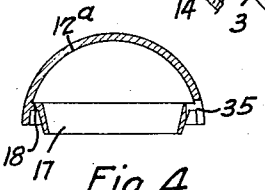


Fig. 4

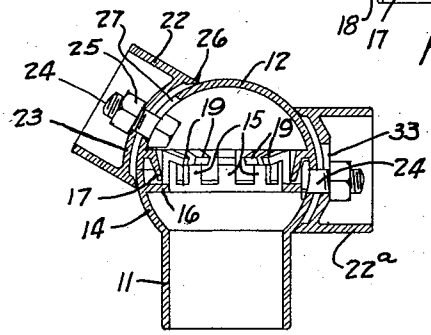


Fig. 5

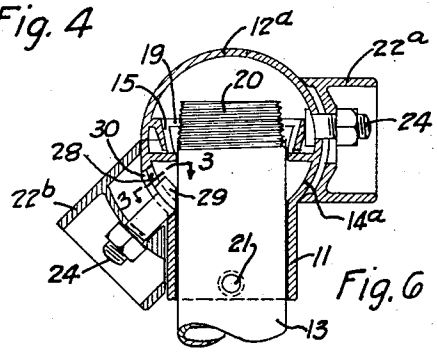


Fig. 6

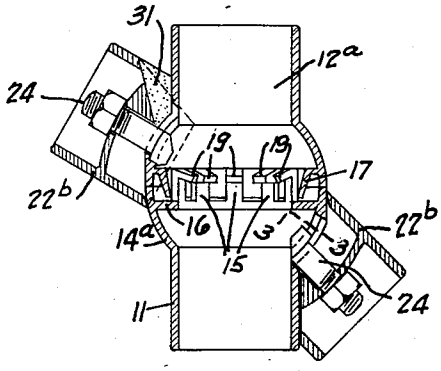


Fig. 7

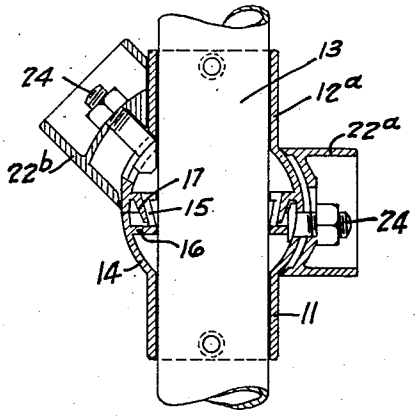


Fig. 8

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UNITED STATES PATENT OFFICE

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ADJUSTABLE RAIL FITTING

Application filed May 14, 1928. Serial No. 277,435.

This invention relates to fittings for connecting sections of pipes and other tubes, or rods (all comprehensively denominated as rails), to uprights and to one another in the construction of railings for stairways, other foot ways, and similar uses. More particularly it relates to the class of fitting illustrated in my prior Patent No. 1,467,153, dated September 4, 1923, having means for adjustment of the several parts connected by the fitting in planes at right angles to one another. Its object is chiefly to furnish a new and improved means of connection between the relatively adjustable parts of a post or stanchion to which the rails are connected, enabling such parts to be assembled and interlocked with one another easily, accurately and without separate fastening means, and providing, further, a wider range of angular adjustment for the connected rails, in the same plane with the post, than is possible with the device of my prior patent. The new features in which the invention consists are explained in the following specification in connection with the drawing, and pointed out in the following claims.

In the drawing,—

Fig. 1 is a plan view of the lower part of a post or stanchion coupling embodying this invention;

Fig. 2 is a view similar to Fig. 1, showing a modification in construction of the same;

Fig. 3 is a fragmentary sectional view through the slotted side of the fitting shown in Fig. 2, such section being taken on a line indicated at 3—3 in Figs. 2 and 7;

Fig. 4 is a vertical sectional view of the complemental member of the coupling embodied in the head or crown of the post;

Figs. 5 and 6 are vertical sectional views of the extremity or head end of a post embodying this invention;

Figs. 7 and 8 are sectional views of an intermediate joint in the post embodying this invention.

