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(54) **ROOF WINDOW WITH IMPROVED VENTILATION**  
DACHFENSTER MIT VERBESSERTER BELÜFTUNG  
FENÊTRE DE TOÎT À VENTILATION AMÉLIORÉE

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- **NOER, Jesper Händel**  
**2970 Hørsholm (DK)**
- **THOMSEN, Freddy Dam**  
**2970 Hørsholm (DK)**

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(74) Representative: **AWA Denmark A/S**  
**Strandgade 56**  
**1401 Copenhagen K (DK)**

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(73) Proprietor: **VKR Holding A/S**  
**2970 Hørsholm (DK)**

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(72) Inventors:

- **ANDERSEN, Rasmus**  
**2970 Hørsholm (DK)**

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## Description

### Technical Field

**[0001]** The present invention relates to a roof window comprising a frame having a plurality of frame members including a top member, two side members and a bottom member, a sash having a plurality of sash members including a top member, two side members and a bottom member, of which at least the sash top member includes a separate sash top unit forming part of or constituting the sash top member, and at least one ventilation device including a plurality of ventilation openings to provide ventilation between an exterior side and an interior side of the window.

### Background Art

**[0002]** Such windows come in a number of varieties and models. Typically, the windows are generally equipped with operating means as well as ventilation means. Some roof windows are provided with a ventilation flap rotatably connected to the sash, which at the same time fulfils the role of operating means to release and activate a lock cooperating with the frame.

**[0003]** In combination with a top sash unit connected to the outer side of the sash, the solution with a pivotally connected ventilation flap has proven to function particularly well as describe in for instance Applicant's European patent No. EP 2 751 355 B1. FR 2 899 930 A1 discloses an air inlet system comprising a front grille and a rear mounting frame mounted in a recess of a sash.

**[0004]** However, in some roof windows, it is desirable to provide the roof window with a ventilation device of simpler kind, and to separate the operation of the opening of the window from the ventilation device.

### Summary of Invention

**[0005]** It is therefore the object of the invention to provide a roof window, in which the ventilation through the sash top member is satisfactory but which at the same time makes it possible to provide a flexible solution.

**[0006]** This is achieved with a roof window of the kind mentioned in the introduction, which is further characterised by the features of the claim 1.

**[0007]** By forming the ventilation device in the sash top unit and at the same time allowing the ventilation device to be releasably inserted into and removed from the sash top unit, a number of advantages are obtained. Based on the recognition that the need for maintenance or even replacement of components of the ventilation device surpasses the maintenance interval of other parts of the roof window, it is now easy and flexible to simply remove the ventilation device from the top sash unit, and then either re-introduce the same ventilation device, or a new one, when needed. The releasable engagement by non-positive engagement only, renders the use of structure pen-

etrating fastening means such as screws redundant. This is particularly an advantage in those circumstances that the top sash unit is made of a plastic material.

**[0008]** The ventilation device has a longitudinal configuration extending between a first end and a second end, a length dimension being defined between the first and second ends substantially in parallel with a length direction of the sash top member, a height dimension perpendicular to the length dimension substantially in parallel with a width direction of the sash top member, and a thickness dimension perpendicular to the length dimension substantially in parallel with a thickness direction of the sash top member. This provides for a relatively wide ventilation opening, while at the same time retaining a discreet appearance of the ventilation device.

**[0009]** The engagement means are positioned at one or both of said first and second end and comprise at least one biasing device connected to the ventilation device and contacting the top sash unit of the sash top member in frictional engagement. This provides for excellent retention of the ventilation device in the top sash unit, while at the same time making retraction of the ventilation device easy and logical.

**[0010]** Furthermore, the top sash unit is provided with a track to accommodate the ventilation device, and the top sash unit is provided with a plurality of ventilation openings to match the ventilation openings of the ventilation device. This improves the ventilation conditions even further.

**[0011]** In a preferred embodiment, the top sash unit forms part of the sash top member and has a longitudinal extension defining a length exceeding the length of the at least one ventilation device, and the top sash unit is connected to the remaining parts of the sash top member at a respective longitudinal end. By this design, manufacturing and assembly of the sash top member is facilitated. For instance, the remaining members of the sash may be manufactured in a separate step, and the sash top member including the top sash unit may be connected to the remaining members subsequently.

**[0012]** In one development of this preferred embodiment, the top sash unit is accommodated in a recessed portion of the sash top member and is held by its longitudinal ends to a respective end portion of the sash top member, the end portions of the sash top member being optionally formed by extended portions of the sash side members, by means of a flange portion of the top sash unit contacting an abutment portion associated to a transition portion. This provides for a reliable and inconspicuous connection. In a further development, the top sash unit is fastened to the remaining parts of the sash top member by means of fastening means, such as screws, introduced through a plurality of apertures.

**[0013]** In another presently preferred embodiment, the sash top member is provided with an additional set of ventilation openings, preferably in the form of a first plurality of vent slits facing the top sash unit and a second plurality of vent slits in connection with the first plurality

of vent slits and facing the interior side of the window. In this way, the through-flow area accessible for air is increased without compromising the overall functioning and appearance of the roof window.

**[0014]** Other presently preferred embodiments and further advantages will be apparent from the subsequent detailed description and drawings.

### Brief Description of Drawings

**[0015]** In the following description embodiments of the invention will be described with reference to the schematic drawings, in which

Fig. 1 is a perspective view of an embodiment of a roof window, seen from the interior side and in a closed position;

Fig. 2 is a partial perspective view, on a larger scale, of the top part of the sash of the roof window in an embodiment of the invention;

Fig. 3 is a partial perspective view, on a larger scale, of the bottom part of the roof window in an embodiment of the invention;

Fig. 4 is an exploded partial perspective view of the details shown in Fig. 2;

Fig. 5 is a perspective view of the top sash unit and the ventilation device in an embodiment of the roof window according to the invention;

Fig. 6 is an exploded view of the details of Fig. 5;

Figs 7 and 8 are perspective views, on larger scales, of the details of Figs 5 and 6; and

Fig. 9 is a partial perspective view of the engagement between the top sash unit and the ventilation device in an embodiment of the roof window according to the invention;

Figs 10 and 11 are partial perspective views of the details of Fig. 9; and

Figs 12a and 12b show perspective views, from different angles, of the spring lever forming part of the engagement means in the embodiment of the roof window shown in Figs 9 to 11.

### Description of Embodiments

**[0016]** Referring initially to Fig. 1, the general configuration of a roof window is shown.

**[0017]** The roof window here comprises a primary frame in the form of a stationary frame 1 configured for installation in an inclined roof surface, here by means of mounting brackets 3 provided at the corners, but other installation principles may be applied as well. The frame 1 comprises a plurality of frame members, here including a frame top member 11, two frame side members 12 and 13, and a frame bottom member 14.

**[0018]** At least one secondary frame is connected to the stationary frame 1, in the embodiment shown a sash 2 carrying a pane 4. The sash 2 is pivotally connected to the stationary frame 2 in order to be able to rotate the

sash 2 to an open position. To that end, the sash 2 is provided hinge fitting part (not shown), cooperating with a counterpart hinge fitting part (not shown) provided on the frame 1. The sash 2 comprises, corresponding to the frame 1, a sash top member 21, two sash side members 22 and 23, and a sash bottom member 24. In principle, the hinge axis could be located arbitrarily in the roof window, but is here substantially centre-hinged. The roof window could be top-hinged as well, meaning that the hinge axis is located near the frame top member 11 and the sash top member 21.

**[0019]** From the shown closed position, the user operates the operating device of the window, here in the form of a handle 5 at the bottom member 24 of the sash 2. Further details of the handle 5 are the subject of Applicant's copending patent application having the same filing date as the present application, and the contents thereof are incorporated herein by reference.

**[0020]** Finally, the roof window is provided with a ventilation device 6 accommodated in a top sash unit 7, acting to allow passage of air also in the closed position of the window.

**[0021]** In the following, embodiments of the roof window will be described with particular focus on the ventilation device and the top sash unit. It is recognised that the top sash unit 7 has a length dimension, a width dimension and a thickness dimension configured to cover a substantial part of the sash top member 21. As roof windows come in different sizes, it is understood that the person skilled in the art will be able to select such suitable length and width dimensions without undue burden.

**[0022]** Referring initially briefly again to Figs 1 to 3, the roof window is shown to comprise frame 1 with top member, two side members and a bottom member 11, 12, 13, 14, and sash 2 with top member, two side members and a bottom member 21, 22, 23, 24.

**[0023]** At least the sash top member 21 includes a separate sash top unit 7 forming part of or constituting the sash top member 21. Other sash members may in principle be provided with separate sash units as well to form part of or constitute the sash member in question. The principles of such a separate unit could in principle be transferred to the frame as well, and also applies to fixed, i.e. not openable windows.

