



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.07.2014 Bulletin 2014/30

(51) Int Cl.:
E06B 7/02 (2006.01)

(21) Application number: **14151377.0**

(22) Date of filing: **16.01.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **VKR Holding A/S**
2970 Hørsholm (DK)

(72) Inventor: **Sølvsten, Jacob Skou**
6950 Ringkøbing (DK)

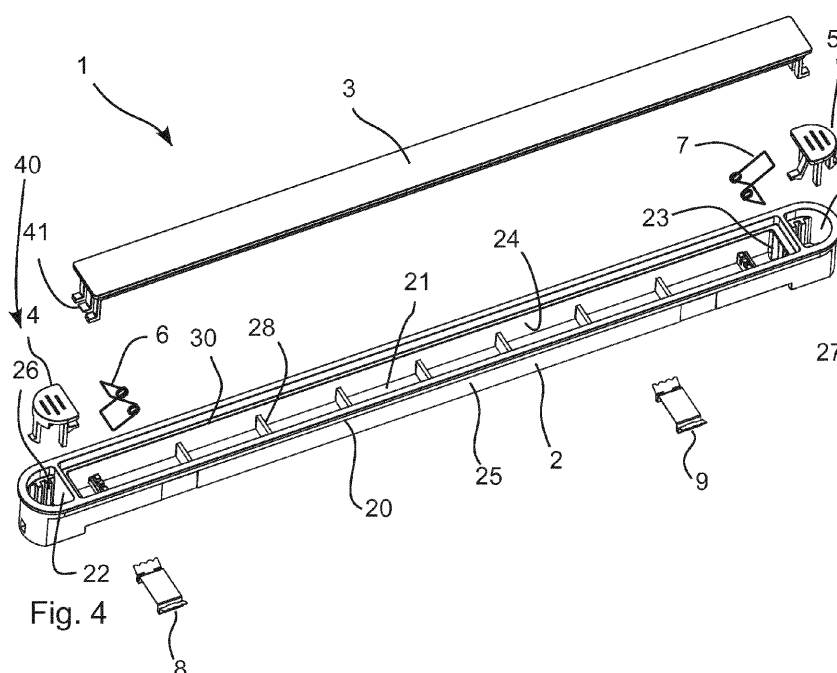
(74) Representative: **Münzer, Marc Eric**
Guardian IP Consulting I/S
Diplomvej, Building 381
2800 Kgs. Lyngby (DK)

(30) Priority: **18.01.2013 DK 201370026**

(54) **A fresh air valve with a displaceable cover plate**

(57) A fresh air valve (1) which comprises an elongated housing (2) with an elongated slot shaped through flow opening (21) for building into elongated slot shaped openings in walls or frames, for example window frames and an elongated cover plate (3) which is displaceably arranged in the elongated housing to be displaceable between two positions, a closed position in which the through flow opening is closed and an open position in which the through flow opening is at least partially open. Wherein the elongated cover plate comprises an elon-

gated stringer element (32) made from a first material and extending along the longitudinal axis of the elongated cover plate, and an outer shell (33) comprising a material different from the first material, said outer shell being arranged to envelope the stringer element within the outer shell such that the material of the outer shell physically locks the stringer to the outer shell, and said first material having a higher modulus of elasticity than the material of the outer shell. In this way, a cover element is provided which is robust and easy to manufacture.



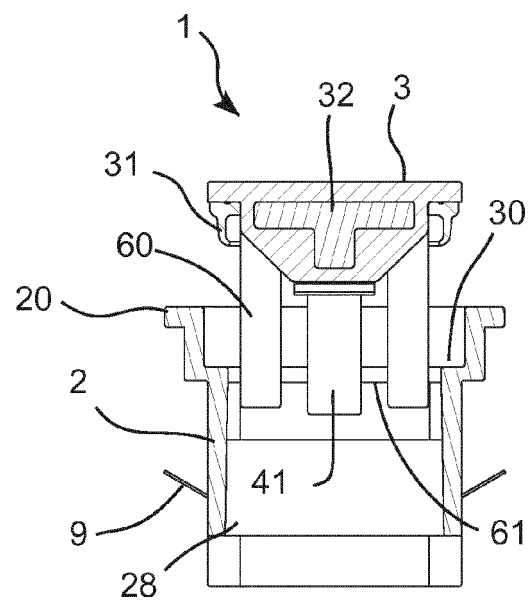


Fig. 3

Description

[0001] The current invention relates to a fresh air valve of the kind which comprises an elongated housing with an elongated slot shaped through flow opening for building into elongated slot shaped openings in walls or frames, for example window frames, and an elongated cover plate which is displaceably arranged in the elongated housing to be displaceable between two positions, a closed position in which the through flow opening is closed and an open position in which the through flow opening is at least partially open.

Description of related art

[0002] Fresh air valves of this kind are well known in the art. Some different examples are disclosed in DE20011184U1, DK122840B, GB2311848B, US7393271B2, WO9010777A1, WO9735087A1, EP1917483A1 and EP2231985A1.

[0003] These prior art documents all disclose fresh air valves having various disadvantages. For example, some of the valves disclose a complicated and fragile locking mechanism. Others disclose a locking mechanism which is difficult to assemble. Others disclose a locking mechanism which is prone to getting jammed with dirt over time. Others disclose an expensive construction of the cover plate. Others disclose a complicated seal arrangement between the housing and the cover plate. Others are prone to condensation problems due to the poor insulating abilities of the cover plate.

