

(12) UK Patent Application (19) GB (11) 2 239 309 (13) A

(43) Date of A publication 26.06.1991

(21) Application No 9026171.0  
(22) Date of filing 01.12.1990  
(30) Priority data  
(31) 8927303.1 (32) 02.12.1989 (33) GB

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(51) INT CL<sup>5</sup>  
**E06B 7/02, F24F 13/08**

(52) UK CL (Edition K)  
**F4V VF401 VGBP VG212 VG215 V161 V162**

(56) Documents cited  
**GB 2168801 A GB 2113825 A GB 2083203 A  
GB 0849591 A US 4953451 A**

(58) Field of search  
UK CL (Edition K) **F4V VCF VGBB VGBE VGBN  
VGBP  
INT CL<sup>5</sup> F24F  
Online database; WPI**

(54) Window/door ventilators of modular construction

(57) A window/door ventilator is of modular construction such that by appropriate selection of parts the ventilator can be adapted to suit different window/door configurations. In the illustrated construction, an exterior element (19) is directly connectable to different forms of interior element eg (17) or (21), to form the ventilator, each element having a ventilation aperture therethrough (not shown), and the ventilator having a channel at its lower edge to receive glazing and being configured at its top edge for receipt of, or fixing to, the window/door frame. The exterior element (19) is of insulating plastics material and the interior element of extruded aluminium. In alternative constructions extruded aluminium interior and exterior elements are interconnected by separate connection elements of plastics which provide a thermal break. A pivoted closure member for controlling air flow through the ventilation apertures may be provided, and a canopy and grille assembly may be fitted to the exterior element.

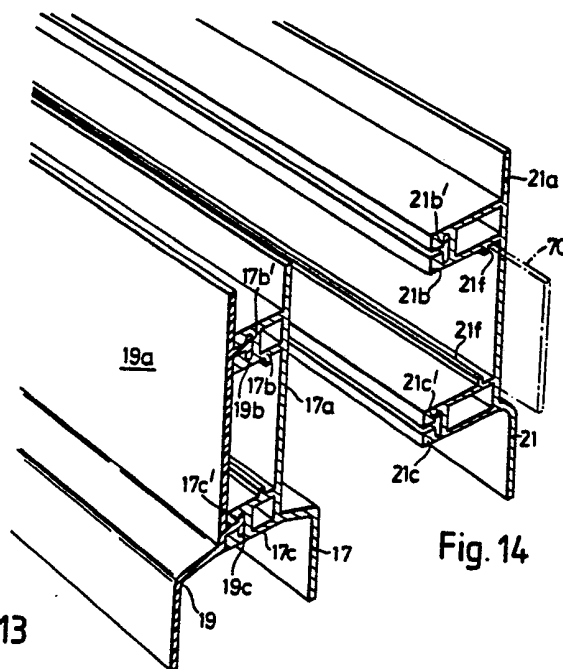


Fig. 13

Fig. 14

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.  
This print incorporates corrections made under Section 117(1) of the Patents Act 1977.

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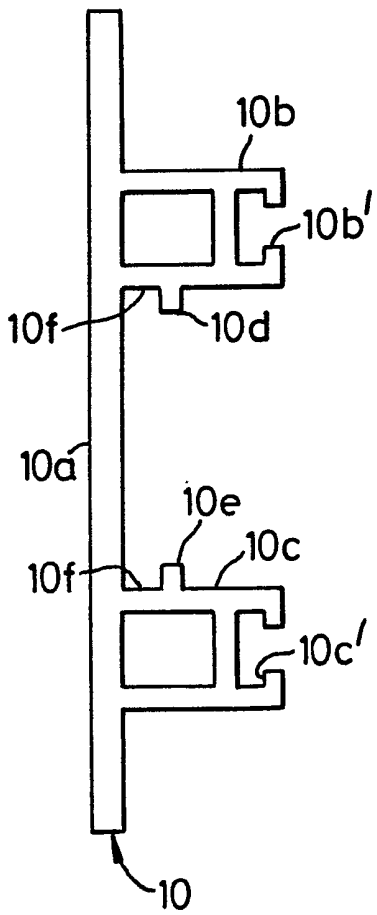


