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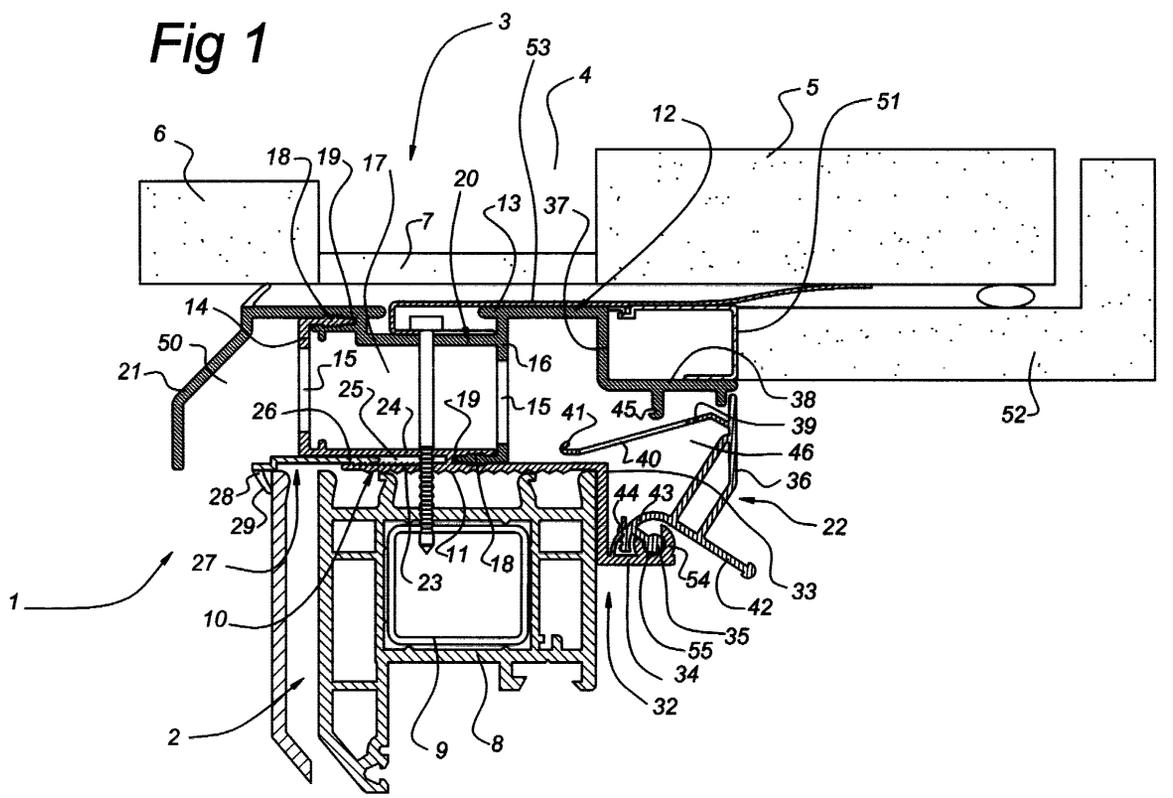
(54) VENTILATION DEVICE WITH FLAP AND INSECT GRATING

(57) A ventilation device in a panel, such as a window, door and the like, for ventilating an area located behind it, comprises an elongated housing having a ventilation passage which extends between the outside of the housing and the inside of the housing facing towards the area to be ventilated, as well as a flap located on the inside of the housing for exposing or closing the ventilation passage. The flap supports a grating which, at least when the flap is in the open position, extends over the ventilation passage.

Fig 1



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Description

[0001] The invention relates to a ventilation device in a panel, such as a window, door and the like, for ventilating an area located behind it, comprising an elongated housing having a ventilation passage which extends between the outside of the housing and the inside of the housing facing towards the area to be ventilated, as well as a flap located on the inside of the housing for exposing or closing the ventilation passage.

[0002] Such a ventilation device is known. When the flap is open outside air can flow into the area concerned via the ventilation passage. However, insects, dirt and the like can be entrained in the outside air. This is undesirable and to counteract such aspects a grating can be present in the ventilation passage.

[0003] The known gratings are located in a position which is not readily accessible, in the middle of the ventilation passage. Consequently, they are difficult to remove, which has the disadvantage that cleaning or replacement is virtually impossible.

[0004] The aim of the invention is to provide a ventilation device which does not have this disadvantage. This aim is achieved in that the flap supports a grating which, at least when the flap is in the open position, extends over the ventilation passage.