Summary of the invention

[0004] The current invention seeks to provide a fresh air valve of the kind as mentioned in the opening paragraph but which is better than the ones known from the prior art.

[0005] This is provided via the features disclosed in the characterizing portion of claim 1. In this way, a strong and robust cover plate is provided.

[0006] It should be noted that the phrase "physically locks" should be understood in that the material of the outer shell is arranged to surround a portion of the stringer element so that it is not possible to remove the stringer element from the outer shell without destroying the outer shell. For example a solution where the stringer element can be unsnapped from the outer shell would not be considered to be included in the scope of this invention.

[0007] Additional advantageous features are described in the dependent claims.

[0008] It should be emphasized that the term "comprises/comprising/comprised of" when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof. For example, in the claims it is stated that the cover plate comprises a

stringer element. However, according to the understanding of this specification, this should be understood as comprising at least one stringer element. Therefore, a cover plate having two or more stringer elements would be included within the scope of the claims.

Brief description of the drawings

[0009] In the following, the invention will be described in greater detail with reference to embodiments shown by the enclosed figures. It should be emphasized that the embodiments shown are used for example purposes only and should not be used to limit the scope of the invention.

Figure 1 shows a top perspective view of a first embodiment of a fresh air valve according to the invention, where the cover plate is in its open position.

Figure 2 shows a top perspective view of the fresh air valve of figure 1 with the cover plate in its closed position.

Figure 3 shows a cross section view of the fresh air valve of figure 1 according to the line III-III defined in figure 1.

Figure 4 shows a top perspective exploded view of the fresh air valve of figure 1.

Figure 5 shows a top perspective detail exploded view of one end of the fresh air valve of figure 1.

Figure 6 shows a close-up perspective view of the push button of the locking mechanism of the fresh air valve of figure 1.

Figure 7 shows a bottom perspective view of the fresh air valve of figure 1.

Figure 8 shows a top view of the fresh air valve of figure 1.

Figures 9-11 schematically show the function of the locking mechanism of the fresh air valve of figure 1.

Figure 12 shows a bottom perspective view of the cover plate of the fresh air valve of figure 1.

Figure 13 shows a cross section view of the cover plate of figure 12 according to the line XIII-XIII defined in figure 12.

Figure 14 shows a top perspective view of the cover plate of figure 12.

Figure 15 shows a cross section view of the cover plate of figure 12 according to the line XV-XV defined

in figure 12.

Figure 16 schematically shows a cross section view of a second embodiment of a cover plate.

Figure 17 schematically shows a cross section view of a third embodiment of a cover plate.

Figure 18 schematically shows a cross section view of a fourth embodiment of a cover plate.

Detailed description of the embodiments

[0010] Figures 1-15 are all related to the same embodiment of a fresh air valve, and as such the reference numerals used will be the same. Figures 16-18 relate to separate embodiments of a cover plate suitable for use with a fresh air valve.

[0011] The first embodiment 1 of a fresh air valve according to the invention comprises an elongated housing 2, a cover plate 3, two push buttons 4,5, two springs 6,7 and two fastening clips 8,9. The fastening clips and the springs are of the kind which are known to the person skilled in the art and as such these will not be described in more detail in this specification.

[0012] The fresh air valve is of the kind which can be mounted in an elongated slot in wall or frame. One typical example of the use of such a valve is in a window frame. Typically, a slot is machined in a window frame and the fresh air valve is inserted in the slot by pressing it into the slot. It can be seen that the ends of the housing are semi-circular. This fits well with the fact that when machining a slot in a frame, it is typical to use a router with a circular cutter. Therefore, the start and end of the slot will be rounded. The rounded ends of the housing therefore match the rounded ends of the machined slot. A small overhang 20 on the top of the housing ensures that small manufacturing tolerances in the machining of the slot are covered by the fresh air valve. The clips 8,9 are arranged to grip onto the bottom and/or the sides of the housing and when the housing is pressed into the machined slot, the edges of the clips will dig into the sides of the slot, thereby holding the housing fixed in the machined slot.

[0013] Furthermore, the width and length of the machined slot in the window frame are chosen to match the width and length of the housing. In this way, the fresh air valve fills the slot completely and a tight fit can be formed between the outer sides of the housing and the inner sides of the machined slot. This prevents unwanted air flow between the sides of the slot and the outer sides of the housing. In certain cases, it might be desired to apply a seal between the outer side of the housing and the inner sides of the slot.

[0014] The housing further comprises an elongated slot shaped through flow opening 21. The through flow opening in this embodiment is rectangular with a length which is greater than its width. The through flow opening

has two end walls 22,23, one end wall arranged at each end of the through flow opening and two side walls 24,25, one side wall arranged along each longitudinal side of the through flow opening. The through flow opening allows air to flow through the housing when the through flow opening is not blocked. The through flow opening is arranged as an elongated channel having a length, a width and a depth, the length axis being parallel with the longitudinal axis of the elongated housing. When built into a wall or frame, the area defined by the length and the width is the through flow area and the depth would be arranged perpendicular to the outer surface of the wall or frame. The housing further comprises two wells 26,27, one arranged at either end of the housing. The wells are arranged on the "outside" of the end walls of the through flow opening. By "outside" is meant further from the center of the housing. The push buttons 4,5 are arranged in these wells as will be described later on in this specification. In order to strengthen the housing and the through flow opening, a number of strengthening ribs 28 are provided in the through flow opening. The strengthening ribs 28 are connected to opposing side walls and are arranged perpendicular to the side walls. The ribs therefore span the through flow opening.

