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APPARATUS FOR ASSEMBLING WINDOW OF ELEVATOR DOOR

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to an apparatus for assembling a window of elevator door, particularly to an improved apparatus for assembling a window of elevator door installed to allow the inside of a cage to be observed from outside, thereby reducing its assembly components and tightly fixing the window on the door panel.

Description of the Prior Art

Recently, when women or the old get on the elevator's cage alone, they may be harassed by an ill-mannered person. For this reason, in order to prevent harassment, there has been a tendency to equip a door having a window (hereinafter, a door panel) in an elevator so that one can see the inside of the cage through the window from outside.

In a certain area of the door panel used for a conventional elevator, as illustrated in Fig. 1, a rectangular hole 2 is formed, and a plurality of stud bolts 3 are fixed on the circumference of hole 2 by welding.

As illustrated in Fig. 2, a rubber packing 4 is combined along the circumference of hole 2, and one side of watch glass

8 comes into contact with the inner circumference of rubber packing 4 placed inside door panel 1.

As illustrated in Fig. 1, one side of a plurality of fixing pieces 5 is placed on the outer circumference of the other side of watch glass 8. Fixing pieces 5 are shaped in a plate bent twice in stairs, whose inner surface comes in contact with watch glass 8, the outer surface being combined by a washer 6 and nut 7 to the inner surface 1b of the door panel coupled with stud bolt 3. A buffing rubber 9 is inserted between the outer circumference of the other side of watch glass 8 and one side of fixing pieces 5 in order to prevent watch glass 8 from receiving shock due to shaking.

The reason to fix stud bolt 3 to the inner surface of door panel 1 by welding is that the welding part can be concealed by washer 6 and nut 7, thereby preserving the exterior.

On the other hand, when door panel 1 is formed of a material with which stud bolt 3 can not be welded, as illustrated in Fig. 3, an additional fixing member 10 on which stud bolt 3 is fixedly welded is attached to the inner surface of door panel 1 with an adhesive 11. When fixing member 10 is fixed to the inner surface 1a of door panel 1, a double-faced tape (not shown) may be used instead of adhesive 11.

However, the conventional apparatus for assembling a window of elevator door requires an additional welding place

and takes a long time to assembly the window because the watch glass is fixed by welding the stud bolt onto the inner surface of the door panel and then successively engaging the washer and the nut. Securing the fixing member onto the door panel with the additional adhesive involves delay in working time due to time necessary in the adhesive's hardening, as well as deteriorating the working environment due to smell caused by the chemicals contained in the adhesive. In addition, the initial adhesiveness of the adhesive tape is weak so that in order to enhance the adhesiveness, a heavy poise may be laid on the fixing member or an additional working for fastening to the contact surface should be added. Fastening the fixing member with the adhesive tape causes the fixing member to be easily detached out after working, thereby decreasing its reliability.

SUMMARY OF THE INVENTION

An object of the invention is to provide an apparatus for assembling a window of elevator door for tightly fixing the watch glass onto the door panel by simply combining a pair of plastic resin products.

To achieve the object, there is provided an apparatus for assembling a window of elevator door is disclosed including a door panel having a hole; a watch glass fixedly inserted

into the hole; a fixing member whose center is open, on which a protruding part is formed on one side surface, the protruding part having a plurality of hooks at predetermined portions of its end; and a supporting member having a center part being open, the member having a plurality of hooking holes for inserting the hooks.

BRIEF DESCRIPTION OF THE ATTACHED DRAWINGS

Fig. 1 is an exploded perspective view of a conventional door panel and watch glass used for an elevator;

Fig. 2 is a vertical sectional view of a structure in which the watch glass is coupled to the door panel according to the prior art;

Fig. 3 is a vertical sectional view of another example of the conventional construction in which the watch glass is coupled to the door panel;

Fig. 4 is an exploded perspective view of one embodiment of a door panel and watch glass for an elevator of the present invention;

Fig. 5 is a vertical sectional view of a construction in which the watch glass is coupled to the door panel of the first embodiment of the invention;

Fig. 6 is a sectional view of the first embodiment cut along line VI-VI of Fig. 5;

Fig. 7 is a sectional view of the first embodiment cut along line VII-VII of Fig. 5; and

Fig. 8 is a perspective view of a state in which a hook formed on the fixing member of the first embodiment is inserted into a hooking hole formed on the supporting member.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the attached drawings, an apparatus for assembling a window of elevator door will be described in detail as follows.

A rectangular hole 52 is formed on a certain part of the door panel used for the apparatus for assembling a window of elevator door, as illustrated in Fig. 4.