**[0024]** More than one ventilation device 6 may be provided in one sash or frame member. In the following, only one ventilation device 6 accommodated in the top sash unit 7 forming part of the sash top member 21 will be referred to.

**[0025]** Referring now to Figs 4 to 8, the ventilation device 6 includes a plurality of ventilation openings 67 to provide ventilation between an exterior side and an interior side of the window. The ventilation openings 67 are formed between bars 66 spaced apart by a certain distance.

**[0026]** In the embodiment shown, the ventilation device 6 has a longitudinal configuration extending between a first end 6a and a second end 6b, a length dimension

being defined between the first and second ends 6a, 6b substantially in parallel with a length direction of the sash top member 21, a height dimension perpendicular to the length dimension substantially in parallel with a width direction of the sash top member, and a thickness dimension perpendicular to the length dimension substantially in parallel with a thickness direction of the sash top member.

**[0027]** In the embodiment shown, the ventilation device 6 functions as a well-known so-called click valve, in which a cover section 62 surrounded by border section 61 includes two push buttons 63 which may be activated independently of each other such that if one is activated, the cover section 62 will assume an inclined position and allowing air to flow in and out via a wedge-shaped opening, and if both push buttons 63 are activated, the cover section 62 will assume a position substantially in parallel with the border section 61. The operating principles resemble those of a pen, i.e. reactivation of the lock is achieved by pushing the push buttons 63 back. Such principles are well-known and will not be described in further detail, although snap lock 60 responding to the activating push-buttons 63 is shown in Fig. 9.

**[0028]** Opposite the cover section 62, a back section 64 is provided adjacent but retracted from the border section 61. In the embodiment shown, engagement means generally designated 65 are provided at the back section 64. The engagement means 65 are non-positive, i.e. force dependent only, and do not require removal of an obstacle in order to be released. The engagement means 65 serve to releasably connect the ventilation device 6 to the sash top unit 7.

**[0029]** In the embodiment shown, the engagement means 65 are positioned at both of the first and second end 6a, 6b and comprise at least one biasing device connected to the ventilation device 6 and contacting the top sash unit 7 of the sash top member 21 in frictional engagement, as will be described in further detail below.

**[0030]** In order to accommodate the ventilation device 6, the top sash unit 7 is provided with a track 75. The top sash unit 7 is provided with a plurality of ventilation openings 77 to match the ventilation openings 67 of the ventilation device 6, also separated by bars 76.

**[0031]** Furthermore, top sash unit 7 forms part of the sash top member 21 and has a longitudinal extension defining a length exceeding the length of the ventilation device 6. The top sash unit 7 is connected to the remaining parts of the sash top member 21 at a respective longitudinal end 7a, 7b.

**[0032]** The top sash unit 7 has a front face 71 to which the border section 61 of the ventilation device 6 is substantially flush. A top face 72 adjoins the front face 71. At a distance in the height direction from the top face 72, a ledge 78 is provided. Bars 76 thus extend between the ledge 78 and the underside of the top face 72.

**[0033]** In the embodiment shown, the top sash unit 7 is accommodated in a recessed portion 211 of the sash top member 21 and is held by its longitudinal ends 7a,

7b to a respective end portion 210 of the sash top member 21, the end portions 210 of the sash top member 21 being here formed by extended portions of the sash side members 22, 23. A flange portion 73 at each end 7a, 7b of the top sash unit 7 contacts an abutment portion 212 associated to a transition portion 213.

**[0034]** Although the contact between the flange portions 73 and the end portions 210 may be sufficient, it is preferred that the top sash unit 7 is fastened to the remaining parts of the sash top member 21 by means of fastening means, such as screws, introduced through a plurality of apertures 74.

**[0035]** The top sash unit 7 may for instance be provided as a moulded element and may be used both with a sash of wood and of a plastic material such as polyurethane (PU). As one example, the top sash unit 7 is a plastic injection moulded element, with a surface adapted to be painted with a lacquer in order to resemble the surface finish of PU

**[0036]** Turning now to Figs 9 to 11 and Figs 12a and 12b, another embodiment will be described with particular focus on the biasing device of the engagement means of the ventilation device 6. There are only slight differences between the above-described embodiment and the other embodiment, and elements having the same or analogous function carry the same reference numerals.

**[0037]** The biasing means comprises a spring lever 69 having at least one engagement portion 691, 692 to contact a corresponding flange portion 791, 792 on the top sash unit 7 in frictional engagement. Furthermore, at least one fastening portion 693, 694 is provided for fastening the spring lever 69 to the remaining parts of the ventilation device 6.

**[0038]** Here, the spring lever 69 is formed as a substantially plate-shaped element comprising a number of bent portions with a length direction substantially parallel with the height dimension of the ventilation device 6, said bent portions including said at least one fastening portion 691, 692.

**[0039]** A first and a second engagement portion 691, 692 are provided as each an inclined plate section at opposite ends of a substantially plane bridge portion 690. In this way, the first and second engagement portions 691, 692 are allowed to flex resiliently when contacting the top sash unit 7.

**[0040]** A first and second fastening portions 693, 694 are provided as respective folded sections between a respective engagement portion 691, 692 and said bridge portion 690.

**[0041]** Each engagement portion 691, 692 is provided with friction-increasing means, preferably in the form of a set of teeth 691a, 692a.

**[0042]** Other details include opening 696 in plane section 695 of each fastening portion 693, 694. In addition to being an advantage during manufacture, this also assists in the resilient flexing of the engagement portions 691, 692.

**[0043]** Referring in particular to Fig. 11, the back side of the ventilation device 6 comprises an end block 680 at each longitudinal end 6a, 6b, between which a first and a second ledge 681, 682 extend. It is apparent that the bars 66 separating the ventilation openings 67 extend in the height direction between the first and second ledges 681, 682.

**[0044]** Simple fastening of the spring lever 6 to the remaining parts of the ventilation device 6 is here obtained in that the respective folded sections forming the first and second fastening portions 693, 694 of the ventilation device are clamped on to the respective first and second ledge 681, 682 of the ventilation device 6.

**[0045]** The parts of the ventilation device 6 are typically made of moulded plastic parts. However, the biasing means, here the spring lever 69, may be made of metal, for instance spring steel.

**[0046]** Finally, returning to Fig. 4, it is shown how the sash top member 21 is provided with an additional set of ventilation openings, preferably in the form of a first plurality of vent slits, here in the form of recess vent slits 214, facing the top sash unit 7 and a second plurality of vent slits, here in the form of inner vent slits 215, in connection with the recess vent slits 214 and facing the interior side of the window. The sash 2 is also provided with a lock bolt 216 interacting with an aperture (not shown) in the frame, for holding the sash 2 parked in a ventilation or cleaning position.

**[0047]** The invention is not limited to the embodiments shown and described in the above, but various modifications and combinations may be carried out as defined by the appended claims.

#### List of reference numerals

##### [0048]

- 1 stationary frame
  - 11 frame top member
  - 12 frame side member
  - 13 frame side member
  - 14 frame bottom member
- 2 sash
  - 21 sash top member
  - 210 end portion
  - 211 recessed portion
  - 212 abutment portion
  - 213 transition portion
  - 214 recess vent slit
  - 215 inner face vent slit
  - 216 lock bolt
  - 22 sash side member
  - 23 sash side member
  - 24 sash bottom member
- 3 mounting bracket
- 4 pane
- 5 handle
- 6 ventilation device

- 6a first end
- 6b second end
- 60 snap lock
- 61 border section
- 62 cover section
- 63 push button
- 64 back section
- 65 engagement means
- 66 bar
- 67 ventilation opening
- 680 end block
- 681 first ledge
- 682 second ledge
- 69 spring lever
- 690 bridge portion
- 691 first engagement portion
- 691a teeth
- 692 second engagement portion
- 692a teeth
- 693 first fastening portion
- 694 second fastening portion
- 695 plane section of fastening portion
- 696 opening
- 7 top sash unit
  - 7a first end
  - 7b second end
- 71 front face
- 72 top face
- 73 flange portion
- 74 apertures
- 75 track
- 76 bar
- 77 ventilation opening
- 78 ledge
- 791 first flange portion
- 792 second flange portion
- 8 striking plate