[0015] In order to prevent airflow through the through flow opening when desired, a cover plate 3 is provided. The cover plate 3 is in the current embodiment arranged as a rectangular plate having dimensions so that it can block the through flow opening and block air flow through it. The cover plate is arranged such that it can assume at least two positions. In a first position, an open position, the cover plate is arranged so that air can flow through the through flow opening and in a second position, a closed position, the cover plate is arranged so that air cannot flow through the through flow opening.

[0016] In one embodiment, the cover plate could be arranged to fit inside the through flow opening like a plug and thereby block the air flow through it. In another embodiment, the cover plate could be arranged slightly larger than the through flow opening like a cover over the through flow opening. In the current embodiment, the through flow opening is provided with a shoulder 30 onto which the cover plate can be fitted in the closed position of the cover plate. The dimension of the shoulder is arranged such that the cover plate can be pushed into the through flow opening, thereby allowing the top surface of the cover plate to be flush with the top surface of the housing.

[0017] As can best be seen in figure 3, the cover plate is provided with a co-injected seal 31. More details of the seal 31 are provided later on in this specification. The seal 31 is arranged on the bottom surface of the cover plate and is arranged to press against the shoulder 30 in the through flow opening when the cover plate is in its closed position, thereby ensuring that an essentially air tight seal is provided between the housing and the cover plate. Furthermore, as can best be seen in figure 3, the cover plate is provided with an internal stringer 32 to pro-

vide extra stiffness. More details of the construction of the cover plate will be provided later on in this specification.

[0018] Springs 6,7 arranged between the cover plate and the housing at each end of the cover plate ensure that the cover plate is biased away from the housing, thereby biasing the cover plate into its open position. When it is desired to close the housing, the cover plate is pressed in towards the housing thereby counteracting the bias of the springs.

[0019] In order to hold the cover plate in its closed position, locking mechanisms 40,50 are provided at each end of the housing which are engageable with engagement elements 41,51 arranged at either end of the cover plate. In the current embodiment the engagement elements are provided on the bottom of the cover plate, whereby they are hidden from view when the cover plate is in its closed position. When the cover plate is pressed into its closed position, the engagement elements on the cover plate, engage the locking mechanisms thereby holding the cover plate in place. When it is desired to open the cover plate, the locking mechanisms are unlocked thereby releasing the engagement elements of the cover plate and allowing the cover plate to displace into its open position due to the bias of the springs.

[0020] In the current embodiment, the locking mechanisms are independent of each other. As such one of the locking mechanisms could be unlocked while the other one was locked. This allows the cover plate to assume a position where it is partially closed and arranged diagonally in the opening. This also means that in order to close the cover plate, one could either press both ends of the cover plate to simultaneously engage both sides of the cover plate with the locking mechanisms at both ends of the housing which requires two hands or one could first press one end of the cover plate thereby engaging that end of the cover plate with the locking mechanism at one end of the housing then one could press the cover plate at the other end, thereby engaging that end of the cover plate with the locking mechanism at the other end of the housing.

[0021] In the current embodiment, it can also be noted that each side of the cover plate can assume one of two stable positions. The first position is completely open, the other is completely closed. In another embodiment (not shown) the locking mechanism could be arranged to allow the ends of the cover plate to assume a number of different positions, for example, by providing the locking mechanism or the engagement elements with a ratchet type mechanism. This would provide a fresh air valve where the air flow through the valve could be controlled more precisely.

[0022] The locking mechanism and the engagement element will now be described in more detail. The function of the locking mechanism can best be explained with reference to figures 9-11. For the sake of simplicity, only the locking mechanism and engagement element at the left side of the fresh air valve as shown in the figures will

be discussed. However, the locking mechanism and the engagement element at the right side of the fresh air valve are identical.

[0023] The engagement element 41 is in the form of a "hook" projecting from the bottom of the cover plate element. The hook comprises a first elongated flexible portion protruding from the bottom of the cover plate. At the end of this flexible portion, a protrusion is formed. The hook could also be described as a leg or an L shaped member. The locking mechanism is in the current embodiment in the form of a plastic injection moulded push button 4, or activation element, arranged displaceably in the well 26 of the housing 2. The push button is arranged to be displaceable along an axis which is essentially parallel to the air flow through the through flow opening. It could also be said that the push button is arranged to be displaceable along an axis which is perpendicular to the cross sectional area of the through flow opening.

[0024] In figures 9-11, it can be seen that the push button comprises two "legs" 42, 43 extending from the bottom of the push button. Each leg is formed as an elongated flexible protrusion protruding from the bottom of the push button. One leg 42 is arranged with a protrusion 44 which extends out through a small opening 45 in the end wall 22 of the through flow opening. The leg 42 is however arranged to be flexible and by bending the leg 42, the protrusion 44 can be retracted from the small opening 45. As can be seen in figures 9-11, the bottom surface of the protrusion is formed with a sloped surface 46 which is in contact with an edge of the small opening 45 in the end wall 22. Due to the sloped surface of the protrusion, when the push button is pressed down into the well, the protrusion is forced to retract from the small opening, thereby causing the leg 42 to bend. When the push button is released, the stiffness of the leg 42 causes the leg to want to return to its normal position, thereby causing the protrusion to again extend out through the small opening and thereby the push button moves up again due to the sloped surface.

