

[DESCRIPTION]

[Title of Invention] GUIDE RAIL FIXING DEVICE FOR ELEVATOR

[Technical Field]

[0001]

The present invention relates to a guide rail fixing device for an elevator, which device fixes, to a hoistway wall, a guide rail for guiding travelling of a car, a counterweight, etc. forming an elevating body.

[Background Art]

[0002]

A guide rail fixing device for an elevator disclosed in Patent Literature 1 belongs to this kind of background-art technique. Fig. 7 is a plan view corresponding to the Patent Literature 1. As shown in Fig. 7, a guide rail fixing device for an elevator according to the background-art technique is provided with a wall side fixing fitting, i.e. a wall side bracket 12 which has a first vertical portion 12a and a first horizontal portion 12b. The first vertical portion 12a is fixed to a hoistway wall 10. The first horizontal portion 12b is provided consecutively to the first vertical portion 12a. The guide rail fixing device for an elevator according to the background-art technique is also provided with a rail side fixing fitting, i.e. a rail side bracket 15 which has a second horizontal portion 15a and a second vertical portion 15b. The second horizontal portion 15a is welded to the aforementioned

first horizontal portion 12b of the wall side bracket 12. The second vertical portion 15b is provided consecutively to the second horizontal portion 15a. A not-shown guide rail for guiding an elevating body such as a car or a counterweight is attached to the second vertical portion 15b.

[0003]

A notch 15c is formed in the rail side bracket 15. A pair of welding side end portions 15d are formed in the rail side bracket 15 due to the notch 15c so that welding portions 13 can be provided in the welding side end portions 15d.

[0004]

According to the background-art technique, the wall side bracket 12 is fixed to the hoistway wall 10, the rail side bracket 15 is welded to the wall side bracket 12, and the not-shown guide rail is attached to the rail side bracket 15. In this manner, the not-shown guide rail is fixed and retained inside the hoistway.

[Citation List]

[Patent Literature]

[0005]

[Patent Literature 1] JP-UM-A-60-173565

[Summary of Invention]

[Technical Problem]

[0006]

According to the aforementioned background-art

technique, it is possible to secure a welding margin where each of the welding portions 13 is formed due to each of the welding side end portions 15d of the rail side bracket 15. However, when the rail side bracket 15 is intended to be moved rightward in Fig. 7 in order to adjust the position of the not-shown guide rail, there is a fear that the aforementioned welding margin may become shorter and fixation of the not-shown guide rail may become unstable.

[0007]

Thus, the aforementioned background-art technique has a problem that it is difficult to simultaneously secure the welding margin for welding the rail side bracket 15 (i.e. the rail side fixing fitting) and the wall wide bracket 12 (i.e. the wall side fixing fitting) to each other and the margin for adjusting the position of the not-shown guide rail.

[0008]

The present invention has been accomplished under the actual circumstances in the aforementioned background-art technique. An object of the invention is to provide a guide rail fixing device for an elevator, in which a margin for welding a rail side fixing fitting and a wall side fixing fitting to each other and a margin for adjusting the position of a guide rail can be secured simultaneously and easily.

[Solution to Problem]

[0009]

In order to achieve the object, a guide rail fixing device for an elevator according to the invention is a guide rail fixing device for an elevator, including a wall side fixing fitting and a rail side fixing fitting, the wall side fixing fitting having a first vertical portion and a first horizontal portion, the first vertical portion being fixed to a hoistway wall, the first horizontal portion being provided consecutively to the first vertical portion, the rail side fixing fitting having a second horizontal portion and a second vertical portion, the second horizontal portion being welded to the first horizontal portion of the wall side fixing fitting, the second vertical portion being provided consecutively to the second horizontal portion, a guide rail for guiding an elevating body being attached to the second vertical portion; wherein: the guide rail fixing device further includes: a protrusion portion which is provided in a guide rail side end portion of the first horizontal portion of the wall side fixing fitting, which has a larger width than the width of a back portion of the guide rail, and which protrudes toward the guide rail side; and a recess portion which is provided in the protrusion portion so that the back portion of the guide rail can be inserted into the recess portion.

