ABSTRACT: For supporting an inclined hand rail on a wall alongside a flight of stairs, a bracket assembly includes a stationary bracket anchored to the wall and mounting a tiltable rail support which may be turned on the bracket to an angular position corresponding to the inclination of the rail. The bracket and support are formed with a complementary key and keyway enabling assembly of the support to the bracket with a simple slip-on motion and thereafter acting to hold the two against separation while still leaving the support free to turn on the bracket.
HAND RAIL BRACKET ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to a bracket assembly especially suitable for mounting an inclined hand rail or the like on a wall alongside a flight of stairs. More particularly, the invention relates to an adjustable bracket assembly of the type including a stationary bracket or body anchored to the wall and assembled to a support adapted to be fastened to the rail, the support being illustrative on the body to a selected angular position corresponding to the inclination of the rail. Bracket assemblies of the same general type are disclosed in U.S. Pat. Nos. 2,886,278; 3,161,425; and 3,223,371.

SUMMARY OF THE INVENTION

The present invention aims primarily to provide a new and improved bracket assembly of the above character which not only is of simpler and less expensive construction than prior assemblies but which also may be assembled and installed much quicker and easier than has been possible heretofore. In a more detailed sense, the invention contemplates a bracket assembly in which the support simply may be slipped onto the bracket body and then turned so as to be locked automatically against removal from the body while still being illustrative on the body to various angular positions.

The invention also resides in the novel construction of the support to enhance the overall appearance of the bracket assembly and, at the same time, to effect a secure mounting of the support on the body.

Other objects and advantages will become apparent as the following description proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a hand rail mounted by bracket assemblies embodying the novel features of the present invention.

FIG. 2 is an enlarged fragmentary cross section taken substantially along the line 2-2 of FIG. 1.

FIG. 3 is an exploded perspective view of the bracket assembly.

FIG. 4 is an enlarged fragmentary cross section taken substantially along the line 4-4 of FIG. 2.

FIG. 5 is a perspective view of the support.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings for purposes of illustration, the invention is embodied in a bracket assembly 10 for mounting an inclined hand rail 11 on an upright wall or other supporting member 13 located alongside a flight of stairs. The rail, which in this instance is made of wood, is inclined in accordance with the slope of the stairs and is supported by two or more of the bracket assemblies, the assemblies being spaced along the rail and being offset vertically from one another.

Herein, each bracket assembly 10 includes a stationary mounting body or bracket member 14 cast of zinc and formed with an upright mounting plate 15 adapted to be anchored face to face with the wall 13 by means of screws 16 extending through holes 17 in the plate and threaded into the wall. Projecting outwardly and slightly upwardly from the mounting plate is an elongated arm 19 which carries a separately formed support member 20 on its free end. The support 20 is adapted for attachment to the underside of the rail 11 and anchors the latter to the bracket and the wall 13.

Prior to being fastened to the rail 11, the support 20 is tiltable relative to the bracket 14 in order to enable angular positioning of the support at an inclination corresponding to that of the rail. In this way, the bracket assembly 10 may be used for mounting differently inclined rails and may be adjusted both to accommodate slightly crooked rails and to compensate for errors in the placement of the bracket 14 on the wall 13.

In accordance with the present invention, the support member 20 and bracket member 14 are constructed in a novel manner to permit assembly of the two simply by slipping the support onto the bracket and then by turning the latter to lock the latter automatically against removal from the bracket. For these purposes, a key 21 is formed on one of the members, preferably on the bracket member 14, and a complementary keyway 23 is formed in the support member 20. During assembly, the two members are telescoped together with the key and the keyway aligned and then are turned relative to one another to move the keyway out of alignment with the key thereby to prevent separation of the members in their assembled positions. With such interlocking arrangement, the support 20 and the bracket 14 may be assembled to each other quickly and easily and without need of separate connectors or fasteners.

In the present instance, the support 20 is carried on a cylindrical head 24 (FIG. 3) formed on the free end of the arm 19 and projecting outwardly and generally horizontally from the mounting plate 15. Protruding radially from and extending axially along the upper side of the head 24 is the key 21 which is disposed in a rectangular cross section. As shown in FIG. 3, the key is located between the inner and outer ends of the head and is positioned with its inner end spaced outwardly from an annular shoulder or abutment 25 formed on the arm 19 near the inner end of the head.