[0025] As can also be seen from figures 9-11 the bottom surface 47 of the engagement element is also formed with a sloped bottom. In this way, when the engagement element is pushed downwards and the bottom surface of the engagement element meets an edge, the edge is either forced to the left (according to the orientation in the figures) or the engagement element is forced to the right. This situation is shown in figure 9.

[0026] Figures 9-11 also show the second leg 43. The second leg is also formed as a hook element. The hook element of the second leg, allows the push button to be inserted into the well and then the hook element of the second leg engages with a slot 48. When the push button moves up and down in the well, the hook element of the second leg slides up and down in the slot 48, but the hook element prevents the push button from moving too far up and falling out of the well. The push button is also formed with two guiding legs 49 (not shown in figures 9-11, but shown in figures 4 and 5). The two guiding legs

are arranged perpendicular to the upper surface of the push button and are arranged in slots 50 in the well. The slots and the guiding legs ensure that the push button moves up and down in the well.

[0027] In general, the figures show one specific embodiment of a locking mechanism. However, it should be clear to the person skilled in the art that the locking mechanism could perform the same function but have a different form. For example, in the current embodiment, the guiding legs have the function of ensuring that the push button slides up and down along a well defined path. The second leg 43 can be said to have the function to ensure that the push button does not fall out of the well and has a well defined top position. The first leg 42 has the function of guiding the protrusion in and out of the small opening. Therefore, the locking mechanism can be said to have three main functions, a guiding function, a top position defining function and a protrusion moving function. These three functions could be arranged with other physical means than the ones used in the shown embodiment.

[0028] Figure 9 shows what happens when the cover plate is moved from its open position to its closed position. As the cover plate is pushed down into the housing, the bottom surface 47 of the engagement element comes into contact with the top edge of the protrusion 44. As the cover plate is pushed further down, the protrusion 44 is pushed further into the small opening 45. The engagement element 41 may also be pushed to the right, an amount depending on the strength difference between the first leg 42 of the push button and engagement element 41. Once the protrusion has been pushed all the way into the small opening, the engagement element can pass the protrusion. As soon as the engagement element has passed the protrusion, the protrusion snaps out again (as shown in figure 10) due to the elasticity of the first leg 42. The engagement element is then held in place by the protrusion and the cover plate kept in place in its closed position.

[0029] Figure 11 shows what happens when the push button is pushed into the well when the cover plate is in its closed position. In this case, the sloped surface 46 of the protrusion 44 is pushed against the edge of the small opening 45. This forces the protrusion to retract into the well. Once the protrusion is retracted enough, the engagement element will release the protrusion, and the cover plate will be forced outwards into its open position due to the bias of the springs.

[0030] In order to ensure that the cover plate does not fall out of the housing, two stabilizing elements 60 are arranged at each end of the cover plate. These stabilizing elements are also in the form of a hook and hook onto the bottom surface 61 of the shoulder 30 of the through flow opening in the open position of the cover plate. The bottom surface 61 can be seen in figures 9-11. Since there are two stabilizing elements at each end of the cover plate, one at each corner, the stabilizing elements help to prevent the cover plate from twisting in the opening.

[0031] It should be noted that the engagement ele-

ments arranged on the bottom surface of the cover plate are arranged inside the through flow opening, while the locking mechanisms are arranged on the outside of the through flow opening. In this way, the locking mechanisms are kept separate from the through flow opening. The interaction between the locking mechanisms and the engagement elements occurs via the small openings in the end walls.

[0032] Figures 12-15 show more details of the cover plate 3 of the fresh air valve shown in figures 1-11. As mentioned earlier in this specification, the cover plate is manufactured via an injection moulding process out of a plastic material. In order to give strength and stiffness to the cover plate, an aluminium stringer 32 is provided inside the cover plate 3. It could be said that the cover plate comprises an outer shell 33 and a stringer element 32 enveloped inside the outer shell 33. In particular, it can be said that the material of the outer shell 33 is arranged to physically lock the stringer element to the outer shell, thereby ensuring that the cover plate feels like a single integrated element which does not need to be manually assembled and which cannot fall apart. In the current embodiment the outer shell almost completely surrounds the stringer element so that only a very small percentage of the outer surface of the stringer element is exposed.

[0033] During manufacturing, the aluminium stringer 32 is arranged inside the empty mould and held in place in the correct position. Plastic material is then injected into the mould, thereby surrounding or enveloping the aluminium stringer with plastic. During the injection moulding process, the aluminium stringer is held in place by support elements in the mould. These support elements occupy space in the mould, and the plastic cannot fill the space occupied by the support elements. This can be seen by the grooves 34 in the cover plate. In this way, a small amount of the outer surface area of the stringer element is exposed after the injection moulding process is completed.

[0034] Furthermore, as mentioned previously, the cover plate also comprises a seal 31 arranged around the periphery of the cover plate. This seal could be arranged in different ways, but is in the current embodiment formed during the injection moulding of the cover plate in the same mould. The mould is a two position mould, where in a first position, the outer shell of the cover plate itself is moulded by injecting a hard plastic into the mould cavity. Once the plastic material of the cover plate is sufficiently cooled, the mould is put into its second position whereby a new cavity is formed into which a second plastic material is injected. This second plastic material could be softer than the first plastic material and is suitable for forming a seal. Since the seal is formed during the injection moulding of the cover plate, no assembly is required for the cover plate. The cover plate comes out of the mould completely assembled. Also the engagement elements 41 and the stabilizing elements 60 are injection moulded in the current embodiment, again in the same mould as the outer shell of the cover plate. In this way,

a cover plate is provided which is a very simple and robust part.

