

PATENT SPECIFICATION

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(54) SILL CONSTRUCTION FOR WINDOW FRAME

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to a frame sill for windows having horizontally slidable sashes.

Under storm conditions, the rain is generally accompanied by winds of substantial velocity, which winds drive the rain past movable window sashes due to leakage around or under the sashes or due to a failure of the sashes to fit snugly against the sill, thereby causing water to collect on the sill plate. Also, the movable sashes may inadvertently be not tightly closed, thereby resulting in water leakage past the sashes, which water then collects on the sill plate. When external drainage of the collected water is relatively slow or completely obstructed for some reasons, the collected water tends to increase on the sill plate and, in some cases, reaches the junctions between the vertical mounting fin of the sill and an attachment plate fixed to the building wall. The junctions usually comprise screws, which allow the water to leak out through the clearances around the screws. Thus, the conventional sill constructions cannot provide against water leakage through screw interconnections. Furthermore, the screws become corroded in a relatively short period of time, resulting in a failure to provide durable support for the sill and the sashes mounted thereon.

One proposal for a leakage-free frame sill is to form on a window frame sill a double-walled hollow mounting fin that can be fixed to the attachment plate by means

of screws extending through the attachment plate and an inner wall of the mounting fin. Although the prior attempt does prevent rain water from getting in touch with the screws, the hollow mounting fin cannot be easily fabricated as a single extrusion and requires special machining when it is desired to employ interconnections other than the screws.

Accordingly, this invention seeks to provide a leakage-free window frame sill which can be produced with utmost ease.

The invention further seeks to provide a leakage-free window frame sill which requires no complicated machining.

According to the invention, there is provided a sill construction for a window comprising a bottom plate, and an upwardly extending vertical mounting flange along one edge of the bottom plate, the flange including upper and lower aligned vertical walls joined by a channel portion extending outwardly from the vertical walls on the same side as the bottom plate, one of the walls having an edge portion extending in the region of the channel portion towards the other wall for attachment to an angled attachment member for connection of the sill construction to the window opening.

Preferably a pair of upwardly extending flanges are provided on the bottom plate, on which flanges sashes are adapted to ride for opening and closing movement.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:—

Figure 1 is a vertical cross-sectional view of a window frame sill constructed in accordance with the invention, the sill being attached to an attachment angle; and

Figure 2 is a vertical cross-sectional view of a modified window frame sill.

Figure 1 shows a window unit comprising a window frame 11 that can be attached to a building wall (not shown), and a pair

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of horizontally slidable sashes 12, 13 mounted within the frame 11 in parallel closely spaced planes. The window frame 11 includes a header (not shown), a pair of side jambs (not shown), and a sill 14, the header and sill being securely connected endwise to the side jambs.

The frame sill 14 is made of an aluminium extrusion and broadly comprises a bottom plate 15, an outer facing member 16 formed on and along an outer edge of the bottom plate 15, and a vertical mounting flange 17 formed on and along an inner edge of the bottom plate 15. The mounting flange 17 is fixed to an angled attachment member 18 extending along the mounting flange 17 and attachable to a sill (not shown) of wood or other suitable material which partly bounds an opening in the building wall.

The bottom plate 15 is sloped downwardly from the mounting flange 17 toward the facing member 16. A pair of upwardly extending flanges 19, 20 are formed on the bottom plate 15 and spaced laterally apart from each other, the flanges 19, 20 extending over the entire length of the bottom plate 15 for guiding the sashes 12, 13 that ride on the flanges 19, 20, respectively, for opening and closing relative movement within the frame 11. The bottom plate 15 has on its underside a pair of sockets 21, 22 which receive screws (not shown) passing through the side jambs for interconnection between sill 14 and the side jambs.

The mounting flange 17 is composed of an upper wall 23, a lower wall 24, and a middle channel wall 25 connecting the upper and lower walls 23, 24 together. The lower wall 24 is connected at an outer side to the inner edge of the bottom plate 15 and lies flush with the upper wall 23. The channel wall 25 comprises a top member 26 extending outwardly from the upper wall 23 and inclined downwardly toward its distal edge, a bottom member 27 extending outwardly at a right angle from the upper edge of the lower wall 24, and a vertical member 28 extending between the distal edges of the top and bottom members 26, 27. Thus, the channel wall 25 projects outwardly away from the general plane of the upper and lower walls 23, 24 toward the rail flange 20. The vertical member 28 has a drip flange 29 extending downwardly beyond the horizontal bottom member 27.

The upper wall 23 has a lower edge portion 30 extending downwardly beyond the inclined top member 26 and terminating short of the upper edge of the lower wall 24 to provide a space 31 therebetween. The edge portion 30 has a plurality of tapped holes 32 formed therein at suitable intervals spaced along the edge portion 30. The upper wall 23 is provided on its upper edge with

a socket 33 that serves to receive screws (not shown) for connection with the side jambs.

The angled attachment member 18 has a horizontal leg 34 which acts as a window board to be mounted on the sill in the building wall. The angled attachment member 18 also has a vertical leg 35 extending downwardly from the horizontal leg 34 and held in engagement against the upper and lower walls 23, 24. The angled attachment member 18 is fixed to the lower edge portion 30 of the upper wall 23 by means of a plurality of screws 36 passing through the vertical leg 35 threadedly into the tapped holes 32, with the screw heads on the same side as the horizontal leg 34. With the angled attachment member 18 affixed, the horizontal leg 34 is located adjacent to the junction between the upper wall 23 and the inclined top member 26, the upper wall 23 having a portion extending upwardly of the horizontal leg 34 into the window opening. The upwardly extending portion prevents wind from driving collected water on the sill bottom member 15 into the window opening and hence the interior of the building.

