

SPECIFICATION

Rain-proof Window Frame for Outside Glazing

The present invention relates to a rain-proof window frame for outside glazing, i.e. for being mounted on a wall body around a window opening provided in the wall body from outside of the wall body.

As is well known, one of the major problems in a window frame structure is rain-proofing or prevention of rain water from intrusion into the wall body or further into the room inside the window. It is especially difficult to obtain a satisfactory rain-proofing when the window frame is for outside glazing or to be mounted on to the exterior surface of the wall body around the window opening ready-finished since rain water sinks into any finest interstices between the window frame and the exterior surface of the wall body around the window opening by the capillary phenomenon. When the exterior surface of the wall is finished with a wooden material, the problem is somewhat mitigated since small amount of rain water can be absorbed by the wooden finishing material having considerable absorptivity for water even in lasting rainy-weather followed by subsequent drying up when the weather turns fine. The problem is more serious, however, when the exterior surface of the wall is finished with a metallic or masonry material with less water-absorptivity to induce rusting or corrosion of various materials used in the building.

Various attempts have been proposed to obtain improved rain-proofing in such a window frame. For example, a specific configuration of an elastic gasket is proposed to cover the interstice between the window head of the window frame and the exterior surface of the wall around the window opening (see Japanese Utility Model Publication 52-34040). Even with this improved gasket configuration as proposed, no satisfactory rain-proofing can be obtained with sufficient reliability and easiness in the constructive works.

According to the invention there is provided a rain-proof window frame for outside glazing comprising a frame head, a sill, a right jamb and a left jamb for being mounted on a wall body around a window opening in the wall body from outside of the wall body, said frame head comprising

- (a) a vertical mounting plate adapted to be attached to the exterior surface of the wall body above the window opening,
- (b) a horizontal plate integrally joined to the vertical mounting plate and projecting horizontally inwardly from the vertical mounting plate, the horizontal plate coming below the downside surface of the wall body facing the window opening,
- (c) a first elastic gasket overhanging the space between the wall body and the vertical mounting plate, and
- (d) a second elastic gasket positioned between the downside surface of the wall body facing the

window opening and the horizontal plate, said horizontal plate being provided with a drain hole at a position between the vertical mounting plate and the second elastic gasket.

The present invention will now be described by way of example with reference to the accompanying drawings, wherein:—

Figure 1 is an outside view of a window frame mounted on to the body 2 of the wall of a building from outside of the wall and provided with two double-sliding windows 11a and 11b; and

Figure 2 is a cross sectional view taken along the line II—II of Figure 1 to show the cross sectional structure of the frame head 1 of the window frame as well as to show the condition of its mounting on to the wall body 2 above the window opening.

The frame head 1 of the window frame is formed basically with a horizontal plate 3 and a vertical mounting plate 4 integrally shaped in perpendicular to each other. The horizontal plate 3 comes below the downside surface 12 of the wall body 2 facing the window opening, from which horizontally extending guide flanges 15a and 15b for the sliding windows 11a and 11b hang downwardly, while the vertical mounting plate 4 is closely positioned to the exterior surface of the wall body 2 above the window opening and fastened to the wall body 2 through the exterior finishing material 2a of the wall by use of wood screws 13 penetrating the screw holes in the vertical mounting plate or other suitable means while it is also recommendable to upwardly fasten the frame head 1 by use of the wood screws 14 or other suitable means to the downside surface 12 of the wall body 2 facing the window opening.

An overhanging gasket 7 is provided covering the space between the vertical mounting plate 4 of the frame head 1 and the exterior surface of the wall body 2. Water-tightness of the interstice between the gasket 7 and the exterior surface of the wall body 2 is ensured by the gasket 7 which is pressed against the wall body 2 by its elastic resilience. The distance of the vertical mounting plate 4 from the exterior surface of the wall body 2 is determined by the depth of the flange 5b. Although not essential, another gasket 6 shaped with an elastic rubbery material to have an H-shaped cross section is provided between the vertical mounting plate 4 and the wall body 2 and placed into the groove formed by the flanges 5a, 5b and the vertical mounting plate 4 before the window frame is mounted on to the wall body 2 from outside around the window opening. It is necessary that the thickness of the gasket 6 in the horizontal direction is a little larger than the depth of the flange 5b so that a water-tight contact is obtained between the gasket 6 and the exterior surface of the wall body 2 when the vertical mounting plate 4 is fastened to the wall body 2 with the wood screws 13 to seal the interstice therebetween. It is optional or rather recommendable that, as is shown in Figure 3, the overhanging gasket 7 extends downwardly sufficient to cover the screw holes provided in the

vertical mounting plate 4 penetrated by the wood screws 13 for fastening the vertical mounting plate 4 to the wall body 2 so that the water-tightness is increased and the gasket 6 can be

5 omitted.

A gasket 10 is provided on the horizontal plate 3 and supported by the flanges 9a and 9b each with an inversely L-shaped cross section projecting upwardly from the horizontal plate 3.

- 10 The gasket 10 is shaped also with a flexible rubbery material and has a cross section something like a tongue. The gasket 10 is also placed in the groove formed by the flanges 9a, 9b and the horizontal plate 3 before the window frame is mounted on to the wall body 2 around the window opening. When the frame head 1 is inserted into the window opening, the tip of the tongue-like gasket 10 comes into contact with the downside surface 12 of the wall body 2 with
- 15 certain pressure thereto so that the tongue-like gasket 10 is bent outwardly by the friction with the wall body 2 as is shown in Figure 2. The contacting pressure between the gasket 10 and the downside surface 12 of the wall body 2
- 20 further increases the reliability in the water-tightness of the window head 1.