[0035] In the current embodiment, the cover plate is manufactured with a single aluminium stringer 32 having a T shaped cross section. However, within the scope of the current invention, the cover plate could be arranged with different forms of stringers. For example, in one embodiment, not shown, the stringer could be manufactured from a fibre reinforced composite material, for example pultruded polyurethane with a high composition of glass fibres. In another embodiment, not shown, instead of a single T shaped stringer, two separate L shaped stringers could be arranged in the cover plate. Many other forms of stringers could be imagined which increase the stiffness of the cover plate.

[0036] Furthermore, in the current embodiment, the cover plate is formed as a plastic injection moulded component with integrated engagement elements and stabilizing elements. However, in another embodiment (not shown), the cover plate could be formed via an extrusion or pultrusion process, where the body of the cover plate is formed via the extrusion or pultrusion process and the engagement elements and/or stabilizing elements are fastened to the cover plate after the extrusion/pultrusion process. Furthermore, the seal could be formed as a co-extruded component along the sides of the cover plate. A seal for the ends of the cover plate could be fastened to the cover plate when the fastening and/or stabilizing elements are fastened to the cover plate.

[0037] Furthermore, in one embodiment, one could imagine a process where in a first part of the process, a stringer element was extruded. The extruded stringer element was then fed directly into an extrusion or pultrusion apparatus to form a moving core about which the outer shell is formed. This could be considered to be a process where the stringer element is formed "inline" with the manufacture of the cover plate. This is similar to the way electrical wires are coated with plastic coverings. In this way, one could provide for a continuous process where only raw material needs to be stored prior to the process and out of the process comes the finished cover plate.

[0038] Figure 16 shows a second embodiment 100 of a cover plate according to the invention. In this embodiment, the stringer element 101 is made from an aluminium material and the outer shell 102 is manufactured from a plastic material injection moulded around the stringer element. As in the first embodiment, the stringer element is inserted into the empty mould and held in place. Plastic is then injected into the mould. As can be seen from the figures, the stringer element is formed as a T channel. Furthermore, the stringer element is formed with openings 103 spaced at regular intervals in the base of the stringer element. When the plastic of the outer shell 102 is injected into the mould, the plastic flows through the openings and thereby locks the stringer element to the outer shell. In contrast to the other embodiments, a groove 104 is provided in the outer periphery of the outer shell and an o-ring 105 is arranged in the groove. Fur-

thermore, in this embodiment, the stringer element forms the outer surface of the cover plate. Therefore, the material of the stringer element is visible from the outside of the fresh air valve.

[0039] Figure 17 shows another embodiment 110 of a cover plate according to the current invention. In this embodiment the stringer element 111 is formed as a pultruded glassfiber reinforced element. The outer shell 112 is again injection moulded around the stringer element. The bottom of the stringer element 111 is formed with a strong center section 113 which provides stiffness to the cover plate and two hooks 114 to engage the material of the outer shell effectively. Furthermore, it can be seen that the majority of the outer surface of the stringer element is exposed. Furthermore, it can be seen that the outer shell "wraps" slightly around the top edge of the stringer element in order to more effectively hold the stringer element and the outer shell together. A seal 115 is co-injected into the mould after the outer shell is formed.

[0040] Figure 18 shows a fourth embodiment 120 of a cover plate according to the current invention. This embodiment is very similar to the first embodiment. In contrast to the first embodiment which used a T shaped cross section, in this embodiment a hollow circular element 121 is used as a stringer element. In this case, the stringer element is made from a carbon fibre tube. The ends of the tube are plugged before injection moulding so that plastic does not enter the hollow portion of the tube.

[0041] It is to be noted that some of the figures and the above description have shown the example embodiments in a simple and schematic manner. Certain mechanical details might have been removed since the person skilled in the art should be familiar with these details and they would just unnecessarily complicate this description and/or the figures. For example, in many of the figures, the springs 6,7 were removed to simplify the drawings.

Claims

1. A fresh air valve (1) of the kind which comprises

- an elongated housing (2) with an elongated slot shaped through flow opening (21) for building into elongated slot shaped openings in walls or frames, for example window frames and
- an elongated cover plate (3) which is displaceably arranged in the elongated housing to be displaceable between two positions, a closed position in which the through flow opening is closed and an open position in which the through flow opening is at least partially open

characterized in that the elongated cover plate comprises

- an elongated stringer element (32) made from a first material and extending along the longitudinal axis of the elongated cover plate, and