[Advantageous Effects of Invention]

[0010]

According to the guide rail fixing device for an elevator

according to the invention, it is possible to secure a margin for welding the rail side fixing fitting and the wall side fixing fitting to each other and a margin for adjusting the position of the guide rail simultaneously and easily. Thus, the invention can improve efficiency of a fixation work for fixing the guide rail to the inside of a hoistway in comparison with the background art.

[Brief Description of Drawings]

[0011]

[Fig. 1] A plan view showing an embodiment of a guide rail fixing device for an elevator according to the invention when a guide rail is fixed in a position nearest to a hoistway wall.

[Fig. 2] A side view of the embodiment shown in Fig. 1.

[Fig. 3A] A plan view showing a wall side fixing fitting provided in the embodiment.

[Fig. 3B] A side view showing a wall side fixing fitting provided in the embodiment.

[Fig. 4A] A front view showing a rail side fixing fitting provided in the embodiment.

[Fig. 4B] A side view showing a rail side fixing fitting provided in the embodiment.

[Fig. 4C] A bottom view showing a rail side fixing fitting provided in the embodiment.

[Fig. 5] A plan view showing the embodiment when the guide

rail is fixed in a position farthest from the hoistway wall.

[Fig. 6] A side view of the embodiment shown in Fig. 5.

[Fig. 7] A plan view of a background-art technique.

[Description of Embodiment]

[0012]

A guide rail fixing device for an elevator according to an embodiment of the invention will be described below with reference to the drawings.

[0013]

As shown in Figs. 1 and 2, a guide rail fixing device for an elevator according to the embodiment is provided with a wall side fixing fitting 3 which has a first vertical portion 3a and a first horizontal portion 3b. The first vertical portion 3a is fixed to a hoistway wall 1 by anchor bolts 2. The first horizontal portion 3b is provided consecutively to the first vertical portion 3a. In addition, the guide rail fixing device according to the embodiment is also provided with a rail side fixing fitting 7 which has a second horizontal portion 7a and a second vertical portion 7b. The second horizontal portion 7a is welded to the first horizontal portion 3b of the wall side fixing fitting 3. The second vertical portion 7b is provided consecutively to the second horizontal portion 7a. A guide rail 6 for guiding a car, a counterweight, or the like forming an elevator body is attached to the second vertical portion 7b by rail clips 5.

[0014]

As shown in Figs. 3A and 3B, the wall side fixing fitting 3 provided in the embodiment includes a protrusion portion 3d. The protrusion portion 3d is provided on an end portion of the first horizontal portion 3b on the guide rail 6 side, has a width larger than the width of a back portion 6a of the guide rail 6, and protrudes toward the guide rail 6 side in a range (see Fig. 1) not interfering with a car 8 or a device 9 inside the hoistway. In addition, as shown in Figs. 3A and 3B, the wall side fixing fitting 3 includes a recess portion 3e which is provided in the protrusion portion 3d so as not to interfere with the car 8 or the device 9 inside the hoistway as shown in Fig. 1 so that the back portion 6a of the guide rail 6 can be inserted in the recess portion 3e. Bolt holes 3c are formed in the first vertical portion 3a so that the aforementioned anchor bolts 2 can be inserted into the bolt holes 3c.

[0015]

In addition, as shown in Figs. 4A to 4C, the second horizontal portion 7a and the second vertical portion 7b in the rail side fixing fitting 7 according to the embodiment are different from each other in length. For example, the second vertical portion 7b is set to be longer in length than the second horizontal portion 7a. In addition, hole portions 7c are formed in the second vertical portion 7b of the rail side fixing fitting 7 so that the aforementioned rail clips 5 can be

inserted into the hole portions 7c. Hole portions 7d are also formed in the second horizontal portion 7a so that the aforementioned rail clips 5 can be inserted into the hole portions 7d.

