EASILY CLEANABLE WINDOW
Description
EASILY CLEANABLE WINDOW

Technical Field
[1] The present invention relates to a window structure for easily cleaning window panes thereof, and more particularly, to a window structure for easily cleaning window panes thereof wherein a sliding window with window sashes slidable along rails disposed on a window frame is improved such that the outer surfaces of the window panes mounted in the window sashes can be easily cleaned.

Background Art
[2] As well known, some examples of window structures include sliding windows with window sashes slidable along rails disposed on a window frame, fixed windows, and windows openable at a given angle by using a stay.

[3] The windows using the stay are widely used for ventilating air in high buildings, and the sliding windows and the fixed windows are very popular as an outer wall of a building. These windows are very useful for changing indoor air into refresh air and admitting light therethrough. As the buildings become higher and larger, recently, it is hard to completely clean the windows in the buildings.

[4] That is to say, in case of cleaning small-sized windows, window sashes are firstly disassembled from a window frame, and the window panes supported in the window sashes are then cleaned at the inner and outer surfaces thereof, without any difficulties. In case of middle or large-sized windows, the inner surfaces of the window panes are easily cleaned at the indoor side, but it is difficult to clean the outer surfaces of the window panes even though a bar to which cleaning things are attached is used at a state where the window sashes are a little opened. At this time, a cleaner who conducts the cleaning is exposed to the outside of the building, so that he or she is in a danger of hurting himself or herself, and furthermore, the cleaning is conducted while the window sashes overlap, so that the cleaning result is not good.

Disclosure of Invention
Technical Problem
[5] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and it is an object of the present invention to provide a window structure for easily cleaning window panes thereof, thereby making the outer surfaces of the window panes easily cleaned.

Technical Solution
[6] To accomplish the above object, according to the present invention, there is provided a window structure for easily cleaning window panes thereof wherein a
window frame is partially rotated by 180° toward the indoor side with respect to axial bars formed thereon at a state of being assembled with window sashes supporting the window panes, thereby accomplishing easy cleaning of the outer surfaces of the window panes thereof, while ensuring the safety of a cleaner.

[7]

[8]

**Brief Description of the Drawings**

Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

[9] FIG. 1 is a perspective view showing a sliding window structure according to an embodiment of the present invention;

[10] FIG.2 is a front view showing the sliding window structure of FIG.1;

[11] FIG.3 is a plane sectional view showing the sliding window structure of FIG.1;

[12] FIG.4 is a perspective view showing a sliding window structure according to another embodiment of the present invention;

[13] FIG.5 is a perspective view showing an example of an existing window structure remodeled according to the principles of the present invention; and

[14] FIG.6 is a side sectional view showing the assembled state of the parts of the window structure of FIG.5.

**Best Mode for Carrying Out the Invention**

[15] FIG. 1 is a perspective view showing a sliding window structure according to an embodiment of the present invention, FIG.2 is a front view showing the sliding window structure of FIG.1, and FIG.3 is a plane sectional view showing the sliding window structure of FIG.1, and an explanation of the window structure according to the preferred embodiment of the present invention will be given with reference to the attached drawings.

[16] A window structure 1 for easily cleaning window panes thereof according to the present invention is applied to a sliding window structure 1 as shown in the figures, thereby accomplishing easy cleaning of the outer surfaces of the window panes thereof. As shown, a window frame 4, that is provided with rails along which window sashes 2 are slidably located on the top and bottom sides thereof, is partially rotated by 180° at a state where the window sashes 2 are moved to opposite direction in such a manner as to completely overlap with each other.

[17] In other words, there is provided the sliding window structure 1 having the window frame 4 provided with support frames 5 erected vertically at left and right sides thereof and with rail frames 6 formed in parallel relation with each other at top and bottom
sides thereof for providing rails thereon, each of the rail frames 6 is provided with left and right rotating members 6a each having a larger width than the window sashes 2 overlapping with each other along the rails of the window frame 4, left and right fixing members 6b adapted to be correspondingly coupled to the support frame 5, and left and right connecting members 6c for connecting the rotating member 6a and the left fixing member 6b and connecting the rotating member 6a and the right fixing member 6b.