First describing the invention with reference to Figs. 1, 4 and 5, the parts designated 11 and 12 collectively form a fitting adapted to be applied to a standard or post and to form a hollow spherical knob or head to finish the post and provide means for securing and anchoring the adjacent ends of rails in a fence or railing. The part 11 embodies a sleeve adapted to be applied over the end of a post, such as the tubular post 13 shown in Fig. 6, and a spherical enlargement 14 terminating in the equatorial plane of the sphere. This fitting is shown in plan view in Fig. 1. The complemental part 12, which may be called for convenience the crown of the fitting, is substantially like, except for slight differences in detail later described, that shown separately in section in Fig. 4 and designated 12*a*. It completes the sphere of which the enlargement 14 is a part; such enlargement being termed the "base" of the knob or head.

For connecting the base 14 and crown 12 with provision for horizontal rotary adjustment, I provide upstanding fingers 15 on the base part, rising from the edge of an interior flange 16 and crossing the plane of division between the parts; and on the crown I provide a conical lip 17 extending downward from an interior web 18 across the dividing plane and between the fingers 15 and the rim of the base member 14.

The fitting 11 is made preferably as a casting of malleable iron, or other material having sufficient ductility and flexibility to permit of bending without fracture; although it may be made by other methods than that of metal founding. As originally made, the outer surfaces of the fingers 15 are parallel with the axis of the fitting and arranged tangent to a circle slightly smaller than the smaller end of the cone 17. In other words, the fingers 15 are so arranged that they will pass readily into the space bounded by cone 17 when the crown piece is applied to the fitting. On the ends of the fingers are inwardly directed lugs 19 which, as originally made, project inwardly well beyond the inner end of the flange 16. Thus a suitable tool, or the end of the post on which the fitting is applied, is adapted to bear on the inner ends of the lugs and crowd the fingers outwardly, bending them about their points of union with the flange 16 until they overlap the lower edge of the cone 17 and approach, or make, bearing contact therewith.

Fig. 6 shows the manner in which application of such a fitting to the end of a post may be caused to crowd outward the locking fingers. In this instance the post 13 is a pipe having a standard tapered pipe thread 20 on its end, the inner ends of the lugs 19 are complementally threaded or grooved. By screwing the end of the post between the lugs the fingers are at the same time spread apart and the crown piece is locked on the post. An additional lock is provided by a pin 21 passed through the sleeve part of the fitting and the post.

Figs. 7 and 8 show another form of fitting in which both parts have sleeves adapted to receive a post; this fitting being provided to support the ends of rails below the top rail of a fence or balustrade. But the coupling means between the two members of the fitting is substantially identical with that previously described. The fingers of the coupling may be spread apart by the inserted post and are held in the outwardly inclined position by the engagement of the ends of their lugs with the side of the post. A difference in detail between Figs. 6 and 8 may be noted in that the lugs on the fingers shown in Fig. 8 are short enough to admit the full diameter of the post between them instead of being long enough to engage a tapered thread on the end of the post. It is to be understood, of course, that the fingers in any case may be bent outward by a temporarily inserted crowding tool before the fitting is applied to a post.

Figs. 5–8 inclusive also illustrate different means for connecting the ends of pipe rails to the fittings there shown. In each instance socket pieces 22, 22*a* or 22*b* are connected to the respective members of the fitting. These socket pieces are substantially like those shown in my prior patent, previously mentioned, being open at the outer end to receive the end of a pipe or equivalent rail and having a cross web or wall 23 perforated to receive an attaching bolt 24, the shank of which passes through a slot in the fitting, carrying a head located inside of the fitting and a nut 25 screwed on the shank outside of the wall 21. The beveled edges 26 on the socket members are adapted to make a close joint with the outer convex surfaces of the fitting. The fittings here shown are particularly adapted to junction points in a railing where a change in direction occurs; either between inclined sections of the railing or between a horizontal section and an inclined section. In Fig. 5 the socket member 22 is mounted on the crown piece 12, its attaching bolt passing through a slot 27 in such crown piece, permitting the socket to be angularly adjusted conformably to the slope of the railing with which it is used. In Fig. 6 the socket piece 22*b* is connected to the spherical enlargement of the lower fitting member, its bolt passing through a slot 28 of the latter and being likewise adjustable to different inclinations. In this instance the side of the bolt head at 29, next to the side of the post, is cut away; and the slotted part of the fitting is formed with outwardly offset lips 30, as shown in detail in Fig. 3; both these features cooperating to permit setting of the socket at a steeper inclination than would otherwise be possible. To this end the side of the socket piece next to the post is likewise recessed.

