



BATTEN-ATTACHED FITTINGS



BACKGROUND OF THE INVENTION

5 1.FIELD OF THE INVENTION

The present invention relates to batten-attached fittings such as a door attached to double sliding window and single sliding window and a door leaf attached to door frame.

2.DESRIPTION OF RELATED ART

10 As shown in Fig. 18, batten-attached fittings have a rail assembly 4 connecting a top rail 1, a bottom rail 2 and right and left stiles 3 in square shape, a plate body 5 fitted in the rail assembly 4 and a batten 6 attached on the respective rails and stiles.

An inner side 6a (inner side in width direction) of one of the adjacent battens 6 and an end surface 6b (end surface in longitudinal direction of the other adjacent batten 6 are abutted.
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As shown in Japanese Patent Laid-Open Publication No. Hei 9-209658, the size of the inner periphery of the rail assembly 4 of the batten-attached fittings on a depth-direction first side is greater than the plate body 5, so that the plate body 5 can be easily inserted into the rail assembly 4.

20 The batten-attached fittings are assembled as follows.

The plate body 5 is inserted into the rail assembly 4 from the depth-direction first side and the batten 6 is subsequently attached to the depth-direction first side of the respective rails and stiles so that the plate body 5 is held inside the rail assembly 4 by the batten 6.

25 It is known for the batten 6 to have decorative shape such as curved shape on the front surface configuration (the shape of the depth-direction first side).

Such batten 6 lacks continuity of the front surface shape on the connection corner of the adjacent battens 6, thus deteriorating design thereof.

For instance, when the front surface shape of the batten 6 is curved in the width direction, the front surface of the batten 6 attached to the top rail 1 is vertically curved.
30 The front surface of the batten 6 attached to the stile 3 is curved in right and left direction.

Accordingly, the front surface of the batten is discontinuous at the connection

corner where the inner side 6a of the batten 6 attached to the top rail 1 and the end surface 6b of the batten 6 attached to the stile 3 are abutted.

Fittings having a corner member connecting a bead for maintaining air and water proofness between the rails and plate body is disclosed in Japanese Utility Model
5 Laid-Open Publication No. Sho 54-52143.

According to the above fittings, the front surface of the bead having decorative configuration can be continued by the corner member.

However, the bead is inserted between the rail and the plate body to maintain air and water proofness and is different from the above-described batten in attachment
10 structure and function thereof.

Further, the above-described corner member is inserted between the rail and the plate body.

Accordingly, the technique for continuing the above-described bead with the corner member cannot be directly applied to the batten-attached fittings.

For instance, when the batten-attached fittings uses a batten made of metal such as aluminum, a sealing member is attached between the batten and the plate body to prevent
15 damage on the plate body caused by the batten and to improve sealability between the plate body and the batten.

Before attaching the sealing member, there is a gap between the plate body and the
20 batten for the sealing member to be fitted.

Accordingly, a gap also exists between the corner member and the plate body for the sealing member to be fitted, so that the corner member cannot be held on the rail assembly.

Therefore, the corner member falls off when a corner member is attached to a
25 connection corner of the top rail and the right and left stile, so that the sealing member has to be attached by a worker while the other worker is holding the corner member, thus deteriorating workability of assembling work.

SUMMARY OF THE INVENTION

30 An object of the present invention is to provide a batten-attached fittings having superior assembly workability.

A batten-attached fittings according to the present invention includes: a rail

assembly (14) connecting top and bottom rails and right and left stiles in a square shape; a plate body (15) provided in the rail assembly (14); a batten (16) respectively attached to adjacent rail and stile of the rail assembly; and a batten corner block (17) for continuing the adjacent battens, in which the adjacent rail and stile have a block attachment at inner side thereof, and the batten corner block is configured to be attached and fixed to the block attachment of at least one of the adjacent rail and stile.

According to the above arrangement, the two adjacent battens are continued through the batten corner block. Therefore, the front surface shape at the connection corner of the decorative shaped batten can be continued.