[0005] Since the grating is now located in a more readily accessible position, that is to say on the flap which itself also has to remain within the range of operation, it can be more easily cleaned or replaced. Furthermore, such an embodiment can result in a lower cost price because the manufacture of the ventilation device is simplified.

[0006] The flap can be constructed in various ways. According to a first variant, the grating can be essentially straight, in the cross-section of the flap, the grating having a free end which, when the flap is in the open position, is located close to or in contact with the wall of the ventilation passage, which wall is located opposite the wall on which the flap is mounted. With this arrangement the grating covers the ventilation passage completely when the flap is in the virtually fully open position. The gap between the grating and the said wall is no greater than 2 to 3 mm to ensure that insects are kept out as is desired.

[0007] If it is desired to ensure the exclusion effect of the grating in any position of the flap it is possible, according to a second variant, for the grating to be essentially curved in the cross-section of the flap. With this arrangement, the grating is close to or in contact with the wall of the ventilation passage which is opposite the wall on which the flap is mounted essentially in any position of the flap.

[0008] The grating is now able always virtually to abut the opposing wall, irrespective of the position of the flap, so that the ventilation passage remains covered by the grating.

[0009] The free end of the grating can have a first stop and the opposing wall can have been provided with a second stop, which stops are in contact with one another when the flap is in the open position.

[0010] Preferably, the grating is so flexible that the stops can be moved over one another when a transverse force is exerted on the grating. In this way the flap can be swung outwards and then be removed from the housing. The grating can then easily be cleaned or replaced.

[0011] The flap has a hinge edge which is accommodated in a correspondingly shaped groove which has been made in a wall of the ventilation passage, which groove is essentially located opposite the stop on the opposing wall.

[0012] The hinge edge is a beaded edge, which is joined by means of a dam to an essentially concentric annular component extending around it some distance away, which annular component interacts with a correspondingly shaped, concentric annular component on the wall of the ventilation passage where the groove is located, the annular components having elevations and recesses which engage in one another to determine the positions of the flap. The grating can have been constructed as an integral flange on the flap. The flange can in turn itself support integral grating components or have holes which are covered by a separate grating layer.

[0013] The invention also relates to a flap for the ventilation device described above. Said flap has a grating on its surface which will face towards the ventilation passage when the flap is in the assembled position.

[0014] The invention will be explained in more detail below with reference to the illustrative embodiments shown in the figures.

[0015] Figure 1 shows a cross-sectional view of the ventilation device according to the invention in the assembled position, the flap being closed.

[0016] Figure 2 shows a partial view of the ventilation device with the flap open.

[0017] Figure 3 shows a detail.

[0018] Figure 4 shows a variant.

[0019] Figures 5 - 7 show various stages during removal of the flap from a further variant.

[0020] The ventilation device 1 shown in Figure 1 is positioned between a frame 2 and the adjoining construction of a wall 3. Part of the cavity 4 of this wall is shown, with the adjoining ceiling 5 and the part of the external cladding 6. The cavity 4 is closed off by means of a strip 7.

[0021] The frame 2 comprises a plastic section 8, known per se, with a metal tube 9 accommodated therein.

[0022] The ventilation device 1 according to the invention comprises a bottom section 10, the bottom wall 11 of which bears on the frame 2. The ventilation device 1 further comprises a top section 12, the top wall 13 of which is fixed to the ceiling 5 by means of bracket 53.

[0023] The bottom section 10 has an upright dam 14 with coarse perforation 15 and the top section 12 has a

dam 16 which extends downwards and likewise has a coarse perforation 15. Said perforations 15 leave a ventilation passage 17 free between the opening 50 located on the outside and opening 46 of the ventilation device 1, which opening 46 is located on the inside.

[0024] Since the dams 14, 16 project freely they are readily accessible with a punching tool and openings 15 can be punched therein without many problems.

[0025] The two dams 14, 16 each have a moulded-on strip 18 at their ends, which strip 18 is pushed into and clamped in a correspondingly positioned foot 19 of each of the sections 10, 12. The sections 10, 12 fixed to one another in this way together define the housing 20 of the ventilation device 1, which housing 20 has a protective cover 21 on the outside and on the inside can be closed by means of a flap 22 to be described in more detail.

[0026] The bottom section 10 has two parallel wall portions 23, 24, which enclose a slot 25 in which the limb 26 of the outermost stop, indicated in its entirety by 27, is slidably accommodated. Said outermost stop 27 furthermore has a stop edge 28 which has a moulded-on, flexible sealing strip 29.