Fig. 1

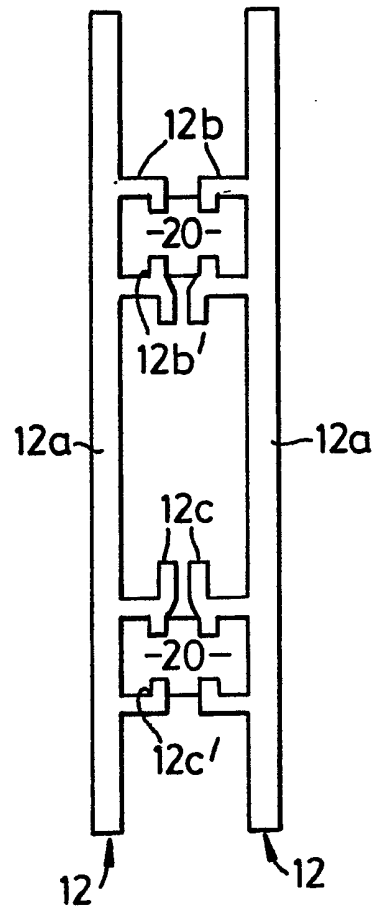


Fig. 2

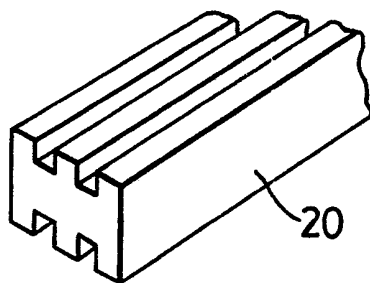


Fig. 1a

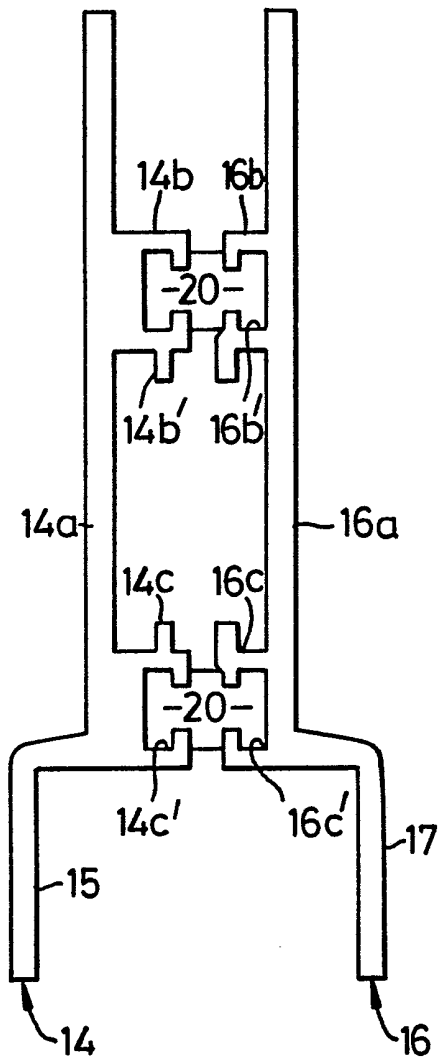


Fig. 3

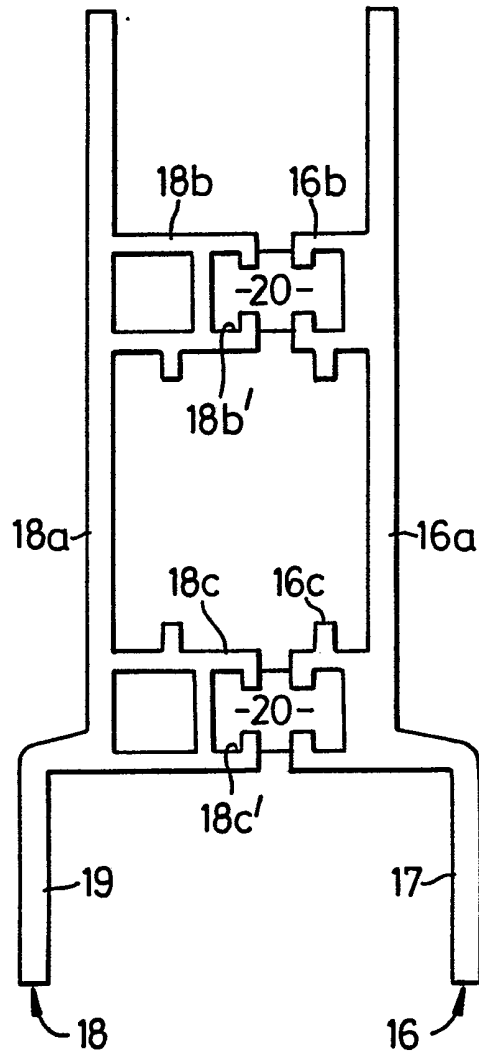


Fig. 4

3/12

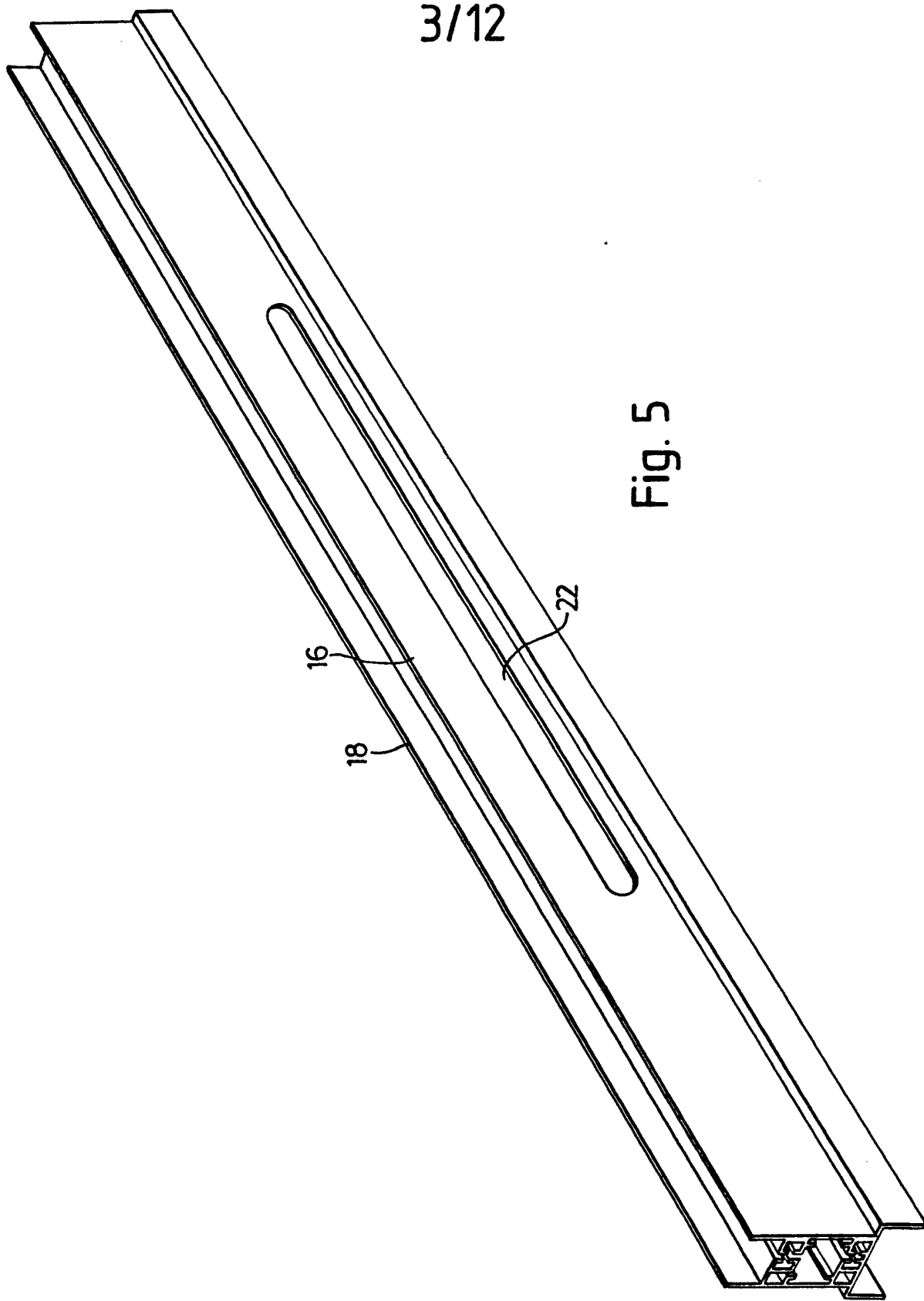


Fig. 5

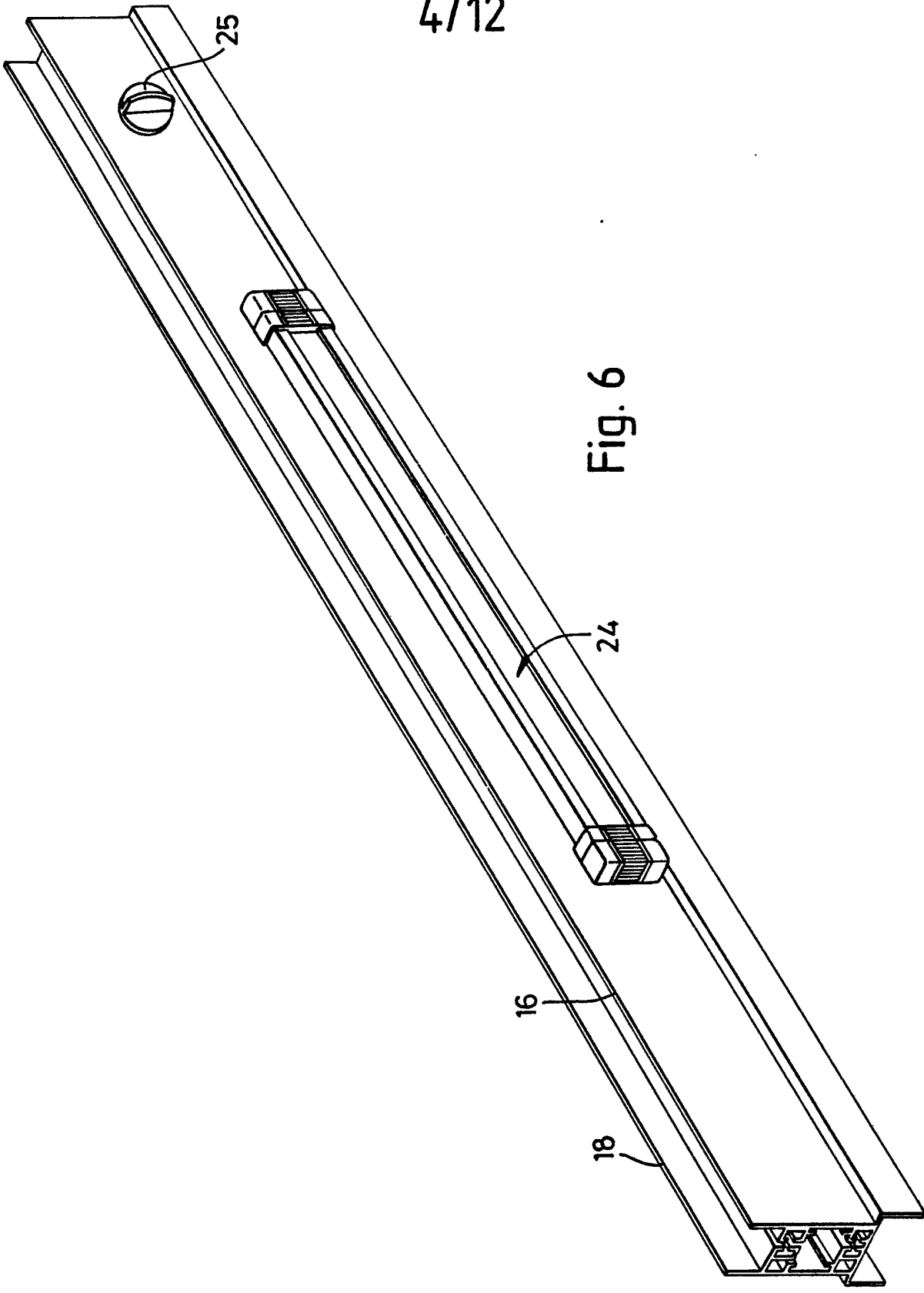


