

WINDOW ASSEMBLY

The present invention relates to a window assembly,
and to a wall structure incorporating such an assembly.

5 It is primarily concerned with windows for buildings,
such as apartment blocks.

Conventional sliding windows (such as vertically
movable sash windows and horizontally movable windows)
employ an outer frame in which two or more panels (each
10 generally consisting of an inner frame in which one or
more panels of glass are mounted) are slidably mounted.
In the 'closed' configuration the panels substantially
fully obscure the opening of the outer frame, and have
little if any overlap. In 'open' configurations there is
15 substantial overlap of panels, so that one or more
regions of the outer frame are no longer obscured.
However the maximum opening is limited: it is slightly
less than half of the opening of the outer frame for a
conventional two-sash window.

20 Casement windows, hinging open like doors, allow the
full size of the opening to be utilised. However there
are situations when it is undesirable for a window to
protrude substantially away from the wall in which it is
mounted, e.g. when it may then obstruct a corridor.

25 Furthermore there are security problems with such
windows. Conventional sliding windows also tend to have
security problems, e.g. associated with frame parts that
can be removed, enabling the window panels to be removed.

In one aspect the present invention provides a wall structure comprising

a wall having an opposed pair of external wall surfaces and defining a wall opening; and

5 a window assembly comprising a frame defining a frame opening and a light-transmitting panel slidably mounted to said frame so as to be slidable between a closed position in which it substantially closes said frame opening and an open position in which said frame
10 opening is substantially open;
said window assembly being mounted to the wall structure so that the frame opening is in register with the wall opening and so that in the open position the light-transmitting panel extends over one of said wall
15 surfaces.

Preferably the frame is a unitary structure, such that no part thereof is readily removable to allow removal of a panel.

20 The window assembly may be oriented so that said panel slides substantially vertically.

Suitably said panel is a sheet of rigid plastics material, e.g. polycarbonate. The panel may be frameless, or at least without side frame portions at the sides that slide in the frame. Thus it opens by passing
25 closely in front of the wall surface.

The wall opening may have a stepped profile so as to define a larger area portion separated by a step surface from a smaller area portion, and the frame may then be

partly received in the larger area portion and abut said step surface.

The frame is desirably permanently connected to the wall. The frame may be rivetted to the wall.

5 The panel may have at least one abutment member adjacent a leading edge which substantially traverses said frame opening when said panel slides between its closed and open positions, said at least one abutment member limiting the sliding of said panel in the opening
10 sense by coming into abutment with said frame.

 Desirably, said frame includes an opposed pair of channel-defining members which slidably receive respective opposite edge portions of said panel; at least one of said channel-defining members having a front wall
15 portion having at least one frame aperture; a said edge portion of said panel which is received in said at least one channel-defining member having at least one panel aperture which is slidable into and out of register with said at least one frame aperture; said wall structure
20 further including at least one stop member adapted for passage through registered panel and frame apertures to lock the said panel against sliding.

 There may be a metal grille mounted to the frame to close off the frame opening while permitting the passage
25 of light and air. There may be a pair of such grilles, on opposite sides of the frame.

 In one type of embodiment, the wall opening is elongate. The window assembly is correspondingly

elongate, and the frame defines a plurality of frame openings located side by side, each having a corresponding panel mounted therein so as to be slidable in parallel, perpendicular to the direction of elongation of the wall opening and window assembly.

In a second aspect the invention provides a window assembly for use in a wall assembly according to the first aspect.

An embodiment of the invention will now be described in greater detail with reference to the accompanying drawings in which:

Fig. 1 is a view from inside a room of a wall structure embodying the invention, including a window assembly with four vertically slidable panels;

Fig. 2 is a schematic vertical section on II-II in Fig. 1 (with the panel in its closed configuration);

Fig. 3 is a plan view of a panel; and

Figs. 4-6 are schematic vertical sections on IV-IV, V-V and VI-VI respectively on Fig. 3, the panel thickness being exaggerated for clarity.

Fig. 1 shows a vertical wall 10 in which there is a horizontally elongate window opening 12 spaced above the floor 14. A window assembly 16 is mounted to the wall, in register with the opening 12.

The window assembly 12 includes a frame 18, suitably of aluminium. The frame defines a rectangular outer frame structure 20 including upright side bars 22, and three intermediate vertical bars 24, dividing the opening

of the frame into four equal portions each of which receives a respective panel 26.

As can be seen in Fig. 2, the wall opening 12 has a stepped profile, such that it is larger on the room interior side and there is an inwardly-facing abutment surface 28 within the thickness of the wall. The frame 20 is dimensioned so that it fits in the larger part of the opening, and abuts against the abutment surface 28. When in abutment, it still projects somewhat into the interior of the room. The vertical bars 22,24 have portions shaped to provide opposed channel formations, in which the panels 26 are slidably mounted, so that their external faces are approximately in line with the internal face of the wall 10.

