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(54) **WINDOW WITH A SCREENING ARRANGEMENT AND METHOD OF PROVIDING VENTILATION IN SUCH A WINDOW**

FENSTER MIT EINER ABSCHIRMUNGSANORDNUNG UND VERFAHREN ZUR BEREITSTELLUNG VON BELÜFTUNG IN SOLCH EINEM FENSTER

FENÊTRE AVEC UN DISPOSITIF DE CRIBLAGE ET UN PROCÉDÉ PERMETTANT DE FOURNIR UNE VENTILATION DANS UNE TELLE FENÊTRE

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Description

[0001] The present invention relates to a window according to the preamble of claim 1. Such a window is known from US patent no. 1,997,206 A. The invention furthermore relates to a method for providing ventilation in a window according to claim 15. It is generally known from prior art to provide windows with a ventilating position, in order to provide easy ventilation of a room without the need to fully open the window. In the ventilating position the windows thus have a ventilating aperture, through which not only air can flow, but also objects, such as insects, may enter. It is in generally known from prior art to block the entry of objects through the ventilating aperture by providing the windows with a screening arrangement.

[0002] Such screening arrangements are generally provided in the form of a screening curtain, netting or similar attached to either the frame or sash, or, in an activated screening position, to both the frame and sash, so that they can be manually activated by a user handling the screening arrangement after opening of the window or is automatically activated throughout the entire opening movement of the window, i.e. following the path of opening of the window so as to cover the full aperture provided in an open position of the window.

[0003] A screening arrangement of this kind is known from Applicant's application no. WO2005/005762 A1, which discloses a pivotal roof window having a screening arrangement arranged to provide screening of the top and/or bottom part of the window exclusively. The screening arrangement is moved automatically from an inactive position corresponding to the closed position of the window to an active position corresponding to the ventilating position, and from the active position to the inactive position when the window is brought from its ventilating position to its closed position. The screening arrangement is for example formed as an element hanging freely form the top and/or bottom member or as a curtain being connected to the top and bottom member of the frame and sash. Such screening arrangements are thus useful in the sense that they block out incoming objects in the top and/or bottom of the window effectively.

[0004] However, such screening arrangements must however be formed as an element hanging freely from either the frame and/or sash or being connected to both the frame and sash in order to cover at least the bottom aperture in the ventilating position, which may create an unwanted direct visible and to some degree aesthetically unpleasing screening arrangement.

[0005] Other solutions disclosed in the prior art are curtains or insect nets screening off the entire aperture between the sash and frame in the ventilating as well as open position of the window, as for example disclosed in US patent no. 2311413. This document describes a window, having a screening arrangement for screening off the aperture between the sash and frame in the open position of the window. Thus, the screening arrangement disclosed does not only cover a small aperture such as the aperture arising in the ventilating position of a window, but as the sash turns outwards when opening the window, the screening arrangement is activated so that it covers the entire opening angle between the frame and sash by a single insect net screening the entire opening angle. That is, the screening arrangement has the form of a curtain covering the aperture between the sides, top and bottom members of the window in the open position.

[0006] Still further examples of prior art windows with screening arrangements are shown in US patent no. 4,969,291, DE 42 18 088 C1, WO 95/34739 A1 and DE 20 2008 006531 U1.

[0007] This solution for screening off especially the sides of the window is useful in the sense that it blocks out incoming objects such as insects, while providing a ventilating passage of the window both in an open position and a ventilating position of the window. However, when provided in a roof window, generally designed especially to facilitate easy window cleaning as the sash comprising the pane can be turned essentially 180° to allow cleaning of the outside surface of the pane from inside the building, with such screening arrangements you must remember that they have to be decoupled from the frame and/or sash in order to make the 180° rotation.

[0008] Furthermore, such arrangements limit the possibility of using the window as an exit, as in for instance fires, where the screening device has to be manually removed first, in order to create an unblocked escape opening.

[0009] Moreover, the large screening arrangement constituted by the prior art can be aesthetically unpleasing, as the screening arrangements are blocking at least portions of the view through the window. In some examples of the prior art, the screening arrangement is clearly visible, when the window is closed, which makes these solutions less advantageous.

[0010] With this background it is the object of the present invention to provide a window with a screening arrangement arranged to cover at least one ventilating aperture in a ventilating position of the window for blocking out incoming objects, such as insects, while maintaining the unhindered view and operation of the window, and which furthermore maintains an aesthetic appearance of the window.

[0011] In a first aspect this and further objects are met by a window according to claim 1. The screening arrangement comprises at least one screening element incorporated in at least one member of said frame and/or sash, said screening element being arranged so as to form a ventilating passage, wherein said screening element automatically spans the ventilating aperture between the sash and frame plane in the ventilating position, while being inconspicuous in both the open and the ventilating position of the window.

[0012] By this screening arrangement, a screening element having a ventilating passage, which is active in all positions of a window, is provided for. That is, the screen-

ing arrangement needs not be activated during opening and/or after opening of the window. The screening arrangement is simply an incorporated part of at least one member of the frame and/or sash so that it is active independently of for instance an opening movement of the window and is especially functionally active in the ventilating position of the window. By the term "incorporated" should be understood that the screening arrangement forms part of the frame or sash member in question, and may for instance be an integrated part of at least one of the sash and/or frame members, so that the material from which the members are made may constitute the screening element having the ventilating passage or even a part of the members are constituted by the screening element. One advantage is thus that there is simply no part of the screening arrangement which extends a distance covering neither more nor less than the exact ventilating aperture between the sash and frame in the ventilating position of the window. Furthermore, the screening arrangement is arranged to be part of either the frame or sash, so that by positioning the window in the ventilating position, the screening element automatically provides screening of the ventilating aperture. Basically, the screening arrangement provides for the possibility of automatic screening by the screening element incorporated into a frame or sash member while being placed in a way so it appears hidden or inconspicuous for the user's eye in both the open and ventilating position of the window. Further, the at least one screening element is incorporated exclusively in at least one of the side frame members of the window so as to form at least one ventilating passage in at least one of the side frame members, preferably one screening element in each side frame member. By providing the screening arrangement in one of or both side frame members, it is made sure that ventilation through the sides of the window is achieved while blocking out incoming objects, such as insects. Furthermore, with this solution the window may be opened in the ventilating position even during rain fall, and still provide airflow into the room.

[0013] For providing the necessary ventilating suitable for a window, the ventilating passage may extend at least partly along the screening element forming a ventilating passage in only a part of the at least one side frame member in which the screening arrangement is incorporated.

[0014] In another embodiment of the invention the ventilating passage is arranged in the bottom part of the at least one side frame member and extends in a pre-defined distance in the longitudinal direction along the side frame member, the ventilating passage preferably extending half the length of said side frame member, more preferably extending a third of the length of said side frame member. By providing the ventilating passage in the bottom part of the side frame member it is made sure that the ventilating area is arranged where the angle of the ventilating aperture is largest, so that more air flow may be directed into the room.

[0015] In a further embodiment the screening element comprising the ventilating passage is a detachable screening element configured to be connected to the at least one frame or sash member in a mounted condition thereof. Providing the screening element as a detachable element has the advantages that the screening element may be customized for one or more particularly sized windows, so that they may be installed in different sized windows.

[0016] The screening element is in one presently preferred embodiment in the form of an L-shape, having a first flange and a second flange, the second flange extending perpendicularly to the first flange, wherein at least one of the first and/or second flanges comprises said ventilating passage. With this geometrical form of the screening element, the screening element is suitable for installation in a traditional frame and/or sash structure. The L-shape of the screening element makes it possible to create a cavity within a frame and/or sash member, through which cavity air may enter and exit so as to provide the ventilating passage.

[0017] Preferably, the first flange is arranged to abut said side sash member in a mounted condition of the screening element, such that the second flange extends perpendicularly thereto in a direction towards an exterior side of said window to form said ventilating passage of at least a part of said side frame member.

[0018] In a further development of the presently preferred embodiment, the L-shaped screening element is provided as a thin-walled profile element of a material such as metal, plastic or composite. In addition to contributing to material and weight savings of the overall window, the manufacture of such an L-shaped thin-walled profile element is easy and able to be carried out by established technical means such as bending, moulding or extrusion in various sizes and shapes, and in which the provision of ventilating passages may easily be incorporated into the manufacturing process according to the specific field of application of the window.

[0019] It should however be noted that the screening element could take any other shape suitable for installation or incorporation in a frame and/or sash structure. For instance, in alternative embodiments, the screening element is in the form of a U-shape and/or having a rectangular profile shape, not to be ruling out other suitable geometrical shapes that would fit to standard window frame and sash members, or including parts or portions that are movable relative to each other.

[0020] In a preferred embodiment the ventilating passage is formed as a plurality of perforations in the material of said screening element. This makes it easy to manufacture and provide at least a blocking mechanism for entry of for example insects. The perforations may be formed as a netting, constituting an integral part of the screening element, or as a separate unit connected to the remaining parts of the screening element.

[0021] In a second aspect of the invention according to claim 15, a method for providing ventilation in a window

is devised, comprising the steps of
providing a screening arrangement comprising a screening element,
incorporating the screening element in at least one of said side frame members of said window so as to form at least one ventilation passage (22) in at least one of said frame members (8,10) to extend between the sash plane and the frame plane, and
opening the window by moving the sash to a ventilating position in which the sash plane forms an angle with the frame plane.

[0022] The advantages of the first aspect of the present invention as well as the further embodiments presented above equally apply to the second aspect of the invention.