The support 20 also is a zinc casting of substantially V-shaped configuration and is formed with horizontally spaced inner and outer walls 26 and 27 extending parallel to one another and disposed in generally upright planes. Interconnecting the two walls at their lower margins is a curved lower wall 29 which merges gradually with the upper corners of the inner and outer walls, the spacing of the walls being such that the support defines a substantially hollow enclosure open at its upper side. The upper edges of the walls form a flat rectangular, rail-engaging surface 30 (FIG. 5) upon which the underside of the rail 11 is seated. Fastening of the support to the rail is effected by two screws 31 extending through countersunk holes 33 in the lower wall 29 and threaded into the rail. A pair of prongs 34 projecting upwardly from webs 35 located near the holes 33 bite into the wooden rail to help anchor the support to the rail.

As shown most clearly in FIG. 3, a circular hole 36 is formed through the inner wall 26 of the support 20 and is of slightly greater diameter than the head 24 in order that the latter may be projected loosely through the hole to connect the support 20 for turning on the bracket 14. The keyway 23 also is formed in the inner wall 26 and opens into the hole 36, the cross section of the keyway being greater than that of the head 24 to permit passage of the latter when the head is projected through the hole. When the support is assembled to the bracket, the outer end of the head projects into a hole or socket 37 formed in the inner side of the outer sidewalk 27. The socket 37 extends only partially through the outer sidewalk 27 and thus the outer side of such wall is smooth and uninterrupted to present an attractive appearance. In the vicinity of the hole 36 and the socket 37, the sidewalks 26 and 27 are reinforced by thickened bosses 39 and 40, respectively, encircling the upper portions of the hole and the socket to provide relatively large bearing surfaces engageable with the head 24.

To install the rail 11, the bracket 14 first is fastened to the wall 13 alongside the stairs by means of the screws 16. The support 20 then is turned to a generally upright position shown in FIG. 3 with the hole 36 aligned with and spaced outwardly from the head 24 and with the keyway 23 aligned with the key 21. Thereafter, the support is shifted inwardly toward the bracket 14 and is slipped onto the head with the latter projecting through the hole 36 and into the socket 37. Such shifting of the support is continued until the outer side of the inner boss 39 is moved past the inner end of the key. The latter then is free of the keyway 23 and is disposed within the space between the walls 26 and 27 so as to leave the support 20 free...
for turning on the head 24. The space between the abutment 25 and the inner end of the key 21 is somewhat greater than the combined thickness of the inner wall 26 and the boss 39 to allow the boss to move past the inner end of the key when the support and the bracket are assembled.

After the support 20 has been slipped onto the bracket 14, it is turned on the head 24 as shown in FIG. 4 to position the rail-engaging surface 30 at the same inclination as the rail 11. The rail then is fastened to the support by the screws 31. In turning the support from the upright position to the inclined position, the keyway 23 is moved out of alignment with the key 21 and the outer side of the boss 39 is moved into opposing relation with the inner end of the key (See FIG. 2). Thus, once the support has been fixed rigidly in its inclined position by the screws 31, the boss 39 will engage the key to prevent outward removal of the support from the head 24. Advantageously, inward shifting of the support along the head is limited not by the key but rather by engagement of the inner side of the inner wall 26 with the abutment 25. This enables formation of the key with a length which is less than the horizontal spacing between the bosses 39 and 40 so that the ends of the key will not bind against the bosses to prevent free turning of the support.

Fastening of the rail 11 to the support 20 may be accomplished easily by one person since the head 24 holds the support against falling while the screws 31 are being driven into the rail. With the support held by the head, the installer may hook his arm around the rail to hold the latter on the support and thus have both hands to hold the screws and to manipulate a screwdriver. Accordingly, two people are not required to effect installation of the rail.

The bracket assembly 10 may be used equally well for left and right-hand installations and may be employed with rails inclined at widely varying angles. As shown in FIG. 3, the sidewalls of the keyway 23 substantially parallel the rail-engaging surface 30. This, together with the location of the key 21 on the upper side of the head 24, results in the key and the keyway being aligned only when the support 20 is positioned as shown in FIG. 3 with the rail-engaging surface 30 disposed in an upright plane. Thus, the support may be turned to any position to either the left or right of that shown in FIG. 3 as required by a particular installation without any possibility of the key and keyway becoming aligned to permit removal of the support.