Fig. 6

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

5/12

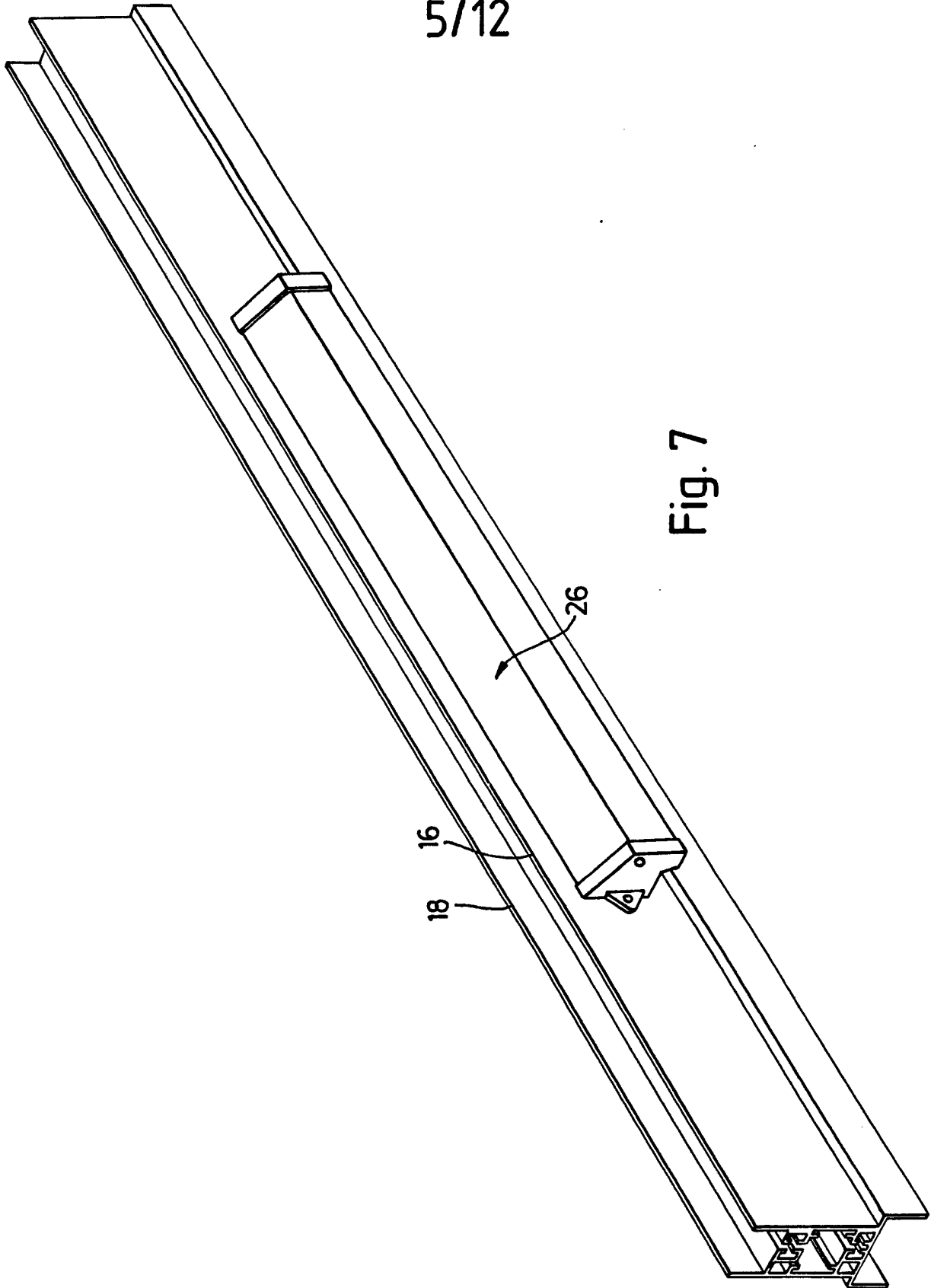


Fig. 7

6/12

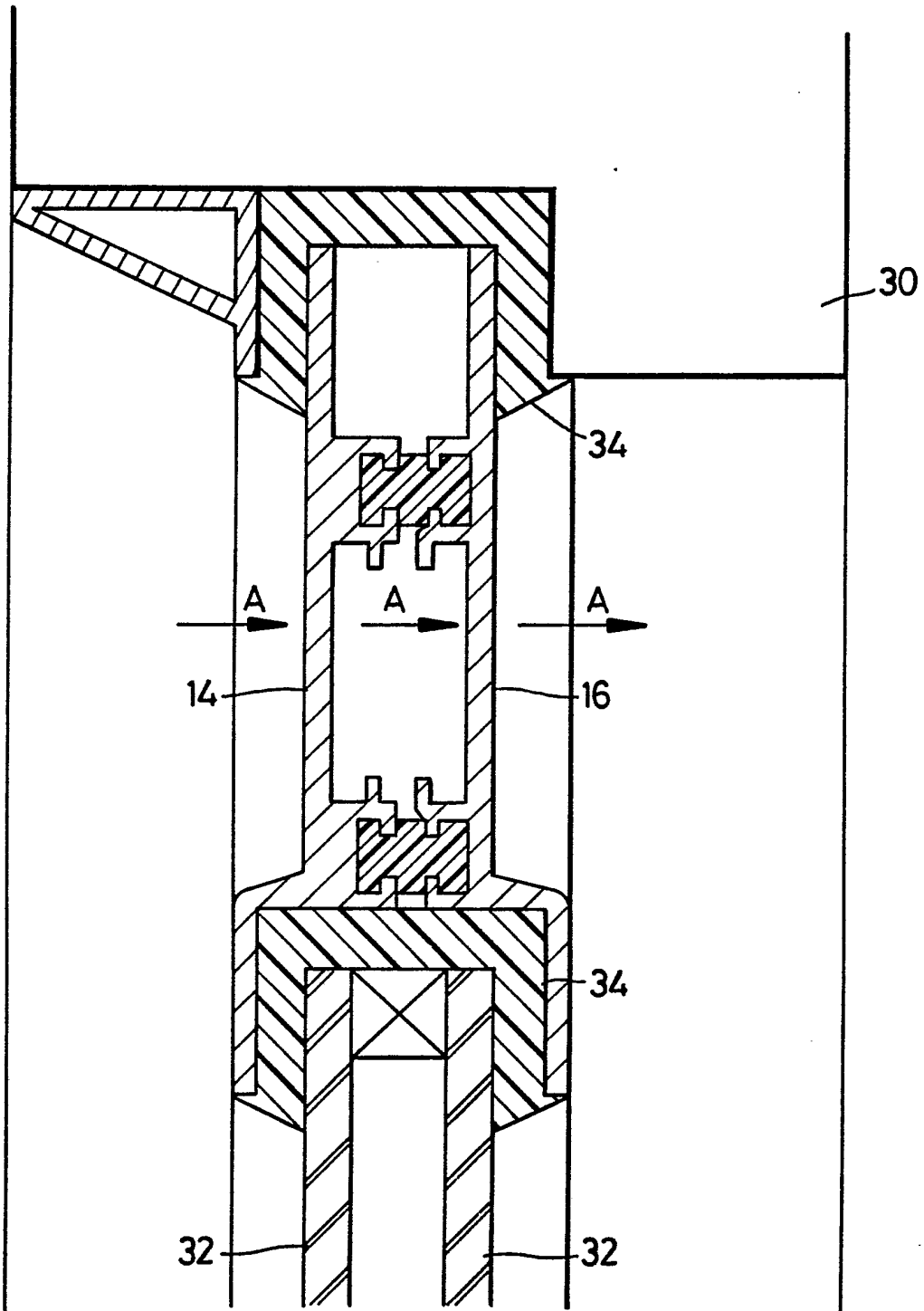


Fig. 8

7/12

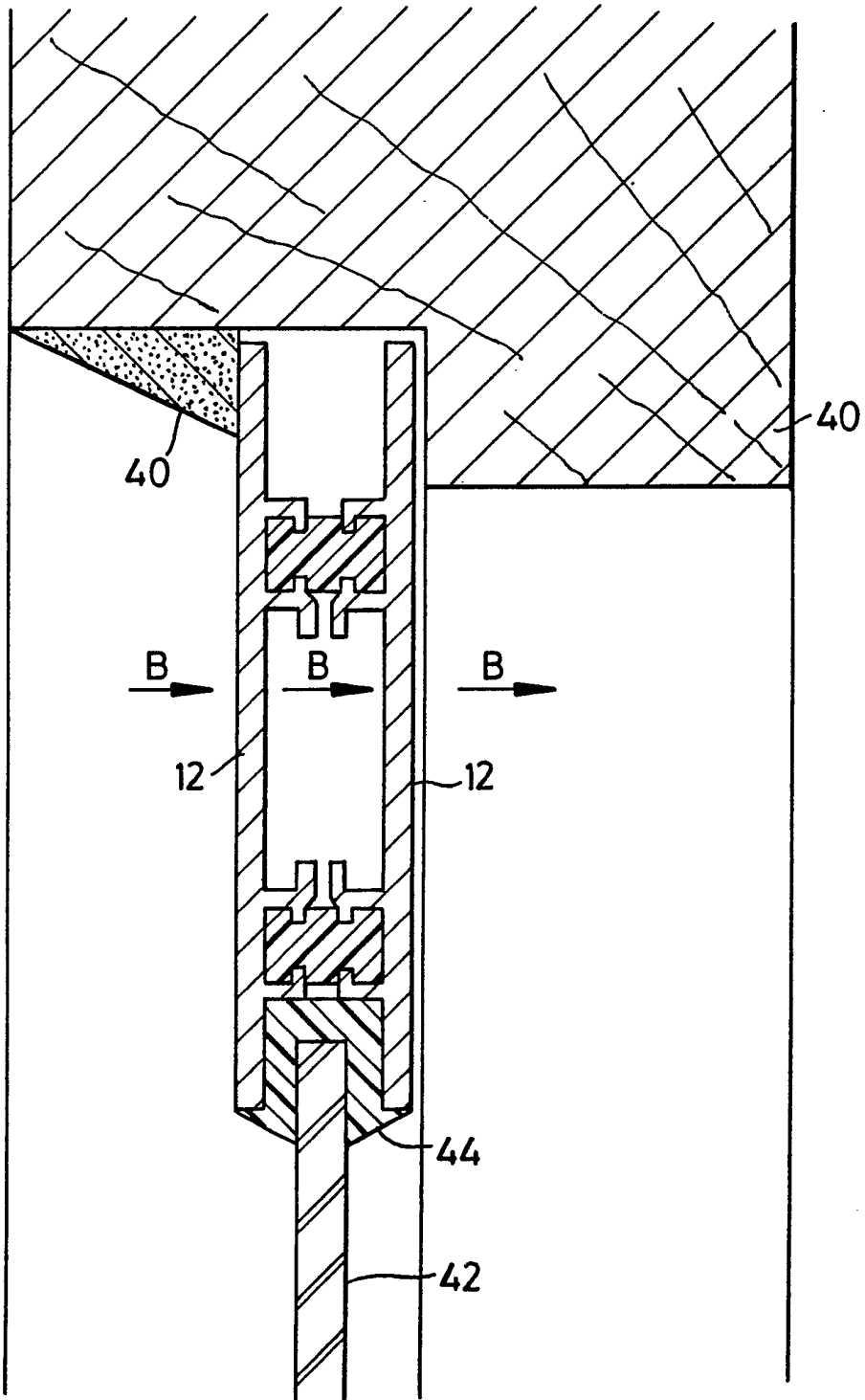


Fig. 9



8/12

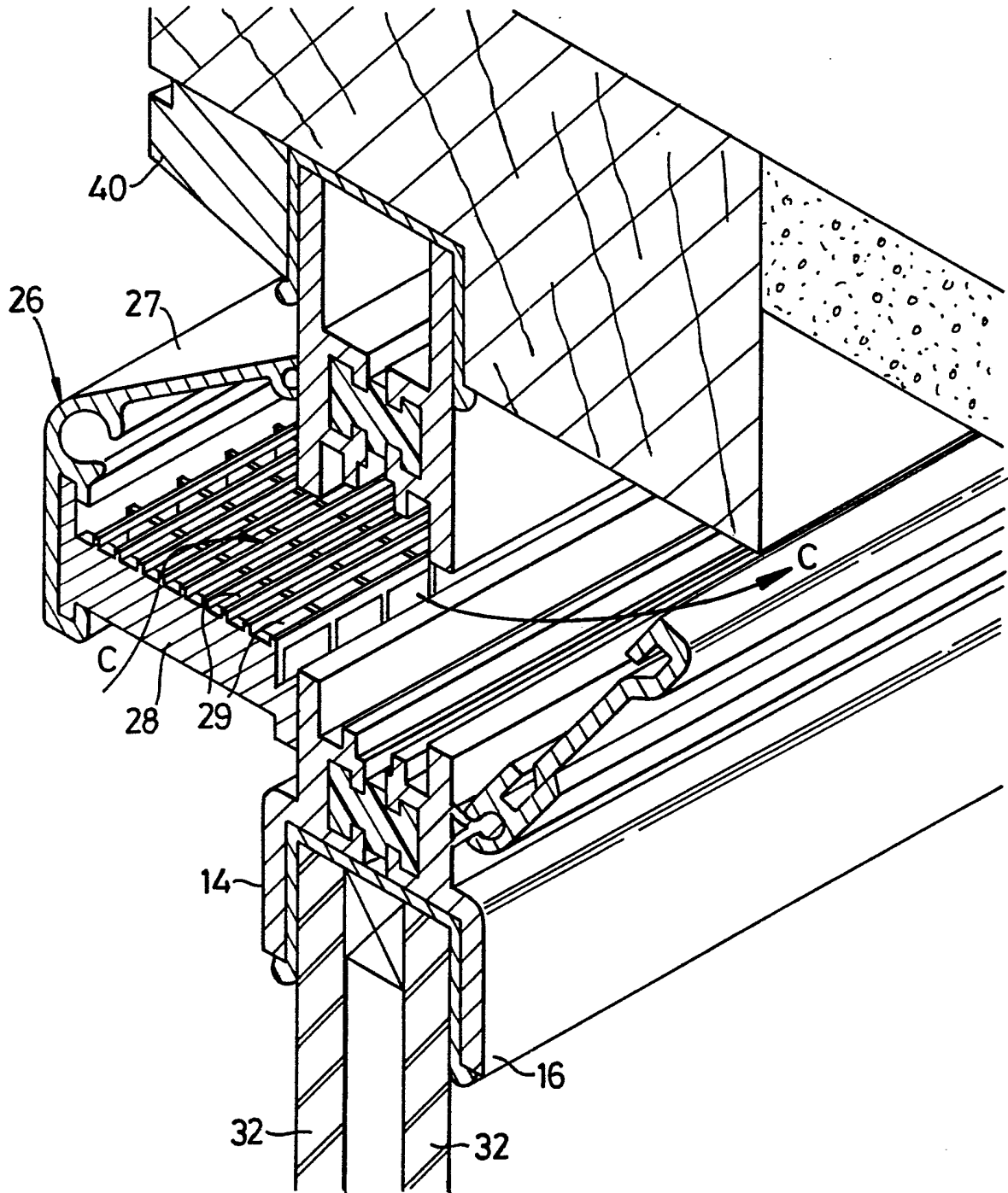


Fig. 10

9/12