Further, since the batten corner block is attached and fixed to at least one of the adjacent rail and stile, the corner block does not fall off even when there is a gap between the batten corner block and the plate body for attaching a sealing member. Accordingly, when the batten corner block is attached after mounting the plate body in the rail assembly and the batten is attached thereafter, there is no need for a worker to manually hold the batten corner block in order to prevent fall off, thus enabling assembly by one worker.

Accordingly, superior assembly workability of batten-attached fittings can be obtained.

In the present invention, the batten corner block may preferably have a body (30) and an attachment (31), the body having two end surfaces to be in contact with the inner sides of the adjacent rail and stile and two end surfaces to be in contact with end surface (16b) of the adjacent two battens, the attachment being engaged with the block attachment of at least one of the adjacent rail and stile.

According to the above arrangement, since the body is in contact with the inner sides of the adjacent rail and stile and the end surfaces of the adjacent two battens respectively, the adjacent rail and stile and the two adjacent battens are integrally continued at the connection corner, thereby improving appearance.

Further, by engaging the attachment with the block attachment, the batten corner block can be easily attached.

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least one of the adjacent rail and stile.

According to the above arrangement, since the body is in contact with the inner sides of the adjacent rail and stile and the end surfaces of the adjacent two battens respectively, the adjacent rail and stile and the two adjacent battens are integrally continued
5 at the connection corner, thereby improving appearance.

Further, by fitting the attachment with the block attachment, the batten corner block can be easily attached.

In the present invention, the attachment may preferably be elastically deformed to be fixed and pushes the body (30) toward a front surface by elastic restoring force thereof,
10 and the body may preferably have a restricting portion (33) to be abutted to the block attachment of at least one of the adjacent rail and stile for restricting protrusion toward the front surface.

According to the above arrangement, the restricting portion of the body is abutted to the block attachment by the attachment, so that protrusion toward the front surface can
15 be restricted. Accordingly, the front surface of the body and the front surface of the rail can be made flush.

In the present invention, the body may preferably have an engagement piece (34) to be engaged with the block attachment of horizontal rail for preventing fall-off.

According to the above arrangement, the engagement piece of the body is engaged
20 with the block attachment of the horizontal rail, so that the batten corner block can be securely prevented from falling off.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a view illustrating an exterior of a batten-attached fittings according to an
25 embodiment of the present invention;

Fig. 2 is a cross section taken along A-A line in Fig. 1;

Fig. 3 is a cross section taken along B-B line in Fig. 1;

Fig. 4 is a cross section taken along C-C line in Fig. 1;

Fig. 5 is a cross section taken along D-D line in Fig. 1;

30 Fig. 6 is an exploded perspective view showing a batten-attached corner block according to the aforesaid embodiment;

Fig. 7 is a perspective view showing assembly work of the batten-attached corner

block according to the aforesaid embodiment;

Fig. 8 is a perspective view showing assembly work of the batten-attached corner block according to the aforesaid embodiment;

Fig. 9 is a perspective view showing assembly work of the batten-attached corner
5 block according to the aforesaid embodiment;

Fig. 10 is a perspective view showing assembly work of the batten-attached corner block according to the aforesaid embodiment;

Fig. 11 is a perspective view showing assembly work of the batten-attached corner block according to the aforesaid embodiment;

Fig. 12 is a partial perspective view showing a rail assembly attached with a batten
10 corner block having different shape in the aforesaid embodiment;

Fig. 13 is a vertical cross section of the aforesaid embodiment;

Fig. 14 is a horizontal cross section of the aforesaid embodiment;

Fig. 15 is a vertical cross section showing another arrangement of an attachment of
15 a batten-corner block;

Fig. 16 is a horizontal cross section showing another arrangement of the attachment of the batten-corner block;

Fig. 17 is a partial perspective view showing batten-attached fittings without using a sealing member; and

Fig. 18 is an illustration showing an exterior of conventional batten-attached
20 fittings.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT(S)

An embodiment of the present invention will be described below with reference to
25 attached drawings.

