

PATENT SPECIFICATION

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(54) WINDOW FRAME SILL

(71) We, YOSHIDA KOGYO K.K., a Japanese corporation, located 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:-

This invention relates to a sill of a fixed window frame for a window sash which pivots on a vertical axis.

According to the invention there is provided a sill of a fixed window frame, the sill having two channels arranged one directly above the other so that a base of the upper channel forms a roof of the lower channel, a pivot for a window sash having a vertical pivotal axis being mounted on the base of said upper channel, the lower channel having at least one drainage and ventilation opening to the outdoor side of the sill, the base of the upper channel having at least one drainage and ventilation opening to the lower channel.

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

Fig. 1 is a front view, illustrating the relation between a pivoted window sash and a window frame structure supporting the pivoted window sash;

Fig. 2 is a longitudinal sectional view, illustrating a lower rail of a pivoted window sash and a fixed window frame sill in a first embodiment of the present invention.

Fig. 3 is a view showing a section taken along the line A-A in Fig. 2; and

Figure 4 is a longitudinal sectional view illustrating a sill and the lower rail of a pivoted window sash in a second embodiment of the present invention.

Referring to Fig. 1, a window structure is shown which comprises fixed frame members 1 to 4 and vertical pivots 5, 6 for a window sash 7 which pivots on a vertical axis through the pivots 5, 6. The frame member 1

is a header, members 2 and 4 are side jambs and member 3 is a sill.

Referring to Figs. 2 and 3, the sill 3 has two channels B, C arranged with channel B directly above channel C so that a base 9 of the upper channel B forms a roof of the lower channel C. The pivot 6 for the window sash 7 is mounted on the base 9 of said upper channel B.

More particularly, the pivot 6 is in the form of an upstanding post which is integral with a block 6' (Fig. 3) secured to the base 9 together with a backing plate 16 by screws 17. A socket 8' is integral with a mounting plate secured by screws 15 to the underside of the lower rail 8 of window sash 7. A ball bearing is interposed as shown in Fig. 3, between the top of pivot post 6 and the socket 8'.

The upper channel B is upwardly open and two horizontal flanges 10 extend inwardly thereof towards each other from the side walls of channel B, as shown in Fig. 2. The lower channel C has a base 11 which slopes downwardly as shown in Fig. 2 to the left, that is, to the outdoor side of the sill 3 and which is integrally joined at its upper side (i.e. the right hand or indoor side in Fig. 2) to the base 9 of channel B by an integral side wall of lower Channel C. The sill 3 includes a member 12 which is made separately from the main body of the sill 3 and is fixed thereto by screws 18 extending as a non-integral side wall on the outdoor side of lower channel C between the bases 9 and 11 of the channels B and C respectively. The member 12 is formed with ventilation and drainage holes 14 for the lower channel C. The member 12 supports the upper channel base 9 from collapsing towards the lower channel base 11 on the outdoor side of the sill 3. The upper channel base 9 has ventilation and drainage holes 13 from the upper channel B to the lower channel C, elsewhere than at the position of pivot post 6 (see Figs. 2 and 3). The

holes 13 may or may not be in registry with the holes 14 along the sill 3 (as seen in Fig. 3).

As shown in Fig. 2, two sealing members 19 composed of an elastic material are fitted on the lower face of the lower rail 8 of the pivoted window sash 7 so that they make contact with the flanges 10 of the sill 3, respectively, to keep out water. While the pivoted window sash 7 is in the closed position as shown in Fig. 2 a closed space (except for the ventilation holes 13 and 14) is formed between the channel B of the sill 3 and the lower rail 8 of the pivoted window 7 and in this state, water tightness is maintained between the flanges 10 of the sill 3 and the pivoted window sash 7 by means of the sealing members 19.

As described hereinbefore, the ventilation holes 13 are formed in the base 9 of the upper channel B of the sill 3. Accordingly, this upper channel B is communicated through these ventilation holes 13 with the lower channel C.

Since the ventilation holes 14 are also formed in the member 12 disposed on the outdoor side of lower channel C, both channels B and C are communicated with outdoor air.

In a second embodiment of the present invention illustrated in Fig. 4 in the sill 3, the upper channel B is defined by the flanges 10 and the base 9, shaped somewhat differently from Fig. 2 and the lower channel C has a sloped base 11 joined integrally on its indoor side to the base 9, as in Fig. 2. However, this second embodiment of Fig. 4 is different from the first embodiment of Fig. 2 in that a supporting member 20 is disposed (in place of member 12 of Fig. 2) to support the upper channel base 9 on which the pivot shaft 6 is mounted. Since the side portion of this supporting member 20 is open the outdoor side of the channel C is communicated with outdoor air, and hence also the channel B, being connected to the channel C through ventilation holes 13 (as in Fig. 2) is communicated with outer air.

The present invention is characterized in that a water-tight structure is provided between the lower rail 8 of the pivoted window sash 7 and the lower frame member or sill 3, an upper channel B is formed in the upper portion of the lower frame member 3 and the space enclosed by the lower frame member 3 and the pivoted window sash 7 is communicated with outdoor air. Accordingly, the pressure in the channel B is always maintained at the same level as that of the pressure of the outdoor atmosphere, and therefore, occurrence of the phenomenon of intrusion of rain water into the room, which would be caused by a negative pressure produced in the channel B in the conventional arrangement, can be prevented. Further, water intruding in the channel B can be

promptly discharged to the outside. Moreover, since the channel C opened to the outside is formed below the base 9 of the upper channel of the lower frame member 3, the operation of attaching the pivot shaft 6 to the base 9 of the lower frame member 3 or dismounting the pivot shaft 6 therefrom can be remarkably facilitated.