From the foregoing it will be apparent that, with the exception of the mounting screws 16 and 31, the bracket assembly 10 of the present invention requires only two members, the support member 20 and the bracket member 14. The two may be interlocked while still being freely turnable simply by slipping the support onto the bracket, or vice versa, and thus do not require locking by setscrews or the like. By forming the support as a hollow enclosure with the keyway 23 located only in the inner wall 26, the head 24 and the key 21 need not project completely through the outer wall 27 and therefore do not detract from the appearance of the bracket assembly. In addition, only one man is needed to install the rail since the support is held on the bracket itself thereby freeing one hand which otherwise would be necessary to hold the support.

I claim:

1. In a bracket assembly for mounting an inclined hand rail on an upright wall, the combination of, a body adapted to be anchored to the wall and having a generally cylindrical head projecting substantially horizontally from the wall, a key of predetermined cross section and length protruding radially from and extending axially along said head and located between the ends of the head, a support formed separately of said body and capable of being assembled to the body, said support having an upper rail-engaging surface adapted to be anchored to the underside of the rail after assembly of the support and having inner and outer opposing walls spaced from each other a distance greater than the length of said key, each of said walls being formed with a generally circular hole of greater diame-

ter than said head with the hole in the inner wall extending completely through the latter, a keyway of greater cross section than said key formed through said inner wall and opening into the hole in the inner wall, said support being assembled to said body by aligning said holes with said head and aligning said keyway with said key and by slipping said support onto said head until the outer side of said inner wall has been moved past the inner end of said key, said support thereafter being rotated on said head to turn said keyway out of alignment with said key and to position the outer side of the inner wall in opposing relation with the inner end of said key to prevent the support from being slipped off of the head, and said support being turnable on said head by virtue of the relative diameters of said holes and said head thereby to permit tilting of said rail-engaging surface to an inclination corresponding with the inclination of the rail.

2. A bracket assembly as defined in claim 1 in which said key protrudes vertically from said head, said keyway being formed in said inner wall in a position such that the keyway is aligned with said key only when said rail-engaging surface is in a substantially upright plane.

3. In a bracket assembly for mounting a hand rail or the like on an upright member, the combination of, a body adapted to be anchored to the member and having a generally cylindrical head projecting from the member, a key of predetermined cross section protruding radially from and extending axially along said head and terminating short of the inner face adjacent the hole for engagement with the key, whereby the key and keyway may be angularly aligned to permit inser-

4. A bracket assembly as defined in claim 3 further including a radially protruding abutment formed on said head near the inner end thereof and spaced axially inwardly of said key with the space between the key and the abutment being slightly greater than the thickness of said wall, said wall being received within said space and being engageable with said abutment to limit inward movement of said support along said head.

5. A bracket assembly as defined in claim 3 in which said support includes a second wall extending parallel to and spaced outwardly from said one wall and rotatably journaled on the outer end portion of said head, said key being disposed within the space between the two walls with its outer end terminating at least a slight distance short of the second wall to leave said support free for turning on said head.

6. In a bracket assembly for mounting an inclined hand rail on an upright member, the combination of, a support adapted to be anchored to the rail and having a wall with a hole therethrough, said hole being enclosed completely by said wall, a keyway formed in said wall and opening into said hole, a body adapted to be anchored to the upright member and having a generally cylindrical head, a key on said head, said key and keyway being complementary to said hole and keyway respectively, the distal side of said wall presenting a radial surface adjacent the hole for engagement with the key, whereby the key and keyway may be angularly aligned to permit inser-
7. In a bracket assembly for mounting an inclined hand rail on an upright wall, the combination of, a first member adapted to be anchored to the wall, a second member adapted to be anchored to the rail, of said members including a wall-like element having a hole with a keyway opening into said hole, a head on the other of said members a key on said head, said head and key being complementary to said hole and keyway respectively, the distal side of said wall-like element presenting a radial surface adjacent the hole for engagement with the key, whereby the key and keyway may be angularly aligned to permit insertion of the head into the hole and then misaligned to prevent separation of said members.