In Fig. 1, fittings 10 has a rail assembly 14 connecting a top rail 11, a bottom rail 12 and right and left stiles 13 in square shape, a plate body 15 such as glass provided to the rail assembly 14, a batten 16 attached to the respective rails for holding the plate body 15 to the rail assembly 14, and a batten corner block 17 attached to the corner of the rail assembly
30 14 for continuing the adjacent battens 16.

As shown in Fig. 2, the top rail 11 and the bottom rail 12 have an inward projection 20 for supporting the plate body 15 to an inner side in width direction, i.e. to

depth-direction first side of inner sides 11a and 12a. The inward projection 20 has a plate shape and has a sealing member attachment 21, e.g. concave groove opening toward depth direction second side.

The top rail 11 and the bottom rail 12 have a batten attachment 22 on a second side of depth direction at the inner sides 11a and 12a. The batten attachment 22 has a first engagement receiver 23 and a second engagement receiver 24 spaced apart in depth direction. The first engagement receiver 23 is provided to the depth-direction second side and has hook shape directed to the depth-direction first side. The second engagement receiver 24 is provided at a depth-direction intermediate portion and has a hook-shape extending toward the depth-direction second side. The top rail 11 and the bottom rail 12 have the same cross section.

As shown in Fig. 3, the right and left stiles 13 have the same cross section as the above-described top rail 11 and the bottom rail 12, where the inward projection 20 and the batten attachment 22 are provided at the inner side in the width direction, i.e. an inner side 13a.

The top rail 11, the bottom rail 12 and the right and left stiles 13 are made of aluminum having the same cross section formed by, for instance, extrusion molding, in which the both longitudinal ends of the respective rails are cut at forty-five degrees which are butted and fixed.

The size of the inner periphery of the depth-direction first side of the rail assembly 14 (the size of the inner circumference formed by the respective inward projections 20) is smaller than the plate body 15. The size of the rail assembly 14 of the inner circumference of the depth-direction second side of the rail assembly (the size of the inner periphery formed by the respective batten attachments 22) is greater than the plate body 15. Accordingly, the plate body 15 can be easily inserted to the rail assembly 14 from the depth-direction second side.

As shown in Figs. 2 and 3, the respective battens 16 are an aluminum extrusion of substantially C-shaped cross section having a depth-direction first side piece 16a extending in width direction, second side piece 16b and horizontal piece 16c extending in depth direction, which includes an attachment 25 capable of engagement and detachment at the batten attachment 22 of the rail. Specifically, the respective battens 16 have a first engagement piece 26 provided to the depth-direction second side piece 16b extending in

width direction to be engaged with the first engagement receiver 23, and a second engagement piece 27 provided to the depth-direction first side piece 16a extending in width direction to be engaged with the second engagement receiver 24. The second side piece 16b of the respective battens 16 constitute a front surface of the batten, the front surface
 5 having decorative configuration such as arc shape.

A first side sealing member 28 is attached to the sealing member attachment 21 of the respective inward projections 20 supporting the plate body 15 extending on the entire circumference. The first side sealing member 28 is pressed to a side of the plate body 15.

There is a gap between the second side of the plate body 15 and the
 10 depth-direction first side piece 16a (depth-direction first side) of the respective batten 16. A second sealing member 29 is attached to the gap to be extended on the entire circumference.

As shown in Figs. 4, 5 and 6, the batten corner block 17 has a body 30 and an attachment 31.

15 The body 30 abuts to the inner side of the adjacent rail and is arranged in a rectangular plate for continuing the front surfaces of the adjacent battens 16, of which adjacent two end surfaces, e.g. first end surface 30a and second end surface 30b respectively abut to one of the inner sides 11a and 12a of the top rail 11 and the bottom rail 12 (the first engagement receiver 23) and the inner side 13a of the stile 13 (the first
 20 engagement receiver 23).

