

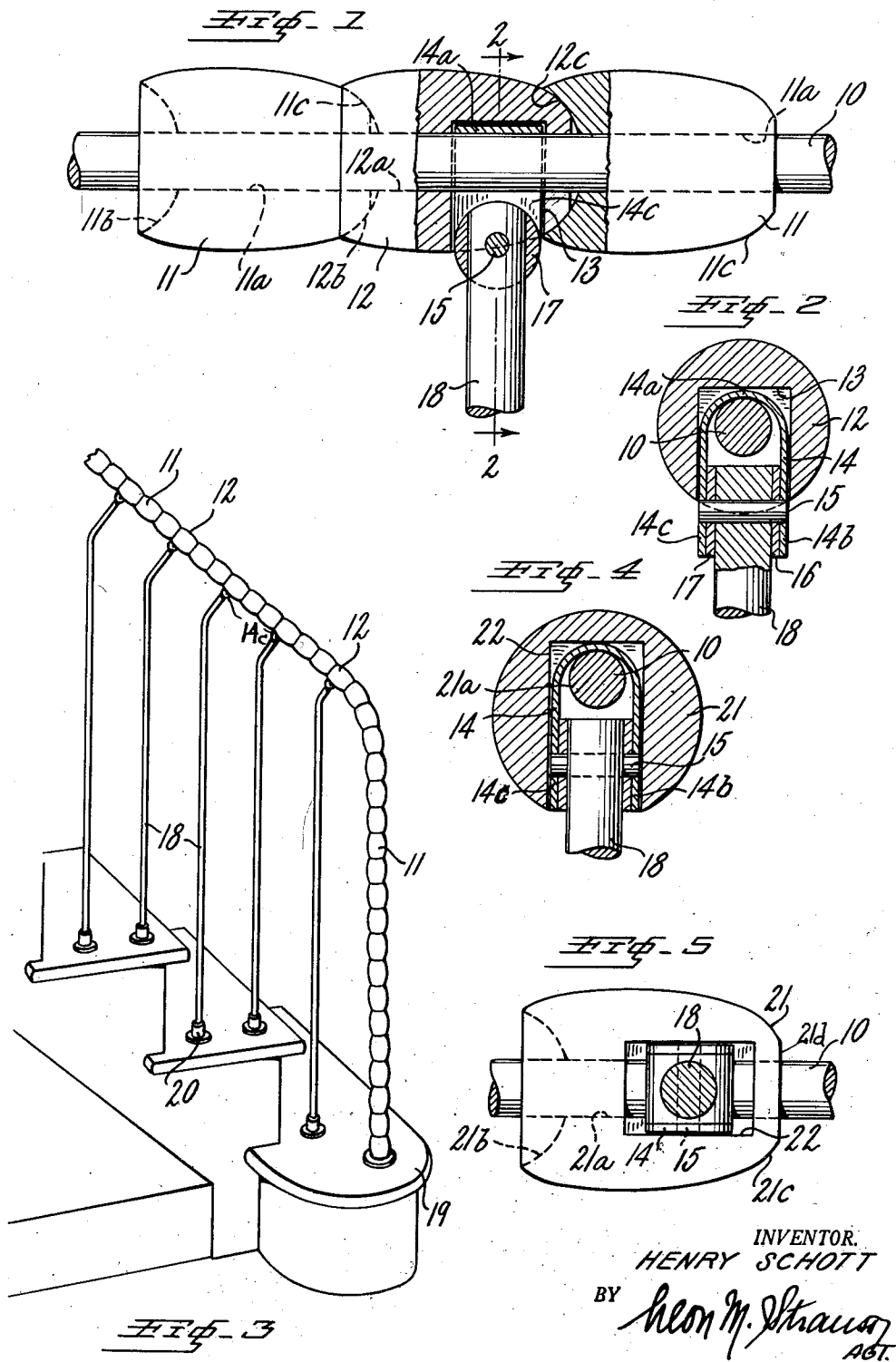
Oct. 23, 1956

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2,767,959

RAIL STRUCTURE FOR STAIRWAYS AND THE LIKE

Filed June 30, 1955



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2,767,959

RAIL STRUCTURE FOR STAIRWAYS AND THE LIKE

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Application June 30, 1955, Serial No. 519,095

12 Claims. (Cl. 256—19)

This invention relates to composite hand rails for stairways, armrests for chairs and like articles.