[0027] As shown in the detail in Figure 3, both the limb 26 and the wall portions 23, 24 have asymmetric serrations 30, 31. These serrations allow the limb 26 to be pushed inwards into the slot 25 but block, or counteract, the opposite movement.

[0028] As shown in Figure 1, the outermost stop 27 can be pushed until it comes into contact with the outer surface of the frame 2.

[0029] The bottom section 10 also has an innermost stop, indicated in its entirety by 32, which has a downward-pointing strip 33 to which a lowered wall portion 34 of the bottom wall 11 is fixed. This lowered edge portion 34 bears the hinge 35 of the flap body 36 of the flap 22.

[0030] Correspondingly, the top wall 20 of the top section 12 has a strip 37 to which a lowered wall portion 38 is attached. This lowered wall portion 38 forms the flap seat for the flap body 36. The two strips 33, 37 and the lowered wall portions 34, 38 form a ventilation passage diverted downwards, the capacity of which must be adequate for ventilation of the area behind it.

[0031] As a consequence of this lowering in the ventilation passage, the hinge 35 of the flap 22 can be positioned so low that when the flap is in the open position it guides the air stream upwards, in the direction of the ceiling 5, as shown in Figure 2. The advantage of this embodiment is that the incoming air is not experienced as a troublesome draught, which is beneficial for comfort.

[0032] An infill section 51 can be fitted above the lowered wall portion 38 if the space concerned is not used. A finishing strip 52, ceiling board and walls can be fitted in contact with said infill section 51. As an alternative the ceiling board can also be pushed directly into said space above the wall portion 38.

[0033] According to the invention a flange 39, which forms the insect grating with passages 40, is formed on the flap body 36 of the flap 22. When the flap is in the open position the free edge 41 of this flange 39 is in contact with the ridge 45 on the lowered wall portion 38 of the top section 12 in such a way that insects are effectively held back when the flap is in the fully open position.

[0034] The free edge 41 and the ridge 45 each have a hook so that the fully open position of the flap 22 is clearly defined.

[0035] In connection with removal of the flap, the flange 39 can be pressed downwards, such that the hooks move over one another and the flap 40 can be lifted from the hinge.

[0036] The flap body 36 also has a ridge 42 by which the flap can be gripped and opened and closed. The flap body 36 also has a locking component 43 that can be made to interact with the locking component 44 of the bottom section 11, such that the flap can be held in its closed position.

[0037] In the variant in Figure 4 the flap 49 is provided with a partially curved flange 48 which is closely adjacent to the ridge 46 in every position of the flap 49. The origin of the associated radius of curvature is in the hinge 35. In this way it is always guaranteed that insects are effectively kept out.

[0038] The variant in Figures 5 - 7 has a flap 61 with a hook 58 and a notch 60 for determining the open and the closed position, respectively. In addition, a separate auxiliary section or auxiliary section piece 56 is snapped into the lowered edge portion 34. This auxiliary section or auxiliary section piece 56 has two lips 57 and 59 which can be made to interact with the hook 58 and the notch 60, respectively.

[0039] The grating 62 is detachably fitted to the flap 61 by means of the snap-fit connector 63.

[0040] The grating can contain a pollen filter or an active charcoal filter. The latter is suitable for retaining certain gases, such as xylene, constituents of exhaust gases, etc.

[0041] Figures 5 - 7 show the various stages when removing the flap 61. As shown in Figure 5, the grating 62 is, for this purpose, first pushed in a little, after which the hinge 35 can be snapped free.

Claims

1. Ventilation device (1) in a panel, such as a window, door or between a wall (3) and a frame (2) and the like, for ventilating an area located behind it, comprising an elongated housing having a ventilation passage (17) which extends between the outside (50) of the housing and the inside (46) of the housing facing towards the area to be ventilated, as well as a flap (22) located on the inside (46) of the housing for exposing or closing the ventilation passage (17), **characterised in that** the flap (22) supports a

grating (40, 48) which, at least when the flap (22) is in the open position, extends over the ventilation passage (17).

2. Ventilation device according to Claim 1, wherein the grating (40) is essentially straight, in the cross-section of the flap (22), which grating (40) has a free end (41) which, when the flap (22) is in the open position, is located close to or in contact with the wall (38) of the ventilation passage (17), which wall (38) is located opposite the wall (34) on which the flap (22) is mounted.

