Sept. 5, 1933. J. SCHURMAN 1,925,573

RAIL ANCHOR

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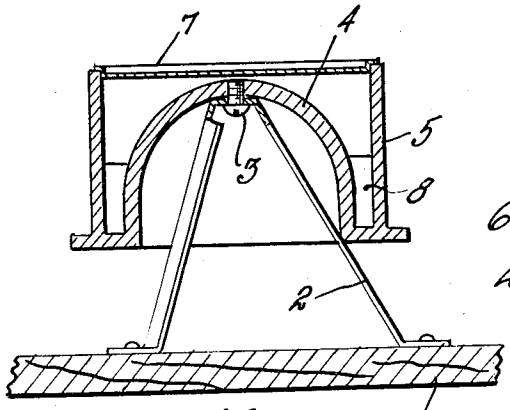

Fig. 1

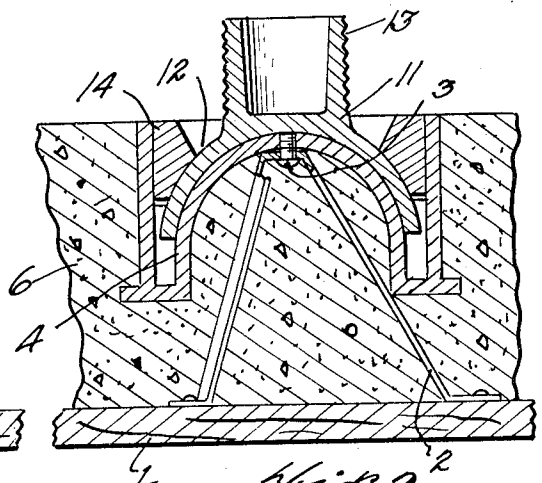

Fig. 2

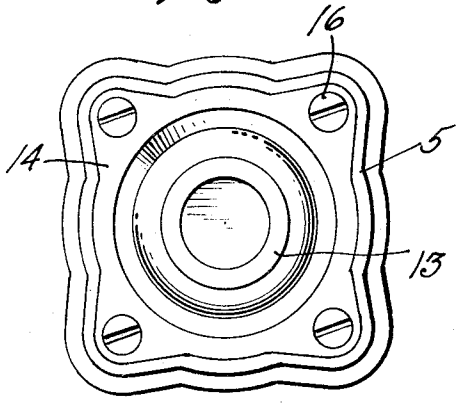

Fig. 3

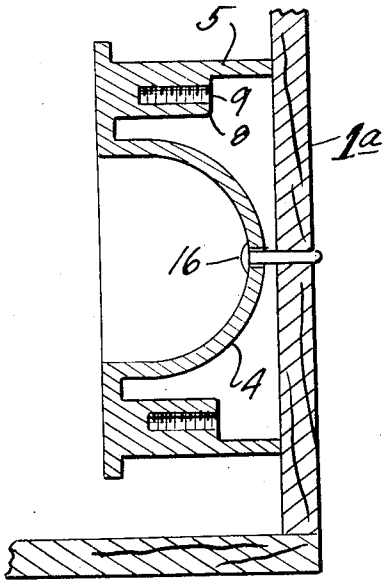

Fig. 4

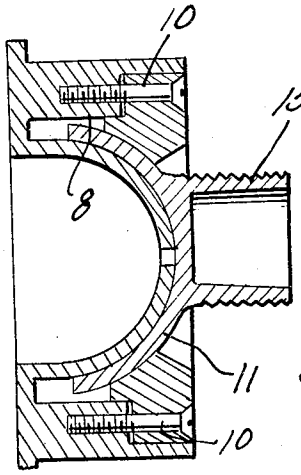

Fig. 5

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RAIL ANCHOR

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7 Claims. (Cl. 72—105)

This invention relates to post or rail anchors, and an object of the invention is to provide a device of simple and inexpensive form adapted to be embedded in the concrete or the like and capable of adjustment subsequent to its being positioned to accommodate variation in angle or position of the rail or post part to be connected therewith.

The specific feature of the invention resides in the provision of a base element having a spherical portion and a terminal for the hand rail or post having a spherical portion fitting thereon and variable in angularity or position or with the part for connection of the rail or post eccentrically arranged whereby an adjujstment radially about the center of the base is provided in conjunction with a means whereby the angularity of the part adapted for the attachment of the rail may be varied.

