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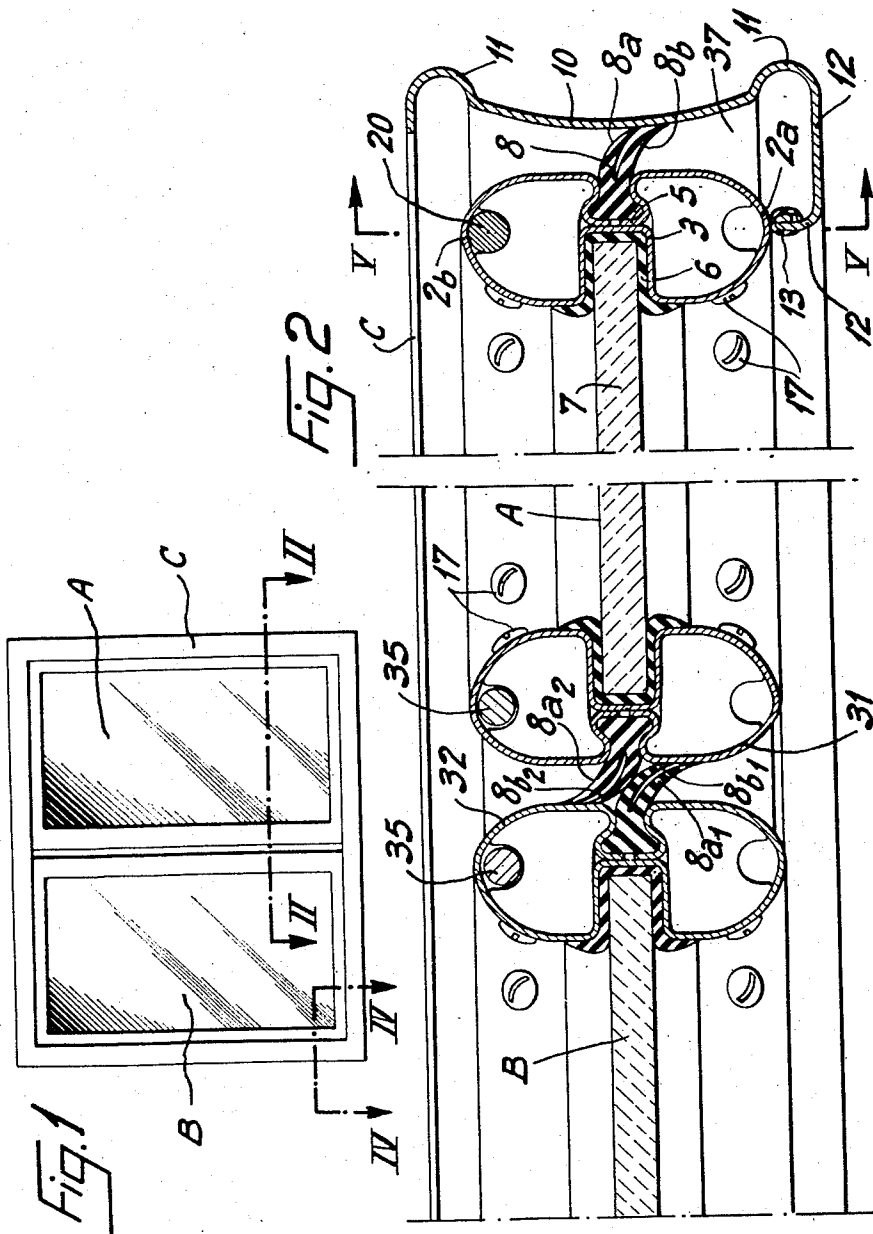
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3,430,384