It is one of the objects of the present invention to provide means facilitating encompassment or enclosure of a hand rail or similar elongated support in a very effective and esthetic manner whereby said enclosure readily adjusts itself to any curvature of said support.

It is another object of the present invention to provide means affording a substantially inexpensive and smooth surfaced hand rail structure with increased hand gripping efficiency, which structure may be readily adapted in design and material to match that of the stairs of a stairway, is rigid, strong and takes readily into consideration interruptions by bars or balusters which space the rail proper from the stairs or floor.

Still another object of the present invention is to provide means ensuring a relatively flexible connection between a series of ball- and socket-equipped elements which are provided with apertures for the passage of a rail and like support therethrough, whereby joints of said elements are obtained which readily adjust themselves to any given curvature or arc of a hand rail and may be easily shaped exteriorly to correspond to the decor of the walls of a room, woodwork of staircases and the like.

Yet a further object of the present invention resides in the provision of means contributing to a novel enclosure or railing structure of pleasing appearance which may find ready use in already erected rail structures and may be employed in connection with balustrades of staircases, fences on balconies, terraces, building roofs and the like.

These and other objects of the invention will become further apparent from the following detailed description, reference being made to the accompanying drawing showing preferred embodiments of the invention.

In the drawing:

Fig. 1 is partly a sectional elevational view of a portion of a hand rail structure and the connection of baluster to the same according to the present invention;

Fig. 2 is a sectional view taken along the line 2—2 in Fig. 1;

Fig. 3 is an isometric view of the hand rail with balusters according to Fig. 1 as applied to a stairway;

Fig. 4 is a transverse sectional view, similar to that of Fig. 2, showing a modified hand rail structure; and

Fig. 5 is a bottom plan view of the structure of Fig. 4.

Referring now more particularly to Figs. 1 and 2, an elongated rod 10, which may be made of iron or any other suitable rigid material and preshaped to desired curvature, comprises the core of the hand rail according to the invention. Slidably disposed on the rod 10 are sleeves or capsules 11 and 12 which may be made of wood, plastics or similar materials and which may have substantially oblong, spherical, polygonal or different geometric configurations, depending on the desired motif for the hand rail and its surroundings.

The sleeves or capsules 11 and 12 are provided with

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longitudinal bores 11a and 12a through which the core rod 10 passes when the sleeves are disposed thereon. Formed at one end of each sleeve 11 is a socket-like counterbore 11b, while the other end 11c of each sleeve 11 is shaped in the manner of a ball or sphere. Similarly, each sleeve 12 is provided with a socket-like counterbore 12b at one end and is shaped as a ball or sphere at its other end 12c.

Thus, when the various sleeves or capsules 11 and 12 are positioned on the core rod 10 in tandem relation, the ball-like end of each sleeve fits into the socket-like counterbore of the next adjacent sleeve to form a ball-and-socket or universal joint therebetween. As may be seen from Fig. 3, this construction enables the covering for the core rod, i. e., the various sleeves 11 and/or 12, to follow the curvature of the rod without necessitating special shaping of said covering, such shaping being generally very expensive and requiring highly skilled artisans.

The sleeves 11, in general, have uninterrupted outer surface contours. However, each sleeve 12 is provided with a recess or transverse bore 13 extending from the outer surface of the sleeve inwardly of the latter and intersecting or traversing the bore 12a. Positioned in each recess 13 is a suspension member which, as may be seen from Fig. 2, is a substantially U-shaped yoke 14 having legs or shanks 14b and 14c connected by an upper bridging portion 14a, the upper bridging portion 14a being adapted to ride on and be supported by the core rod 10. The yokes may be fixedly or removably disposed in the recesses.