[0023] Accordingly, reference is made thereto. In the following the invention will be described in further details by means of examples of embodiments with reference to the schematic drawings, in which

Fig. 1 is a perspective side view of a window positioned in the ventilating position and having a ventilating aperture,
Fig. 2 is a perspective side view of a window corresponding to the window of Fig. 1, having a screening arrangement according to an embodiment of the window according to the invention,
Fig. 3 is a perspective side view corresponding to Fig. 2, illustrating the screening arrangement in more detail,
Fig. 4 is perspective view of the window of Fig. 2, illustrating a top part of the window comprising the screening arrangement,
Fig. 5 is a perspective view of the window of Fig. 4, where parts of the window have been removed to show more clearly the screening arrangement,
Fig. 6 is a perspective top view of the window of Fig. 4,
Fig. 7 is a perspective top view of Fig. 5,
Fig. 8 and 9 are perspective side views of the window in the embodiment of Fig. 2 illustrating the screening element in more detail and where the window in Fig. 9 is in a closed position,
Figs 10 and 11 are perspective views of the screening element according to an embodiment of the window according to the invention, and
Fig. 12 is a schematic perspective view of a screening element of an alternative embodiment of the invention.

[0024] Referring initially to Figs 1 to 3 a window 1 having improved ventilating properties is shown. Generally as shown in the Figures, the window 1 comprises a frame 2 and a sash 3, and a hinge connection (not shown) providing a hinge axis allowing the sash 3 to rotate about the hinge axis. The frame 2 has a bottom member 4, a top member 6, and two side members 8 and 10. Correspondingly, the sash 3 is provided with a bottom member 5, a top member 7, and two side members 9 and 11.

[0025] In the embodiment shown, the window is a top-hung window having a position of the hinge axis near the top members 6; 7 of the frame 2 and sash 3, but the inventive concept is applicable also to centre-hung or traditional pivot windows having a hinge axis provided near a position halfway between the top and bottom members, just as a position of the hinge axis between the top and centre of the window is also possible. The hinge axis is thus substantially parallel with the top members 6; 7 of the frame 2 and sash 3, respectively. The window is adapted to be moved between at least three positions, namely a first closed position, where the plane formed by the sash 3 is substantially parallel with the plane formed by the frame 2, a second and ventilating position, where the plane of the sash 3 forms a predetermined angle with the plane of the frame, and a third and open position, where the sash plane forms an angle, larger than the angle in the ventilating position, with the frame plane.

[0026] As illustrated in Fig. 1, the sash 3 of the window 1, when in the ventilating position, forms a pre-defined angle with the frame plane and a ventilating aperture 20 is formed in the circumferential of the frame 2 and sash 3. The ventilating aperture 20 is at least partly covered by a screening arrangement, as illustrated in Fig. 2, where the screening arrangement comprises a screening element 21 incorporated in a member of the frame 2. In Fig. 2 it is only shown how the screening arrangement is incorporated in the frame structure; however it should be noticed that the screening arrangement could be arranged in the sash in a similar manner. In the embodiment shown, a screening element is incorporated in each side member 8, 10 of the frame 2, but configurations having a screening element in only one side are conceivable as well, just as a screening element may be incorporated in the bottom member 4 of the frame 2 as well.

[0027] The screening element 21 is as shown in Fig. 2 incorporated in the frame so as to form a ventilating passage 22, and wherein the screening element 21 automatically spans the ventilating aperture 20 between the planes of the sash 3 and frame 2. It is a central feature of the inventive window that the screening arrangement is arranged in the frame 2, so that it is inconspicuous in both the open and ventilating position of the window 1. The term "inconspicuous" is intended to incorporate that the screening arrangement is placed in a way so it appears hidden or inconspicuous for the user's eye in both the open and ventilating position of the window. Furthermore, it is noted that the inconspicuous quality inherently excludes hindrance of the physical access through the opening. The inconspicuous characteristics of a first embodiment will be described in further detail in the following.

[0028] As illustrated in more detail in Figs 1, 2 and 3 the ventilating aperture 20 is covered by a screening arrangement, comprising the screening element 21, which is incorporated into the side members 8 and 10 of the frame. In Fig 1, the right side, i.e. the side of the window

to the right side according to the orientation of the drawings, shows the ventilating aperture 20 without the screening element 21 for reasons of clarity. In the opposite, left side of the window in Fig. 1 the ventilating aperture 20 is shown covered by the screening element 21. When the window 1 is moved to the position shown in Fig. 1, i.e. the ventilating position, the ventilating passage 22 is formed through the use of the screening element 21 incorporated in the side frame member 8, 10. In this way the ventilating aperture 20 of Fig. 1 is covered by the screening element 21 as shown in Fig. 2, so that air can flow through the screening element 21 while closing off the ventilating aperture 20 between the sash 3 and frame 2. Insects and other objects trying to enter a room of a building from the outside are thus blocked out, since only air may flow through the ventilating passage 22 of the screening element 21.

[0029] Referring now to the closed position of the window as illustrated in Fig. 9, the screening element 21 is not visible from an interior side of the window, i.e. the screening element is not visible when a person stands in a room and looks at the window, as the side members 9, 11 of the sash cover the screening arrangement in the closed position.

[0030] When the window is moved to the open position, the screening element or elements are also inconspicuous, since each screening element is incorporated in the members of the frame or sash, in the embodiment shown in the side members 8, 10 of the frame. By being incorporated into the side members of the frame 2, the screening elements 21 do not prevent easy opening of the window to an open position or disturb the functions of the open window, including using this as an emergency exit. The function of the ventilating passage 22 created by the ventilating arrangement, comprising the screening element 21 is especially useful, when the window 1 is in the predetermined ventilating position, where it covers the ventilating aperture and thus blocks the entry of among objects, such as insects or similar.

[0031] Even though not illustrated in the Figures, the ventilating passage could be formed by incorporating the screening element in the side members of the sash instead of the side members of the frame, possibly in combination. Furthermore, it would be possible to provide a similar solution of the previously described, wherein the ventilating passage 22 is formed by incorporating the screening element 21 in at least one of the bottom members of the frame and/or sash.

[0032] The screening element 21, regardless of the member it is incorporated in, may extend the whole member it is incorporated in or a portion of the member, in order to form the ventilating passage 22. In the embodiment shown in Fig. 3, the ventilating passage 22 is formed to extend only a portion of the side members 8, 10 of the frame, as the screening element 21 is only perforated in a portion of its length. The length of extension of the ventilating passage 22 in the side members 8, 10 is chosen in accordance with the length of the screening element 21, which in turn is dependent on the desired amount of ventilation.

[0033] In the embodiment shown in Fig. 3, the ventilating passage 22 of the screening element 21 is incorporated in the bottom portion of the side members 8, 10 of the frame. This is a desired place to incorporate the ventilating passage 22 of the screening element 21 for top-hung windows, but in other cases, such as a centre-hung window, an incorporation of the screening element 21 in the top portion of the side members 8, 10 of the frame is just as desirable. By positioning the ventilating passage or passages near the bottom and/or top of the frame side members, optimal ventilating conditions are achieved, as opening the sash to a small angle presents a sufficient ventilating passage at a distance from the hinge axis.

[0034] For incorporation in other members than the side members of the frame, the bottom portions of the chosen members are desired places to incorporate the screening element for a top-hung window, and either the bottom or top portions are desired for non top-hung windows, such as pivotal or centre-hung windows. That is when using the screening element in centre-hung windows it may be desirable to block out entry in both the top and bottom apertures present in a ventilating position of the window.

[0035] In the specific embodiment shown, the screening element 21 is a detachable screening element 21 and the configuration of the screening element 21 is illustrated in more detail in Fig. 10 and 11. The screening element as being detachable is configured to be connected to the at least one frame member 8, 10 in a mounted condition thereof. This makes the screening element 21 suitable for retrofitting, so that it may be produced in different sizes for fitting into different sized windows.

[0036] For attaching the screening element 21 to the at least one side member 8, 10 of the frame, engagement means 40 are included in either the side member 8, 10, the bottom member 4 or in the screening element 21 in order to connect with the screening element 21 in a second end 26 of the screening element 21. The engagement means 40 of the bottom frame member 4 is, as illustrated in Fig. 9 configured as a groove in an engagement part 41 of the bottom frame member 4.

[0037] The screening element 21 is in Figs 10 and 11, illustrated as a screening element having the form of an L-shape, with a first flange 23 and a second flange 24, the second flange extending substantially perpendicular to the first flange 23, wherein at least one of the first and/or second flanges 23, 24 comprises the ventilating passage 22. The L-shaped screening element 21 is as previous described arranged to be incorporated in at least one of any of the frame and/or sash members 4, 5, 6, 7, 8, 9, 10, 11 in a mounted condition, and extends either over a portion of the member to which it is incorporated in or in the entire length of the member in question.

[0038] As illustrated in Fig. 6, the screening element

21 is mounted in the side member of the window, such that the first flange 23 in the mounted condition is arranged to abut the side sash member 9 such that the second flange 24 extends substantially perpendicular to the first flange 23 in a direction towards an exterior side of the window 1 so as to form the ventilating passage 22 of at least a part of the side frame member 8, when mounted in the window.