In the mounting of the hand rails and posts or balusters therefor in concrete stairs, walls or floors, it is necessary that an anchor for the post or hand rail be secured in the form or mold in position for attachment of the hand rail or post portions. In constructing the concrete floors, stairs or walls there is very likely to be a misalignment of the anchor members relative to the parts to be attached thereto and this invention seeks to provide a new and unique construction of anchor whereby the portion thereof to which the hand rail or post is to be attached may be adjusted to compensate for any misalignment of the parts within the structural limitation of the anchors.

These and other objects and novel features of the invention are hereinafter more fully described and claimed, and the preferred embodiment of the invention is shown in the accompanying drawing in which—

Fig. 1 is a sectional elevation showing a portion of a concrete form and one manner of attaching the base of my improved anchor in spaced relation therewith.

Fig. 2 is a sectional view of the same base after embedding in concrete or the like and with the adjustable part in assembled relation therewith.

Fig. 3 is a plan view of the assembled device shown in Fig. 2.

Fig. 4 illustrates an alternative manner of supporting the base in the mold.

Fig. 5 is a section of the assembled parts showing the eccentric arrangement of the rail connection.

The device is particularly adapted for use in concrete and like structures where an anchor is required to be provided in the material. For this purpose, forms are usually used, a wall of which is indicated at 1 in Fig. 1 and in case the thickness of concrete is greater than the length of the base of the anchor I provide a tripod 2 preferably with a flattened apex portion apertured to receive a screw 3 which is threaded into an aperture provided therefor centrally of the spherical portion 4 of the base.

The spherical portion is somewhat greater than a half circle and is surrounded by a peripheral wall 5 of any desired shape as for instance as is shown in Fig. 3, and slightly higher than the upper surface of the spherical portion 4. In erecting this base, the tripod is secured to the form at as nearly the desired location for the anchor as is possible and the base thereof is secured in place by the screw 3 to position the outer edge of the wall 5 practically flush with the rough finished wall or floor as indicated at 6 in Fig. 2. The wall 5 is spaced from the spherical portion as shown, which is a sectional view taken diametrically of the device. After positioning the base, as stated, a cap 7 is provided to prevent any of the plastic material being deposited in the space within the walls 5. At each of the four corners of the device, as shown in Figs. 3 and 5, the peripheral wall 5 has a boss 8 tapped at 9 to receive screws 10. After the concrete or other material has become set and the hand rail is to be erected, the complemental member 11, which has a spherical body portion 12 and a projecting portion 13, is positioned on this spherical part 4 of the base in the manner indicated in Fig. 2 and a ring like member 14 is introduced within the wall and secured by means of the screws 10 therein after the manner indicated in Fig. 5. By means of these screws, the member 11 may be rigidly anchored in place due to the ring member 14 having an inner surface thereof spherically formed to fit the outer spherical wall of the portion 12 of the member 11.

At the time of erection of the rail or post to be secured to the portion 13 of the element 11, the screws may be loosened sufficiently to permit movement of the spherical portion 12 of the member 11 on the similar complemental portion 4 of the base and thus to accommodate variation in angle to which the rail or post end may extend to the anchor and thereupon the screws are finally set in place.

I have indicated at 15 in Fig. 5 a variation in

structure in which the extending portion 15 is eccentric to the center of the spherical surface 4. By thus offsetting this portion to which the rail is to be attached, the member 11 may be rotated and thus its position varied to some extent radially as well as angularly and thus considerable variation in the position of the extension to which the rail is directly connected may be made to accommodate the inaccuracy in positioning of the anchor or hand rail. I have indicated the portion 13 or 15 as being externally threaded but it is not essential whether the device be threaded externally or internally or otherwise arranged or adapted for the attachment of a hand rail thereto.

In such cases where the depth of the concrete is not particularly greater than the length of the base, the base may be directly attached to the form wall indicated at 1*a* in Fig. 4 by means of a nail 16 passing through the central aperture provided therein as heretofore described. Thus, the apertured spherical portion 4 serves in both the cases shown in Figs. 1 and 4 to support the base relative to the inner face of the form.