The rest of adjacent two end surfaces, e.g. third end surface 30c and fourth end surface 30d respectively abut to the end surface 16d of the adjacent batten 16 in longitudinal direction. The shape of a front surface 30e of the body 30 is arranged to continue the decorative front surfaces of the adjacent battens 16. A rectangular projection
 25 32 is provided to a rear surface 30f of the body 30.

A restricting portion 33 which is abutted to a block attachment provided to the inner sides of the adjacent rail and stile for restricting the body 30 from protruding to the depth-direction second side (i.e. in the front surface direction) is provided to the adjacent first end surface 30a and the second end surface 30b of the body 30. The restricting
 30 portion 33 is a projection integrally provided on the first end surface 30a and the second end surface 30b near the side of the rear surface.

An engagement piece 34 is provided to one of the restricting portion 33. The

engagement piece 34 is, for instance, a projection provided on the front surface of the restricting portion 33.

The attachment 31 is engaged with a block attachment provided to the inner side of the adjacent rail and stile for attaching and fixing the batten corner block 17 to the rail.

5 For instance, the attachment 31 has a base 35, a first attachment piece 36 and a second attachment piece 37.

The base 35 is a rectangular plate having a rectangular hole 38 to be fitted to the projection 32. The hole 38 is fitted to the projection 32 to attach the attachment to the body 30. The attachment 31 is detachably attached to the rear surface 30f of the body 30.

10 Incidentally, the attachment 31 may be attached with a screw.

The first attachment piece 36 and the second attachment piece 37 are integrally provided on the adjacent two end surfaces of the base 35.

Since the body 30 and the attachment 31 are separate, the batten corner block 17 can be suitably used for battens having different width dimension by attaching the body 30 of different size with the common attachment 31.

The above-described body 30 is made of zinc and is of appearance similar to the aluminum batten 16, thereby improving design thereof.

The attachment 31 is made of resin, so that the attachment 31 of complicated structure can be easily manufactured and elasticity is given to the first attachment piece 36 and the second attachment piece 37.

The material of the body 30 and the attachment 31 may be zinc, aluminum or resin, and the batten 16 and the body 30 are preferably made of the same material.

The body 30 and the attachment 31 may be integrated.

The batten corner block 17 is attached to a corner of the inner side of the adjacent rail.

For instance, the block attachment is provided to the inner side of the rail. The first attachment piece 36 is engaged with the block attachment of the adjacent horizontal rail (the top rail 11 or the bottom rail 12) and the second attachment piece 37 is engaged with the block attachment of the stile (stile 13), so that the corner block 17 is attached and fixed without being fallen off.

The engagement piece 34 is engaged to the block attachment of the horizontal rail for securely preventing fall-off.

The first attachment piece 36 and the second attachment piece 37 are elastically deformed to be engaged with the block attachment to be fixed, the elastic restoring force thereof forcing the body 30 toward the front surface. The restricting portion 33 of the body 30 is abutted to the block attachment of the adjacent rail to restrict the body 30 from protruding to the depth-direction second side (i.e. toward the front surface), so that the front surface of the body 30 and the front surface of the batten 16 and the rail are flush.

Incidentally, the attachment 31 may be engaged with a block attachment of one of the adjacent rail and stile to be fixed. For instance, only the first attachment 36 may be provided

The attachment 31 may be engaged with the block attachment to be fixed without being elastically deformed.

In the present embodiment, the block attachment and the batten attachment 22 are commonly used. The attachment arrangement will be described below with reference to Figs. 4 and 5.

The first attachment piece 36 and the second attachment piece 37 are engaged with the second engagement receiver 24 of the adjacent top rail 11 and the stile 13 and the adjacent bottom rail 12 and the stile 13. The elastic restoring force of the first and the second attachment pieces 36 and 37 pushes the body 30 toward the front surface, and the two restricting portion 33 are abutted to the first engagement receiver 23 of the above-described adjacent rail and stile. The engagement piece 34 provided to one of the restricting portions 33 is engaged with the first engagement receiver 23 of the top rail 11 and the bottom rail 12.