3. Ventilation device according to Claim 1, wherein the grating (48) is essentially curved in the cross-section of the flap (22), which grating (48) is close to or in contact with the wall (38) of the ventilation passage (17) in any position of the flap (22), which wall (38) is located opposite the wall (34) on which the flap (22) is mounted essentially.

4. Ventilation device according to Claim 2 or 3, wherein the free end (41) of the grating has a first stop and the opposing wall (38) is provided with a second stop (45), which stops (41, 45) are in contact with one another when the flap (22) is in the open position.

5. Ventilation device according to Claim 4, wherein the grating (40, 48) is so flexible that the stops (41, 45) can be moved over one another when a transverse force is exerted on the grating (40, 48).

6. Ventilation device according to Claim 4 or 5, wherein the flap (22) has a hinge edge (35) which is accommodated in a correspondingly shaped groove (54) which has been made in a wall (34) of the ventilation passage (17), which groove (54) is essentially located opposite the stop (45) on the opposing wall (38).

7. Ventilation device according to Claim 6, wherein the hinge edge (35) is a beaded edge, which is joined by means of a dam (55) to an essentially concentric annular component (43) extending around it some distance away, which annular component (43) interacts with a correspondingly shaped, concentric annular component (44) on the wall (34) of the ventilation passage (17) where the slot (54) is located.

8. Ventilation device according to Claim 7, wherein the annular components (43, 44) have elevations and recesses which engage in one another to determine the, optionally continuously variable, intermediate positions of the flap (21).

9. Ventilation device according to Claim 6, wherein a snap-fitted auxiliary section or auxiliary section piece (56) is provided which has a lip (57), which lip (57) is hooked under a hook (58) mounted on a flap (61) when the flap (61) is in the closed position.

10. Ventilation device according to Claim 9, wherein the auxiliary section or auxiliary section piece (56) has a second lip (59) which is snapped into a notch (60) in the flap (61) when the flap is in the open position.

11. Ventilation device according to Claim 3, 6, 7, 8, 9 or 10, wherein the grating (48) is concentric with respect to the hinge edge (35).

12. Ventilation device according to one of the preceding claims, wherein the grating (40, 48) of the flap (22) has a flange (39).

13. Ventilation device according to Claim 12, wherein the flange (39) has integral grating components.

14. Ventilation device according to Claim 12 or 13, wherein the flange (39) has openings which are covered by a grating layer.

15. Ventilation device according to Claim 14, wherein the grating layer is a pollen filter or an active charcoal filter.

16. Flap (22) for a ventilation device (1) according to one of the preceding claims, which ventilation device (1) comprises an elongated housing having a ventilation passage (17) which extends between the outside (50) and the inside (46) of the housing, which flap (22) comprises an elongated section having a hinge component (35) that can be mounted on a correspondingly shaped hinge component (54) of the housing, **characterised in that** the flap (22) has a grating (40, 48) on that surface thereof which faces towards the ventilation passage (17).