- an outer shell (33) comprising a material different from the first material,
 - said outer shell being arranged to envelope the stringer element within the outer shell such that the material of the outer shell physically locks the stringer to the outer shell, and
 - said first material having a higher modulus of elasticity than the material of the outer shell.
2. A fresh air valve (1) according to claim 1 **characterized in that** less than 10% of the outer surface area of the stringer element (32) is exposed.
 3. A fresh air valve (1) according to claim 2, **characterized in that** the outer surface area of the stringer element (32) which is exposed is located on the side of the cover plate (3) which is inside the housing (2) in the closed position of the cover plate.
 4. A fresh air valve (1) according to any one of claims 1-3, **characterized in that** the outer shell (33) is a single integrated element made from a single material.
 5. A fresh air valve (1) according to any one of claims 1-4, **characterized in that** the cover plate (3) is arranged such that the upper surface of the cover plate (32) is flush with the upper surface of the housing (2) in the closed position of the cover plate.
 6. A fresh air valve (1) according to any one of claims 1-5, **characterized in that** the top surface of the stringer element (32) is arranged closer towards the inside of the fresh air valve than the top surface of the outer shell (33).
 7. A fresh air valve (1) according to any one of claims 1-6, **characterized in that** the elongated cover plate (3) further comprises a sealing bead (31) arranged along the sides of the cover plate, said sealing bead being co-formed with the outer shell (33) of the elongated cover plate in the same process in which the outer shell is formed.
 8. A fresh air valve (1) according to any one of claims 1-7, **characterized in that** the outer shell (33) is manufactured via an injection moulding process and that the stringer element (32) is arranged within the mould before the material of the outer shell is injected into the mould.
 9. A fresh air valve (1) according to claims 7 and 8, **characterized in that** the mould used in the manufacture of the cover plate (3) is a two position mould, whereby the material of the outer shell (33) is injected into the mould in its first position, after which the mould is moved into its second position and the material of the sealing bead (31) is injected into the mould into a cavity revealed due to the expansion of the mould.
 10. A fresh air valve (1) according to claim 8 or 9, **characterized in that** engagement means (41) for engaging with a locking mechanism (40) of the fresh air valve are formed as an integrated part of the outer shell (33) of the elongated cover plate (3) during the injection moulding of the outer shell.
 11. A fresh air valve according to any one of claims 1-10, **characterized in that** the top surface of the outer shell of the elongated cover plate is coated with a coating to change the visual impression of the elongated cover plate.
 12. A fresh air valve according to any one of claims 1-10, **characterized in that** the first material is aluminium or a fibre reinforced material and the material of the outer shell comprises a plastic material.
 13. A fresh air valve according to any one of claims 1-7, **characterized in that** the outer shell is manufactured via an extrusion or a pultrusion process and where the stringer element is arranged as a moving core in the extrusion or pultrusion process and the cover plate is cut to the desired length after the extrusion or pultrusion process.
 14. A fresh air valve according to claim 13, **characterized in that** the stringer element is manufactured via an extrusion process in line with the extrusion or pultrusion process which manufactures the outer shell.
 15. A fresh air valve according to claim 13 or 14, **characterized in that** the sealing bead is co-extruded or co-pultruded together with the outer shell.