[0016]

As shown in Figs. 1 and 2, in the form in which the guide rail 6 is fixed in a position nearest to the hoistway wall 1, the rail clips 5 are inserted into the hole portions 7c of the second vertical portion 7b of the rail side fixing fitting 7 so that the guide rail 6 can be fixed to the rail side fixing fitting 7.

[0017]

Differently from the form in which the guide rail is fixed as shown in Figs. 1 and 2, in another form where the guide rail 6 is fixed in a position farthest from the hoistway wall 1 as shown in Figs. 5 and 6, of the rail side fixing fitting 7 shown in Figs. 4A to 4C, the second horizontal portion 7a shown in Figs. 1 and 2 is practically used as a third vertical portion 7f, and the second vertical portion 7b of the rail side fixing fitting 7 shown in Figs. 1 and 2 is practically used as a third horizontal portion 7e. Accordingly, the guide rail 6 can be fixed by the rail clips 5 inserted into the hole portions 7d of the third vertical portion 7f of the rail side fixing fitting 7.

[0018]

For example, a work for fixing the guide rail 6 in the fixation form shown in Figs. 1 and 2 will be performed in the following procedure.

[0019]

First, in the state in which a wall side fixing fitting 3 is positioned, anchor bolts 2 are driven into bolt holes 3c of a first vertical portion 3a of the wall side fixing fitting 3 so that the wall side fixing fitting 3 can be fixed to a hoistway wall 1 by the anchor bolts 2.

[0020]

Next, rail clips 5 are inserted into hole portions 7c of a rail side fixing fitting 7 so that the guide rail 6 can be held by the rail clips 5.

[0021]

In this state, the rail side fixing fitting 7 is moved in a front/rear direction and a left/right direction with respect to the wall side fixing fitting 3, i.e. within a horizontal plane so that the position of the guide rail 6 can be adjusted. On this occasion, the back portion 6a of the guide rail 6 is inserted into a recess portion 3e of the wall side fixing fitting 3.

[0022]

After the position of the guide rail 6 is adjusted, opposite side end portions of a second horizontal portion 7a of the rail side fixing fitting 7 and a first horizontal portion

3b of the wall side fixing fitting 3 are welded to each other to thereby form welding portions 4. In this manner, the guide rail 6 is fixed to the hoistway wall 1.

[0023]

Alternatively, in the state in which the guide rail 6 is attached to the short third vertical portion 7f (the second horizontal portion 7a in Figs. 1 and 2) of the rail side fixing fitting 7 at the time of fixation of the guide rail 6 in the fixation form shown in Figs. 5 and 6, the third horizontal portion 7e (second vertical portion 7b in Figs. 1 and 2) mounted on the first horizontal portion 3b of the wall side fixing fitting 3 is moved in the front/rear direction and the left/right direction within the horizontal plane so that the position of the guide rail 6 can be adjusted. On this occasion, the back portion 6a of the guide rail 6 is separated from the recess portion 3e of the wall side fixing fitting 3.

[0024]

After the position of the guide rail 6 is adjusted, of the third horizontal portion 7e, opposite side portions of a part located on the protrusion portion 3d are welded to the first horizontal portion 3b of the wall side fixing fitting 3, so as to form welding portions 4. In this manner, the guide rail 6 is fixed to the hoistway wall 1.

[0025]

According to the aforementioned embodiment, at the time

of fixation of the guide rail 6, as described above, the second horizontal portion 7a of the rail side fixing fitting 7 is placed on the first horizontal portion 3b of the wall side fixing fitting 3 and the back portion 6a of the guide rail 6 is moved inside the recess portion 3e of the wall side fixing fitting 3, or the third horizontal portion 7e is placed on the protrusion portion 3d located on the end portion of the first horizontal portion 3b on the guide rail 6 side and the back portion 6a of the guide rail 6 is separated from the recess portion 3e, so that the position of the guide rail 6 can be adjusted. After the position is adjusted, the second horizontal portion 7a shown in Figs. 1 and 2 in the rail side fixing fitting 7 is welded to the first horizontal portion 3b of the wall side fixing fitting 3, or the third horizontal portion 7e shown in Figs. 5 and 6 is welded to the first horizontal portion 3b and the protrusion portion 3d.