WINDOW STRUCTURE

Filed Feb. 23, 1967

Sheet 1 of 5



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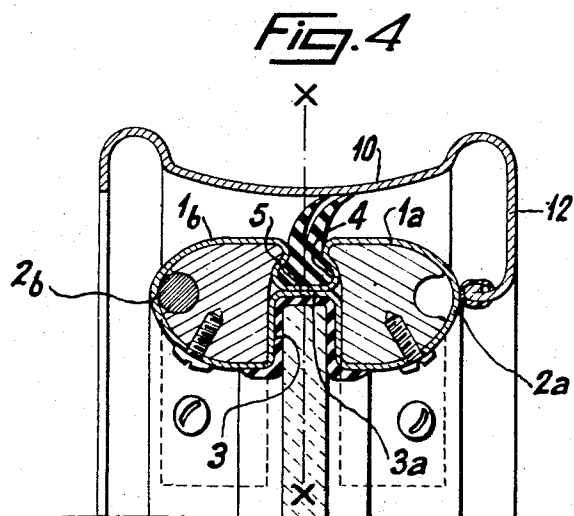
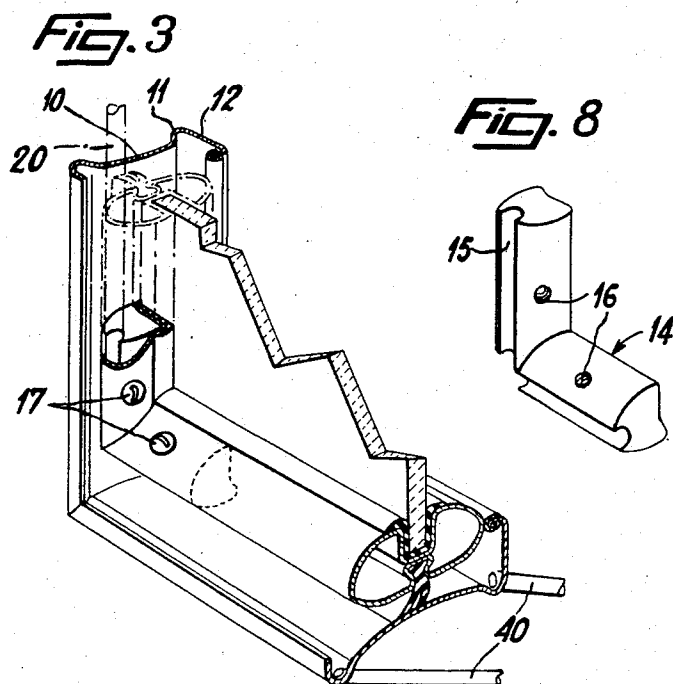
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## WINDOW STRUCTURE

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8 Claims

### ABSTRACT OF THE DISCLOSURE

Window structure having an inner pivoted frame formed of profile section to provide an inwardly facing groove in which a glazed panel is mounted and an outwardly facing groove supporting a resilient sealing element for engaging an adjacent portion of the fixed outer frame of the window structure when the inner frame is in closed position.

The present invention relates to a window structure more particularly for dwelling houses.

The invention in particular makes it possible to produce windows which are highly satisfactory from the aesthetic point of view, and which produce a very good seal, and are characterized by simplicity of assembly, installation and handling.

Moreover, the basic elements of structure are amenable to the production of windows of different types, for example, vertical-hinge windows or horizontally hinged windows or two-part vertical-hinge windows.

The present invention provides a window structure comprising an outer fixed frame defining a window opening and a movable inner frame supporting a glazed panel for closing said opening, the said inner frame being profiled to form a first groove facing inwardly of the inner frame in which the glazed panel is adapted to be mounted and a second groove facing outwardly of said inner frame, a resilient sealing element mounted in said second groove for making sealing engagement with said outer frame when the inner frame is in closed position, the said first and second grooves being disposed back to back, a flange being provided on said outer frame and a resilient sealing element mounted on said flange for engaging a portion of the said inner frame when in closed position.

Preferably, that part of the outer frame against which the sealing element abuts is of convex shape, and at either side of this convex part, channels are provided for catching rainwater or condensation.

In an advantageous embodiment of the invention, the profile of the inner frame will be symmetrical about its own median plane.

Profiles of the kind proposed in accordance with the invention can be obtained by extrusion of metal or plastics. Preferably, these profiled sections will be produced from a strip of metal (for example a strip of stainless steel) formed in a known fashion by rolling. In this case, the joining of the edges of the strip constituting the profiled section of the mobile part of the frame, will be effected at the base of one of the rebates. In addition, the bot-

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oms of the two grooves will, when the frame is made of metal, be in contact with one another and be welded together at the time of assembly of the two edges of the strip, thus simplifying the welding operation.

To enable the invention to be fully understood, it will now be described, by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is an elevational view, taken from the outside of a window according to one embodiment of the invention,

FIGURE 2 is an enlarged sectional view taken on the line II—II of FIGURE 1,

FIGURE 3 is a perspective view of a corner of the window, parts being in section,

FIGURE 4 is a sectional view taken on the line IV—IV of FIGURE 1.

FIGURE 5 is a sectional view on the line V—V of FIGURE 2.

