

of a building structure from the outside.

In this connection, patent document 1 provides a composite hinged window further including a gasket that is attached to first and second hinged pane members or a frame and is disposed on a stepped portion where the first and second hinged pane members are in contact with the frame.

However, patent document 1 is problematic in that the first and second hinged pane members are frequently caught by the frame when the first and second hinged pane members are closed, so that external force generated when the first and second hinged pane members are closed may be transmitted to a large extent to the frame.

【Related Art Document】

【Patent Document】

(Patent Document 1) Korean Patent No. 10-1194338 (registered on Oct. 18. 2012)

SUMMARY OF THE INVENTION

Accordingly, the present invention has been made keeping in mind the above problems occurring in the related art, and an object of the present invention is to provide a composite system door having insulation effect, which is configured to transmit external force generated when a pane member is closed, to a small

extent, to a frame.

In order to accomplish the above object, the present invention provides a composite system door having insulation effect having a frame installed in a wall, and a pane member installed in the
5 frame to be rotated to an outside, wherein the frame includes an interior gasket provided on an edge of an inner surface facing an interior, a straight first contact protrusion protruding from an edge of an inner surface facing outside, an intermediate gasket with a hook protrusion provided on an edge of an inner surface
10 between the interior gasket and the first contact protrusion, and a first insulator provided on an outer surface facing the interior, the pane member includes a straight second contact protrusion protruding from an edge of an outer surface facing the inner surface of the frame to come into close contact with the interior
15 gasket, an outside gasket provided on an edge of an outer surface that is opposite to the edge of the outer surface to come into close contact with the first contact protrusion, a shield protrusion protruding from an edge of an outer surface between the second contact protrusion and the outside gasket to come into close
20 contact with the hook protrusion of the intermediate gasket, and a second insulator provided on an outer surface facing the interior, whereby, when the pane member is closed, only the second contact protrusion, the outside gasket and the shield protrusion of the pane member are hooked by the interior gasket, the first contact
25 protrusion and the hook protrusion of the intermediate gasket of

the frame, so that external force generated when the pane member is closed is transmitted, to a small extent, to the frame.

According to the present invention, when a pane member is closed, only a second contact protrusion, an outside gasket, and a shield protrusion of a pane member are hooked by an interior gasket, a first contact protrusion, and a hook protrusion of an intermediate gasket of a frame, so that external force generated when the pane member is closed is transmitted, to a small extent, to a frame.

Thus, since shocks and compression acting on an interior gasket, an intermediate gasket and an outside gasket by external force generated when a pane member is closed are reduced, damage to the interior gasket, the intermediate gasket and the outside gasket is reduced.

Further, since noise and vibration generated when a pane member is closed are reduced, it has the effect of reducing the pain and discomfort of a resident due to noise and vibration.

In addition, since an interior gasket, an intermediate gasket and an outside gasket are slightly compressed, it is possible to prevent a window from suddenly slamming open when the window is opened.

According to the present invention, when an inside of a frame is closed, a second contact protrusion, an outside gasket and a shield protrusion of a pane member are in close contact with an interior gasket, a first contact protrusion and a hook protrusion

of an intermediate gasket of the frame, thus sealing a gap between the frame and the pane member and thereby preventing noise, cold air and hot air from being transmitted between an interior and an outside.

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BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will be more clearly understood from the
10 following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a view illustrating an installed state of a composite system door having insulation effect according to an embodiment of the present invention;

15 FIG. 2 is a sectional view of FIG. 1;

FIGS. 3A and 3B are views illustrating a state in which the window of FIG. 2 is closed; and

FIG. 4 is a view illustrating an installed state of a composite system door having insulation effect according to another
20 embodiment of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Hereinafter, a preferred embodiment of the present invention
25 will be described in detail with reference to the accompanying

drawings.

As illustrated in FIGS. 1 to 4, a composite system door having insulation effect according to an embodiment of the present invention includes a frame 10 that is installed in a wall 1 of a building, and a pane member 20 that is installed inside the frame 10 to be rotated to an outside and thereby open or close an inside of the frame 10.

Here, the composite system door 100 having insulation effect includes a hinge member 2 configured to rotate the pane member 20, a handle 3, and a locking device configured to perform a locking or unlocking operation in conjunction with the handle 3.

