

Double Window Casements and Sliding Window

This invention relates to two new types of window. One can open inward and outward. The other one can slide and open inward only. These new types of window can be installed in any types of buildings, more particularly for high rise buildings.

BACKGROUND

Conventional windows either only have single window casement, rotating to a maximum of 90° in one direction or slide along the window frame without revolving. This is very inconvenient and dangerous for cleaning the outer side of the glass of the window, especially on higher floors.

When the conventional casement window is used for some time, the mechanism will be blocked because of exposure to sunshine or rain. It results in difficulty to open and close the window from a location, near to the hinge.

OBJECTIVE OF THE INVENTION

To design a new type of window to allow washing of both sides of the window from within the buildings.

To allow the casement window to be opened & closed easily, the casement window has to be designed that it can be opened and closed from a location, which is as far as possible from the hinge to provide sufficient torque with minimum force.

DESCRIPTION OF THE INVENTION

FIG. 1 is a 3D drawing of the casement window 1 according to the invention whereby. It contains the following items:



2. fixed window frame;
3. outer casements;
4. inner casements;
5. sliding lock covers;
6. sliding locks;
7. rods;
8. handle locks;
9. mechanisms;
10. pivot pins;

FIG. 2 is an assembly drawing of outer casement 3, inner casement 4, sliding lock cover 5, sliding lock 6 and pivot pins 10.

FIG. 3 is a drawing of the sliding lock 6, which secure the inner casement 4 to the outer casement 3.

FIG. 4 is a drawing of pivot pin 10.

FIG. 5 is a 3D drawing of rod 7, which is used for assisting in the opening and closing of the outer casement 3 by a pushing or pulling action respectively.

FIG. 6 is a 3D drawing of the sliding window 11 according to the invention. It comprises the following items:

4. inner casements;
5. sliding lock covers;
6. sliding locks;
10. pivot pins;
12. fixed window frame;
13. sliding window frames;
14. sliding window frames;
15. conventional pivot lock.

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As shown in FIG. 1, the glass is fixed within the inner casement 4. The sliding locks 6, which fixed with the inner casements 4 are slid towards the outer casements 3 to secure the inner casement 4 with outer casement 3. Rods 7 are mounted to the outer casement 3. Similar to a normal casement window, outer casement 3 can revolve to a maximum of 90° outward only through the mechanisms 9. To clean the outside of the glass, sliding lock 6 is pushed away from the outer casements 3 to unlock so that the inner casement 4 can be opened inward only to a maximum of 90° . Therefore the outside of the glass can be cleaned within the buildings. So it can be said that the window can revolve to a maximum of 180° (inward and outward). When there is difficulty to open and close the outer casements 3 due to the mechanism problem, rods 7 are taken out to increase the torque of revolving the outer casements 3. So that the outer casements 3 can be opened and closed with a less force.

In FIG. 2, two pivot pins 10 join the inner casement 4 and outer casement 3 at the upper and lower corner respectively to be a hinge of inner casement 4. The inner edge of outer casement 3 and outer edge of inner casement 4 are rounded to allow the inner casement 4 to revolve about the pivot pins 10 without obstruction. The protruding section at the outside of the outer casement 3 is used for limiting the revolving angle to a maximum of 90° inward. It also acts as a cover to prevent rainwater from seeping through.

Rod 7 is fixed at the lower portion of outer casement 3 in a marked as 'C'. Normally the rod 7 is clamped to the outer casement 3 in a groove marked as 'D'. When opening or closing the outer casement 3, rod 7 is taken out to push or pull the outer casement 3.

FIG. 3 shows the sliding lock 6. It is used to secure inner casements 4 to outer casements 3 by pushing the handle 6a to slide the lock towards to the outer casement 3, then the portion 6b will be seated in the outer casement 3.

FIG. 4 shows the pivot pin 10. The portion 10a is completely seated into the outer casement 3 (for casement window 1) or sliding window frames 13 and



14 (for sliding window 11). The pivot pin 10 is threaded at the middle portion 10b and this portion is screwed into the outer casement 3 (for casement window 1) or sliding window frames 13 and 14 (for sliding window 11). The smooth portion 10c of the pivot pin 10 is inserted into the inner casement 4 to be used as a hinge for the inner casement 4.

FIG. 5 shows rod 7. It is used in the casement window 1. At the left end of the rod, the bulge section 7a is used as a handle for taking out the rod 7 from outer casement 3.

FIG. 6 shows a sliding window. Different from the conventional sliding window, there are inner casements 4, which attached by glass. The sliding locks 6 are slid towards the sliding window frames 13 and 14 to secure the inner casements 4 with the sliding window frames 13 and 14. The conventional pivot lock 15 is fixed at the sliding window frames 13 and 14. It is not allowed to block the inner casements 4. To clean the outside of the glass, sliding locks 6 are slid away from the sliding window frames 13 and 14, so the inner casements 4 can be open inward. Therefore the outside of the glass can be cleaned within the buildings. Four pivot pins 10 which are used for joining inner casements 4 to the sliding window frames 13 and 14 act as a hinge for inner casements 4.

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CLAIMS

1. The double-hinged casement window 1 comprising:
 - fixed window frame 2;
 - outer casements 3 mounted in the fixed window frame 2 for outward rotation to a maximum of 90^0 ;
 - inner casements 4 pivotally mounted in the outer casements 3 for inward rotation to a maximum of 90^0 ;
 - sliding lock 6 which is used for securing the inner casement 4 on the outer casement 3;
 - rods 7 used for assisting in the opening and closing of the outer casement 3 (for casement window 1);
 - pivot pins 10 secured to the outer casements 3 and inner casements 4. They are also act as hinge of the inner casements 4.
2. Sliding locks 6 fixed on the inner casements 4 are used for securing inner casement 4 on outer casement 3.
3. Rod 7 are surrounded by rubber material to allow to be clamped in the outer casement 3.
4. Rods 7 said in claim 3 are pivotally mounted to the outer casement 3 and allow rotating to a maximum of 90^0 about the pivot.
5. The inner edge of outer casement 3 and outer edge of inner casement 4 are rounded.
6. The sliding window 11 comprising:
 - fixed window frame 12;
 - sliding window frames 13 and 14 which can slide in the fixed window frame 12;

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- inner casements 4 pivotally mounted in the sliding window frames 13 and 14 for rotating inward to a maximum of 90°;
- sliding locks 6 which are used for securing sliding window frame 13 or 14 on inner casement 4;
- pivot pins 10 secured to the sliding window frame 13 or 14 and inner casements 4. They are also act as hinge of the inner casements 4.

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