[0026]

Thus, the embodiment can secure the margin for welding the rail side fixing fitting 7 and the wall side fixing fitting 3 to each other and the margin for adjusting the position of the guide rail 6 simultaneously and easily, and improve efficiency of the fixation work for fixing the guide rail 6 to the inside of the hoistway.

[0027]

In addition, in the embodiment, the second vertical

portion 7b of the rail side fixing fitting 7 is set to be longer in length than the second horizontal portion 7a of the same in the form shown in Figs. 1 and 2 so that the guide rail 6 can be fixed as shown in Figs. 1 and 2. In addition, the form in which the rail side fixing fitting 7 is disposed can be changed so that the guide rail 6 can be fixed as shown in Figs. 5 and 6. Thus, a sufficiently long position adjustment margin of the guide rail 6 can be secured.

[0028]

Incidentally, the protrusion portion 3d according to the embodiment can exert its function as long as it has a width larger than the width of the back portion 6a of the guide rail 6. That is, as long as the back portion 6a of the guide rail 6 can be located inside the recess portion 3e, the welding portions 4 can be formed between the protrusion portion 3d and the rail side fixing fitting 7 on the back surface side of the rail side fixing fitting 7 even if the width of the protrusion portion 3d is smaller than the width of the rail side fixing fitting 7. However, when the protrusion portion 3d is formed to have a larger width than the width of the rail side fixing fitting 7, the work for forming the welding portions 4 between the protrusion portion 3d and the rail side fixing fitting 7 can be performed on the front surface side of the rail side fixing fitting 7. Accordingly, the workability can be improved and the working time can be shortened. Thus, the cost

can be reduced.

[Reference Signs List]

[0029]

- 1 hoistway wall
- 3 wall side fixing fitting
  - 3a first vertical portion
  - 3b first horizontal portion
  - 3c bolt hole
  - 3d protrusion portion
  - 3e recess portion
- 4 welding portion
- 6 guide rail
  - 6a back portion
- 7 rail side fixing fitting
  - 7a second horizontal portion
  - 7b second vertical portion
  - 7e third horizontal portion
  - 7f third vertical portion
- 8 car
- 9 device inside hoistway

[CLAIMS]

[Claim 1]

A guide rail fixing device for an elevator, comprising a wall side fixing fitting and a rail side fixing fitting, the wall side fixing fitting having a first vertical portion and a first horizontal portion, the first vertical portion being fixed to a hoistway wall, the first horizontal portion being provided consecutively to the first vertical portion, the rail side fixing fitting having a second horizontal portion and a second vertical portion, the second horizontal portion being welded to the first horizontal portion of the wall side fixing fitting, the second vertical portion being provided consecutively to the second horizontal portion, a guide rail for guiding an elevating body being attached to the second vertical portion; wherein:

the guide rail fixing device further comprises: multiple protrusion portions which are provided in a guide rail side end portion of the first horizontal portion of the wall side fixing fitting, width between the protrusion portions is larger than that of a back portion of the guide rail, and which protrudes toward the guide rail side; and

a recess portion which is provided between the protrusion portion so that the back portion of the guide

rail can be inserted into the recess portion,

the second vertical portion of the rail side fixing fitting is set to be larger in length than the second horizontal portion thereof, and

according to a position where the guide rail is disposed, one of a form in which the second horizontal portion of the rail side fixing fitting is welded to the first horizontal portion of the wall side fixing fitting with the back portion of the guide rail held onto the second vertical portion of the rail side fixing fitting and a form in which a third horizontal portion which corresponds to the second vertical portion of the rail side fixing fitting is welded to the first horizontal portion of the wall side fixing fitting with the back portion of the guide rail held onto a third vertical portion which corresponds to the second horizontal portion of the rail side fixing fitting is selectable.

[Claim 2]

A guide rail fixing device for an elevator according to Claim 1, wherein:

the second horizontal portion of the rail side fixing fitting is made different in length from the second vertical portion of the same.