[0039] Furthermore as illustrated, especially in Fig. 7, the screening element 21 is arranged to cover a portion substantially extending the length of the side member 8, 10 of the frame. Thus, as the detachable screening element should be mounted in the frame member, the screening element is furthermore provided with a longitudinally extending slot 27 at a first end 25 of the screening element. The longitudinally extending slot 27 is as illustrated in more detail in Figs 10 and 11 provided in the surface of the second flange 24. The slot 27 is intended to engage with a control arrangement 30 of the window, the control arrangement having the function of provided a force for opening of the window. Furthermore the first end 25 of the screening element 21 is intended to connect with the top frame member 6 of the window so that the screening element when provided as a detachable element is attached to the side frame member 8, 10 in both ends through engagement means 40 of the bottom part of the window and abutting a top part of the frame, while being connected to a second groove 42 in the top part of the side frame member as seen in Fig. 7.

[0040] In the presently preferred embodiment described in the above, the L-shaped screening element 21 is provided as a thin-walled profile element of a material such as metal, plastic or composite. The thickness of the walls may for instance lie in the interval 0.5 to 10 mm, more preferably 1 to 8 mm, and still more preferably 2-5 mm. The manufacture of such an L-shaped thin-walled profile element lies well within the skills of the person skilled in the art, and will typically include technical means such as bending, moulding or extrusion in various sizes and shapes. The provision of ventilating passages may easily be incorporated into the manufacturing process according to the specific field of application of the window.

[0041] It should be noted that the invention is not limited to a screening element having an L-shape, but that any other suitable geometrical shape could be used, such that the screening element could be in the form of a U-shape, profile having a rectangular shape or a rounded profile shape.

[0042] As illustrated in the Figures in general, the ventilation passage 22 is formed as a plurality of perforations 22a, 22b in the material of the screening element 21 opening into a cavity 28 formed in the screening element and hence in turn of the frame member in which the screening element is incorporated. This is especially shown in Fig. 10 and 11, where the perforations in the lower end 26 of the L-shaped profile constitute the ventilating passage 22 of the screening element 21.

[0043] In the embodiment shown and described in the above, the screening element is shown as a fixed element, i.e. with all portions remaining in the same position in all situations. It is conceivable, however, that the screening element may comprise a number of parts or portions which are movable relative to each other, for instance in dependence on the movement of the sash.

[0044] In the alternative embodiment shown in Fig. 12, the screening element 21 comprises a substantially compact and resilient element 121 provided with a plurality of through-going canals 122a. As the element 121 is resilient, it is able to adapt its shape in dependence on the movement of the sash, i.e. is able to be compressed in the closed or only partially open position, and re-assume its relaxed condition when the sash is open. The material and the size and distribution of the canals 122a are advantageously chosen such that the canals 122a are at least partially closed when the element 121 is compressed and open when the element 121 is relaxed.

Claims

1. A window (1) comprising a frame (2) and a sash (3), each having a top member (6; 7), a bottom member (4; 5) and two side members (8, 10; 9, 11), each side member of the frame and sash defining a longitudinal direction between the top and bottom members, and the members all together defining a frame and a sash plane, respectively,
said sash (3) being connected to the frame (2) by means of at least one hinge connection providing a hinge axis substantially parallel with said top and bottom members, so that through an opening movement of the window (1), the sash (3) can be moved from a closed position to an open position, and into an intermediate ventilating position, in which ventilating position the sash plane forms an angle within a limited angle range with the frame plane to provide at least one ventilating aperture (20) in the circumferential of the frame (2) and/or sash (3),
said window further comprising a screening arrangement arranged to cover the said ventilating aperture (20) in said ventilating position and comprising at least one screening element (21) incorporated in at least one member of said frame (2) and/or sash (3), said screening element (21) being arranged so as to form a ventilating passage (22), wherein said screening element (21) automatically spans the ventilating aperture (20) between the sash (3) and frame plane in the ventilating position,
characterized in that said at least one screening element (21) is incorporated in at least one of said side frame members (8, 10) of said window so as to form at least one ventilating passage (22) in at least one of said side frame members (8, 10), the at least one screening element (21) being inconspicuous in the ventilating position of the window (1) so that it

appears hidden from the user's eye.

2. A window (1) according to claim 1, wherein one screening element (21) is incorporated in each side frame member (8, 10).

3. A window (1) according to claim 2, wherein said at least one screening element (21) is incorporated exclusively in one of or both side frame members (8, 10).

4. A window (1) according to claim 2 or 3, wherein said ventilating passage (22) extends at least partly along the screening element (21) forming a ventilating passage (22) in only a part of the at least one side frame member (8, 10) in which the screening arrangement is incorporated.

5. A window (1) according to any one of claims 1 to 4, wherein said ventilating passage (22) is arranged in the bottom part of said at least one side frame member (8, 10) and extends in a pre-defined distance in the longitudinal direction along the side frame member (8, 10), said ventilating passage preferably extending half the length of said side frame member (8, 10), more preferably extending a third of the length of said side frame member (8, 10).

6. A window (1) according to any one of the previous claims, wherein the screening element (21) comprising said ventilating passage (22) is a detachable screening element (21) configured to be connected to the at least one frame or sash member (8,10) in a mounted condition thereof.

7. A window according to any one of the previous claims, wherein said screening element (21) is in the form of an L-shape, having a first flange (23) and a second flange (24), said second flange extending perpendicularly to said first flange (23), wherein at least one of said first and/or second flanges (23, 24) comprises said ventilating passage (22).

8. A window according to claim 7, wherein said first flange (23) is arranged to abut said side sash member (9, 11) in a mounted condition of the screening element (21), such that said second flange (24) extends perpendicularly thereto in a direction towards an exterior side of said window (1) to form said ventilating passage (22) of at least a part of said side frame member (8, 10).

9. A window according to any one of claims 7 and 8, wherein the L-shaped screening element (21) is provided as a thin-walled profile element of a material such as metal, plastic or composite.

10. A window according to any one of claims 1 to 6, wherein said screening element (21) is in the form of a U-shape and/or having a rectangular profile shape.

11. A window according to any one of the previous claims, wherein said ventilating passage (22) is formed as a plurality of perforations in the material of said screening element.

12. A window according to any one of claims 6 to 11, wherein said screening element (21) in a first end (25) is provided with a longitudinally extending slot (27) intended to engage with a control arrangement (30) of said window, said first end (25) intended to connect with said top frame member, said screening element (21) further comprising a second end (26) intended to connect with engagement means (40) of said bottom frame member in a mounted condition.

13. A window according to claim 12, wherein said engagement means (40) of said bottom frame member is configured as a groove in an engagement part (41) of said bottom frame member.

14. A window according to any one of claim 1 to 6, wherein the screening element (21) comprises a number of parts or portions which are movable relative to each other, preferably in the form of a substantially compact and resilient element (121) provided with a plurality of through-going canals (122a).

15. A method for providing ventilation in a window comprising a frame (2) and a sash (3) each having a top member (6; 7), a bottom member (4; 5) and two side members (8, 9, 10, 11), each side member of the frame and sash defining a longitudinal direction between the top and bottom members, and together defining a frame and a sash plane, respectively, said method comprising the steps of
providing a screening arrangement comprising a screening element (21),
incorporating the screening element (21) in at least one of said side frame members of said window so as to form at least one ventilating passage (22) in at least one of said frame members (8, 10) to extend between the sash plane and the frame plane, and
opening the window by moving the sash to a ventilating position in which the sash plane forms an angle with the frame plane.

16. The method of claim 15, wherein the step of providing the screening element (21) involves forming the screening element in an L-shape comprising a first flange (23) and a second flange (24), said second flange extending perpendicular to said first flange (23), wherein at least one of said first and/or second flange (23, 24) comprises said ventilating passage (22), and comprising the further step of

connecting said screening element (21) to at least one of said frame members so that said first flange (23) of said screening element (21) abuts said side sash member (9, 11) such that said second flange (24) extends perpendicularly thereto in a direction towards an exterior side of said window (1) to form said ventilating passage (22) of at least a part of said side frame member (8, 10), and
connecting a first end (25) of said screening element with said top frame member and a further second end (26) with engagement means (40) of said bottom frame member.

Patentansprüche

1. Fenster (1) mit einem Rahmen (2) und einem Flügel (3), die jeweils ein oberes Bauteil (6; 7), ein unteres Bauteil (4; 5) und zwei seitliche Bauteile (8, 10; 9, 11) aufweisen, wobei jedes seitliche Bauteil des Rahmens und des Flügels eine Längsrichtung zwischen den oberen und unteren Bauteilen definiert, und wobei die Bauteile zusammen jeweils eine Rahmenebene und eine Flügelebene definieren,

   wobei der Flügel (3) mit dem Rahmen (2) durch wenigstens eine Scharnierverbindung verbunden ist, die eine Scharnierachse bildet, welche im Wesentlichen parallel zu den oberen und unteren Bauteilen verläuft, so dass der Flügel (3) durch eine Öffnungsbewegung des Fensters (1) aus einer geschlossenen Position zu einer offenen Position und in eine dazwischenliegende Belüftungsposition bewegt werden kann, wobei die Flügelebene in der Belüftungsposition mit der Rahmenebene einen Winkel innerhalb eines begrenzten Winkelbereichs bildet, um wenigstens eine Belüftungsöffnung (20) im Umfang des Rahmens (2) und/oder des Flügels (3) bereitzustellen,
   wobei das Fenster ferner eine Abschirmungsanordnung aufweist, die dazu eingerichtet ist, die Belüftungsöffnung (20) in der Belüftungsposition abzudecken, und wenigstens ein Abschirmungselement (21) aufweist, das in wenigstens einem Bauteil des Rahmens (2) und/oder des Flügels (3) eingebaut ist, wobei das Abschirmungselement (21) derart angeordnet ist, dass es einen Belüftungsdurchgang (22) ausbildet, wobei das Abschirmungselement (21) in der Belüftungsposition die Belüftungsöffnung (20) zwischen der Flügelebene (3) und der Rahmenebene automatisch überspannt,
   dadurch gekennzeichnet, dass das wenigstens eine Abschirmungselement (21) in wenigstens eines der seitlichen Rahmenbauteile (8, 10) des Fensters eingebaut ist, so dass wenigstens ein Belüftungsdurchgang (22) in wenigstens einem der seitlichen Rahmenbauteile (8, 10) ausgebildet wird, wobei das wenigstens eine Abschirmungselement (21) in der Belüftungsposition des Fensters (1) unauffällig ist, so dass es vor dem Betrachter versteckt erscheint.