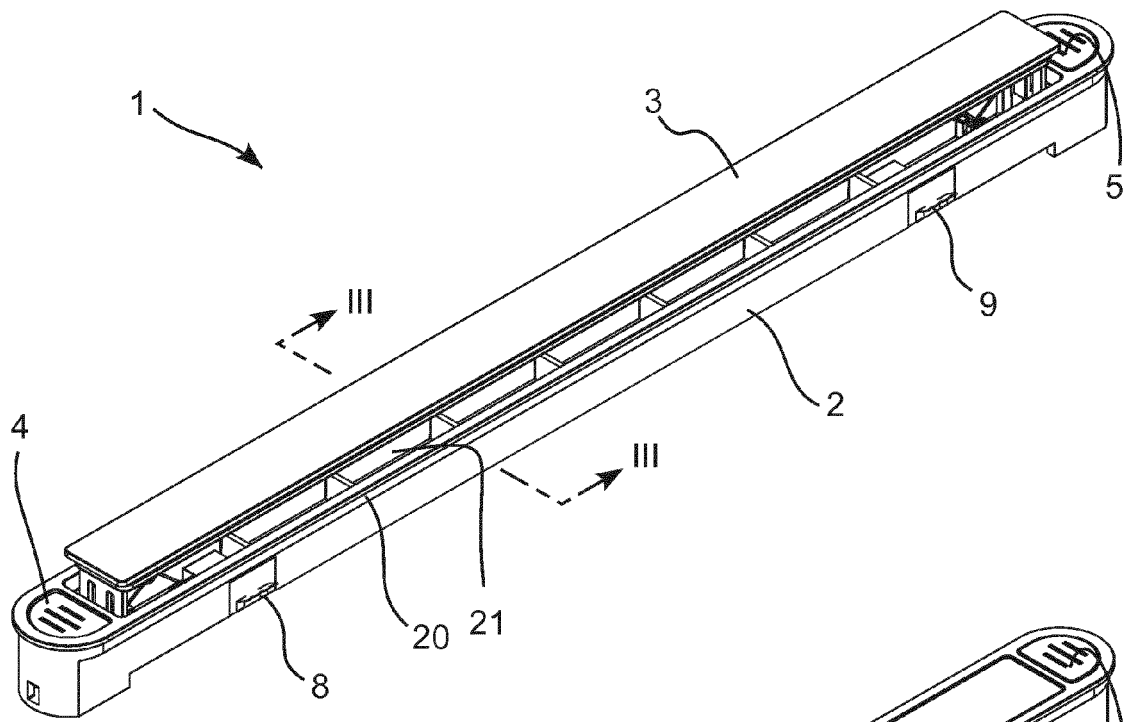


Fig. 1

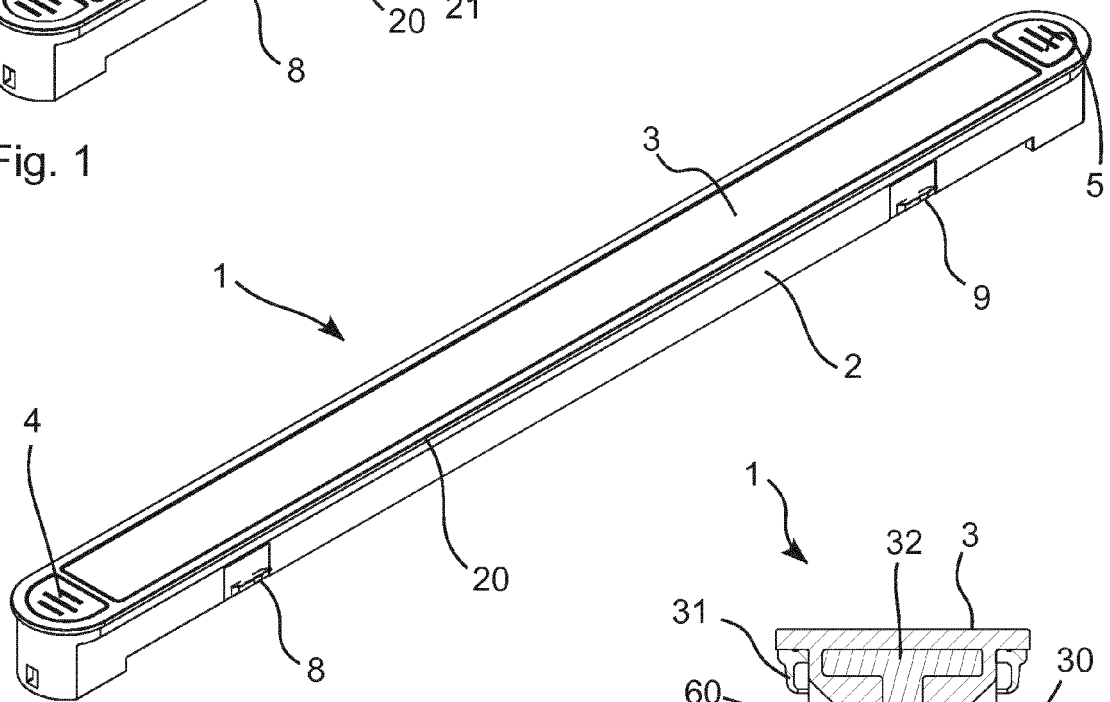


Fig. 2

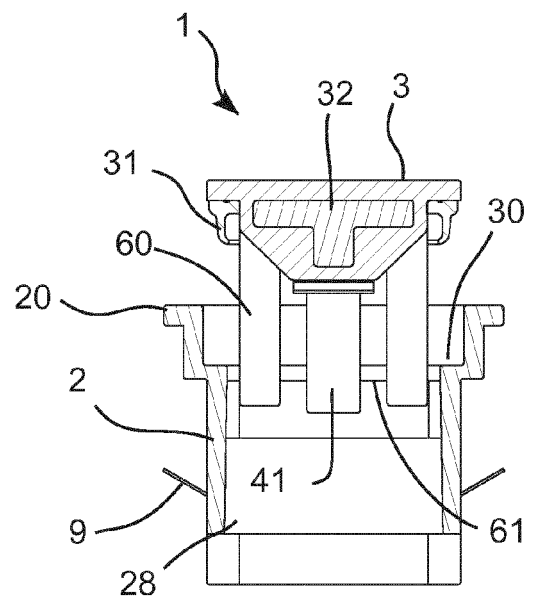