[19] The left and right connecting members 6c connecting the rotating member 6a and the left and right fixing members 6b are assembled in such a manner that the rotating member 6a and each of the left and right fixing members 6c are provided with a concave groove 7 formed in a vertical direction thereof and each of the left and right connecting members 6c is provided with protrusions 8 formed extended from the both side ends thereof for being insertably fit to the concave grooves 7. Then, the coupling of the rotating member 6a and each of the left and right fixing members 6b is rigidly confirmed by means of a fixing pin 9 that is adapted to be passed through the concave grooves 7 and the protrusions 8 in such a manner as to be separable from the window frame 4. In this case, of course, the concave grooves 7 and the protrusions 8 may be disposed at the opposite positions to each other.

[20] Upper and lower fixed panels 10 are fixedly assembled to a wall body or the left and right support frames 5 in such a manner as to be disposed at the outsides (the wall body side) of the rotating members 6a of the rail frames 6, each of the upper and lower fixed panels 10 having an axial bar 12 formed on the central portion of the top side thereof in such a manner as to be coupled to an axis hole 11 formed on the rotating member 6a such that the rotating member 6a can be rotated with reference to the axial bar 12.

[21] Even though not shown, the axis hole 11 may be formed on the fixed panel 10 and the axial bar 12 may be formed on the rotating member 6a. Further, the axis hole 11 is provided with a bearing 13 mounted therein, such that the rotating is gently conducted.

[22] FIG.4 is a perspective view showing a sliding window structure according to another embodiment of the present invention, wherein the rotating member 6a and each of the left and right fixing members 6b of each rail frame 6 are provided with the concave grooves 7 formed in a horizontal direction thereof and each of the left and right connecting members 6c is provided with the protrusions 8 insertably fit to the concave grooves 7, such that the coupling of the rotating member 6a and each of the left and right fixing members 6b through each of the left and right connecting members 6c is simply achieved, without any separate fixing pin 9.

[23] FIG.5 is a perspective view showing an example of an existing window structure remodeled according to the principles of the present invention, and FIG.6 is a side sectional view showing the assembled state of the parts of the window structure of
FIG. 5. In case of the existing window frame 4, the fixed panels 10 are fixedly fit onto the top side of each of the rail frames 6, and the rotating member 6a and the left and right fixing members 6b connected by means of the left and right connecting members 6c are formed on the top sides of the fixed panels 10, such that the window sashes 2 can be slidable along the rail frames 6.

[24] Under the above construction, the window structure 1 for easily cleaning window panes thereof according to the preferred embodiments of the present invention includes the rail frames 6 constituting the window frame 4 are partially rotated by 180° at a state of being assembled with the window sashes 2, thereby accomplishing easy cleaning of the outer surfaces of the window panes 3 thereof, while ensuring the safety of a cleaner. Now, an explanation of the operation of the sliding window structure 1 according to the preferred embodiments of the present invention will be given.

[25] If the outer surfaces of the window panes 3 of the window sashes 2 of the window structure of this invention is to be cleaned, the window sashes 2 disposed at the left and right sides of the window frame 4 are moved to the middle zone of the window frame 4 such that they completely overlap with each other. At the state where the window frame 4 is partially opened, the plurality of fixing pins 9 that are coupled to the rail frames 6 constituting the window frame 4 are detached such that the left and right connecting members 6c connecting the rotating member 6a and each of the left and right fixing members 6b are separated from the rail frames 6 of the window frame 4.

[26] At the state of separating the left and right connecting members 6c from each of the rail frames 6, the rotating member 6a on which the window sashes 2 are mounted is rotated by 180°, and after that, the left and right connecting members 6c are coupled again to the rotating member 6a and the left and right fixing members 6b and are fixed by means of the fixing pins 9. Then, after the window sashes 2 are moved toward the indoor side, the window panes 3 are cleaned. As a result, the outer surfaces of the window panes 3 can be safely cleaned at the indoor side, without any exposing a cleaner to the outside as commonly seen in the conventional practice.