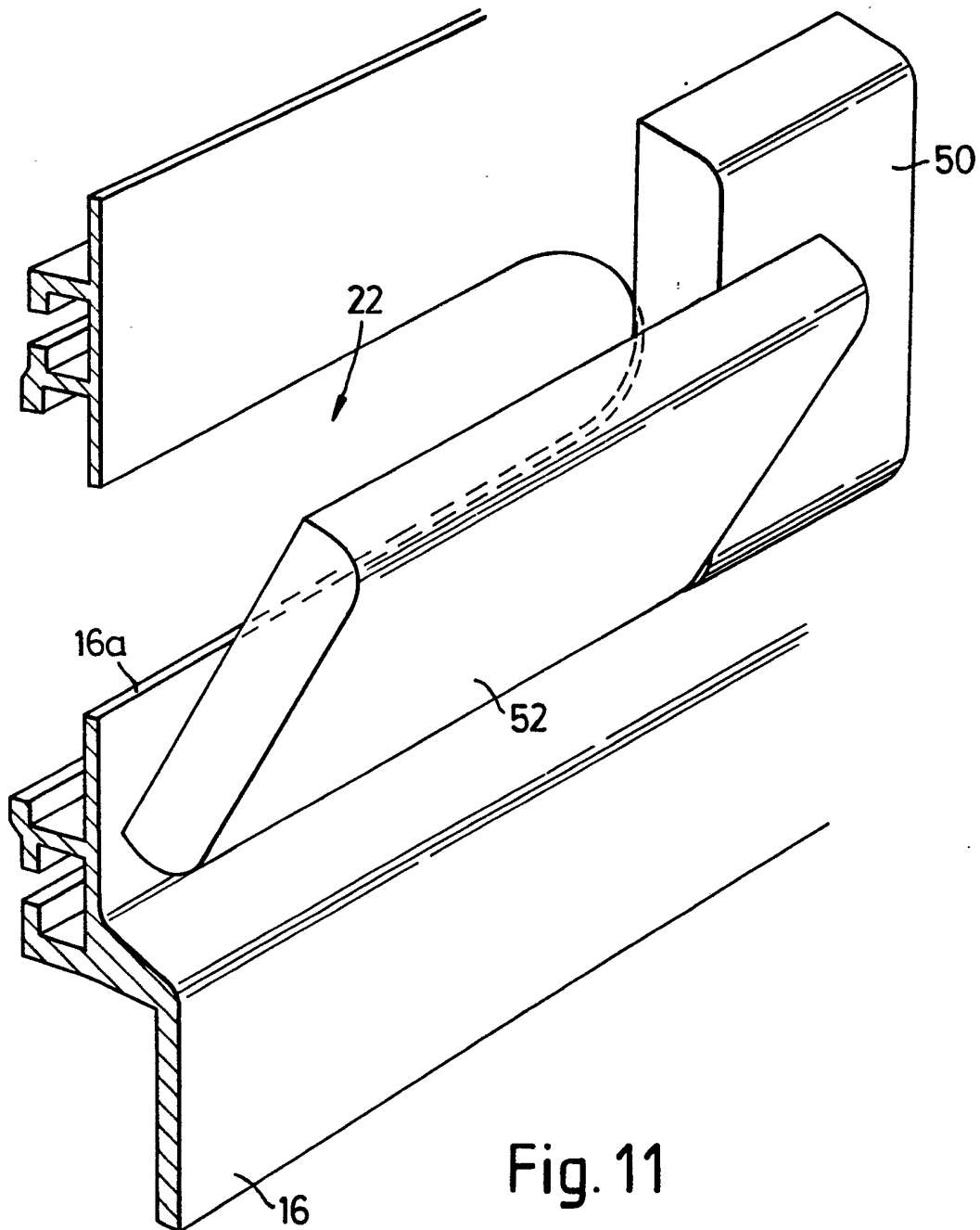


Fig. 11

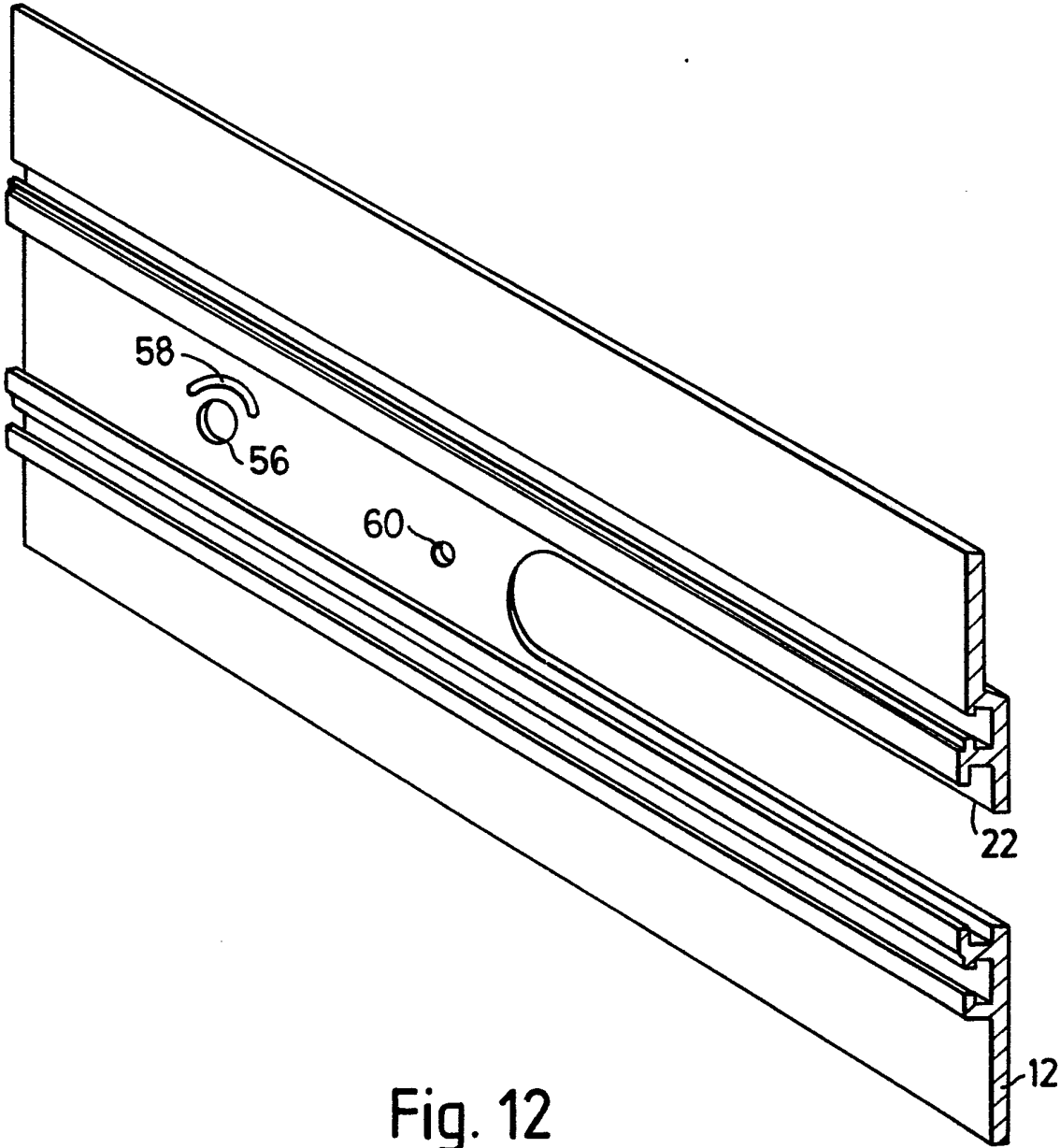


Fig. 12

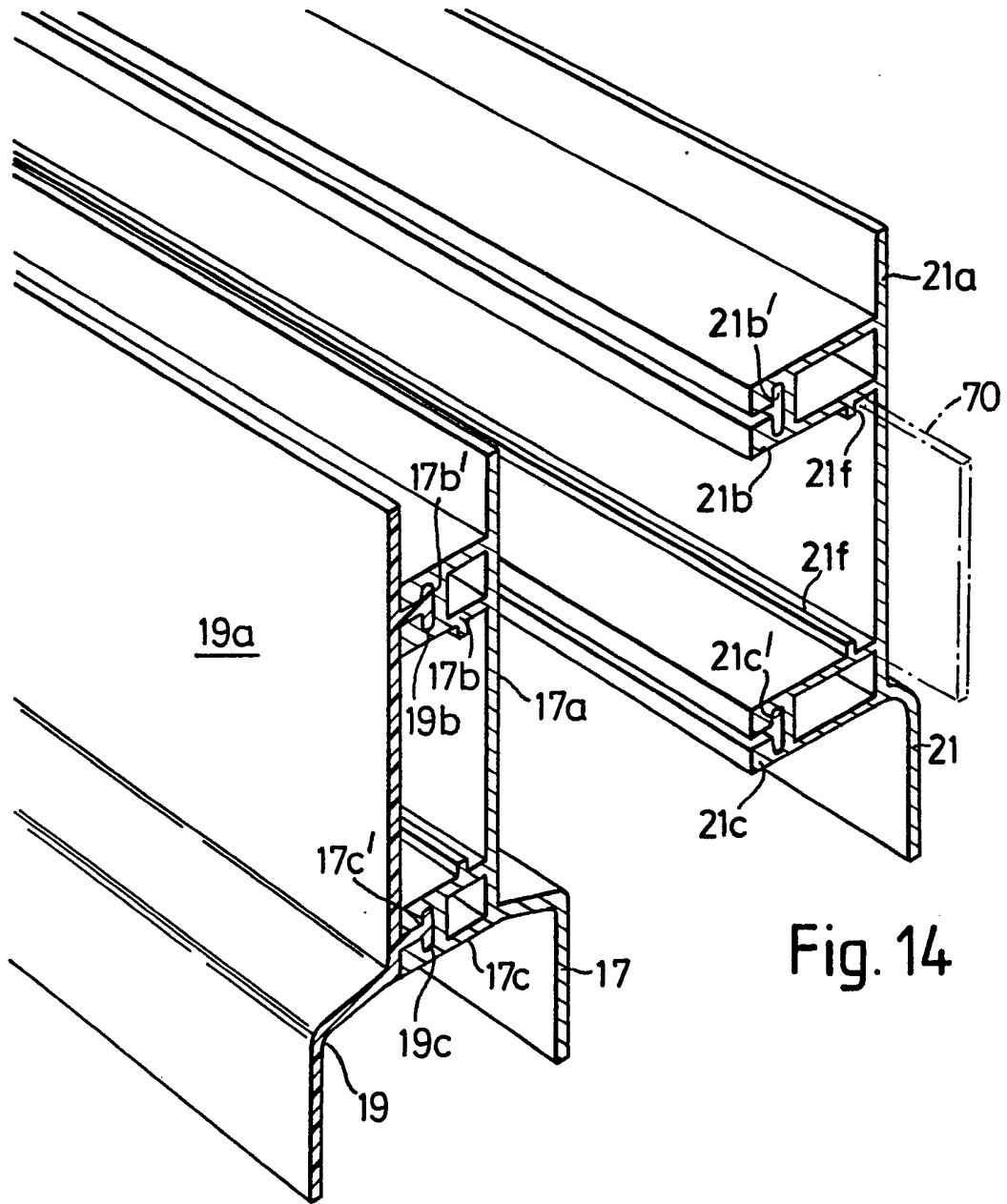


Fig. 13

Fig. 14

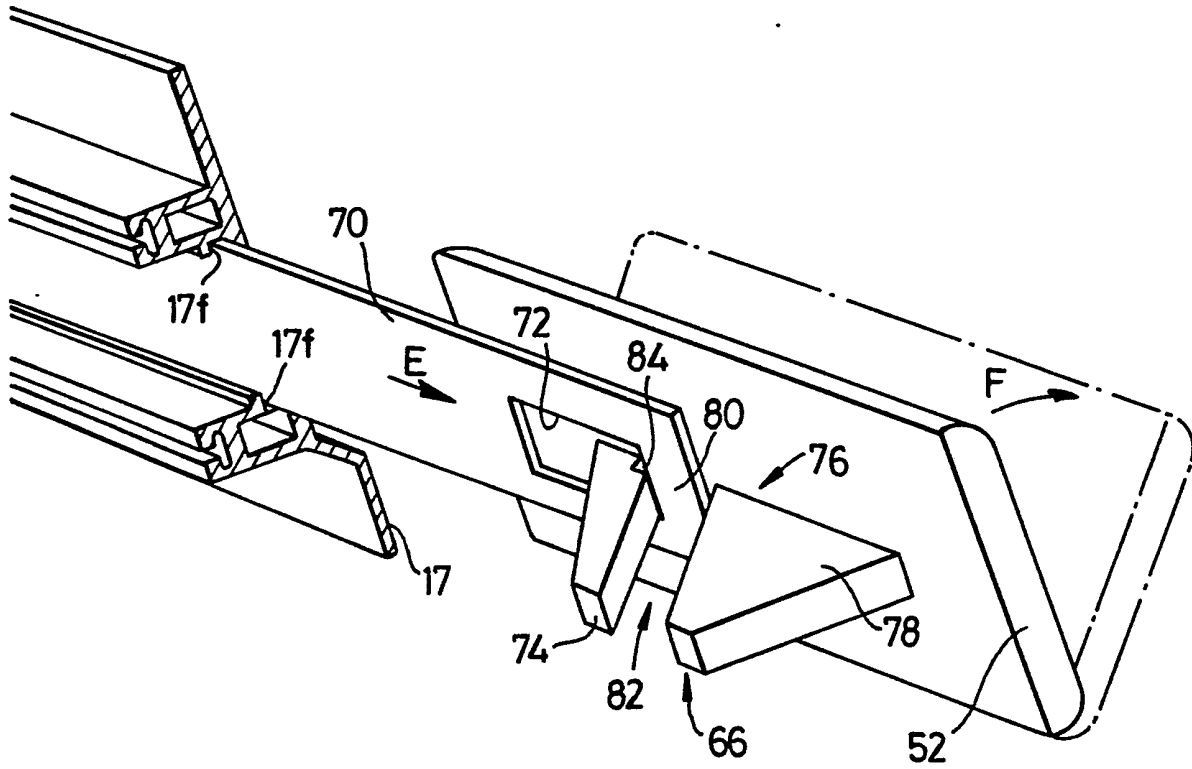


Fig. 15

WINDOW/DOOR VENTILATION SYSTEM

This invention relates to a window/door ventilation system.

According to one aspect of the present invention there is provided a window/door ventilation system for providing ventilation to a building in the region of a window or door, said system comprising a plurality of modular ventilation elements, each element being adapted to be connected to at least one other ventilation element to form a ventilation module, said module defining a ventilation passage therethrough and being adapted to be disposed between a window or door and a surrounding frame, wherein the ventilation elements forming the ventilation module can be preselected to match the configuration of the window or door.