Fig 1

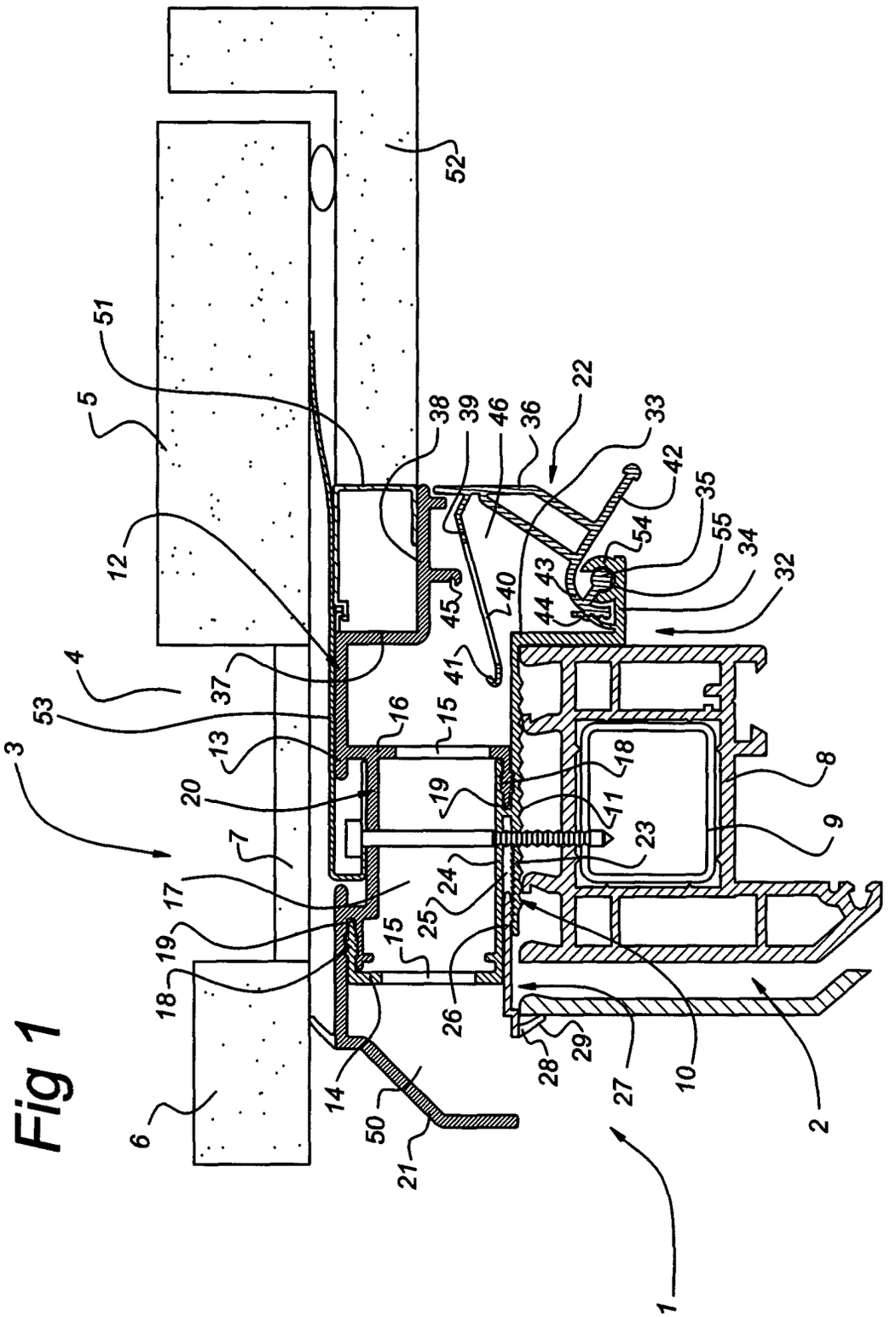
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Fig 2