Further, the frame 10 includes an interior gasket 14 provided on an edge of an inner surface facing an interior, a straight first contact protrusion 12a protruding from an edge of an inner surface facing outside, an intermediate gasket 15 having a hook protrusion 15a on an edge of an inner surface between the interior gasket 14 and the first contact protrusion 12a, and a first insulator 16 provided on an outer surface facing the interior.

The first insulator 16 is made of a polystyrene material to improve insulation effect, and various transfer interior films are applied to maximize interior effects.

Further, the frame 10 will be described in more detail. The frame 10 includes interior and outside frame parts 11 and 12, and a pair of heat blocking connecting members 13 connecting the interior and outside frame parts 11 and 12 to each other.

The interior frame part 11 includes a mounting end 11a with a mounting hole 11a', which protrudes from an edge of an inner surface thereof. The first insulator 16 is provided on an outer surface of the interior frame part facing the interior, and a pair
5 of mounting holes 11b is formed on both sides of an outer surface that is opposite to the above-described outer surface on which the first insulator is provided.

In this regard, the interior gasket 14 is fitted into the mounting hole 11a', and one ends of the pair of heat blocking
10 connecting members 13 are fitted into the pair of mounting holes 11b.

Further, the outside frame part 12 has a straight first contact protrusion 12a protruding from an edge of an inner surface thereof, and a pair of mounting holes 12b formed on both sides of
15 an outer surface facing the outer surface of the interior frame part 11.

Here, the other ends of the pair of heat blocking connecting members 13 are fitted into the pair of mounting holes 12b.

Further, the heat blocking connecting member 13 located at an
20 inner position of the frame 10 has a mounting hole 13a, and an end of the intermediate gasket 15 having the hook protrusion 15a is fitted into the mounting hole 13a.

Meanwhile, the pane member 20 includes a straight second contact protrusion 21a protruding from an edge of an outer surface
25 facing the inner surface of the frame 10 to come into close contact

with the interior gasket 14, an outside gasket 24 provided on an edge of an outer surface that is opposite to the above-described edge of the outer surface to come into close contact with the first contact protrusion 12a, a shield protrusion 23a protruding from an edge of an outer surface between the second contact protrusion 21a and the outside gasket 24 to come into close contact with the hook protrusion 15a of the intermediate gasket 15, and a second insulator 25 provided on an outer surface facing the interior.

Here, the second insulator 25 is made of a polystyrene material to improve insulation effect, and various transfer interior films are applied to maximize interior effects.

Further, the pane member 20 will be described in more detail. The pane member 20 includes interior and outside frame parts 21 and 22, a pair of heat blocking connecting members 23 connecting the interior and outside frame parts 21 and 22 to each other, a subsidiary part 26 installed in the outside frame part 22, and glass 4 provided between the interior frame part 21 and the subsidiary frame part 26.

The interior frame part 21 includes the straight second contact protrusion 21a provided on the edge of the outer surface facing the inner surface of the interior frame part 11 to come into close contact with the interior gasket 14, a mounting end 21b with a mounting hole 21b', which protrudes from an edge of an inner surface thereof, the second insulator 25 provided on the outer surface facing the interior, and a pair of mounting holes 21c

formed on both sides of an outer surface that is opposite to the above-described outer surface on which the second insulator is provided.

In this regard, one ends of the pair of heat blocking
5 connecting members 23 are fitted into the pair of mounting holes 21c.

Further, the outside frame part 22 has a pair of mounting holes 22a formed on both sides of an outer surface facing the outer surface of the interior frame part 21, a mounting end 22b with a
10 mounting hole 22b', which protrudes from an edge of an outer surface facing the inner surface of the outside frame part 12, and a mounting hole 22c formed at a position of the inner surface.

Here, the other ends of the pair of heat blocking connecting members 23 are fitted into the mounting holes 22a, the outside
15 gasket 24 coming into close contact with the first contact protrusion 12a is fitted into the mounting hole 22b', and one end of the subsidiary frame part 26 is fitted into the mounting hole 22c.

Further, the heat blocking connecting member 23 located close
20 to the intermediate gasket 15 has the shield protrusion 23a that comes into close contact with the hook protrusion 15a of the intermediate gasket 15.

The glass 4 is provided between the mounting end 21b of the interior frame part 21 and the subsidiary frame part 26.