Incidentally, the block attachment may be independent of the batten attachment 22. For instance, first and second engagement receivers having the same shape as the first engagement receiver 23 and the second engagement receiver 24 of the batten attachment may be provided to the inner side of the respective rails and stiles.

Next, assembling process of the present embodiment will be described below.

As shown in Figs. 1 and 7, the top rail 11, the bottom rail 12 and the right and left stile 13 are connected in square shape to form the rail assembly 14.

As shown in Fig. 8, the first side sealing member 28 is attached to the respective inward projections 20 of the rail assembly 14. Subsequently, the plate body 15 is inserted into the rail assembly 14 to be in contact with the first side sealing member 28. The plate

body 15 is in contact with the inner side 12a of the bottom rail 12 through a setting block.

As shown in Fig. 9, the batten corner block 17 is attached to the corner of the adjacent rails, e.g. the corner between the bottom rail 12 and the stile 13 and the corner between the top rail 11 and the stile 13.

5 The first end surface 30a and the second end surface 30b of the body 30 are brought into contact with the first engagement receiver 23 of the stile 13 and the bottom rail 12, for instance, and while being elastically deformed, the first attachment piece 36 and the second attachment piece 37 are fitted to the second engagement receiver 24 of the stile 13 and the bottom rail 12. The engagement piece 34 is engaged with the first engagement
10 receiver 23 of the bottom rail 12.

The batten corner block 17 is attached to the corner between the top rail 11 and the stile 13 in the same manner.

Accordingly, the front surface of the body 30 is flush with the front surface of the rail assembly 14 (depth-direction second side).

15 The batten 16 is attached as shown in Fig. 10.

The part adjacent to the front surface on the end surface 16d of the one of the adjacent battens 16 (the end surface of the first side piece 16b) is brought into contact with the third end surface 30c of the body 30 and the part adjacent to the front surface on the end surface 16d of the other adjacent battens 16 is brought into contact with the fourth end
20 surface 30d of the body 30.

Accordingly, the decorative front surface of the batten 17 becomes consecutive on the front surface 30e of the body 30 of the batten corner block 17.

The parts near the depth-direction first side as a flat surface of the end surface 16d of the batten 16 (end surface of the horizontal piece 16c) are mutually abutted.

25 As shown in Fig. 11, the second side sealing member 29 is attached to the gap between the plate body 15 and the respective battens 16.

Next, second embodiment of the batten corner block 17 will be described below with reference to Figs. 12, 13 and 14.

The batten corner block 17 has a body 30 and an attachment 31.

30 The body 30 is substantially the same as the body 30 of the above-described first embodiment except that the projection 32 is not provided on the rear surface.

The attachment 31 is a rectangular parallelepiped and is fixed to the rear surface of

the body 30 by adhesion etc.

The body 30 is made of aluminum. The attachment 31 is made of resin and has elasticity. Incidentally, the material of the body 30 and the attachment 31 is not limited to the above.

5 The sum of the depth-direction dimension of the attachment 31 and the depth-direction dimension of the restricting portion 33 is slightly greater than the dimension of the respective rail block attachment, the batten attachment 22 in the present embodiment, i.e. the gap between the first engagement receiver 23 and the second engagement receiver 24.

10 Accordingly, the attachment 31 and the restricting portion 33 are elastically deformed to fitted by pushing into between the first engagement receiver 23 and the second engagement receiver 24 of the adjacent rail and stile, for instance, the stile 13 and the bottom rail 12. The attachment 31 is slightly elastically compressed and deformed, the elastic restoring force pushing the body 30 toward the front surface, where the restricting
15 portion 33 is in contact with the first engagement receiver 23 to restrict protrusion toward the front surface and holds and fixes the batten corner block 17 to prevent from falling off. The engagement piece 34 is engaged with the first engagement receiver 23 of the horizontal rail for securely preventing fall-off.

 Incidentally, the attachment 31 may be fixed to the block attachment (between the
20 first engagement receiver 23 and the second engagement receiver 24, for instance) by elastic deformation.