2. Fenster (1) nach Anspruch 1, wobei ein Abschirmungselement (21) in jedes seitliche Rahmenbauteil (8, 10) eingebaut ist.

3. Fenster (1) nach Anspruch 2, wobei das wenigstens eine Abschirmungselement (21) ausschließlich in eines der beiden oder in beide seitliche Rahmenbauteile (8, 10) eingebaut ist.

4. Fenster (1) nach Anspruch 2 oder 3, wobei sich der Belüftungsdurchgang (22) zumindest teilweise entlang des Abschirmungselements (21) erstreckt, so dass ein Belüftungsdurchgang (22) nur in einem Teil des wenigstens einen seitlichen Rahmenbauteils (8, 10), in das die Abschirmungsanordnung eingebaut ist, ausgebildet ist.

5. Fenster (1) nach einem der Ansprüche 1 bis 4, wobei der Belüftungsdurchgang (22) im unteren Teil des wenigstens einen seitlichen Rahmenbauteils (8, 10) angeordnet ist und sich in der Längsrichtung in einem vorgegebenen Abstand entlang des seitlichen Rahmenbauteils (8, 10) erstreckt, wobei der Belüftungsdurchgang sich vorzugsweise über die Hälfte der Länge des seitlichen Rahmenbauteils (8, 10) erstreckt, besonders bevorzugt entlang eines Drittels der Länge des seitlichen Rahmenbauteils (8, 10).

6. Fenster (1) nach einem der vorhergehenden Ansprüche, wobei das Abschirmungselement (21) mit dem Belüftungsdurchgang (22) ein abnehmbares Abschirmungselement (21) ist, das dazu ausgebildet ist, mit dem wenigstens einen Rahmen- oder Flügelbauteil (8, 10) in einem montierten Zustand davon verbunden zu sein.

7. Fenster nach einem der vorhergehenden Ansprüche, wobei das Abschirmungselement (21) eine L-Form aufweist und einen ersten Flansch (23) und einen zweiten Flansch (24) umfasst, wobei sich der zweite Flansch senkrecht zu dem ersten Flansch (23) erstreckt, wobei wenigstens einer der ersten und/oder zweiten Flansche (23, 24) den Belüftungsdurchgang (22) aufweist.

8. Fenster nach Anspruch 7, wobei der erste Flansch (23) derart angeordnet ist, dass er im montiertem Zustand des Abschirmungselements (21) an dem seitlichen Flügelbauteil (9, 11) anliegt, so dass sich der zweite Flansch (24) senkrecht dazu in einer Richtung zu einer Außenseite des Fensters (1) hin erstreckt, um den Belüftungsdurchgang (22) von we-

nigstens einem Teil des seitlichen Rahmenbauteils (8, 10) auszubilden.

9. Fenster nach einem der Ansprüche 7 und 8, wobei das L-förmige Abschirmungselement (21) als dünnwandiges Profilelement aus einem Material wie Metall, Kunststoff oder einem Verbundwerkstoff vorgesehen ist.

10. Fenster nach einem der Ansprüche 1 bis 6, wobei das Abschirmungselement (21) eine U-Form und/oder eine rechteckige Profilform aufweist.

11. Fenster nach einem der vorhergehenden Ansprüche, wobei der Belüftungsdurchgang (22) in Form einer Anzahl von Perforationen in dem Material des Abschirmungselements ausgebildet ist.

12. Fenster nach einem der Ansprüche 6 bis 11, wobei das Abschirmungselement (21) an einem ersten Ende (25) mit einem sich in Längsrichtung erstreckenden Schlitz (27) versehen ist, der dazu bestimmt ist, in Eingriff mit einer Steuerungsanordnung (30) des Fensters zu treten, wobei das erste Ende (25) dazu bestimmt ist, mit dem oberen Bauteil des Rahmens verbunden zu sein, wobei das Abschirmungselement (21) ferner ein zweites Ende (26) aufweist, das dazu bestimmt ist, in einem montierten Zustand mit Eingriffsmitteln (40) des unteren Rahmenbauteils verbunden zu sein.

13. Fenster nach Anspruch 12, wobei die Eingriffsmittel (40) des unteren Bauteils des Rahmens als Nut in einem Eingriffsteil (41) des unteren Bauteils des Rahmens ausgebildet sind.

14. Fenster nach einem der Ansprüche 1 bis 6, wobei das Abschirmungselement (21) eine Anzahl von Teilen oder Abschnitten aufweist, die relativ zueinander bewegbar sind, vorzugsweise in Form eines im Wesentlichen kompakten und elastischen Elements (121), das mit einer Anzahl von durchgehenden Kanälen (122a) versehen ist.

15. Verfahren zur Bereitstellung einer Belüftung in einem Fenster mit einem Rahmen (2) und einem Flügel (3), die jeweils ein oberes Bauteil (6; 7), ein unteres Bauteil (4; 5) und zwei seitliche Bauteile (8, 9, 10, 11) aufweisen, wobei jedes seitliche Bauteil des Rahmens und des Flügels eine Längsrichtung zwischen den oberen und unteren Bauteilen definiert, und zusammen jeweils eine Rahmenebene und eine Flügelebene definieren, wobei das Verfahren die folgende Schritte aufweist:

Bereitstellen einer Abschirmungsanordnung mit einem Abschirmungselement (21),
Einbauen des Abschirmungselements (21) in wenigstens eines der seitlichen Rahmenbauteile des Fensters, um wenigstens einen Belüftungsdurchgang (22) in wenigstens einem der Rahmenbauteile (8, 10) auszubilden, wobei sich der Belüftungsdurchgang (22) zwischen der Flügelebene und der Rahmenebene erstreckt, und Öffnen des Fensters durch Bewegen des Flügels in eine Belüftungsposition, in der die Flügelebene einen Winkel mit der Rahmenebene bildet.

16. Verfahren nach Anspruch 15, wobei der Schritt des Bereitstellens des Abschirmungselements (21) beinhaltet, dass das Abschirmungselement in eine L-Form geformt wird, wobei das Abschirmungselement einen ersten Flansch (23) und einen zweiten Flansch (24) aufweist, wobei sich der zweite Flansch senkrecht zum ersten Flansch (23) erstreckt, wobei wenigstens einer der ersten und/oder zweiten Flansche (23, 24) den Belüftungsdurchgang (22) aufweist, wobei das Verfahren ferner die folgende Schritte aufweist:

Verbinden des Abschirmungselements (21) mit wenigstens einem der Rahmenbauteile, so dass der erste Flansch (23) des Abschirmungselements (21) an dem seitlichen Flügelbauteil (9, 11) anliegt, so dass sich der zweite Flansch (24) senkrecht dazu in einer Richtung zu einer Außenseite des Fensters (1) hin erstreckt, um den Belüftungsdurchgang (22) von wenigstens einem Teil des Seitenbauteils des Rahmens (8, 10) auszubilden, und
Verbinden eines ersten Endes (25) des Abschirmungselements mit dem oberen Rahmenbauteil und Verbinden eines weiteren zweiten Endes (26) mit Eingriffsmitteln (40) des unteren Rahmenbauteils.

Revendications

1. Fenêtre (1) comprenant un cadre (2) et un châssis (3), ayant chacun un organe supérieur (6 ; 7), un organe inférieur (4 ; 5) et deux organes de côté (8, 10 ; 9, 11), chaque organe de côté du cadre et du châssis définissant une direction longitudinale entre les organes supérieur et inférieur, et les organes définissant tous ensemble un plan de cadre et un plan de châssis, respectivement,

ledit châssis (3) étant raccordé au cadre (2) au moyen d'au moins un raccordement à charnière fournissant un axe de charnière sensiblement parallèle auxdits organes supérieur et inférieur, de sorte que par l'intermédiaire d'un mouvement d'ouverture de la fenêtre (1), le châssis (3) puisse être déplacé d'une position fermée à une po-

sition ouverte, et dans une position de ventilation intermédiaire, dans laquelle position de ventilation le plan de châssis forme un angle dans une plage d'angles limitée avec le plan de cadre pour fournir au moins une ouverture de ventilation (20) dans la direction circonférentielle du cadre (2) et/ou du châssis (3),
ladite fenêtre comprenant en outre un agencement de protection agencé pour couvrir ladite ouverture de ventilation (20) dans ladite position de ventilation et comprenant au moins un élément de protection (21) incorporé dans au moins un organe dudit cadre (2) et/ou dudit châssis (3), ledit élément de protection (21) étant agencé de façon à former un passage de ventilation (22), dans laquelle ledit élément de protection (21) recouvre automatiquement l'ouverture de ventilation (20) entre le châssis (3) et le plan de cadre dans la position de ventilation,
caractérisée en ce que ledit au moins un élément de protection (21) est incorporé dans au moins l'un desdits organes de cadre de côté (8, 10) de ladite fenêtre de façon à former au moins un passage de ventilation (22) dans au moins l'un desdits organes de cadre de côté (8, 10), l'au moins un élément de protection (21) passant inaperçu dans la position de ventilation de la fenêtre (1) de sorte qu'il apparaît dissimulé à l'oeil de l'utilisateur.