#### 40 Claims

1. A roof window comprising
  - a frame (1) having a plurality of frame members including a top member, two side members and a bottom member (11, 12, 13, 14),
  - a sash (2) having a plurality of sash members including a top member, two side members and a bottom member (21, 22, 23, 24), of which at least the sash top member (21) includes a separate sash top unit (7) forming part of or constituting the sash top member (21), and
  - at least one ventilation device (6) including a plurality of ventilation openings (67) to provide ventilation between an exterior side and an interior side of the window,
  - wherein said at least one ventilation device (6) is accommodated in the sash top unit (7),
  - wherein said at least one ventilation device (6) is

releasably connected to the sash top unit (7) by non-positive engagement means (65), wherein the at least one ventilation device (6) has a longitudinal configuration extending between a first end (6a) and a second end (6b), a length dimension being defined between the first and second ends (6a, 6b) substantially in parallel with a length direction of the sash top member (21), a height dimension perpendicular to the length dimension substantially in parallel with a width direction of the sash top member, and a thickness dimension perpendicular to the length dimension substantially in parallel with a thickness direction of the sash top member, wherein said non-positive engagement means (65) is positioned at one or both of said first and second end (6a, 6b) and comprises at least one biasing device connected to the ventilation device (6) and contacting the top sash unit (7) of the sash top member (21) in frictional engagement, and wherein the top sash unit (7) is provided with a track (75) to accommodate the ventilation device (6), and the top sash unit (7) is provided with a plurality of ventilation openings (77) to match the ventilation openings (67) of the ventilation device (6),

**characterised in that,**

the at least one biasing device of the i 2. non-positive engagement means (65) of the at least one ventilation device (6) comprises a spring lever (69) having at least one engagement portion (691, 692) to contact a corresponding flange portion (791, 792) on the top sash unit (7) in frictional engagement, and at least one fastening portion (693, 694) for fastening the spring lever (69) to the remaining parts of the at least one ventilation device (6).

2. A roof window according to claim 1, wherein the top sash unit (7) forms part of the sash top member (21) and has a longitudinal extension defining a length exceeding the length of the at least one ventilation device (6), and wherein the top sash unit (7) is connected to the remaining parts of the sash top member (21) at a respective longitudinal end (7a, 7b).
3. A roof window according to claim 2, wherein the top sash unit (7) is accommodated in a recessed portion (211) of the sash top member (21) and is held by its longitudinal ends (7a, 7b) to a respective end portion (210) of the sash top member (21), the end portions (210) of the sash top member (21) being optionally formed by extended portions of the sash side members (22, 23), by means of a flange portion (73) of the top sash unit (7) contacting an abutment portion (212) associated to a transition portion (213).
4. A roof window according to claim 3, wherein the top sash unit (7) is fastened to the remaining parts of the sash top member (21) by means of fastening means, such as screws, introduced through a plurality of ap-

ertures (74).

5. A roof window according to any one of the preceding claims, wherein the sash top member (21) is provided with an additional set of ventilation openings, preferably in the form of a first plurality of vent slits (214) facing the top sash unit (7) and a second plurality of vent slits (215) in connection with the first plurality of vent slits (214) and facing the interior side of the window.
6. A roof window according to any of the preceding claims, wherein the spring lever (69) is formed as a substantially plate-shaped element comprising a number of bent portions with a length direction substantially parallel with the height dimension of the ventilation device (6), said bent portions including said at least one fastening portion (691, 692).
7. A roof window according to claim 6, wherein a first and a second engagement portion (691, 692) are provided as each an inclined plate section at opposite ends of a substantially plane bridge portion (690).
8. A roof window according to claim 7, wherein a first and second fastening portions (693, 694) are provided as respective folded sections between a respective engagement portion (691, 692) and said bridge portion (690).
9. A roof window according to claim 8, wherein each engagement portion (691, 692) is provided with friction-increasing means, preferably in the form of a set of teeth (691a, 692a).
10. A roof window according to any one of the preceding claims, wherein the ventilation device (6) comprises a border section (61), a cover section (62) with at least one activating means, preferably in the form of at least one push button (63), and a back section (64) accommodated in the track (75) in the top sash unit (7) associated with the engagement means (65).
11. A roof window according to any one of claims 8 to 10, wherein the respective folded sections forming the first and second fastening portions (693, 694) of the ventilation device are clamped on to a respective first and second ledge (681, 682) of the ventilation device (6).

**Patentansprüche**

1. Dachfenster, Folgendes umfassend: einen Rahmen (1), der mehrere Rahmenelemente, einschließlich eines oberen Elements, zweier Seitenelemente und eines unteren Elements (11, 12, 13, 14) aufweist,

einen Flügel (2), der mehrere Flügelemente, einschließlich eines oberen Elements, zweier Seitenelemente und eines unteren Elements (21, 22, 23, 24) aufweist, wobei mindestens das obere Flügelement (21) eine getrennte obere Flügeleinheit (7) umfasst, die einen Teil des oberen Flügelements (21) oder das gesamte Teil ausbildet, und mindestens eine Belüftungsvorrichtung (6), die mehrere Belüftungsöffnungen (67) umfasst, um eine Belüftung zwischen einer Außenseite und einer Innenseite des Fensters vorzusehen, wobei die mindestens eine Belüftungsvorrichtung (6) in der oberen Flügeleinheit (7) untergebracht ist, wobei die mindestens eine Belüftungsvorrichtung (6) über kraftschlüssige Eingriffseinrichtungen (65) lösbar mit der oberen Flügeleinheit (7) verbunden ist, wobei die mindestens eine Belüftungsvorrichtung (6) eine Längskonfiguration aufweist, die sich zwischen einem ersten Ende (6a) und einem zweiten Ende (6b) erstreckt, wobei eine Längenabmessung zwischen dem ersten und zweiten Ende (6a, 6b) im Wesentlichen parallel zu einer Längenrichtung des oberen Flügelements (21) definiert ist, wobei eine Höhenabmessung senkrecht zur Längenabmessung im Wesentlichen parallel zu einer Breitenrichtung des oberen Flügelements ist und eine Stärkeabmessung senkrecht zur Längenabmessung im Wesentlichen parallel zur Stärkerichtung des oberen Flügelements ist, wobei die kraftschlüssige Eingriffseinrichtung (65) am ersten und/oder zweiten Ende (6a, 6b) angeordnet ist und mindestens eine Vorspannungsvorrichtung umfasst, die mit der Belüftungsvorrichtung (6) gekoppelt ist und die obere Flügeleinheit (7) des oberen Flügelements (21) in reibschlüssigem Eingriff berührt, und wobei die obere Flügeleinheit (7) mit einer Schiene (75) versehen ist, um die Belüftungsvorrichtung (6) unterzubringen, und wobei die obere Flügeleinheit (7) mit mehreren Belüftungsöffnungen (77) versehen ist, um zu den Belüftungsöffnungen (67) der Belüftungsvorrichtung (6) zu passen,

**dadurch gekennzeichnet, dass**

die mindestens eine Vorspannungsvorrichtung der kraftschlüssigen Eingriffseinrichtung (65) der mindestens einen Belüftungsvorrichtung (6) einen Federhebel (69) umfasst, der mindestens einen Eingriffsabschnitt (691, 692), um einen zugehörigen Flanschabschnitt (791, 792) an der oberen Flügeleinheit (7) in reibschlüssigem Eingriff zu berühren, und mindestens einen Befestigungsabschnitt (693, 694), um den Federhebel (69) an den restlichen Teilen der mindestens einen Belüftungsvorrichtung (6) zu befestigen, aufweist.

2. Dachfenster nach Anspruch 1, wobei die obere Flügeleinheit (7) einen Teil des oberen Flügelements (21) bildet und eine Längsausdehnung aufweist, die eine Länge definiert, die die Länge der mindestens

einen Belüftungsvorrichtung (6) übersteigt, und wobei die obere Flügeleinheit (7) mit den restlichen Teilen des oberen Flügelements (21) an einem entsprechenden Längsende (7a, 7b) verbunden ist.