The frame 20 has brackets 30 which extend over the interior face of the wall 10. Rivets 32 pass through these brackets into the wall, to hold the frame essentially permanently in place.

As can be seen from Figs. 3 to 6, a panel is a rectangular sheet of a rigid plastic material, e.g. polycarbonate. A suitable thickness is 3-12mm, preferably 3-6mm. Such material is much less dense than glass, e.g. having a weight of about $1.2\text{kg/m}^2/\text{mm}$, which is about half the weight of corresponding glass sheet. It is also a simple matter to provide such thermoplastic sheet material with shaped apertures and fittings. As shown, there are no frame elements on the panel. However there are two abutment pegs 34, provided at the same

horizontal level near the lateral sides and near the top edge. Each panel also has some small apertures 36 in the side areas which are received in the channel formations of the vertical bars 22,24. As shown, they are in the
5 four corner regions.

In an upper region of the insulated panel, in line with the abutment pegs 34, there are three louvre-type ventilation openings 38. That is, the openings are slots which are slanted downwardly, towards the exterior.

10 The abutment pegs delimit the downward sliding of the panels. In Fig. 1, the panels are shown with different degrees of opening, and the one at the extreme right is fully open. It can be seen that the abutment pegs 34 are abutting the horizontal bottom limb of the
15 frame 20. Furthermore, the bottom of the panel 36 is slightly spaced above the floor 14. The frame opening is about 85% unobstructed.

It can be seen from Fig. 2 that an opening panel slides closely over the interior face of the wall below
20 the window opening.

As can be seen in Fig. 1, the vertical bars 22,24 of the frame have openings 40. These are arranged so that they are in line with the lateral openings 36 of the panels at different degrees of opening of the panels.
25 Thus stopper members can be inserted through the holes in the frame and in a panel, to lock the panel in position. (The stopper members may be provided on the frame structure, e.g. being spring-loaded releasable buttons.)

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As shown in broken lines in Fig. 2, metal grilles 42,44 may be provided on one or both sides of the frame.



CLAIMS:

1. A wall structure comprising
a wall having an opposed pair of external wall
surfaces and defining a wall opening; and
5 a window assembly comprising a frame defining a
frame opening and a light-transmitting panel slidably
mounted to said frame so as to be slidable between a
closed position in which it substantially closes said
frame opening and an open position in which said frame
10 opening is substantially open;
said window assembly being mounted to the wall structure
so that the frame opening is in register with the wall
opening and so that in the open position the light-
transmitting panel extends over one of said wall
15 surfaces.
2. A wall structure according to claim 1 wherein said
window assembly is oriented so that said panel slides
substantially vertically.
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3. A wall structure according to claim 1 or claim 2
wherein said panel is a sheet of rigid plastics material.
4. A wall structure according to claim 3 wherein said
25 panel is a sheet of a polycarbonate plastics material.
5. A wall structure according to any preceding claim



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wherein said wall opening has a stepped profile so as to define a larger area portion separated by a step surface from a smaller area portion, and the frame is partly received in the larger area portion and abuts said step
5 surface.

6. A wall structure according to any preceding claim wherein said frame is rivetted to said wall.

10 7. A wall structure according to any preceding claim wherein said panel has a leading edge which substantially traverses said frame opening when said panel slides between its closed and open positions, and said panel includes at least one abutment member adjacent said
15 leading edge, said at least one abutment member limiting the sliding of said panel in the opening sense by coming into abutment with said frame.

20 8. A wall structure according to any preceding claim wherein said frame includes an opposed pair of channel-defining members which slidably receive respective opposite edge portions of said panel; at least one of said channel-defining members having a front wall portion having at least one frame aperture; a said edge portion
25 of said panel which is received in said at least one channel-defining member having at least one panel aperture which is slidable into and out of register with



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said at least one frame aperture; said wall structure further including at least one stop member adapted for passage through registered panel and frame apertures to lock the said panel against sliding.

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9. A wall structure according to any preceding claim further including a metal grille mounted to said frame.

10. A wall structure according to claim 9 including a pair of metal grilles mounted to said frame, one on either side of said panel.

11. A wall structure according to any preceding claim wherein said opening is elongate and said window assembly is correspondingly elongate, and wherein said frame defines a plurality of frame openings located side by side, each having a corresponding panel mounted therein so as to be slidable in parallel, perpendicular to the direction of elongation of the wall opening and window assembly.

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12. A wall structure substantially as herein described with reference to and as illustrated in the accompanying drawings.

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13. A window assembly adapted for use in a wall structure according to any preceding claim.