It will be observed from the foregoing that the device is simple and inexpensive in construction; that due to the spherical form of the base and the spherical form of the portion of the part to which the rail or post is to be attached permits considerable variation in angularity to accommodate the angle to which the rail or post approaches the anchor and further that, by the alternative arrangement of the member 11 shown in Fig. 5, a considerable variation may be made to accommodate a rail or post that, in erection, lies off center to the anchor, and that all the various objects of the invention are attained by the objects described.

Having thus briefly described my invention, what I claim and desire to secure by Letters Patent of the United States is—

1. An anchor for hand rails and the like comprising a base having a portion provided with an outer spherical surface and an integral portion providing a wall in spaced relation therewith and extending slightly beyond the uppermost point of the spherical surface, a member for attachment of a rail or post having a complemental spherical portion fitting the spherical portion of the base and extending into the space between said wall and spherical portion of the base, and a ring member securable within the said wall and having a ring like surface of spherical shape fitting the said member and maintaining the same in association with the spherical surface of the base.

2. An anchor for hand rails and the like comprising a base having an inner outwardly extending spherical portion and an outer integral wall in spaced relation therewith, a member having a complemental spherical portion fitting the said spherical part of the base and extending into the space between said wall and spherical portion of the base and further having an extending portion to which a rail or post may be attached, means for securing the said member with its spherical surface in contact with the spherical surface of the base whereby the said second member may be fixed in position subsequent to adjustment for alignment with the rail or post.

3. An anchor for hand rails and the like comprising a base having an inner outwardly extending spherical portion and an outer wall in spaced relation therewith providing a recess about said peripheral portion, a member having an inner complemental spherical portion fitting the said spherical part of the base and extending into the said recess and further having a portion extending to beyond the wall to which the rail or post may be attached, the said member being capable of adjustment whereby the said portion for attachment of a rail may be aligned therewith, a ring member having a spherical surface to fit the outer spherical surface of the second member, and means whereby the ring may be secured within the said wall to fixed engagement with the said second member to maintain the same in adjusted position.

4. An anchor for hand rails and the like comprising a base having a spherical portion and an integral peripheral wall in spaced relation therewith extending to a height slightly beyond the outermost point of said spherical surface, said spherical surface having a central aperture adapted to receive an element for retaining the same in a fixed position relative to a form whereby the said base may be cast in place in a plastic material with the outer edge of the wall practically flush with the face of the cast material, a fastening means for said base, a member adapted to be assembled with the said base comprising a part having an outer and inner spherical surface, a part projecting from the outer spherical surface adapted to receive a rail or the like, and a retainer member for said second element consisting of a ring engaging the outer spherical surface of the second member, said ring being apertured and the said base having threaded portions within the wall thereof, and screws extending through the apertures of the ring to the threaded portions of the base for clamping the same in place, said member being of a character to permit a radial adjustment of the extending portion to align the same with the hand rail to be attached thereto.

5. An anchor for hand rails and the like comprising a base having a convex surface, means for supporting the base relative to a form whereby the same may be cast in concrete or plastic material with said convex surface facing the surface of the form whereby said surface will be accessible from the face of the concrete after removal of the form, a second element having a concave portion fitting the said convex portion of the base, a threaded extension on the second element to receive a rail, and means for clamping the concave portion of the second element to the convex portion of the first subsequent to adjustment of the second element to align said extension with a rail.

6. An anchor for hand rails and the like comprising a base having a convex surface and a surrounding wall extending a slight distance beyond the outermost portion of the convex surface, a cap member supported on the said wall to cover the convex surface providing a device to be set in concrete with the cap member engaging the form and preventing plastic material from contacting the convex surface, a supporting means for holding the said device in position during the placing of the plastic material, and a second element having a concave portion fitting the convex portion of the base, an extension on said second element adapted to receive a hand rail or the like, and means for securing

the second element in adjusted position on the said convex surface of the base.

7. An anchor for hand rails and the like comprising a cup like base member for casting in plastic material and having a convex wall within the cup like member facing the open end thereof and providing the bottom of the cup, an element adapted for attachment of a hand rail or post having a concave portion fitting the said convex portion of the cup member, and means for adjustably securing the second element relative to the cup member subsequent to adjustment to align the same with the rail or post to be secured thereto.

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