- 5 3. Dachfenster nach Anspruch 2, wobei die obere Flügeleinheit (7) in einem vertieften Abschnitt (211) des oberen Flügelements (21) untergebracht ist und an seinen Längsenden (7a, 7b) an einem entsprechenden Endabschnitt (210) des oberen Flügelements (21) gehalten wird, wobei die Endabschnitte (210) des oberen Flügelements (21) optional mittels eines Flanschabschnitts (73) der oberen Flügeleinheit (7), die einen einem Übergangabschnitt (213) zugeordneten Anschlagabschnitt (212) berührt, durch verlängerte Abschnitte der Seitenflügel-elemente (22, 23) ausgebildet sind.
- 10 4. Dachfenster nach Anspruch 3, wobei die obere Flügeleinheit (7) mittels Befestigungseinrichtungen, zum Beispiel Schrauben, die durch mehrere Öffnungen (74) eingeführt werden, an den restlichen Teilen des oberen Flügelements (21) befestigt ist.
- 15 5. Dachfenster nach einem der vorstehenden Ansprüche, wobei das obere Flügelement (21) mit einem zusätzlichen Satz Belüftungsöffnungen versehen ist, vorzugsweise in Form erster mehrerer Lüftungsschlitze (214), die der oberen Flügeleinheit (7) zugewandt sind, und zweiter mehrerer Lüftungsschlitze (215), die mit den ersten mehreren Lüftungsschlitzen (214) verbunden und der Innenseite des Fensters zugewandt sind.
- 20 6. Dachfenster nach einem der vorstehenden Ansprüche, wobei der Federhebel (69) als im Wesentlichen plattenförmiges Element ausgebildet ist, das mehrere gekrümmte Abschnitte mit einer Längsrichtung, die im Wesentlichen parallel zur Höhenabmessung der Belüftungsvorrichtung (6) ist, aufweist, wobei die gekrümmten Abschnitte den mindestens einen Befestigungsabschnitt (691, 692) umfassen.
- 25 7. Dachfenster nach Anspruch 6, wobei ein erster und ein zweiter Eingriffsabschnitt (691, 692) als jeweils geneigter Plattenabschnitt an entgegengesetzten Enden eines im Wesentlichen ebenen Brückenabschnitts (690) vorgesehen sind.
- 30 8. Dachfenster nach Anspruch 7, wobei ein erster und zweiter Befestigungsabschnitt (693, 694) als jeweils gefalteter Abschnitt zwischen einem entsprechenden Eingriffsabschnitt (691, 692) und dem Brückenabschnitt (690) vorgesehen sind.
- 35 9. Dachfenster nach Anspruch 8, wobei jeder Eingriffsabschnitt (691, 692) mit reibungsverstärkenden Einrichtungen, vorzugsweise in Form eines Satzes
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- 45
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Zähne (691a, 692a), versehen ist.

10. Dachfenster nach einem der vorstehenden Ansprüche, wobei die Belüftungsvorrichtung (6) einen Randabschnitt (61), einen Abdeckungsabschnitt (62) mit mindestens einer Betätigungseinrichtung, vorzugsweise in Form mindestens eines Drucktasters (63), und einen hinteren Abschnitt (64), der in der der Eingriffseinrichtung (65) zugeordneten Schiene (75) in der oberen Flügeleinheit (7) untergebracht ist, umfasst.
11. Dachfenster nach einem der Ansprüche 8 bis 10, wobei die entsprechenden gefalteten Abschnitte, die den ersten und zweiten Befestigungsabschnitt (693, 694) der Belüftungsvorrichtung ausbilden, an eine erste bzw. zweite Kante (681, 682) an der Belüftungsvorrichtung (6) geklemmt sind.

## Revendications

1. Fenêtre de toit comprenant un cadre (1) ayant une pluralité d'organes de cadre comportant un organe supérieur, deux organes latéraux et un organe inférieur (11, 12, 13, 14), un châssis (2) ayant une pluralité d'organes de châssis comportant un organe supérieur, deux organes latéraux et un organe inférieur (21, 22, 23, 24), dont au moins l'organe de châssis supérieur (21) comporte une unité de châssis supérieure (7) faisant partie de l'organe de châssis supérieur (21) ou constituant celui-ci, et au moins un dispositif de ventilation (6) comportant une pluralité d'ouvertures de ventilation (67) pour assurer la ventilation entre un côté extérieur et un côté intérieur de la fenêtre, ledit au moins un dispositif de ventilation (6) étant reçu dans l'unité de châssis supérieure (7), ledit au moins un dispositif de ventilation (6) étant connecté de manière amovible à l'unité de châssis supérieure (7) par le biais d'un moyen d'engagement non positif (65), l'au moins un dispositif de ventilation (6) ayant une configuration longitudinale s'étendant entre une première extrémité (6a) et une deuxième extrémité (6b), une dimension en longueur étant définie entre les première et deuxième extrémités (6a, 6b) sensiblement parallèlement à une direction en longueur de l'organe de châssis supérieur (21), une dimension en hauteur perpendiculaire à la dimension en longueur sensiblement parallèlement à une direction en largeur de l'organe de châssis supérieur, et une dimension d'épaisseur perpendiculaire à la dimension en longueur sensiblement parallèlement à une direction d'épaisseur de l'organe de châssis supérieur, ledit moyen d'engagement non positif (65) étant positionné à une desdites première et deuxième extré-

mités (6a, 6b) ou aux deux et comprenant au moins un dispositif de sollicitation connecté au dispositif de ventilation (6) et venant en contact avec l'unité de châssis supérieure (7) de l'organe de châssis supérieur (21) avec engagement par friction et l'unité de châssis supérieure (7) étant pourvue d'une glissière (75) pour recevoir le dispositif de ventilation (6), et l'unité de châssis supérieure (7) étant pourvue d'une pluralité d'ouvertures de ventilation (77) prévues pour coïncider avec les ouvertures de ventilation (67) du dispositif de ventilation (6),

### caractérisée en ce que

l'au moins un dispositif de sollicitation du moyen d'engagement non positif (65) de l'au moins un dispositif de ventilation (6) comprend un levier à ressort (69) ayant au moins une portion d'engagement (691, 692) prévue pour venir en contact avec une portion de bride correspondante (791, 792) sur l'unité de châssis supérieure (7) avec engagement par friction, et au moins une portion d'attache (693, 694) pour attacher le levier à ressort (69) aux parties restantes de l'au moins un dispositif de ventilation (6).

2. Fenêtre de toit selon la revendication 1, dans laquelle l'unité de châssis supérieure (7) fait partie de l'organe de châssis supérieur (21) et présente une extension longitudinale définissant une longueur dépassant la longueur de l'au moins un dispositif de ventilation (6), et dans laquelle l'unité de châssis supérieure (7) est connectée aux parties restantes de l'organe de châssis supérieur (21) au niveau d'une extrémité longitudinale respective (7a, 7b).
3. Fenêtre de toit selon la revendication 2, dans laquelle l'unité de châssis supérieure (7) est reçue dans une portion en retrait (211) de l'organe de châssis supérieur (21) et est retenue par ses extrémités longitudinales (7a, 7b) au niveau d'une portion d'extrémité respective (210) de l'organe de châssis supérieur (21), les portions d'extrémité (210) de l'organe de châssis supérieur (21) étant facultativement formées par des portions prolongées des organes de châssis latéraux (22, 23), au moyen d'une portion de bride (73) de l'unité de châssis supérieure (7) venant en contact avec une portion de butée (212) associée à une portion de transition (213).
4. Fenêtre de toit selon la revendication 3, dans laquelle l'unité de châssis supérieure (7) est attachée aux parties restantes de l'organe de châssis supérieur (21) au moyen de moyens d'attache tels que des vis, introduits à travers une pluralité d'ouvertures (74).
5. Fenêtre de toit selon l'une quelconque des revendications précédentes, dans laquelle l'organe de châssis supérieur (21) est pourvu d'un jeu supplémentaire d'ouvertures de ventilation, de préférence sous la forme d'une première pluralité de fentes de ventila-

- tion (214) faisant face à l'unité de châssis supérieure (7) et une deuxième pluralité de fentes de ventilation (215) en liaison avec la première pluralité de fentes de ventilation (214) et faisant face au côté intérieur de la fenêtre. 5
- 6.** Fenêtre de toit selon l'une quelconque des revendications précédentes, dans laquelle le levier à ressort (69) est formé sous forme d'élément substantiellement en forme de plaque, comprenant un certain nombre de portions recourbées avec une direction en longueur sensiblement parallèle à la dimension en hauteur du dispositif de ventilation (6), lesdites portions recourbées comportant ladite au moins une portion d'attache (691, 692). 10 15
- 7.** Fenêtre de toit selon la revendication 6, dans laquelle une première et une deuxième portion d'engagement (691, 692) sont prévues chacune sous la forme d'une section de plaque inclinée à des extrémités opposées d'une portion de pont sensiblement plane (690) . 20
- 8.** Fenêtre de toit selon la revendication 7, dans laquelle une première et une deuxième portion d'attache (693, 694) sont prévues au niveau de sections pliées respectives entre une portion d'engagement respective (691, 692) et ladite portion de pont (690). 25
- 9.** Fenêtre de toit selon la revendication 8, dans laquelle chaque portion d'engagement (691, 692) est pourvue de moyens pour augmenter la friction, de préférence sous la forme d'un jeu de dents (691a, 692a) . 30
- 10.** Fenêtre de toit selon l'une quelconque des revendications précédentes, dans laquelle le dispositif de ventilation (6) comprend une section de bordure (61), une section de recouvrement (62) avec au moins un moyen d'activation, de préférence sous la forme d'au moins un bouton poussoir (63), et une section arrière (64) reçue dans la glissière (75) dans l'unité de châssis supérieure (7), associée au moyen d'engagement (65) . 35 40
- 11.** Fenêtre de toit selon l'une quelconque des revendications 8 à 10, dans laquelle les sections pliées respectives formant la première et la deuxième portion d'attache (693, 694) du dispositif de ventilation sont serrées sur un premier et un deuxième rebord respectif (681, 682) du dispositif de ventilation (6). 45 50