In another of its aspects the present invention may be considered to provide a window/door ventilation system for providing ventilation to a building in the region of a window or door, said system comprising a plurality of modular ventilation elements, including at least one exterior ventilation element adapted to be mounted at the exterior of a building and at least one interior ventilation element adapted to be mounted at the interior of a building, a first element which may be either exterior or an interior element being adapted to be

connected to a selected one of a plurality of second elements of different configuration to form a ventilation module, said module defining a ventilation passage therethrough and being adapted to be disposed between a window or door and a surrounding frame, wherein the ventilation elements forming the ventilation module can be preselected to match the configuration of the window or door.

In a system as set out in the last preceding paragraph said first element is preferably an exterior element and the second elements are complementary interior elements.

A ventilation module provides ventilation to the building between the window or door and the surrounding frame. The modular nature of the components enables a system in accordance with the invention to be used with a wide variety of different window and door structures.

For example, the system can be used with wooden frame having 4mm and 6mm single glazing, and 14mm double glazing. The system can also be used with plastics frames having 14mm, 18mm, 20mm and 24mm double glazing.

It is preferred that each ventilation element is formed by extrusion; each ventilation module comprises an interior element and an exterior element, respectively intended to be mounted in use at the inside and outside of a building. These elements may be identical. The preferred material of construction is aluminium for most ventilation elements. However, the external element of a preferred system in accordance with the invention comprises an external element of a suitable rigid and weather resistant plastics, preferably an appropriate grade of PVC.

The ventilation elements are desirably provided with elongate securing members which enable the ventilation elements to be secured to form the ventilation module.

Preferably, in a system in accordance with the invention, especially where the internal ventilation element is readily heat-conductive, e.g. aluminium, insulation means may be provided. In a preferred system the insulation means may be provided by the external element which, in this case, is made of an insulating plastics material. Alternatively, the system may comprise connecting elements which are adapted to fit between the securing members, and which keep the securing members out of contact with one another. Such a connecting element may also be an insulation element



and may be a plastics material serving to provide a thermal break between the ventilation elements. Provision of insulation means is particularly important with double glazed windows.

The ventilation module may be adapted along one edge to receive a window or door, and along an opposite edge to receive or be secured to the surrounding frame.

Additional ventilation structures can be provided on one or both faces of the ventilation modules. The additional ventilation structures can be designed to provide baffles which help to prevent the ingress of moisture. The baffles may also prevent the ingress of large insects or vermin.

The additional ventilation structures may also be provided with a control arrangement for controlling the airflow through the ventilation module.

The control arrangement may be provided partially, or wholly, on the ventilation module. For example, the ventilation elements can be provided with formations adapted to receive an apertured strip in order to provide control of the air flow by a hit and miss arrangement.

Preferably, however, the control arrangement comprises a hinged control flap and means to pivot it about the hinge to open or close the ventilation passage.

The ventilation control system may form the one or more of the additional ventilation structures described above.

Basically the preferred control system comprises an air control flap movable between a first position in which air flow through an aperture is maximum and a second position in which air flow through the aperture is minimum and preferably substantially zero. The aperture is conveniently a ventilation aperture in one of the ventilation elements. Control means such as a control knob is provided for an operator to control the control flap, and an operating linkage is provided between the control flap and the control knob.

Conveniently, the linkage in the preferred system comprises a slide member mounted for sliding movement in a slideway provided by one of the ventilation elements and engaging a cam system on the control flap, the construction and arrangement being such that movement of the slide member lengthwise of the ventilation element causes the flap to pivot between its first and second positions.

This arrangement provides an extremely compact control arrangement needing relatively little thickness, only a little greater than the distance the cam means extends away from the flap. This compact control arrangement is achieved without any complex spring systems.

Reference is now made to the accompanying drawings, in which:-

Figure 1 is a cross sectional view of a ventilation element of a system according to the invention;

Figure 1a is a perspective view, with part broken away, of a connection element;

Figures 2 to 4 are cross sectional views of three ventilation modules of a system according to the invention;

Figure 5 is a perspective view of the ventilation module shown in Figure 4;

Figure 6 is a perspective view of the ventilation module shown in Figure 4 with one embodiment of an additional ventilation structure provided therein;

Figure 7 is a perspective view of the ventilation module shown in Figure 4 with another embodiment of an additional ventilation structure provided thereon;

Figure 8 is a cross sectional view of a ventilation module of a system according to the invention, in position in a window with a plastics window frame;

Figure 9 is a cross sectional view of a ventilation module of a system according to the invention, in position in a window with a wooden window frame;

Figure 10 is a perspective view showing a ventilation module with part broken away for clarity, similar to that shown in Figure 6, and including additional ventilation structures;

Figure 11 is a perspective view with part cut away of an embodiment of additional ventilation structure according to the invention;

Figure 12 is a perspective view with part cut away of part of a ventilation element of a system according to the invention, modified to receive the structure shown in Figure 11;

Figure 13 is a perspective view of a ventilation module of a second ventilation system embodying the invention;

Figure 14 is a perspective view of part of a ventilation element of the second system; and

Figure 15 is a perspective view of the additional ventilation structure showing a ventilation element with part broken away and a control arrangement for controlling the airflow.

Referring to the drawings, Figures 1 to 4, 13 and 14 show eight different types of ventilation element designated 10, 12, 14, 16, 17, 18, 19 and 21. Each element 10, 12, 14, 16, 17, 18, 19 and 21 comprises a length of extrusion, aluminium in the case of all but element 19 which is of a sufficiently rigid and weather resistant plastics material, suitably PVC.

Each ventilation element 10, 12, 14, 16, 17, 18, 19 and 21 comprises a flat strip-like member 10a, 12a, 14a, 16a, 17a, 18a, 19a and 21a, with securing formation 10b, 10c, 12b, 12c, 14b, 14c, 16b, 16c, 17b, 17c, 18b, 18c, 19b, 19c, 21b and 21c projecting therefrom.

The securing formation 10b is provided with a C-shaped recess 10b' which is adapted to receive a plastics insulating element 20. The other securing formations are provided with similar C-shaped recesses with the exception of formations 19b, 19c which are in the form of projections of T-shaped cross-section adapted to be slidably received in complementary recesses 17b', 17c', 21b', 21c' generally similar to the recesses 10b' in a manner similar to the plastics element 20.

The securing formations 10b and 10c are provided with projections 10d and 10e respectively, which extend towards one another. The projections 10d and 10e, together with the member 10a define a channel 10f which can receive an apertured strip (not shown). The apertured strip may be slidable within said channel and may act as a control member for a ventilation arrangement, e.g. a "hit and miss" ventilation arrangement or a preferred form of arrangement described hereinafter. Similar projections are provided on the other elements with the exception of the element 19 which is intended only for exterior use and therefore does not require provision for such a strip.

The elements 10, 12, 14, 16 and 18 can be paired together in preselected combination to provide a selected ventilation module as shown in Figures 2, 3 and 4. The

element 19 can be paired with a selected one of elements 17 and 21 (or other elements not shown, generally corresponding for example with one of the elements 10-18) as shown in Figures 13 and 14. The length of the securing formations of the elements (in the case of the module utilising the element 19, the interior element 17 or 21) determines the spacing between the strip-like members of each module.

It will be noted that the elements 14, 16, 17, 18, 19 and 21 are provided with dog-leg portions 15, 17 and 19 respectively which enable an increased thickness of frame to be received. This is especially useful for double glazed window structures.

An insulation element 20 is provided to secure the elements 10, 12, 14, 16 and 18 together. The insulation element 20 is made of a plastics material and serves to provide a thermal break. It will be noted that only one size and shape of insulation element 20 is necessary. The module of Figure 13 eliminates the separate insulation element, the exterior module 19 is of insulating plastics material, providing thermal insulation.

It can be seen from Figure 5 that each element 16 and 18 of the module shown in Figure 5 is provided with an elongate ventilation aperture 22. The aperture 22 can be selected to have a length and width sufficient to meet the desired ventilation requirements. The aperture 22 can be formed "on site" or at the manufacturing stage. It will be appreciated that the other modules are provided with similar apertures.