2. Fenêtre (1) selon la revendication 1, dans laquelle un élément de protection (21) est incorporé dans chaque organe de cadre de côté (8, 10).

3. Fenêtre (1) selon la revendication 2, dans laquelle ledit au moins un élément de protection (21) est incorporé exclusivement dans l'un des organes de cadre de côté (8, 10) ou les deux.

4. Fenêtre (1) selon la revendication 2 ou 3, dans laquelle ledit passage de ventilation (22) s'étend au moins en partie le long de l'élément de protection (21) formant un passage de ventilation (22) dans uniquement une partie de l'au moins un organe de cadre de côté (8, 10) dans lequel l'agencement de protection est incorporé.

5. Fenêtre (1) selon l'une quelconque des revendications 1 à 4, dans laquelle ledit passage de ventilation (22) est agencé dans la partie inférieure dudit au moins un organe de cadre de côté (8, 10) et s'étend sur une distance prédéfinie dans la direction longitudinale le long de l'organe de cadre de côté (8, 10), ledit passage de ventilation s'étendant de préférence sur la moitié de la longueur dudit organe de cadre de côté (8, 10), s'étendant de manière davantage préférée sur un tiers de la longueur dudit organe de cadre de côté (8, 10).

6. Fenêtre (1) selon l'une quelconque des revendications précédentes, dans laquelle l'élément de protection (21) comprenant ledit passage de ventilation (22) est un élément de protection détachable (21) configuré pour être raccordé à l'au moins un organe de cadre ou de châssis (8, 10) dans un état monté de celui-ci.

7. Fenêtre selon l'une quelconque des revendications précédentes, dans laquelle ledit élément de protection (21) est en forme de L, ayant une première bride (23) et une seconde bride (24), ladite seconde bride s'étendant de façon perpendiculaire à ladite première bride (23), dans laquelle au moins l'une desdites première et/ou seconde brides (23, 24) comprend ledit passage de ventilation (22).

8. Fenêtre selon la revendication 7, dans laquelle ladite première bride (23) est agencée pour buter contre ledit organe de châssis de côté (9, 11) dans un état monté de l'élément de protection (21), de sorte que ladite seconde bride (24) s'étende de façon perpendiculaire à celui-ci dans une direction vers un côté extérieur de ladite fenêtre (1) pour former ledit passage de ventilation (22) d'au moins une partie dudit organe de cadre de côté (8, 10).

9. Fenêtre selon l'une quelconque des revendications 7 et 8, dans laquelle l'élément de protection en forme de L (21) est prévu en tant qu'élément de profil à paroi mince d'un matériau tel que le métal, le plastique ou un composite.

10. Fenêtre selon l'une quelconque des revendications 1 à 6, dans laquelle ledit élément de protection (21) est en forme de U et/ou a une forme de profil rectangulaire.

11. Fenêtre selon l'une quelconque des revendications précédentes, dans laquelle ledit passage de ventilation (22) est formé en tant que pluralité de perforations dans le matériau dudit élément de protection.

12. Fenêtre selon l'une quelconque des revendications 6 à 11, dans laquelle ledit élément de protection (21) dans une première extrémité (25) est pourvu d'une fente (27) s'étendant longitudinalement destinée à s'enclencher avec un agencement de commande (30) de ladite fenêtre, ladite première extrémité (25) étant destinée à se raccorder audit organe de cadre supérieur, ledit élément de protection (21) comprenant en outre une seconde extrémité (26) destinée à se raccorder à un moyen d'enclenchement (40) dudit organe de cadre inférieur dans un état monté.

13. Fenêtre selon la revendication 12, dans laquelle ledit moyen d'enclenchement (40) dudit organe de cadre inférieur est configuré en tant que gorge dans une

partie d'enclenchement (41) dudit organe de cadre inférieur.

14. Fenêtre selon l'une quelconque des revendications 1 à 6, dans laquelle l'élément de protection (21) comprend un certain nombre de parties ou de portions qui sont mobiles les unes par rapport aux autres, de préférence sous forme d'un élément sensiblement compact et résilient (121) pourvu d'une pluralité de canaux traversants (122a).

15. Procédé de fourniture d'une ventilation dans une fenêtre comprenant un cadre (2) et un châssis (3) ayant chacun un organe supérieur (6 ; 7), un organe inférieur (4 ; 5) et deux organes de côté (8, 9, 10, 11), chaque organe de côté du cadre et du châssis définissant une direction longitudinale entre les organes supérieur et inférieur, et définissant ensemble un plan de cadre et un plan de châssis, respectivement, ledit procédé comprenant les étapes de

fourniture d'un agencement de protection comprenant un élément de protection (21),
incorporation de l'élément de protection (21) dans au moins l'un desdits organes de cadre de côté de ladite fenêtre de façon à former au moins un passage de ventilation (22) dans au moins l'un desdits organes de cadre (8, 10) pour s'étendre entre le plan de châssis et le plan de cadre, et
ouverture de la fenêtre en déplaçant le châssis vers une position de ventilation dans laquelle le plan de châssis forme un angle avec le plan de cadre.

16. Procédé selon la revendication 15, dans lequel l'étape de fourniture de l'élément de protection (21) implique la formation de l'élément de protection en forme de L comprenant une première bride (23) et une seconde bride (24), ladite seconde bride s'étendant perpendiculaire à ladite première bride (23), dans lequel au moins l'une desdites première et/ou seconde brides (23, 24) comprend ledit passage de ventilation (22), et comprenant l'étape supplémentaire de

raccordement dudit élément de protection (21) à au moins l'un desdits organes de cadre de sorte que ladite première bride (23) dudit élément de protection (21) bute contre ledit organe de châssis de côté (9, 11) de sorte que ladite seconde bride (24) s'étende de façon perpendiculaire à celui-ci dans une direction vers un côté extérieur de ladite fenêtre (1) pour former ledit passage de ventilation (22) d'au moins une partie dudit organe de cadre de côté (8, 10), et
raccordement d'une première extrémité (25) dudit élément de protection audit organe de cadre supérieur et d'une seconde extrémité supplémentaire (26) à un moyen d'enclenchement (40) dudit organe de cadre inférieur.