FIGURE 6 is a perspective view, partly in section, of a detail of a horizontally-hinged window.

FIGURE 7 is a section of part of the detail view of FIGURE 6, and

FIGURE 8 is a perspective view of another detail.

The window illustrated schematically in FIGURE 1 of the accompanying drawings comprises two rectangular inner frames A and B mounted in a casement or outer frame C.

Each of the inner frames is made up of four rectilinear lengths of profiled section, mitred at their ends and assembled in the fashion explained hereinafter.

The shape of the section of these profiles can be seen in the sectioned illustration of FIGURE 4. This section, or profile, which is symmetrical in relation to the plane X namely the median plane of the window, comprises two tubular parts 1a, 1b having exterior curved portions 2a and 2b. Between these two tubular parts, two back-to-back grooves are formed, one of them 3 having a rectangular section and the other 4 having an inverted U-like shape in cross-section.

The profile form may be produced by symmetrically bending a parallel-edge strip of material, the opposed side edges of the strip abutting along the median line 5. As shown the said side edges abut the base 3a of the groove 3, and are welded along the line 5.

As shown in FIGURE 2, the groove 3 is designed to accommodate a U-section sealing strip 6 for a glass panel 7, while the groove 4 has a sealing element 8 having two parallel lips 8a and 8b, secured therein by adhesive.

It will be noted that the area of the weld that is at the bases of the grooves 3, 4 is covered by the sealing strip 6 and sealing element 8 and consequently, is well protected against corrosion. The dimensions of the sealing strip 6 are preferably such as to permit glass panels of different thicknesses being fitted ranging for example from 3 mm. glass to 10 mm. plate glass.

The lips 8a and 8b are adapted to bear against an internal convex surface 10, of the outer frame C. At either side of this convex surface the outer frame C is formed with two channels 11 one of which is extended in the form of a return portion 12, inwardly curved at 12a to form a flange, provided with a sealing element 13. With the window in the closed position, this sealing element engages the curved portions (2a or 2b).

The assembly of the four lengths of profiled section forming the framing is effected by means of L-shaped corner inserts 14 such as that illustrated in FIGURE 8.

Each of the arms of these inserts has a sectional profile corresponding to that of one of the tubular portions 1a, 1b, and is hollowed out to form a groove 15 which co-operates with the inner face of the associated tubular portion to define a cylindrical channel.

Each arm of the insert is also formed with a drilled hole 16. Thus, as FIGURE 3 shows, using two corner pieces 14 and four screws 17, two mitred casement sections can be assembled at right-angles to one another. FIGURE 3 also indicates how two channels 11, in which condensation or rain-water can collect, communicate with the exterior through narrow passages 40.

It will also be noted that with a casement constructed in this fashion, it is easy to dismantle one or two sides thereof simply by releasing the screws 17, in order to replace a damaged window-pane.

The cylindrical channels formed in the tubular sections 1a, 1b, are used to accommodate the window hinges and casement bolts.

As shown in FIGURE 5, a rod 20 extends through the channels 11 over the full height of the window and projects at the two ends, where it is received in sleeves 21 and 22 fixed to the outer frame C.

The bottom sleeve 21, contains a convex bearing 23, and acts as a hinge. The top of the rod extends into the lower end of the upper sleeve 22, the end of the rod being spaced from the inner end of the sleeve.

Between the two corner inserts 14<sub>1</sub> and 14<sub>2</sub>, there is produced in the component 2b a longitudinal slot 25, whilst the rod 20, in that portion of its length exposed by this slot, contains threaded holes 26.

When the slot 25 is exposed, it is possible to insert into one of the drilled holes a rod having a threaded end, thus enabling the rod 20 to be longitudinally displaced. In this way, it can be moved upwards into the upper part of the sleeve 21 in order to remove the window.

When the window is in place, screws 28 are inserted into the holes 26 to secure a plate 30 which closes off the slot 25.

The rod 20 may, if desired, be replaced by two aligned rod sections, one engaging in the sleeve 22 and the other in the sleeve 21, the inner ends of these two rod sections being connected to a manually operable device which can be designed after the manner of a nut and held in position by a bayonet fixing.

For the central mounting of the inner window frames A and B, rods 35 extend through internal passages in the respective frames, the upper and lower ends of the rods engaging in seatings formed in the outer frame C.

Preferably, each of the inner window frames is provided with its own bolt. Either the frame A or the frame B may be adapted to be closed before the other.