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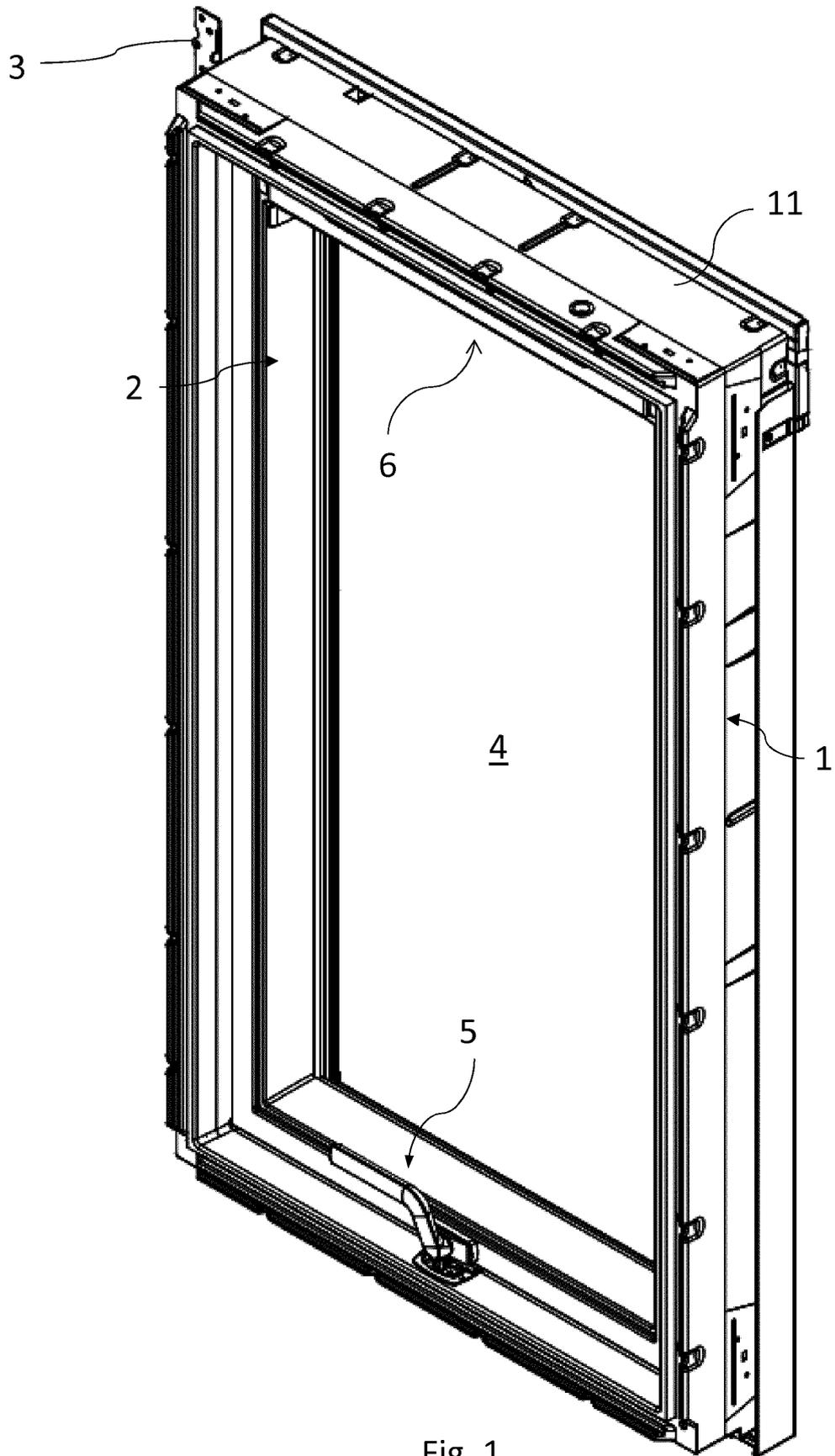