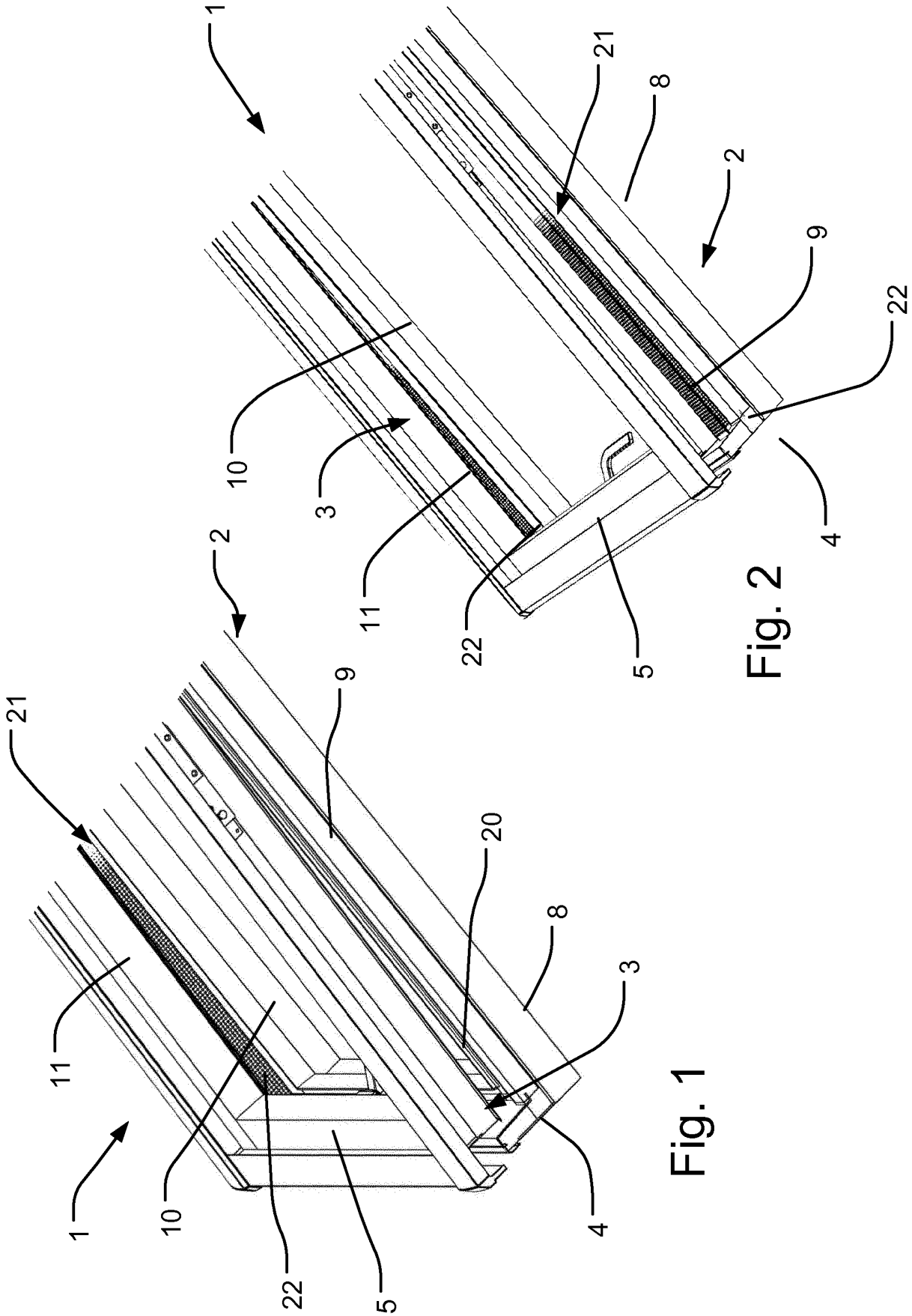


Fig. 2

Fig. 1

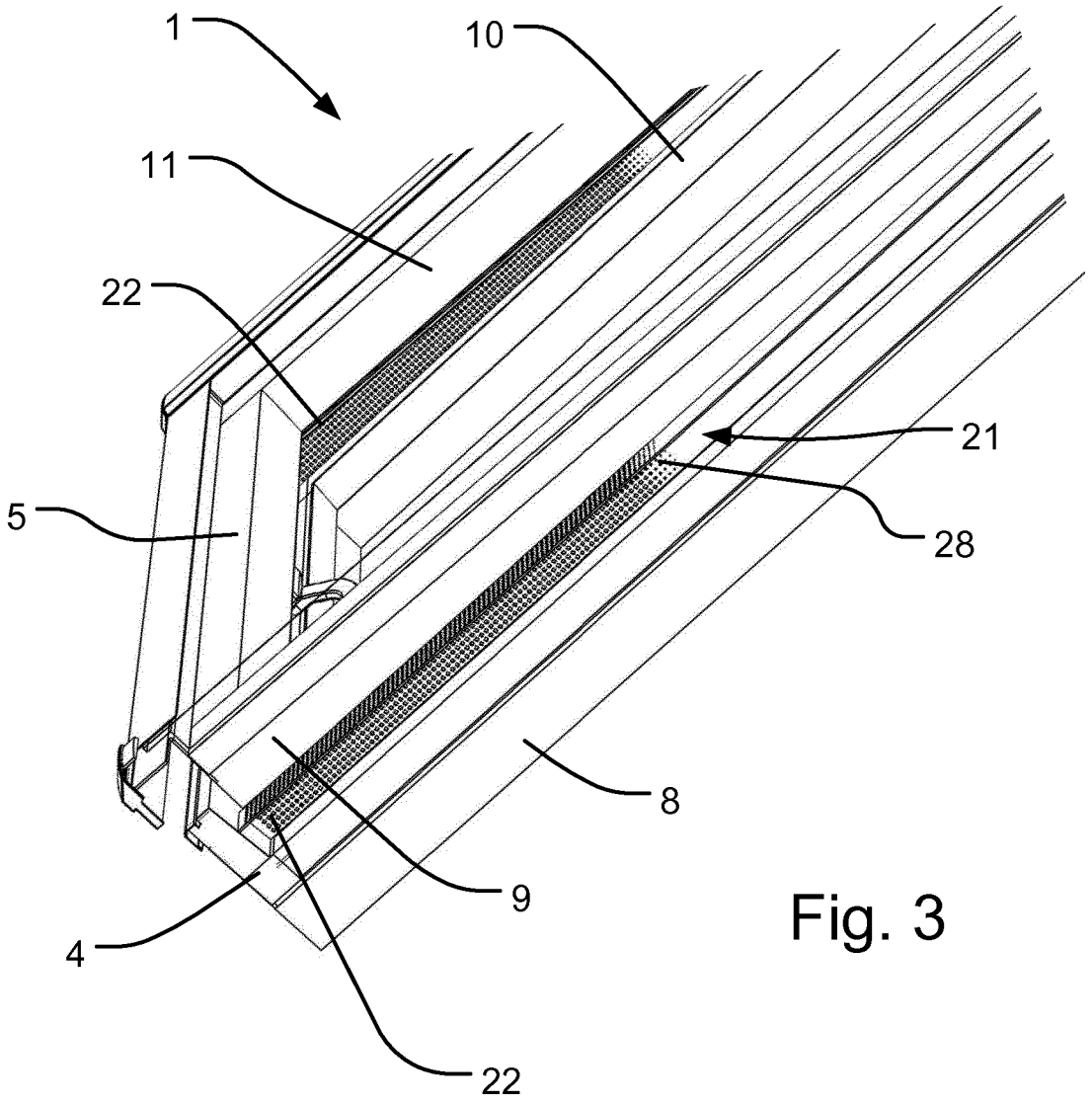


Fig. 3

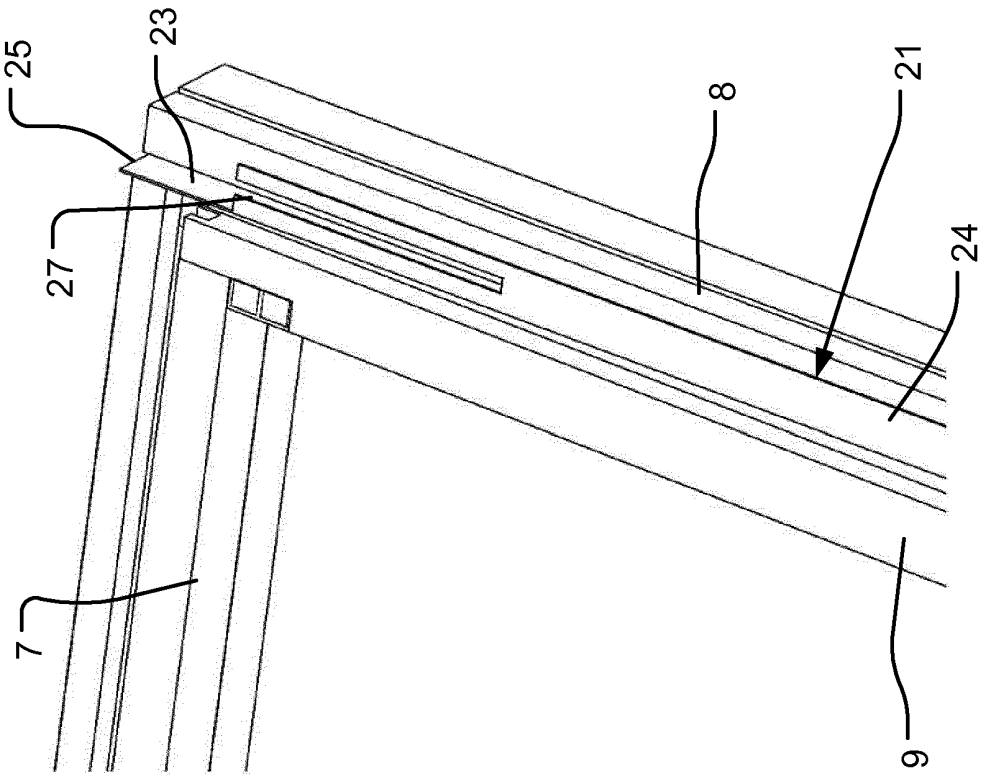


Fig. 5

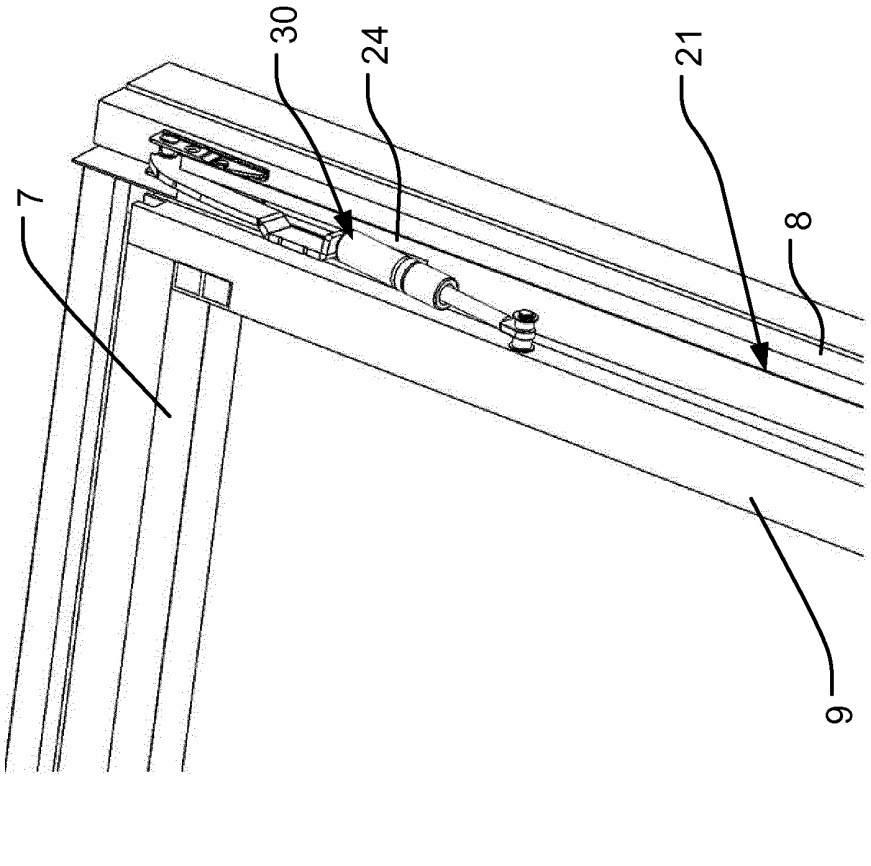


Fig. 4