In the example illustrated in FIGURE 2, the frame B has been designed to close first. When the frame A has been closed in its turn, the lips 8a<sub>1</sub>, 8b<sub>1</sub> of the sealing element 8 associated with frame B will be forced outwards by the portion 31 of the frame A, whilst the lips 8a<sub>2</sub> and 8b<sub>2</sub> will be deflected inwards by the portion 32 of the frame B.

With the window in the closed position, the sealing element 13 seals off the window around practically its full periphery, additional seals are provided by the action of the lips 8a and 8b. Between these two sealing devices, the space 37 which is at a pressure intermediate of the pressure prevailing inside the room and that outside, limits the extent of any draught which can develop as a consequence of discontinuity in the sealing fittings.

It will be understood that the invention is applicable to window frames pivoting about a horizontal or a vertical axis.

As shown in FIGURES 6 and 7 the section of the casement is symmetrical in relation to a plane corresponding

to the plane XX (FIG. 4) except for the return portion 12, 12a. The outer frame is in two halves D<sub>1</sub> and D<sub>2</sub> connected at the level of the pivots 38 in such a fashion that in the case of one of the halves, the return portion 12a is positioned externally of the window whilst in the case of the other it is positioned internally. Thus, in pivoting about the axis YY, in the closed position one of the halves of the inner frame of the window is in contact through the curved portion 2a with one of the halves of the sealing element 13, and the other is similar in contact through the symmetrical curved portion 2b with the other half of the sealing element.

As illustrated in FIGURE 7, the pivot 38 is carried by a flat plate 39 fixed in place by means of screws 40 engaging in threads in tubular portions 1a and 1b. The pivot 38 rotates in a socket 41 fixed in the plane of symmetry of the part 10 of the casement.

It will be understood that the invention is applicable to glazed windows indoors.

I claim:

1. A window structure comprising an outer fixed frame defining the window opening and a movable inner frame supporting a glazed panel for closing said opening, the said inner frame being profiled to form a first groove facing inwardly of the inner frame in which the glazed panel is adapted to be mounted and a second groove facing outwardly of said inner frame, a resilient sealing element mounted in said second groove for making sealing engagement with said outer frame when the inner frame is in closed position, the said first and second grooves being disposed back to back, a flange being provided on said outer frame and a resilient sealing element mounted on said flange for engaging a portion of the said inner frame when in closed position, said inner frame comprising side wall frame units each having mitred ends and assembled together through the medium of separate corner pieces, said corner pieces being L-shaped, the arms of which are formed with longitudinal grooves, said grooves in the corner pieces combining with portions of the inner frame to define longitudinal passages for a rod about which the said inner frame is adapted to pivot.

2. A window structure as claimed in claim 1 wherein a bolt is provided for locking the inner frame in closed position.

3. A window structure as claimed in claim 1 wherein the outer frame is symmetrical about a median plane.

4. A window structure as claimed in claim 1 wherein the outer frame is formed with a drain groove, the said flange being an extension of one of said drain grooves.

5. A window structure comprising an outer fixed frame defining a window opening and a movable inner frame displaceable in said opening and provided in a glazed panel for closing same, said inner frame being provided with a profile member along the periphery of said panel with said profile member having a wall formed with a first U-section channel defining an inwardly open first groove receiving said panel, with a second U-section channel defining an outwardly open second groove in the plane of said panel, and a tubular rib of convex configuration interconnecting said channels and projecting transversely on opposite sides of said plane of said panel along the periphery of the latter, said channels having bights abutting one another, a resilient sealing element of strip configuration seated in said outwardly open second groove and engageable sealingly with said outer frame in a closed position of said inner frame and panel, said outer frame being formed with a flange juxtaposed with said rib in said closed position, and a further resilient sealing element mounted on said flange and engaging said rib in said closed position.

6. A window structure as defined in claim 5 wherein a pair of juxtaposed inner frames are mounted on said outer frame, the sealing element mounted in the portion of said second groove at one side of each inner frame

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being adapted to engage said outer frame and the sealing element in the portion of the said second groove on the opposite sides of each of the said inner frame being engageable with an adjacent portion of a side wall of the rib of the other of the pair of inner frames.

7. A window structure as defined in claim 5 wherein the said first groove is of rectangular section and accommodates a sealing element of U-section in which the glazed panel is received.

8. A window structure as defined in claim 5 wherein the said second groove is of U-shape and the sealing element received therein comprises two resilient lips.

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KENNETH DOWNEY, *Primary Examiner*.

U.S. Cl. X.R.

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