In Figure 6, an additional ventilator 24 is provided at one of the apertures 22; the additional ventilation structure 24 is described in more detail below. The ventilator structure 24 has the ability to control airflow through the module by means of a control knob 25 which is described below.

In Figure 7 another embodiment of additional ventilator structure 26 is shown. The structure 24 essentially comprises a hood disposed over one of the apertures 22, and is shown in more detail in Figure 10.

Typically, the ventilation structure 24 is provided on the interior of the building whilst the ventilation structure 26 is provided on the exterior: the ventilation control is usually required on the inside rather than the outside.



In Figure 8 the type of module shown in Figure 3 is shown in a plastics window frame structure. The window frame structure comprises a plastics frame 30 which surrounds two glass panes 32 which form double glazing (it will be appreciated that single glazing can be utilised). The module is disposed in an aperture between the top of the panes 32 and the frame 30. Gaskets 34 are provided to seal the region between the module and the frame 30, and the region between the module and the panes 32. An airflow path through the module is designated by arrows A.

In Figure 9 the type of module shown in Figure 2 is shown in a wooden window frame structure. The window frame structure comprises a wooden frame 40 which surrounds a single glass pane 42 (it will be appreciated that double glazing can be utilised). The module is disposed in an aperture between the top of the pane 42 and the frame 40. A gasket 44 is provided to seal the region between the module and the pane 32. Putty 46 is provided to seal the region between the frame 40 and the module. An airflow path through the module is designated by arrows B.

Figure 10 shows the type of module shown in Figure 3 in a wooden window frame structure having the wooden frame 40 and panes 32 which form double glazing (again, single glazing could have been provided if desired).

The additional ventilation structure 26 is shown in more detail in Figure 10: the structure 26 comprises a canopy 27 which holds in place a grille 28; the grille 28 defines a plurality of apertures 29 through which air can flow to the module.

An airflow path through the module is designated by arrows C.

When an additional ventilation structure is used it can be specially built into each module to provide an integral unit which enables control of the airflow. This arrangement is shown in more detail in Figures 11 to 15.

In Figure 11 the integral additional ventilation structure 24 comprises two end caps 50 (of which only one is shown), disposed at opposite ends of the elongate aperture 22, and an air control flap 52 disposed between the end caps 50. The flap 52 is connected to the outer surface of the strip-like member 16a of the ventilation element 16 by means of a flexible sealing hinge (not shown). The flexible sealing hinge enables the flap 52

to pivot between an open position (shown in Figure 13), in which airflow through the aperture 22 is maximum, and a closed position (not shown) in which the airflow through the aperture 22 is substantially zero (see also Figure 15).

Figure 12 shows the ventilator element 12 modified to take the operating means for the control flap 52. In particular, a circular aperture 56 and an arc-shaped slot 58 are provided to receive the control knob 25 (the control knob 25 may be provided with the arrangement described in our copending UK Patent Application No. 8902498.8, filed 4 February 1989, Publication No. 2229257 and entitled "control device for a rotatable control knob"). Additionally, the ventilator element 12 is provided with an aperture 60 at each end of the aperture 22 (only one aperture 60 is shown) for the purpose of providing a fixing point for the end caps 50.

It will be appreciated that the structure 24 can be used with any of the ventilation elements 10 to 21.

The operating means for the control flap 52 is shown in Figure 15.

The operating means basically comprises a linkage generally designated 66 which is operatively connected to the control knob 25. The linkage 66 comprises a slide member 70 slideably received in the opposing channels 17f which provides a slideway helping to guide movement of the linkage 66.

The slide member 70 extends fully between the opposing channels 17f and is operatively connected at one end to the control knob 25, so that operation of the control knob 25 causes sliding movement of the member 70. The member 70 is positioned so that there is no obstruction of the ventilation aperture 22; thus the aperture 22 is to the right of the member 70, view g Figure 15, so as to minimise any interference with the airflow.

Rotation of the control knob 25 in one direction will cause the member 70 to move in the direction indicated by arrow E and rotation in the opposite direction will cause the member 70 to move in a direction opposite to arrow E..

An aperture 72 in the member 70 receives a part 74 of cam means 76 and an end portion 80 of the member 70 is received in a cam way 82 between parts 74,78 of the cam means. The cam way 82 is angled so that as the member 70 is moved in the direction of the arrow E the flap 52

moves from a first position (in which it is shown in full line in Figure 15) in which the ventilation aperture 22 is closed to a sealed position (shown in dash line in Figure 15) in which the aperture 22 is open. Movement of the member 70 in the direction of arrow E is limited so that the portion 80 cannot escape from the cam way 82. Return of the flap to the first position is achieved by movement of the member in a direction opposite to the arrow E until the end portion 80 reaches the bottom of the cam way and enters a notch 84 in the part 74 to lock the flap in the first position.

The illustrative systems provide simple and effective ventilation means providing thermal insulation of interior elements from the exterior and means for controlling airflow. Because of the modular construction ventilation modules for a variety of different sizes and types of window or door can readily be provided using relatively few parts.

CLAIMS

1. A window/door ventilation system for providing ventilation to a building in the region of a window or door, said system comprising a plurality of modular ventilation elements, each element being adapted to be connected to at least one other ventilation element to form a ventilation module, said module defining a ventilation passage therethrough and being adapted to be disposed between a window or door and a surrounding frame, wherein the ventilation elements forming the ventilation module can be preselected to match the configuration of the window or door.

2. A window/door ventilation system for providing a ventilation system to a building in the region of a window or door, said system comprising a plurality of modular ventilation elements, including at least one exterior ventilation element adapted to be mounted at the exterior of a building and at least one interior ventilation element adapted to be mounted at the interior of a building, a first element which may be either exterior or an interior element being adapted to be connected to a selected one of a plurality of second elements of different configuration to form a ventilation module, said module defining a ventilation passage therethrough and being adapted to be disposed between a

window or door and a surrounding frame, wherein the ventilation elements forming the ventilation module can be preselected to match the configuration of the window or door.

3. A system according to either one of the preceding claims comprising a connecting element adapted to engage securing members of the ventilation elements whereby to connect elements together to form a ventilation module.

4. A system according to Claim 3 wherein the connecting elements fit between the securing member to keep the ventilation elements out of contact with one another.

5. A system according to Claim 4 wherein the connecting elements provide insulation means forming a thermal break between the ventilation elements.

6. A system according to either one of Claims 1 and 2 wherein the ventilation elements comprise formations adapted to engage one another whereby to connect ventilation elements together to provide a ventilation module.

7. A system according to Claim 6 wherein the formations comprise projections on one ventilation element adapted to be slidably received in complementary recesses in a co-operating ventilation element whereby to connect the elements.

8. A system according to either one of Claims 6 and 7 wherein at least the portion of a first ventilation exterior element which engages a second interior ventilation element provides insulation means by which, in use, the interior element is thermally insulated from conditions outside a building in which the system is installed.

9. A system according to Claim 8 wherein the first ventilation element is formed from an insulating plastics material.

10. A system according to any one of the preceding claims comprising a control arrangement for controlling airflow through the ventilation module.

11. A system according to Claim 10 wherein the control arrangement comprises a pivotally mounted control flap and control means by which the flap can be pivoted between first and second positions whereby to open or close a ventilation aperture.



12. A ventilation system constructed, adapted and arranged to operate substantially as hereinbefore described with reference to Figures 1 to 12 of the accompanying drawings.

13. A ventilation system constructed, adapted and arranged to operate substantially as hereinbefore described with reference to Figures 13 to 15 of the accompanying drawings.

14. A ventilation element for use in a system according to any one of the preceding claims comprising a pair of securing formations extending lengthwise of the element and positioned at opposite sides of a lengthwise extending ventilation aperture.

15. An element according to Claim 14 comprising a slideway adapted to receive a slide member of a control arrangement adapted to move a member by which air flow through the ventilation aperture can be controlled.

16. An element according to Claim 15 wherein the slideway comprises opposed channels provided on the securing formations.