A bearing or pivot pin 15 is supported by and between the downwardly depending legs or shanks 14b and 14c of the yoke 14 of each sleeve 12. Two washers or bearing rings 16 and 17 are mounted on each bearing pin 15 adjacent the inner faces of the respective yoke legs 14b and 14c. A baluster 18 is pivotally suspended from each bearing pin 15, movements of the balusters laterally of the sleeves 12 thus being prevented by the washers 16 and 17.

The lower ends of the balusters 18 are constructed for attachment to the structure to be provided with the hand rail, for example, the stairs 19. To this end, a flanged socket member 20 may be connected to the lower end of each baluster 18, holes (not shown) being provided in the flanges of said socket members for permitting screws or nails to be inserted therethrough and driven into the stairs 19. Alternatively, the stairs may be provided with such socket members already affixed thereto, the socket portions of said members then being adapted to receive the correspondingly shaped lower ends of the balusters.

The pivotal connection between each baluster 18 and its corresponding rail sleeve 12 is provided to enable the baluster to accommodate itself to irregularly oriented surfaces without requiring an undue distortion of the rail and especially to avoid irregular orientations of the sleeves.

As may be seen from Figs. 1 and 2, although the recesses or transverse bores 13 are fairly narrow in cross-section, sufficient pivotal movement for the balusters 18 is ensured through the positioning of the bearing or pivot pins 15 substantially externally of the sleeves 12. In some cases it might be desirable that the yoke legs 14b and 14c should not project exteriorly of the recesses 13.

To effectuate this, according to Figs. 4 and 5, the sleeves 12 of the hand rail of Fig. 1 are replaced by specially constructed sleeves 21. The sleeves or capsules 21 are generally similar in shape to the sleeves 12, each sleeve 21 being provided with a socket-like counterbore 21b at one end and shaped as a ball or sphere at the other end 21c, terminating in end wall 21d.

Referring to Fig. 4, it will be seen that the bore 21a,

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through which the core rod 10 is threaded, is located somewhat eccentrically with respect to sleeve 21 and in contrast to the bore 12a of sleeve 12. The recess 22, which corresponds to the recess 13 in Fig. 1, thus is of greater depth in sleeve 21 than in sleeve 12. Concurrently, of course, the bores 11a in the sleeves 11 should be similarly displaced toward the top of said sleeves 11 so as to register with the bores 21a.

The yokes 14 may, in this manner, be positioned entirely within the recesses 22 so as to have the lower ends of the legs 14b and 14c terminate flush with the surfaces of the sleeve 21. In this modification, however, in order to provide for sufficient pivotal movement of the balusters 18 about the axes of the respective bearing pins 15, it is necessary that the recesses 22 be made somewhat longer than the recesses 13 shown in Fig. 1 (see Fig. 5).

From the above it will be seen that the sleeves 11 and 12 (or 21) may be employed as a shell or covering for already existing hand rails or as exterior surface elements of newly constructed hand rails. Thus, if it be desired to decorate an existing hand rail in a house, apartment, balcony, or like structure, a sufficient number of sleeves 11 and 12, say, having the desired outer surface characteristics and inner bores of a cross-section corresponding to the cross-section of said hand rail, is selected and fitted onto said rail, which must, of course, be removed from its supports and/or balusters, if the latter are present. The balusters should be first connected to the yokes or suspension members 14, but the latter may be eliminated and the balusters inserted directly into the recesses 13 of the appropriate sleeves 12 and into the existing, corresponding recesses of the hand rail.

The sleeves, which are slidably disposed on the core rod or rail being covered, may be fixed in position thereon by suitable wedging means (not shown) inserted into the bores 11a of the two sleeves located at the ends of the rail. By way of example, these two end or terminal sleeves may be threaded onto the core rod or rail in opposite directions so as to press all of the intermediate sleeves hard against each other.