 As shown in Figs. 15 and 16, the width dimension of the attachment 31 may be greater than the width dimension of the body 30 so that the width-direction inner sides of the body 30 and the attachment 31 are flush and the width-direction outer side of the
25 attachment 31 projects relative to the width-direction outer side of the body 30, thereby projecting the attachment 31 to the first and the second end surfaces 30a and 30b of the body 30.

 The attachment 31 is fitted to the block attachment, for instance between the first engagement receiver 23 and the second engagement receiver 24, by elastic deformation.

30 The attachment 31 is engaged with the first engagement receiver 23 and the second engagement receiver 24, thus securely preventing fall-off.

 Accordingly, the engagement piece 34 of the body 30 is not necessary.

Further, the attachment 31 may be fitted to the block attachment without elastic deformation.

Though the sealing member is used in the above-described embodiments, the plate body 15 may be directly pressed to the inward projection 20 of the respective rails and the
5 batten 16 may be directly pressed to the plate body 15 as shown in Fig 17. In this case, the batten 16 may preferably be made of resin.

In the above-described respective embodiments, the body 30 of the batten corner block 17 may be shaped in an approximate L-shape having horizontally-extending members consecutive with the third and the fourth end surfaces 30c and 30d and the part adjacent to
10 the depth-direction first side (the end surface of the horizontal piece 16c) as the flat surface of the end surface 16d of the batten 16 may be abutted to the body 30 (horizontally-directed member).

Though the respective rails and stiles have the inward projections 20 in the above embodiments, the respective rails and stiles may not have the inward projection but the
15 batten may be attached to both sides of the inner sides in depth-direction.

Though the batten 16 is attached to four sides of the rail assembly 14 (the top rail 11, the bottom rail 12 and the right and left stiles 13), , the batten 16 may be attached only to adjacent rail and stile, e.g. the top rail 11 and one of the stiles 13 or the bottom rail 12 and one of the stiles 13.

20 In other words, any arrangement is possible for the batten-attached fittings of the present invention as long as the batten is attached to the adjacent two rails and stiles.

WHAT IS CLAIMED IS:

1. A batten-attached fittings, comprising:
 - a rail assembly (14) connecting top and bottom rails and right and left stiles in a square shape;
 - a plate body (15) provided in the rail assembly (14);
 - a batten (16) respectively attached to adjacent rail and stile of the rail assembly;
 - and
 - a batten corner block (17) for continuing the adjacent battens,
 - wherein the adjacent rail and stile have a block attachment at inner side thereof,
 - and
 - wherein the batten corner block is configured to be attached and fixed to the block attachment of at least one of the adjacent rail and stile.
2. The batten-attached fittings according to claim 1, wherein the batten corner block has a body (30) and an attachment (31), the body having two end surfaces to be in contact with the inner sides of the rail and stile and two end surfaces to be in contact with end surface (16b) of the adjacent two battens, the attachment being engaged with the block attachment of at least one of the rail and stile.
3. The batten-attached fittings according to claim 1, wherein the batten corner block has a body (30) and an attachment (31), the body having two end surfaces to be in contact with the inner sides of the rail and stile and two end surfaces to be in contact with end surface (16b) of the adjacent two battens, the attachment being fitted to the block attachment of at least one of the rail and stile.
4. The batten-attached fittings according to claim 2 or 3,
 - wherein the attachment is elastically deformed to be fixed and pushes the body (30) toward a front surface by elastic restoring force thereof, and
 - wherein the body has a restricting portion (33) to be abutted to the block attachment of at least one of the rail and stile for restricting protrusion toward the front surface.

5. The batten-attached fittings according to claim 2 or 3, wherein the body has an engagement piece (34) to be engaged with the block attachment of horizontal rail for preventing fall-off.

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6. The batten-attached fittings according to claim 4, wherein the body has an engagement piece (34) to be engaged with the block attachment of horizontal rail for preventing fall-off.