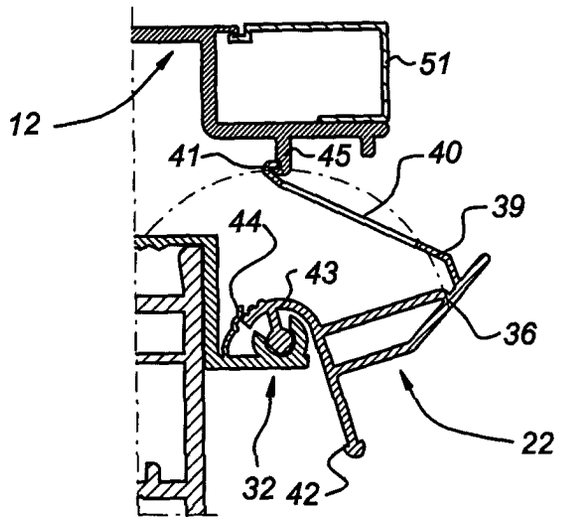


Fig 3

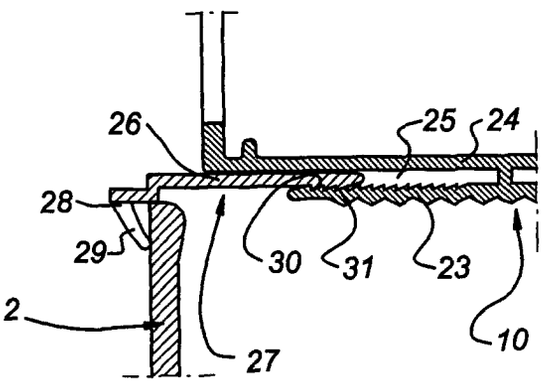


Fig 4

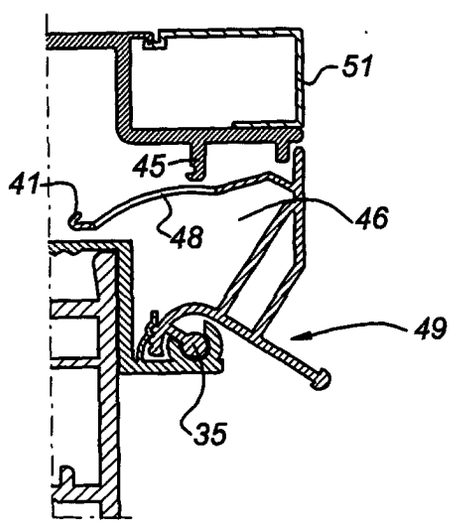


Fig.5

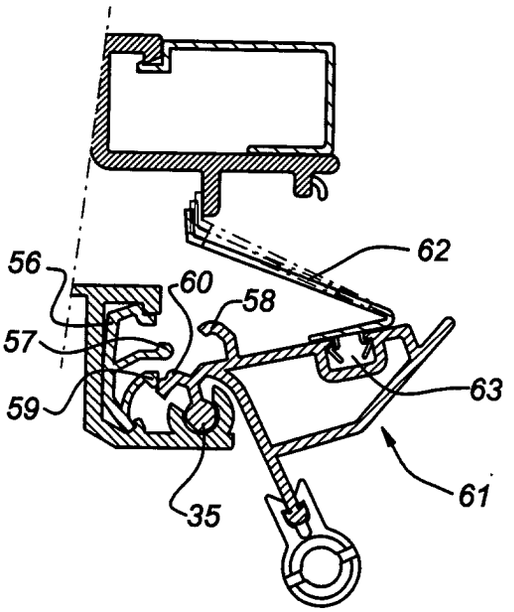


Fig.6

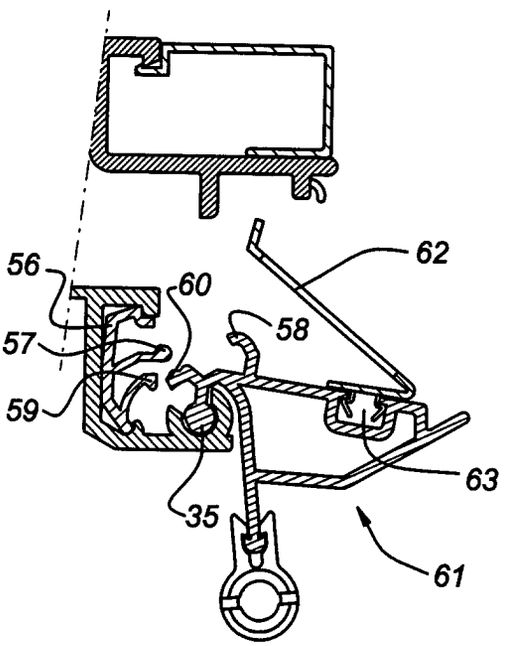
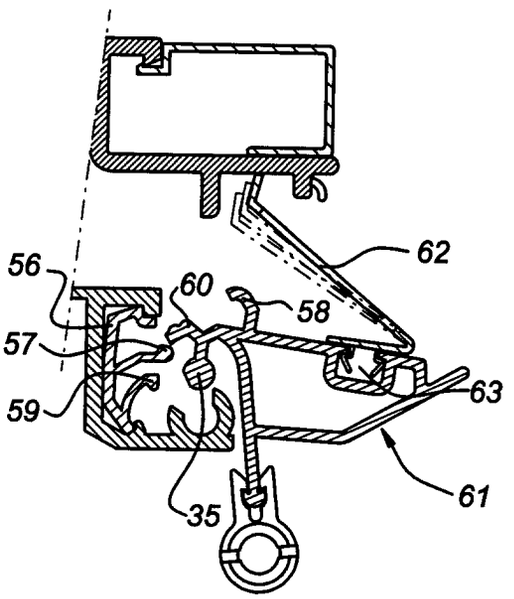


Fig.7



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EUROPEAN SEARCH REPORT

Application Number
EP 00 20 0966

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 4 186 656 A (WEBER RONALD J) 5 February 1980 (1980-02-05) * column 5, line 29 - line 52; figures *	1,16	E06B7/06 E06B7/10
A	US 1 977 206 A (RAW) 16 October 1934 (1934-10-16) * page 1, line 79 - line 87; figures *	1,16	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B
F24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 August 2000	Fordham, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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01-08-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 1977206 A	16-10-1934	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82