Even with the above described gasket 7 or a combination of the gaskets 6 and 7 which ensures the water-tightness of the frame head 1,

- 30 it is sometimes inevitable to have an imperfect prevention of rain water intruding the interstice between the vertical mounting plate 4 and the wall body 2 so that the space 16 may be filled with the rain water. In order to have the rain
- 35 water in the space 16 freely flowing down, a drain hole 8 of a desired size is provided in the horizontal plate 3 between the gasket 10 and the vertical mounting plate 4 so as that no rain water is retained within the space 16 to ensure dryness
- 40 therearound even when rain water is blown up by the wind to enter the space 16.

As is described in detail in the above, the inventive window frame is so constructed in the frame head thereof as to be provided with two barriers of the gaskets between the wall body and the vertical and horizontal plates for preventing intrusion of rain water from above as well as from below. In addition, the drain hole serves to ensure

- 50 the flowing out of the rain water not to be retained within the frame.

Claims

1. A rain-proof window frame for outside glazing comprising a frame head, a sill, a right jamb and a left jamb for being mounted on a wall body around a window opening in the wall body from outside of the wall body, said frame head comprising
 - (a) a vertical mounting plate adapted to be attached to the exterior surface of the wall body above the window opening,
 - (b) a horizontal plate integrally joined to the vertical mounting plate and projecting horizontally inwardly from the vertical mounting plate, the horizontal plate coming below the downside surface of the wall body facing the window opening,
 - (c) a first elastic gasket overhanging the space between the wall body and the vertical mounting plate, and
 - (d) a second elastic gasket positioned between the downside surface of the wall body facing the window opening and the horizontal plate, said horizontal plate being provided with a drain hole at a position between the vertical mounting plate and the second elastic gasket.
2. The window frame as claimed in claim 1 wherein a third elastic gasket is provided between the vertical mounting plate and the exterior surface of the wall body.
3. The window frame as claimed in claim 1 wherein the first elastic gasket overhanging the space between the wall body and the vertical mounting plate extends downwardly covering the screw holes provided in the vertical mounting plate through which the vertical mounting plate is fastened to the wall body with screws.
4. The window frame as claimed in claim 1 wherein two horizontally extending flanges each with an inversely L-shaped cross section are provided on the horizontal plate facing each other to form a groove therebetween and the second elastic gasket is fitted in the groove.
5. A window frame substantially as described with reference to Figures 1 and 2 or Figure 3 of the accompanying drawings.

vertical mounting plate 4 penetrated by the wood screws 13 for fastening the vertical mounting plate 4 to the wall body 2 so that the water-tightness is increased and the gasket 6 can be omitted.

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15 frame is mounted on to the wall body 2 around the window opening. When the frame head 1 is inserted into the window opening, the tip of the tongue-like gasket 10 comes into contact with the downside surface 12 of the wall body 2 with
20 certain pressure thereto so that the tongue-like gasket 10 is bent outwardly by the friction with the wall body 2 as is shown in Figure 2. The contacting pressure between the gasket 10 and the downside surface 12 of the wall body 2
25 further increases the reliability in the water-tightness of the window head 1.

Even with the above described gasket 7 or a combination of the gaskets 6 and 7 which ensures the water-tightness of the frame head 1,
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35 water in the space 16 freely flowing down, a drain hole 8 of a desired size is provided in the horizontal plate 3 between the gasket 10 and the vertical mounting plate 4 so as that no rain water is retained within the space 16 to ensure dryness
40 therearound even when rain water is blown up by the wind to enter the space 16.

As is described in detail in the above, the inventive window frame is so constructed in the frame head thereof as to be provided with two
45 barriers of the gaskets between the wall body and the vertical and horizontal plates for preventing intrusion of rain water from above as well as from below. In addition, the drain hole serves to ensure

the flowing out of the rain water not to be retained within the frame.

Claims

1. A rain-proof window frame for outside glazing comprising a frame head, a sill, a right jamb and a left jamb for being mounted on a wall
55 body around a window opening in the wall body from outside of the wall body, said frame head comprising

(a) a vertical mounting plate adapted to be attached to the exterior surface of the wall body
60 above the window opening,

(b) a horizontal plate integrally joined to the vertical mounting plate and projecting horizontally inwardly from the vertical mounting plate, the horizontal plate coming below the downside
65 surface of the wall body facing the window opening,

(c) a first elastic gasket overhanging the space between the wall body and the vertical mounting plate, and

(d) a second elastic gasket positioned between the downside surface of the wall body facing the window opening and the horizontal plate, said horizontal plate being provided with a drain hole at a position between the vertical mounting plate
75 and the second elastic gasket.

2. The window frame as claimed in claim 1 wherein a third elastic gasket is provided between the vertical mounting plate and the exterior surface of the wall body.

3. The window frame as claimed in claim 1 wherein the first elastic gasket overhanging the space between the wall body and the vertical mounting plate extends downwardly covering the screw holes provided in the vertical mounting
85 plate through which the vertical mounting plate is fastened to the wall body with screws.

4. The window frame as claimed in claim 1 wherein two horizontally extending flanges each with an inversely L-shaped cross section are
90 provided on the horizontal plate facing each other to form a groove therebetween and the second elastic gasket is fitted in the groove.

5. A window frame substantially as described with reference to Figures 1 and 2 or Figure 3 of
95 the accompanying drawings.