Fig. 1

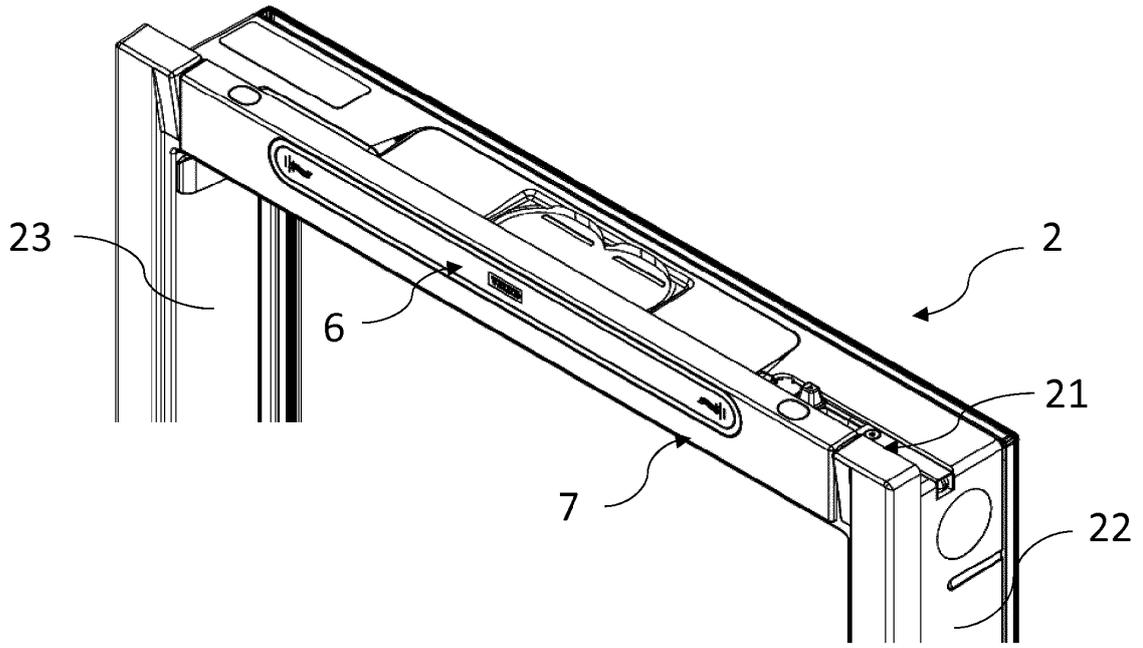


Fig. 2

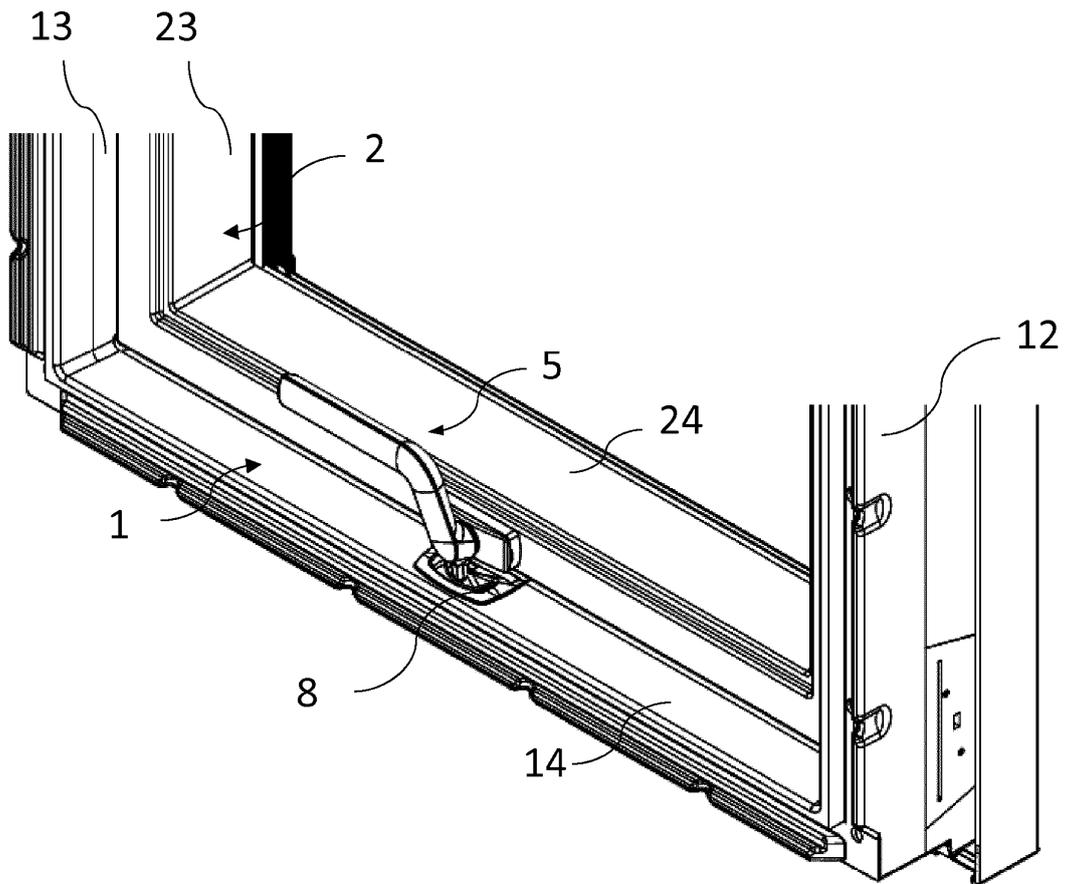


Fig. 3

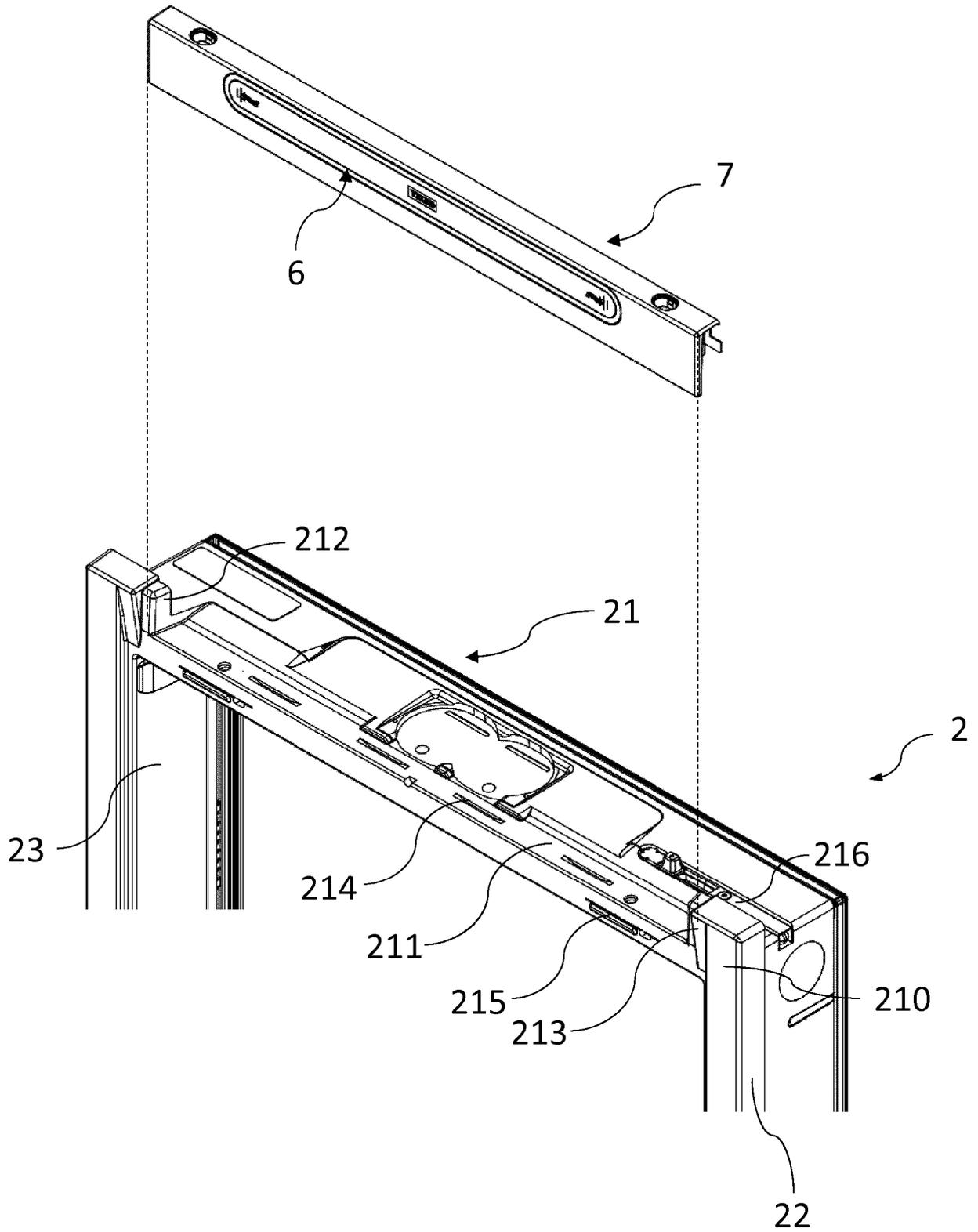


Fig. 4

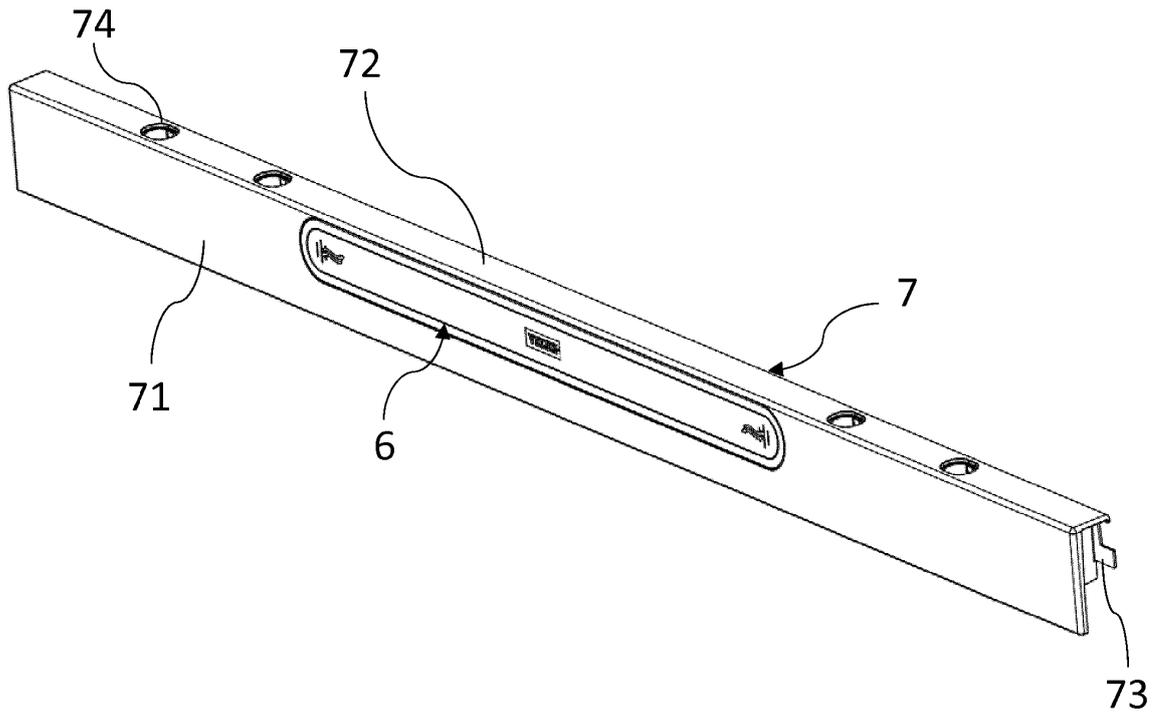


Fig. 5

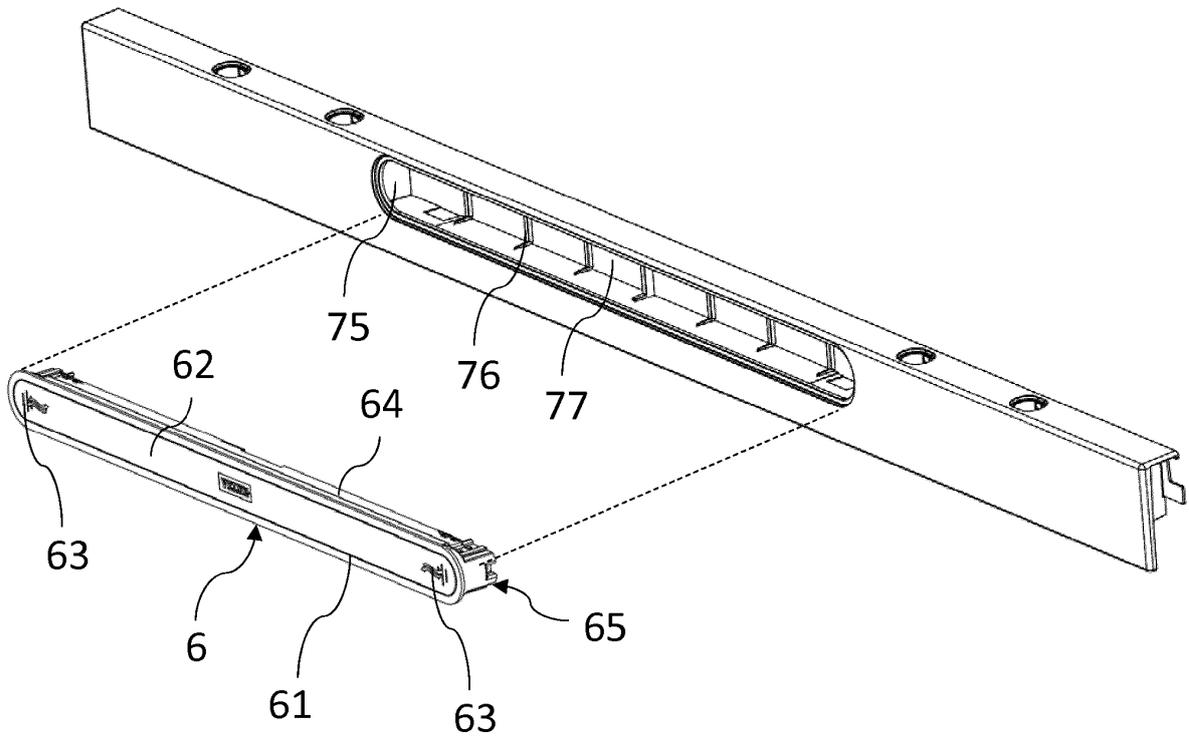