The sleeves according to the present invention may also be employed as coverings for lamp stands, furniture legs, handles, and similar articles. The outer surfaces of the bodies of the sleeves may be shaped along conventional or modern lines and suitably colored to match their surroundings, the only requirement being that each sleeve has a socket at one end and a ball-like shape at the other end.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

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

1. A hand rail for stairways, balconies and like structures, comprising an elongated iron core preshaped to desired curvature, a plurality of wooden sleeves each provided with a longitudinal bore and surrounding said core, each sleeve having a socket-like counterbore at one end and being substantially ball-shaped at its other end, said sleeves being arranged on said core in tandem relation, with said ball-shaped ends fitting into said socket-like counterbores, whereby said sleeves may readily conform to said curvature of said core at least some of said sleeves being provided with recesses, respectively, traversing the longitudinal bores thereof, a plurality of suspension members disposed, respectively, in said recesses and supported by said core, and a plurality of balusters pivotally supported at one end thereof by said suspension members, respectively, the other ends of said balusters being attachable to a portion of said structure.

2. A support for a stairway, balcony and like structure, comprising an elongated rod-like rail element preshaped to desired curvature, a plurality of sleeves each provided

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with a longitudinal bore having a cross-section corresponding approximately to the cross-section of said rail element, whereby said sleeves are retained on said rail element with the latter extending through said longitudinal bores, each sleeve being socket-shaped at one end and substantially ball-shaped at its other end, said sleeves being arranged on said element in end-to-end relation, with said ball-shaped ends engaging said socket-shaped ends and forming universal joints between said sleeves, whereby the latter may readily conform to said curvature of said rail element, at least one of said sleeves being provided with a transverse bore intersecting said longitudinal bore thereof, a suspension member disposed within said transverse bore and connected to said rail element, pivot means on said suspension member, and a baluster connected at one end thereof to said pivot means, the other end of said baluster being attachable to a portion of said structure.

3. A support according to claim 2, said longitudinal bores being disposed, respectively, substantially centrally of said sleeves, said suspension member and said pivot means being located for access substantially adjacent the outer surface of said one sleeve.

4. A support according to claim 2, said longitudinal bores being disposed, respectively, substantially eccentrically of said sleeves, said suspension member with said pivot means being located entirely within said transverse bore, the transverse dimension of said transverse bore in the direction parallel to said rail element being greater than the transverse dimension of said transverse bore in the direction perpendicular to said rail element.

5. A sleeve for use as a covering of an elongated member, hand rail element and like structure, comprising a body having predetermined outer surface contours, said body being socket-shaped at one end and ball-shaped at the other end and being provided with a first bore extending therethrough from said socket-shaped end to said ball-shaped end, said first bore being constructed to receive said member therein, said ends being engageable, respectively, with ball-shaped and socket-shaped ends of adjoining substantially similarly constructed sleeves arranged on said member to thereby form universal joints between said sleeves, said body being further provided with a second bore disposed substantially transversely to said first bore and intersecting the latter for locating therein means for attachment to a baluster adapted to be connected to said rail element.

6. A sleeve according to claim 5 as applied to a baluster of a hand rail, said first bore being located substantially centrally of said body, and suspension means to be retained on said rail element and extending through said second bore for connection with said baluster exteriorly of said body.

7. A sleeve according to claim 6, said suspension means including pivot means disposed adjacent said second bore, said second bore having a greater transverse dimension in the direction parallel to the axis of said first bore than in the direction perpendicular to said axis of said first bore.

8. A sleeve according to claim 7, said suspension means comprising a substantially U-shaped yoke having a pair of substantially parallel legs and a transverse portion interconnecting said legs, said transverse portion being constructed to ride on said rail element with said legs extending past the latter and on opposite sides thereof, said pivot means comprising a bearing pin supported at its opposite ends by said legs of said yoke.

9. A sleeve according to claim 8, said yoke being removably positioned within said second bore.

10. A sleeve according to claim 8, said yoke being fixed within said second bore.

11. In a pivotal joint for connecting two angularly oriented and spaced rods; a shell having a bore extending therethrough and arranged to receive one of said rods, said shell having a recess extending inwardly from

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its outer surface and intersecting said bore at an angle, first means disposed within both said recess and said bore and pivotally engaging said one rod, and second means connected to said first means for pivotal connection with the other rod and for spacing the latter from said one rod. 5

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12. In a joint according to claim 11, said first means comprising a yoke constructed to ride on said one rod, and said second means comprising a bearing pin operatively connected to said yoke.

No references cited.