25 In this regard, a glass fixing gasket coming into close

contact with the glass 4 is fitted into the mounting hole 21b' of the interior frame part 21, and a backup member is placed between the glass 4 and the outer surface of the subsidiary frame part 26 and then is sealed by a sealant.

5 Further, a shock absorbing member is installed between the glass 4 and the inner surface of the interior frame part 21.

As shown in FIG. 4, a composite system door having insulation effect according to another embodiment of the present invention includes a partitioning frame that has the same structure as the
10 frame 10 and is installed to partition an inside of the frame 10, and windows 20 are installed at both sides of the partitioning frame.

That is, the composite system door having insulation effect may include the partitioning frame to allow the pane member 20 to
15 be further installed.

The operation and effects of the present invention configured as such will be described below.

As illustrated in FIGS. 1 to 4, in the composite system door having insulation effect according to the embodiment of the present
20 invention, external force generated when the pane member 20 is closed is transmitted to the interior gasket 14 of the frame 10 hooked by the second contact protrusion 21a of the pane member 20.

Further, the external force generated when the pane member 20 is closed is transmitted to the first contact protrusion 12a of the
25 frame 10 hooked by the outside gasket 24 of the pane member 20.

In addition, the external force generated when the pane member 20 is closed is transmitted to the hook protrusion 15a of the intermediate gasket 15 of the frame 10 hooked by the shield protrusion 23a of the pane member 20.

5 That is, since only the second contact protrusion 21a, the outside gasket 24 and the shield protrusion 23a of the pane member 20 are hooked by the interior gasket 14, the first contact protrusion 12a and the hook protrusion 15a of the intermediate gasket 15 of the frame 10, the external force generated when the
10 pane member 20 is closed is transmitted, to a small extent, to the frame 10.

Further, a change in the interior gasket 14, the outside gasket 24 and the hook protrusion 15a of the intermediate gasket 15 due to the hooking is reduced.

15 In addition, noise and vibration caused by the hooking when the pane member 20 is closed are reduced.

Meanwhile, while the pane member 20 is closed, the inside of the frame 10 is closed.

That is, the interior gasket 14, the outside gasket 24 and the
20 hook protrusion 15a of the intermediate gasket 15 are slightly compressed against the second contact protrusion 21a, the first contact protrusion 12a and the shield protrusion 23a.

Further, the second contact protrusion 21a of the pane member 20, the outside gasket 24 and the shield protrusion 23a come into
25 close contact with the interior gasket 14 of the frame 10, the

first contact protrusion 12a and the hook protrusion 15a of the intermediate gasket 15, thus sealing a gap between the frame 10 and the pane member 20.

That is, air may not move to the gap between the frame 10 and
5 the pane member 20.

Moreover, if the pane member 20 is opened, the interior gasket 14, the outside gasket 24 and the hook protrusion 15a of the intermediate gasket 15 are slightly compressed against the second contact protrusion 21a, the first contact protrusion 12a and the
10 shield protrusion 23a, the pane member 20 is opened while bouncing slightly from the frame 10.

Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and
15 substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

WHAT IS CLAIMED IS:

1. A composite system door having insulation effect having a frame installed in a wall, and a pane member installed in the
5 frame to be rotated to an outside,

wherein the frame comprises an interior gasket provided on an edge of an inner surface facing an interior, a straight first contact protrusion protruding from an edge of an inner surface facing outside, an intermediate gasket with a hook protrusion
10 provided on an edge of an inner surface between the interior gasket and the first contact protrusion, and a first insulator provided on an outer surface facing the interior,

the pane member comprises a straight second contact protrusion protruding from an edge of an outer surface facing the
15 inner surface of the frame to come into close contact with the interior gasket, an outside gasket provided on an edge of an outer surface that is opposite to the edge of the outer surface to come into close contact with the first contact protrusion, a shield protrusion protruding from an edge of an outer surface between the
20 second contact protrusion and the outside gasket to come into close contact with the hook protrusion of the intermediate gasket, and a second insulator provided on an outer surface facing the interior,

whereby, when the pane member is closed, only the second contact protrusion, the outside gasket and the shield protrusion of
25 the pane member are hooked by the interior gasket, the first

contact protrusion and the hook protrusion of the intermediate gasket of the frame, so that external force generated when the pane member is closed is transmitted, to a small extent, to the frame.