Fig. 7 shows two socket pieces 22*b* like that last described, each connected to one of the fittings 11 and 12*a*, respectively, by means of bolts, the heads of which lie in offset slots. When the upwardly inclined socket is adjusted at anything less than the steepest inclination, the opening in its side is filled with material 31, which may be cement, fusible metal, etc., to exclude water and other foreign matter from the interior of the fitting. Fig. 8 shows the same socket adjusted to the steepest inclination.

In each of Figs. 5, 6 and 8 the right hand socket 22*a* is adapted for placement in a horizontal position in connection with either member of the fitting. To that end its cross wall has a slot 33 wide enough to permit location of the attaching bolt in a slot either above or below the center of the spherical enlargement, while the axis of the socket is alined with such center. In the one case, shown in Figs. 5 and 8, the shank of the bolt is located in a notch 34 in the edge of the enlargement 14, while in the other case it is placed in a similar notch 35 in the upper member. It will be understood without illustration that by combining the lower member shown in Fig. 5 with the upper member shown in Fig. 6, two horizontal sockets may be connected to the same fitting. The drawing shows five specific connections between the members of the post fitting and rail socket members, any two of which may be combined in the same fitting by appropriate selection of the upper and lower members thereof. And the swiveled union between the upper and lower members permits the rails respectively connected to them to be extended at any desired angle to one another in horizontal projection.

The means here described for connecting the parts of the fitting together in this swiveled manner combine simplicity with low cost. Being integral parts of the fitting members themselves and being inside of the members, they cannot be lost or misplaced, are protected from injury, do not leave any openings through which water may enter the interior of the fitting, and they cannot be accidentally or maliciously disconnected without taking the entire railing apart. The coupling means causes no appreciable added

cost in manufacture when the fitting is made by casting or molding.

The interior flange 16 has the further function of cooperating with the post on which the fitting is placed to locate the fitting in a predetermined position relatively to the post; normally in axial alinement with it. The inner edge of a narrow flange, such as that shown, can be fitted to the somewhat rough and uneven sides of the post closely enough for this purpose, more readily than the sleeve part of the fitting can be.

What I claim and desire to secure by Letters Patent is:

1. A swivel pipe fitting of the character described comprising a hollow member having a peripheral edge, an interior flange within said edge and separated coupling fingers extending outwardly at an inclination to the plane of said edge and across said plane, and a complemental hollow member having an edge adapted to bear on the edge of the first member and having a contracting conical lip within its edge extending between the edge of the first member and the said fingers and being overlapped thereby.

2. An article of manufacture, comprising a member adapted to form part of a rail fitting, having a circular bounding edge, an internal flange, and fingers projecting from said flange across the plane of the edge, the fingers being parallel to one another as to their outer surfaces and having inwardly projecting lugs.

3. In an adjustable rail fitting, a member of said fitting having a sleeve portion adapted to receive a post and having a spherical enlargement, combined with an external rail socket formed with an end adapted in part to make contact with the exterior of the fitting, and being cut away at one side to receive said sleeve, and an attaching bolt connected to the rail socket passing through a slot in the said spherical enlargement and having a head within the latter, the lips of the enlargement bounding said slot being offset outwardly from the spherical surface thereof and providing an inner channel receiving the bolt head.

4. An adjustable rail fitting comprising the combination of a post, a sleeve portion surrounding said post and having a spherical enlargement also surrounding the post, combined with an external rail socket having an end formed in part to make contact with the exterior of said enlargement and being cut away at one side to receive said sleeve, and an attaching bolt connected to the rail socket passing through a slot in the enlargement adjacent to the sleeve portion, the bounding lips of said slot being offset outwardly from the spherical surface of the enlargement to provide an inner channel, and said bolt having a head occupying said channel.