[27] Moreover, the sliding window structure according to another embodiment of the present invention, as shown in FIG. 4, is capable of rigidly fixing the left and right connecting members 6c connecting the rotating member 6a and each of the left and right fixing members 6b, without having any separate fixing pins 9, thereby making the sliding window structure of this invention more simplified.

[28] On the other hand, in case where an existing window structure 1 is remodeled, the present invention can be embodied in the same way as shown in FIG. 5, thereby making the existing window structure easily changed into that of this invention at low costs.
Industrial Applicability

[30] According to the preferred embodiments of the present invention, the window structure 1 for easily cleaning window panes 3 thereof is formed in such a manner that the rail frames 6 constituting the window frame 4 are partially rotated by 180° at a state of being assembled with the window sashes 2, thereby accomplishing easy cleaning of the outer surfaces of the window panes 3 thereof, while ensuring the safety of a cleaner, whereby when the window panes 3 of the window structure 1 are cleaned, the outer surfaces of the window panes 3 are rotated toward the indoor side such that the cleaning is conducted in safe and rapid ways, thereby making it convenient and safe to clean the window panes 3 of the window structure 1.

[31]
Claims

[1] A window structure (1) comprising:
a window frame (4) having support frames (5) erected vertically at left and right
sides thereof and rail frames (6) formed in parallel relation with each other at top
and bottom sides thereof for providing rails thereon, each of the rail frames (6)
having a rotating member (6a) having a larger width than window sashes (2)
overlapping with each other along the rails of the window frame (4), left and
right fixing members (6b) adapted to be correspondingly coupled to the support
frames (5), and left and right connecting members 6c for connecting the rotating
member (6a) and the left and right fixing members (6b);
upper and lower fixed panels (10) adapted to be fixedly coupled to a wall body or
the support frames (5) in such a manner as to be disposed at the outer sides (the
wall body side) of the rotating members (6a) of the rail frames (6);
an axial bar (12) formed on the central portion of the top side of each of the
upper and lower fixed panels (10) in such a manner as to be coupled to an axis
hole (11) formed on the rotating member (6a);
concave grooves (7) formed on the both side ends of the rotating member (6a)
and on one side end of each of the left and right fixing members (6b) in a vertical
direction thereof;
protrusions (8) formed extended from the both side ends of each of the left and
right connecting members (6c) in such a manner as to be insertably fit to the
concave grooves (7) of the rotating member (6a) and the left and right fixing
members (6b); and
a fixing pin (9) adapted to be passed through the concave grooves (7) of the
rotating member (6a) and each of the left and right fixing members (6b) and
through the protrusions (8) of each of the left and right connecting members (6c)
in such a manner as to be detachably mounted to the window frame (4).

[2] The window structure 1 according to claim 1, wherein the left and right
connecting members (6c) connecting the rotating member (6a) and the left and
right fixing members (6b) are assembled in such a manner that the rotating
member (6a) and the left and right fixing members (6c) are provided with
concave grooves (7) formed in a horizontal direction thereof and each of the left
and right connecting members (6c) is provided with protrusions (8) formed
extended from the both side ends thereof to be insertably fit to the concave
grooves (7).
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

E06B 7/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 : E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KR, JP IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "window", "clean", "rotation"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>KR 2000-007815 U (PARK, SANG-GIL) 6 May 2000 See the whole document</td>
<td>1,2</td>
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<tr>
<td>A</td>
<td>KR 1999-034587 U (PARK, NO-GOOK) 25 August 1999 See claim 1 and Fig. 1-2</td>
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<td>A</td>
<td>US 5083398 A (JOHN P. KOLBECK) 28 January 1992 See lines 55-66 of column 2, claim 9 and Fig. 1</td>
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<td>A</td>
<td>US 44428154 A (DAVID M. RINEHART) 31 January 1984 See lines 51-61 of column 3, Fig. 1-4</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search 24 MAY 2006 (24.05.2006)

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Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer

LEE, Young Min
Telephone No. 82-42-481-5805

Form PCT/ISA/210 (second sheet) (April 2005)
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