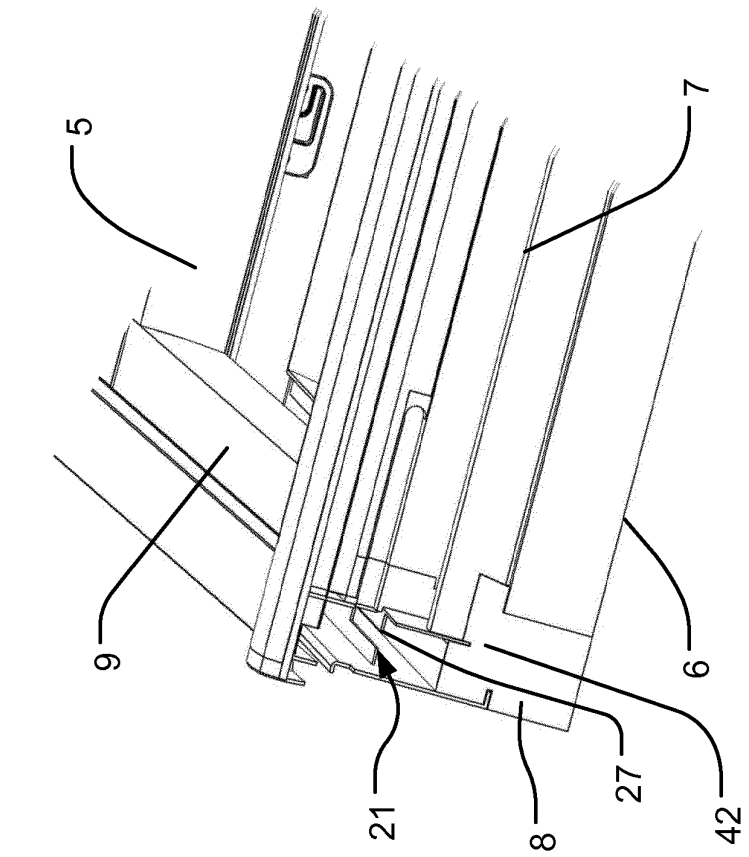


Fig. 7

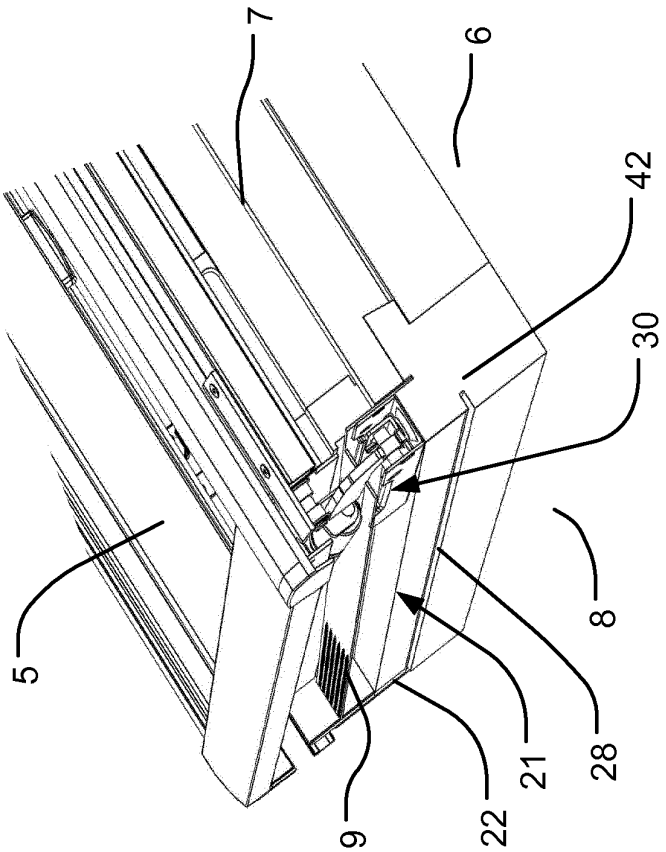


Fig. 6

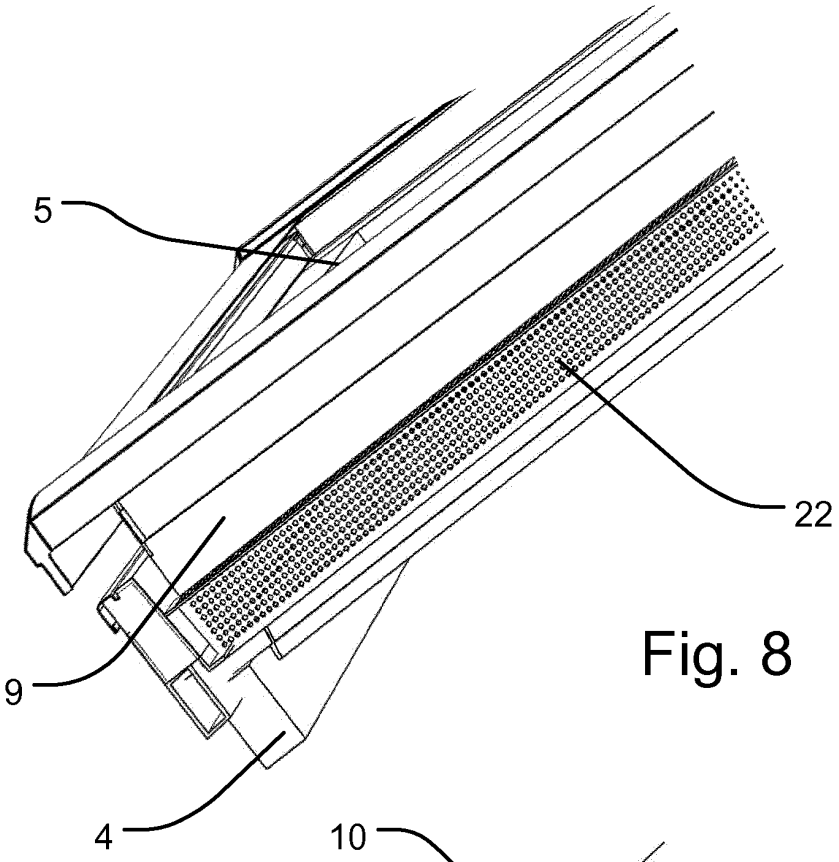


Fig. 8

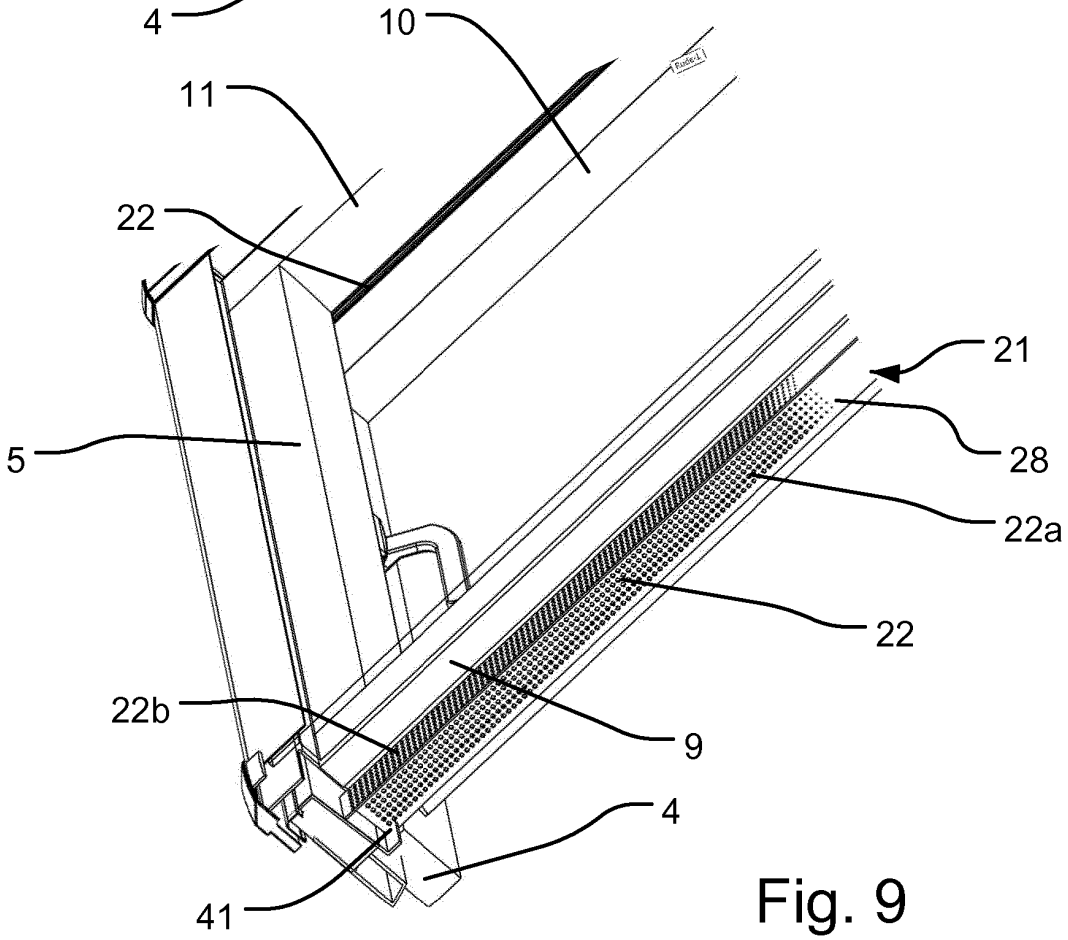


Fig. 9

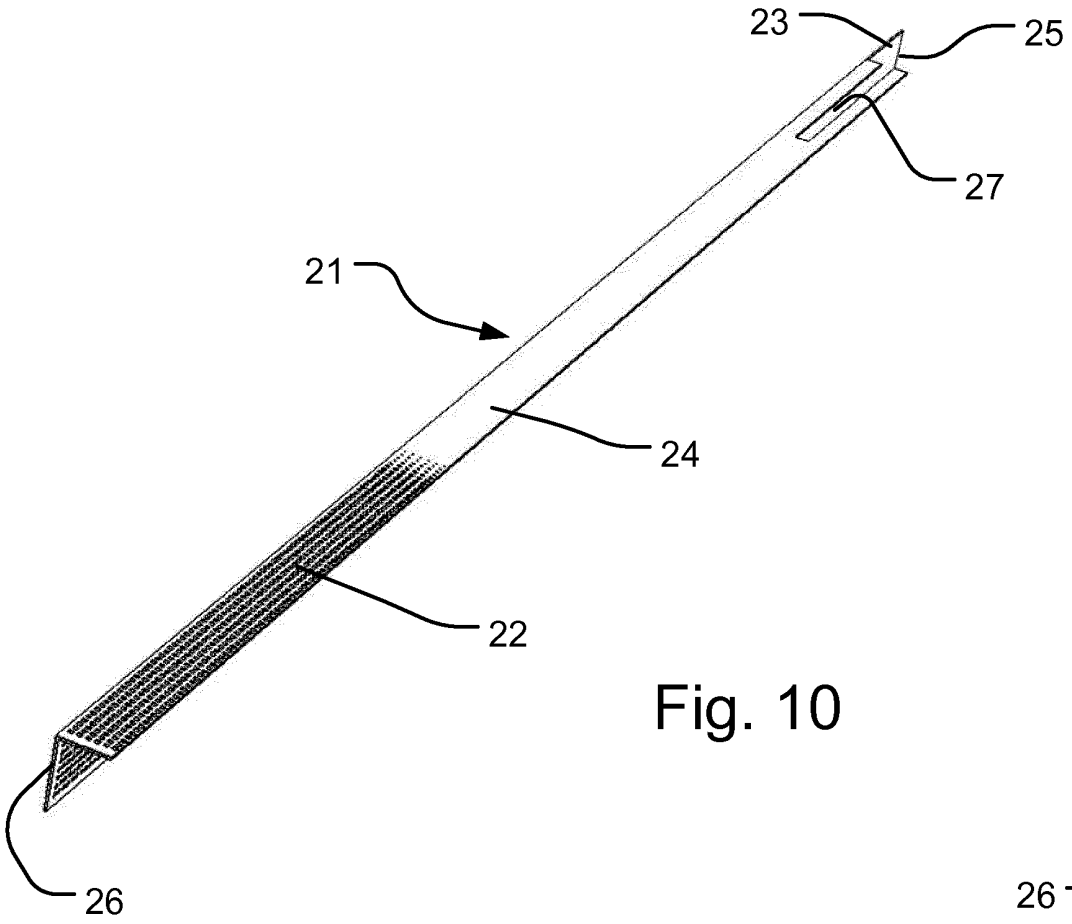