Fig. 6

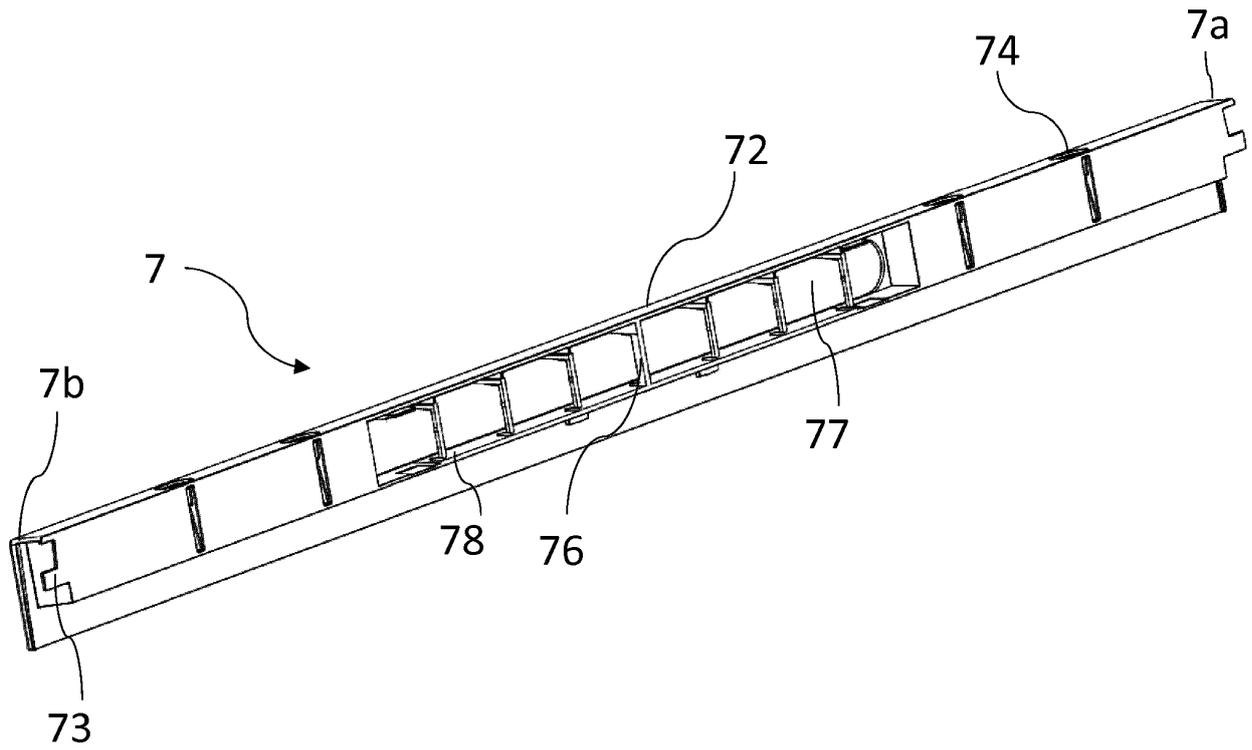


Fig. 7

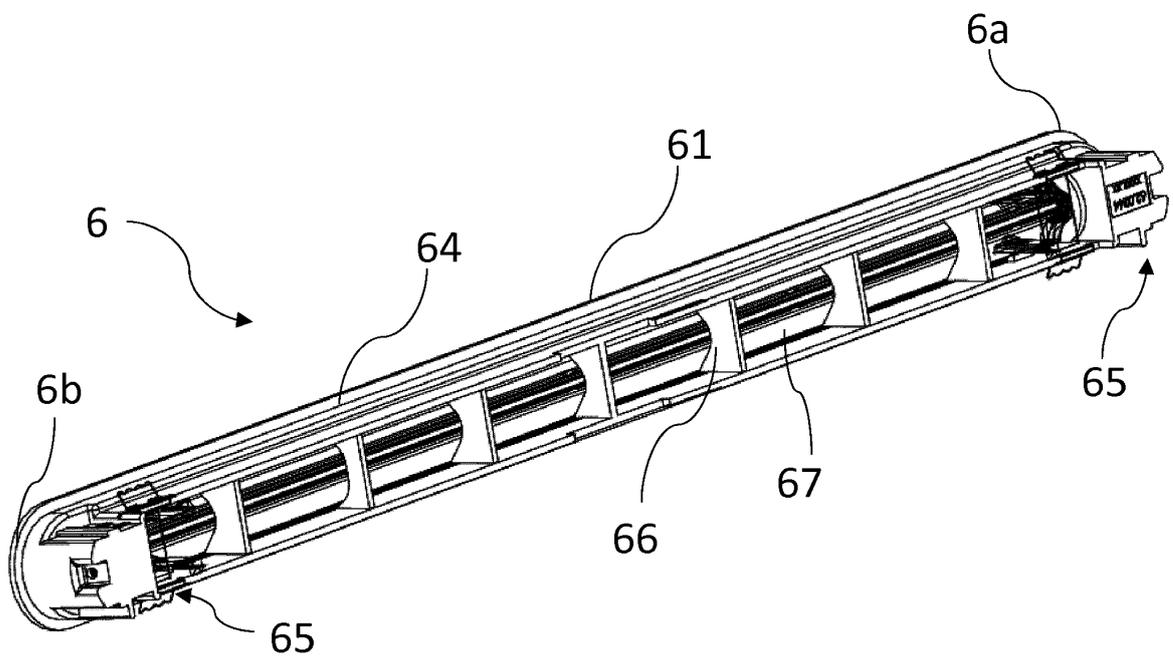


Fig. 8

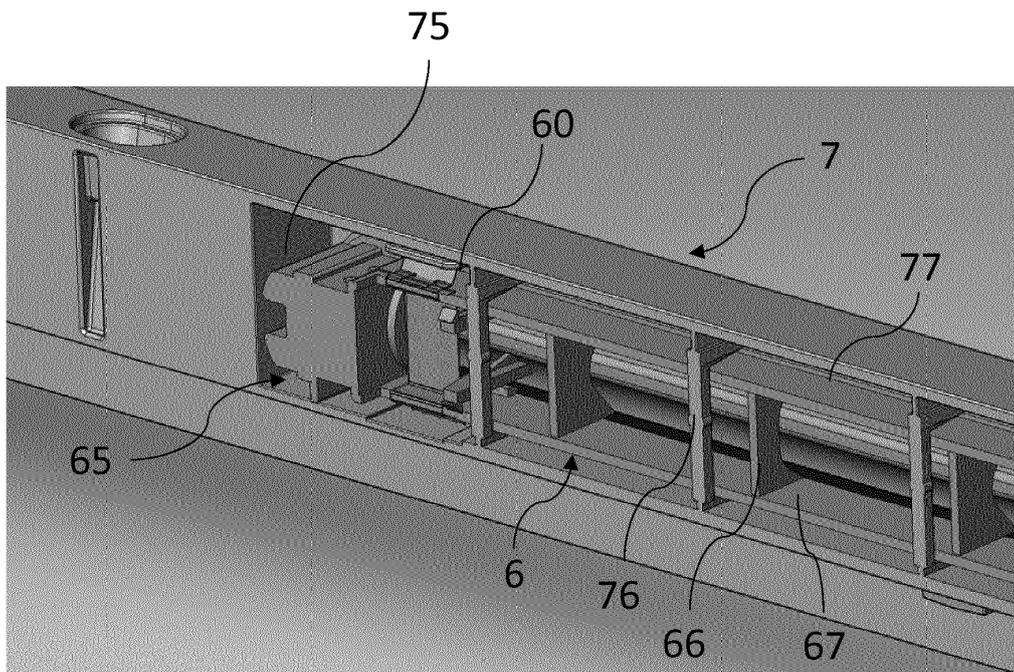


Fig. 9

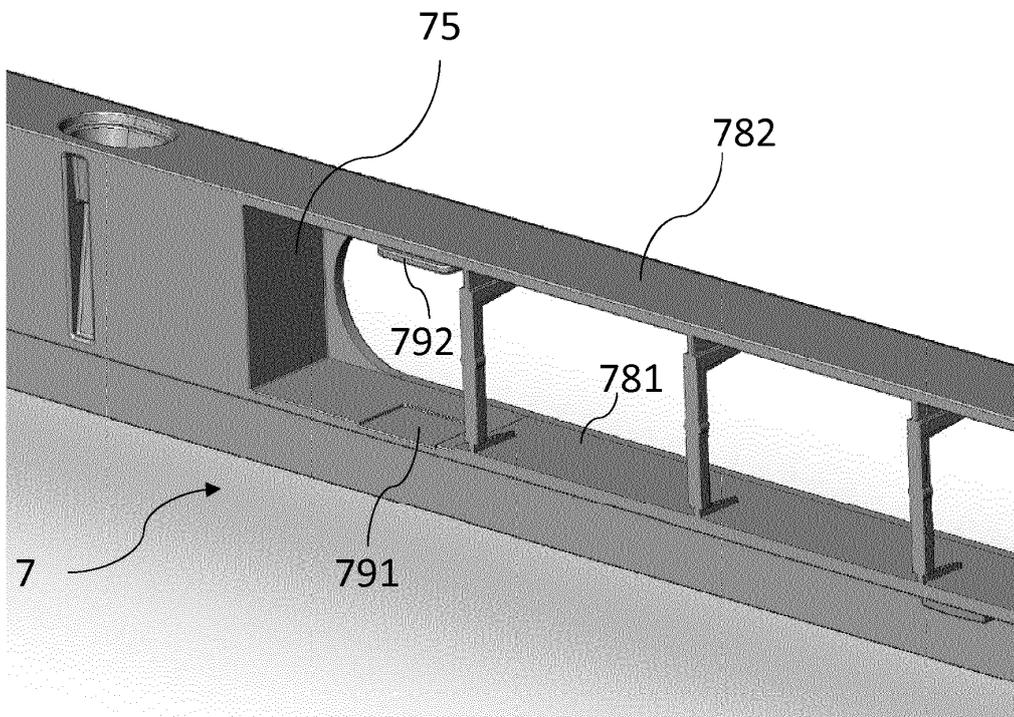


Fig. 10