5. In an adjustable rail fitting, a member of said fitting having a sleeve portion adapted to receive a post and having a spherical enlargement, combined with an external rail fitting so formed at its end as to make contact over a part of its perimeter with said enlargement, and being cut away at one side to receive said sleeve, and an attaching bolt connected to the rail socket passing through a slot in said spherical enlargement and having a head within the latter, the lips of the enlargement bounding said slot being offset outwardly and providing an inner channel in which the bolt head is contained and the sides of which are adapted to embrace opposite flat sides of the bolt head to prevent rotation thereof.

6. A fitting of the character described, comprising complemental members formed as segments of the same hollow sphere and having rims abutting together on an equatorial plane of such sphere, one of said members having an interior web located inward from its rim and a conical lip extending with contracting diameter outwardly from said web; the other member having an interior flange located inwardly from its rim and fingers projecting outwardly from said flange into the interior of said conical lip and being outwardly inclined into interlocking engagement with the conical lip.

7. A fitting of the character described, comprising complemental members formed as segments of the same hollow sphere and having rims abutting together on an equatorial plane of such sphere, one of said members having an interior web located inward from its rim and a conical lip extending with contracting diameter outwardly from said web; the other member having an interior flange located inwardly from its rim and fingers projecting outwardly from said flange into the interior of said conical lip and being outwardly inclined into interlocking engagement with the conical lip, one of said members having an entrance opening coaxial with the said equatorial plane adapted to receive a post and said fingers having lugs directed toward the axis of the sphere and terminating at such distance from said axis as to admit the said post into the space surrounded by them.

8. The combination with a post, of a rail fitting comprising complemental spherically curved hollow members with rims abutting against one another in an equatorial plane of the sphere, one of said members having an entrance portion coaxial with said plane through which said post passes; one of said members having an inner conical lip extending with contracting taper outwardly from a plane within the rim of said member, and the other member having an inner flange adjacent to its rim and fingers in a series surrounding the post projecting from said

flange into the conical lip with outward inclination, whereby they overlap such lip, and having lugs adjacent to their ends directed toward and substantially into engagement with the sides of the post.

9. A two-part fitting for connection between a post or stanchion and a rail, comprising complementary hollow members abutting one against the other and having integral overlapping internal parts consisting of a conical lip on one part and fingers on the other part arranged about a central open space extending through the smaller end of said lip and being inclined outwardly toward the larger end thereof, one of said hollow members being free for angular adjustment about the common axis of said overlapping parts.

10. In an adjustable rail fitting, a member of said fitting having a sleeve portion and a substantially hemispherical enlargement at one end thereof, the interior of which is open in continuation with the interior of said sleeve portion adapted to admit and contain a post, combined with an external rail socket formed at one end in part to make peripheral contact externally with said enlargement and being recessed at one side complementally to said sleeve portion, and an attaching bolt connecting the fitting and rail socket together; said fitting having a slot in its spherical enlargement extending from approximately the junction thereof with the sleeve portion in a meridianal direction, and the lips bounding said slot being offset outwardly from the spherical curvature of the enlargement to provide an interior channel for the reception of the head of said bolt.

11. A rail fitting comprising in combination with a post having a tapered threaded end, a member adapted to be passed over and surround said post and formed with an enlargement of greater diameter than the post, a second member complemental to the first, of hollow formation and having a circular edge abutting against the rim of the first member, one of said members having a conical lip projecting from a zone within its rim toward the other member with contracting diameter, but larger than the post and surrounding the same, and the other member having a flange in its interior and a series of circularly arranged fingers surrounding the post and projecting from said flange into the space surrounded by said lip and being outwardly inclined so as to overlap and interlock with said lip to provide a swivel coupling, said fingers having inwardly directed lugs adjacent to their outer ends which are threaded complementally to the thread on the post end and are engaged with said thread.

In testimony whereof I have affixed my signature.

SELDEN JOHN GULESIAN.