Fig. 10

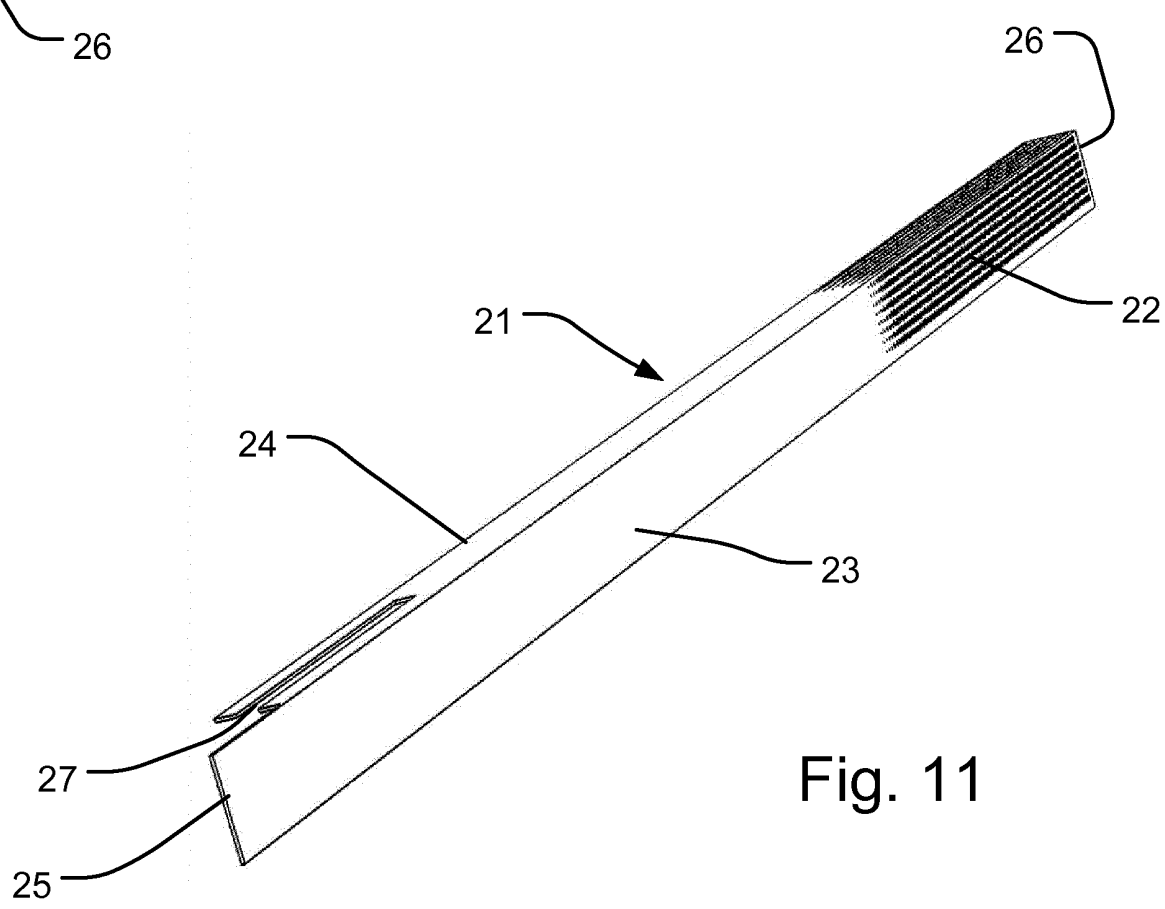


Fig. 11

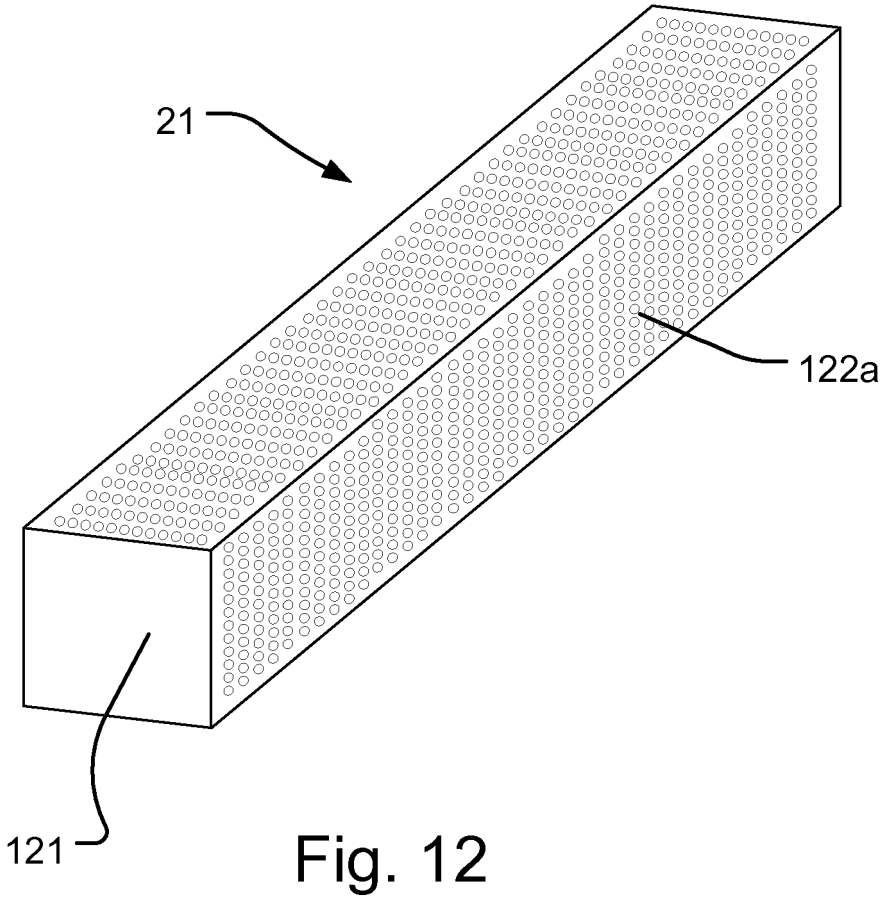


Fig. 12

REFERENCES CITED IN THE DESCRIPTION

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