WHAT WE CLAIM IS:-

1. A sill of a fixed window frame, the sill having two channels arranged one directly above the other so that a base of the upper channel forms a roof of the lower channel, a pivot for a window sash having a vertical pivotal axis being mounted on the base of said upper channel, the lower channel having at least one drainage and ventilation opening to the outdoor side of the sill, the base of the upper channel having at least one drainage and ventilation opening to the lower channel.

2. A sill as claimed in claim 1 wherein a base of the lower channel is integrally joined to the base of the upper channel by an integral side wall of the lower channel, said integral side wall being integrally joined to the bases of both channels and being located on the indoor side of the lower channel, a separately made member extending as a non-integral side wall of the lower channel between the bases of the two channels on the outdoor side of the lower channel and being adapted to maintain or tend to maintain the bases of the two channels spaced apart.

3. A window structure comprising a fixed window frame having a sill as claimed in claim 1 or 2 and a sash pivoted at least partly on said pivot with said vertical pivotal axis, a lower rail of the sash having a sealing member engageable with the top of one side wall of the upper channel.

4. A window structure as claimed in claim 3 wherein the lower rail of the sash has another sealing member engageable with the top of another side wall of the upper channel.

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As shown in Fig. 2, two sealing members 19 composed of an elastic material are fitted on the lower face of the lower rail 8 of the pivoted window sash 7 so that they make contact with the flanges 10 of the sill 3, respectively, to keep out water. While the pivoted window sash 7 is in the closed position as shown in Fig. 2 a closed space (except for the ventilation holes 13 and 14) is formed between the channel B of the sill 3 and the lower rail 8 of the pivoted window 7 and in this state, water tightness is maintained between the flanges 10 of the sill 3 and the pivoted window sash 7 by means of the sealing members 19.

As described hereinbefore, the ventilation holes 13 are formed in the base 9 of the upper channel B of the sill 3. Accordingly, this upper channel B is communicated through these ventilation holes 13 with the lower channel C.

Since the ventilation holes 14 are also formed in the member 12 disposed on the outdoor side of lower channel C, both channels B and C are communicated with outdoor air.

In a second embodiment of the present invention illustrated in Fig. 4 in the sill 3, the upper channel B is defined by the flanges 10 and the base 9, shaped somewhat differently from Fig. 2 and the lower channel C has a sloped base 11 joined integrally on its indoor side to the base 9, as in Fig. 2. However, this second embodiment of Fig 4 is different from the first embodiment of Fig. 2 in that a supporting member 20 is disposed (in place of member 12 of Fig 2) to support the upper channel base 9 on which the pivot shaft 6 is mounted. Since the side portion of this supporting member 20 is open the outdoor side of the channel C is communicated with outdoor air, and hence also the channel B, being connected to the channel C through ventilation holes 13 (as in Fig. 2) is communicated with outer air.

The present invention is characterized in that a water-tight structure is provided between the lower rail 8 of the pivoted window sash 7 and the lower frame member or sill 3, an upper channel B is formed in the upper portion of the lower frame member 3 and the space enclosed by the lower frame member 3 and the pivoted window sash 7 is communicated with outdoor air. Accordingly, the pressure in the channel B is always maintained at the same level as that of the pressure of the outdoor atmosphere, and therefore, occurrence of the phenomenon of intrusion of rain water into the room, which would be caused by a negative pressure produced in the channel B in the conventional arrangement, can be prevented. Further, water intruding in the channel B can be

promptly discharged to the outside. Moreover, since the channel C opened to the outside is formed below the base 9 of the upper channel of the lower frame member 3, the operation of attaching the pivot shaft 6 to the base 9 of the lower frame member 3 or dismounting the pivot shaft 6 therefrom can be remarkably facilitated.

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1. A sill of a fixed window frame, the sill having two channels arranged one directly above the other so that a base of the upper channel forms a roof of the lower channel, a pivot for a window sash having a vertical pivotal axis being mounted on the base of said upper channel, the lower channel having at least one drainage and ventilation opening to the outdoor side of the sill, the base of the upper channel having at least one drainage and ventilation opening to the lower channel.

2. A sill as claimed in claim 1 wherein a base of the lower channel is integrally joined to the base of the upper channel by an integral side wall of the lower channel, said integral side wall being integrally joined to the bases of both channels and being located on the indoor side of the lower channel, a separately made member extending as a non-integral side wall of the lower channel between the bases of the two channels on the outdoor side of the lower channel and being adapted to maintain or tend to maintain the bases of the two channels spaced apart.

3. A window structure comprising a fixed window frame having a sill as claimed in claim 1 or 2 and a sash pivoted at least partly on said pivot with said vertical pivotal axis, a lower rail of the sash having a sealing member engageable with the top of one side wall of the upper channel.

4. A window structure as claimed in claim 3 wherein the lower rail of the sash has another sealing member engageable with the top of another side wall of the upper channel.

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