A rectangular fixing member 12 of a predetermined thickness is equipped, whose center part is open. As illustrated in Fig. 5, in fixing member 12, an inner flange 12a coming into contact with outer surface 58a of the watch glass is formed on the overall inner surface of one side, and an outer flange 12b coming into contact with an outer surface 51a of door panel 51 is formed on the overall outer surface of one side. The overall portion of the fixing member's other surface is protruded to form a plurality of hooks 13 formed on the end of the protruding part.

And a supporting member 14 is equipped being rectangular

with a predetermined thickness, whose center part is open. Its outer and inner surfaces 14a and 14b are stratified as a tier where a rectangular stratified flute 14c is formed with a predetermined width, connecting one side of the inner surface 14a and one side of the outer surface 14b. On the inner surface 14b of the supporting member 14 coming into contact with the internal surface 58b of the watch glass, a plurality of hooking holes 15 for inserting a hook 13 of fixing member 12 and a plurality of second tension ribs 16b are formed spaced apart by a distance. A plurality of first tension ribs 16a are formed on outer surface 14a of the supporting member 14 coming into contact with the inner surface 51b of the door panel 51.

The operation and effect of the thus-structured invention is as follows.

First, in a state that watch glass 58 is accepted in stratified flute 14c of the supporting member 14 so as not to be dropped, the outer surface 14a of the supporting member 14 is made to come into contact with the outer circumferential part of hole 52 placed in the inner part 51b of door panel 51. After the protruding part of fixing member 12 is inserted between the outer circumference of watch glass 58 and hole 52 of the door panel 51, as illustrated in Fig. 8, when the plurality of hooks 13 formed on the fixing member 12 are inserted into hooking hole 15 formed on the inner surface 14b

of the supporting member 14, fixing member 12 and supporting member 14 are combined so that watch glass 58 placed between fixing member 12 and supporting member 14 is fixed onto door panel 51.

During the above-mentioned operation, fixing member 12 is in close contact with the outer surface 51a of door panel 51 while compressing the first tension rib 16a formed on the outer surface 14a of the supporting member 14 against the inner surface 51b of the door panel 51.

Accordingly, when watch glass 58 is fixed between the fixing member 12 and the supporting member 14, outer flange 12b of the fixing member 12 can be closely combined with the door panel 51, though a gap T may be formed between the outer flange 12b of the fixing member 12 and outer surface 51a of the door panel 51 due to the contraction deformation, twisting, or the assembly tolerance of the fixing member 12 and the supporting member 14 manufactured of resin material, as illustrated in Fig. 6. This prevents the watch glass 58 from shaking in case the door panel 51 is opened/closed.

In addition, the second tension rib 16b formed on the supporting member 14 is compressed while in contact with the inner surface 58b of the watch glass 58, and thus pushes the watch glass 58 toward the inner flange 12a of fixing member 12. Thus, even though a gap t may be generated between the inner flange 12a of the fixing member 12 and the outer surface

58a of watch glass 58 due to aforementioned contraction deformation, twisting or an assembly tolerance as illustrated in Fig. 7, the watch glass 58 can be closely combined with the inner flange 12a of the fixing member 12, thereby preventing the watch glass 58 from shaking in case the door panel 51 is opened/closed.

As described above, the apparatus for assembling a window of elevator door of the invention is capable of easily fixing watch glass onto door panel, using the resilient force of the fixing member and supporting member made of plastic resin, without welding the stud bolt on the inner surface of the door panel or fastening with an adhesive the fixing member on which the stud bolt is welded. Therefore, this invention is advantageous by reducing the working time for equipping the watch glass without an additional welding place, and thus improving the working environment.



What is claimed is:

1. An apparatus for assembling a window of elevator door comprising:

a door panel having a hole;

a watch glass fixedly inserted into said hole;

a fixing member whose center is open, on which a protruding part is formed on one side surface, said protruding part having a plurality of hooks at predetermined portions of its end; and

a supporting member having a center part being open, said member having a plurality of hooking holes for inserting said hooks.

2. An apparatus for assembling a window of elevator door as in claim 1, wherein an inner flange coming into contact with the outer surface of said watch glass is formed on the inner surface of the other side of said fixing member, and an outer flange coming into contact with the outer surface of said door panel is formed on the outer surface of the other side of said fixing member.

3. An apparatus for assembling a window of elevator door as in claim 1, wherein a plurality of first tension ribs coming into contact with the inner surface of said door panel



are formed on said supporting member.

4. An apparatus for assembling a window of elevator door as in claim 1, wherein a plurality of second tension ribs coming into contact with the inner surface of said watch glass are formed on said supporting member.

5. An apparatus for assembling a window of elevator door as in claim 1, wherein a plurality of first tension ribs coming into contact with the inner surface of said door panel and a plurality of second tension ribs coming into contact with the inner surface of said watch glass are formed on said supporting member.