With this construction, the bottom member 27 and drip flange 29 of the channel wall 25 serve as a flashing which prevents water collected on the sill bottom plate 15 inside of the rail flange 20 from splashing under high air pressure due to wind gusts entering past the sashes 12, 13. The screws 36 are covered and concealed by the channel wall 25 for pleasing appearance and for protection against leakage of the rain water along the screws and resulting corrosion thereof.

A modification illustrated in Figure 2 comprises a sill 37 having a mounting flange 38 which includes an upper wall 39 with its lower edge 40 terminating just beneath a point where the upper wall 39 is connected with the inclined top member 26. A lower wall 41 has an upper edge portion 42 extending upwardly far beyond the bottom member 15 and ending short of the lower edge 40 to provide a space 43 therebetween. The upper edge portion 42 has a serrated side portion that faces the vertical member 28 of the channel wall 25. An angled attachment member 44 has a horizontal leg 45 with its outer edge held against the upper wall 39, and a vertical leg 46 including an upper portion 47 spaced laterally from the mounting flange 38 and a lower portion 48 mating with the lower wall 41.

The upper portion 46 has a flange 49 of hook-shaped cross-section extending outwardly toward the mounting flange 38, the flange 49 having a vertical portion 50 with its inner side serrated for interlocking

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engagement with the serrated side of the
upper edge portion 42. The lower wall 41
has a plurality of tapped holes 51 spaced
at suitable intervals therealong, the holes 51
5 threadedly receiving a plurality of screws
52 passing through the mated portion 48
of the vertical leg 46. Thus, the angled
attachment member 44 is fixed to the
mounting flange 38 by both the hook flange
10 49 and the screws 52 for increased tight-
ness.

The sills 14 and 37 according to this
invention can be produced as a single
aluminium extrusion with utmost ease.
15 Furthermore, the sills 14, 37 and the attach-
ment angles 18, 44 can be fixed together by
screw connection, non-screw connection such
as hooking engagement, or both without
intricate machining of the sills.

20 WHAT WE CLAIM IS:—

1. A sill construction for a window com-
prising a bottom plate, and an upwardly
extending vertical mounting flange along
one edge of the bottom plate, the flange
25 including upper and lower aligned vertical
walls joined by a channel portion extend-
ing outwardly from the vertical walls on the
same side as the bottom plate, one of the
walls having an edge portion extending in
30 the region of the channel portion towards
the other wall for attachment to an angled
attachment member for connection of the
sill construction to the window opening.

2. A sill construction as claimed in claim
35 1, wherein a pair of upwardly extending

flanges are provided on the bottom plate,
on which flanges, sashes are adapted to
ride for opening and closing movement.

3. A sill construction as claimed in
claim 1 or 2, wherein the edge portion 40
extends downwardly from the upper wall,
and screws pass through a vertical leg of
the angled attachment member threadedly
into the said edge portion.

4. A sill construction as claimed in claim 45
1 or 2, wherein the edge portion extends
upwardly from the lower wall, and the
angled attachment member has a vertical
leg with a flange of hook-shaped cross-
section held in interlocking engagement with 50
the said edge portion.

5. A sill construction as claimed in any
one of the preceding claims, wherein the
channel portion comprises a top member
extending from the upper wall, a bottom 55
member extending from the lower wall, a
vertical member extending between the
distal edges of the top and bottom mem-
bers, and a drip flange extending down-
wardly from the vertical member beyond 60
said bottom member.

6. A sill construction substantially as
herein described with reference to the draw-
ings.

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engagement with the serrated side of the upper edge portion 42. The lower wall 41 has a plurality of tapped holes 51 spaced at suitable intervals therealong, the holes 51 threadedly receiving a plurality of screws 52 passing through the mated portion 48 of the vertical leg 46. Thus, the angled attachment member 44 is fixed to the mounting flange 38 by both the hook flange 49 and the screws 52 for increased tightness.

The sills 14 and 37 according to this invention can be produced as a single aluminium extrusion with utmost ease. 15 Furthermore, the sills 14,37 and the attachment angles 18,44 can be fixed together by screw connection, non-screw connection such as hooking engagement, or both without intricate machining of the sills.

20 WHAT WE CLAIM IS:—

1. A sill construction for a window comprising a bottom plate, and an upwardly extending vertical mounting flange along one edge of the bottom plate, the flange including upper and lower aligned vertical walls joined by a channel portion extending outwardly from the vertical walls on the same side as the bottom plate, one of the walls having an edge portion extending in the region of the channel portion towards the other wall for attachment to an angled attachment member for connection of the sill construction to the window opening.

2. A sill construction as claimed in claim 35 1, wherein a pair of upwardly extending

flanges are provided on the bottom plate, on which flanges, sashes are adapted to ride for opening and closing movement.

3. A sill construction as claimed in claim 1 or 2, wherein the edge portion 40 extends downwardly from the upper wall, and screws pass through a vertical leg of the angled attachment member threadedly into the said edge portion.

4. A sill construction as claimed in claim 1 or 2, wherein the edge portion extends upwardly from the lower wall, and the angled attachment member has a vertical leg with a flange of hook-shaped cross-section held in interlocking engagement with 50 the said edge portion.

5. A sill construction as claimed in any one of the preceding claims, wherein the channel portion comprises a top member extending from the upper wall, a bottom 55 member extending from the lower wall, a vertical member extending between the distal edges of the top and bottom members, and a drip flange extending downwardly from the vertical member beyond 60 said bottom member.

6. A sill construction substantially as herein described with reference to the drawings.

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