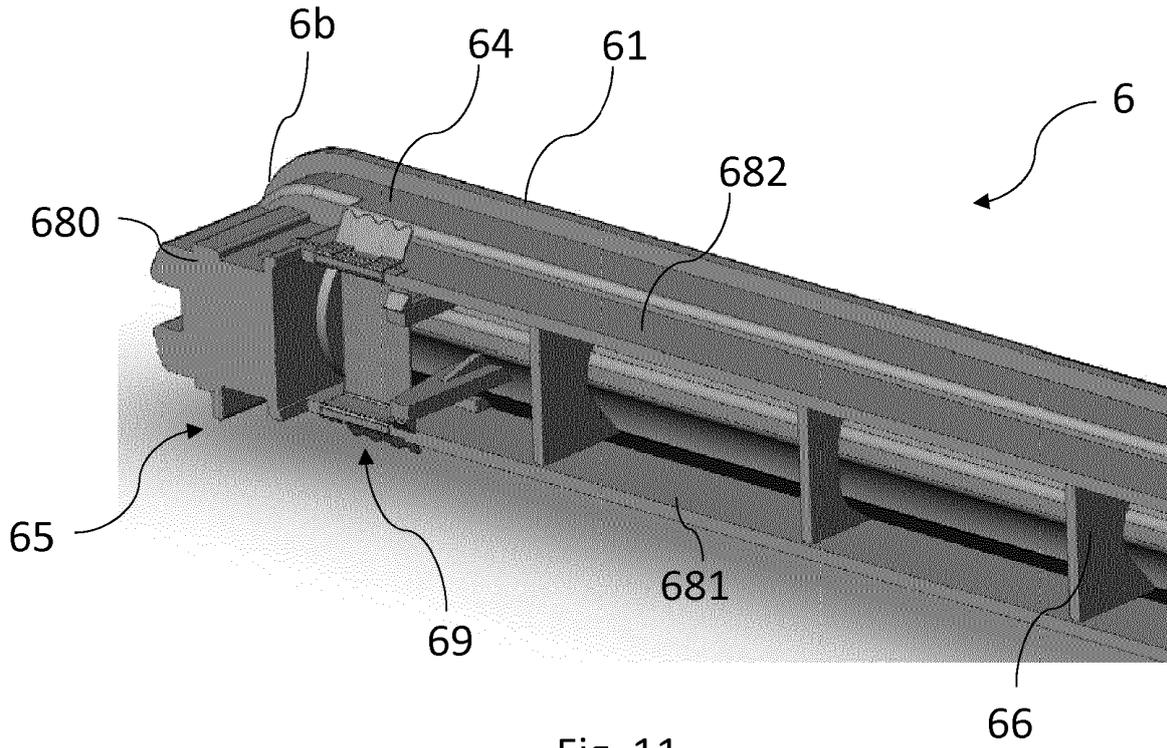


Fig. 11

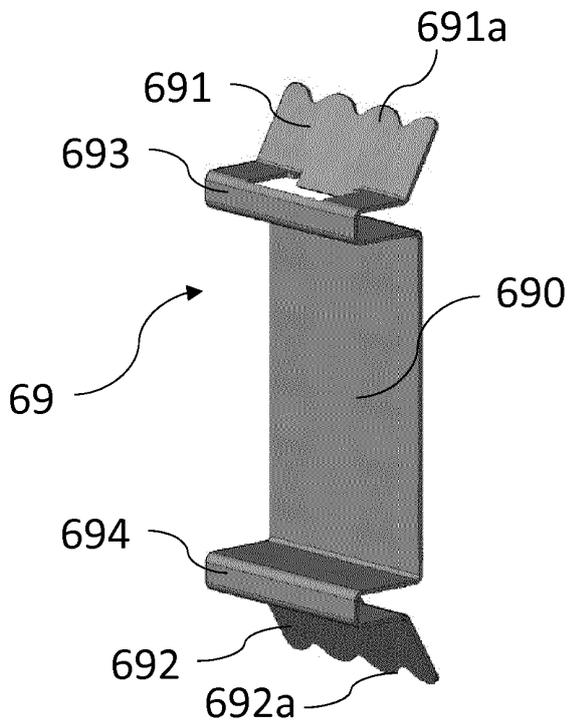


Fig. 12a

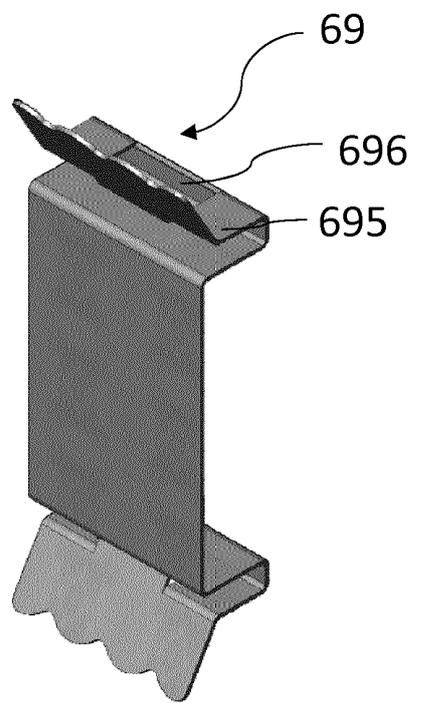


Fig. 12b

**REFERENCES CITED IN THE DESCRIPTION**

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