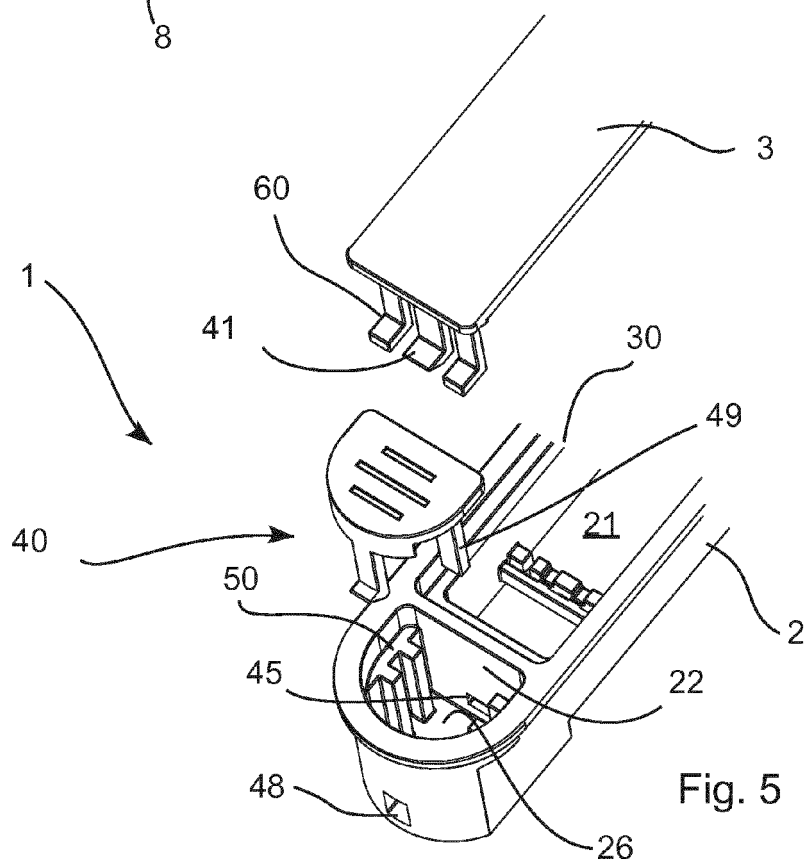
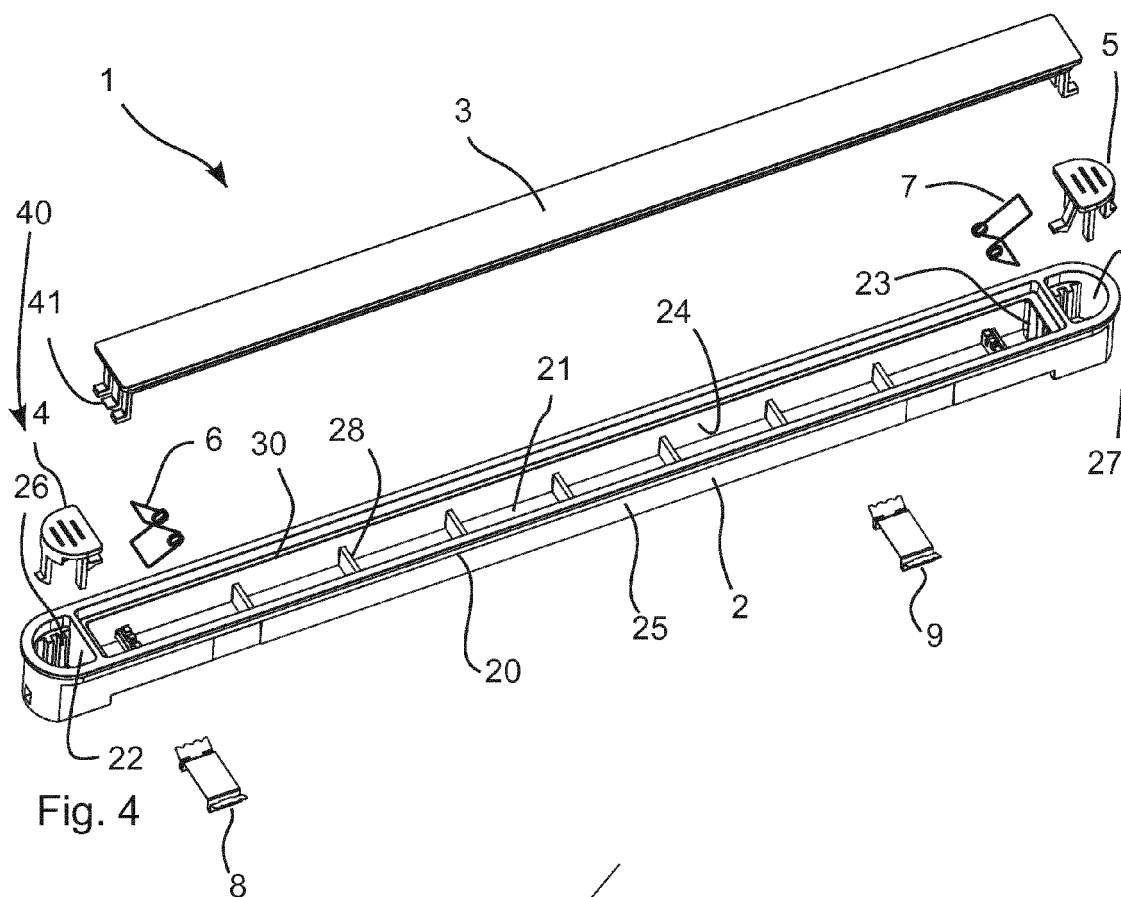
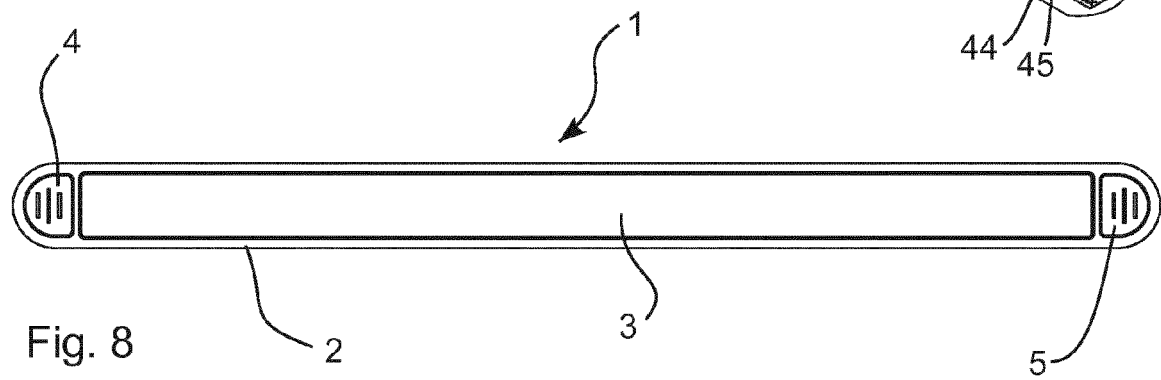
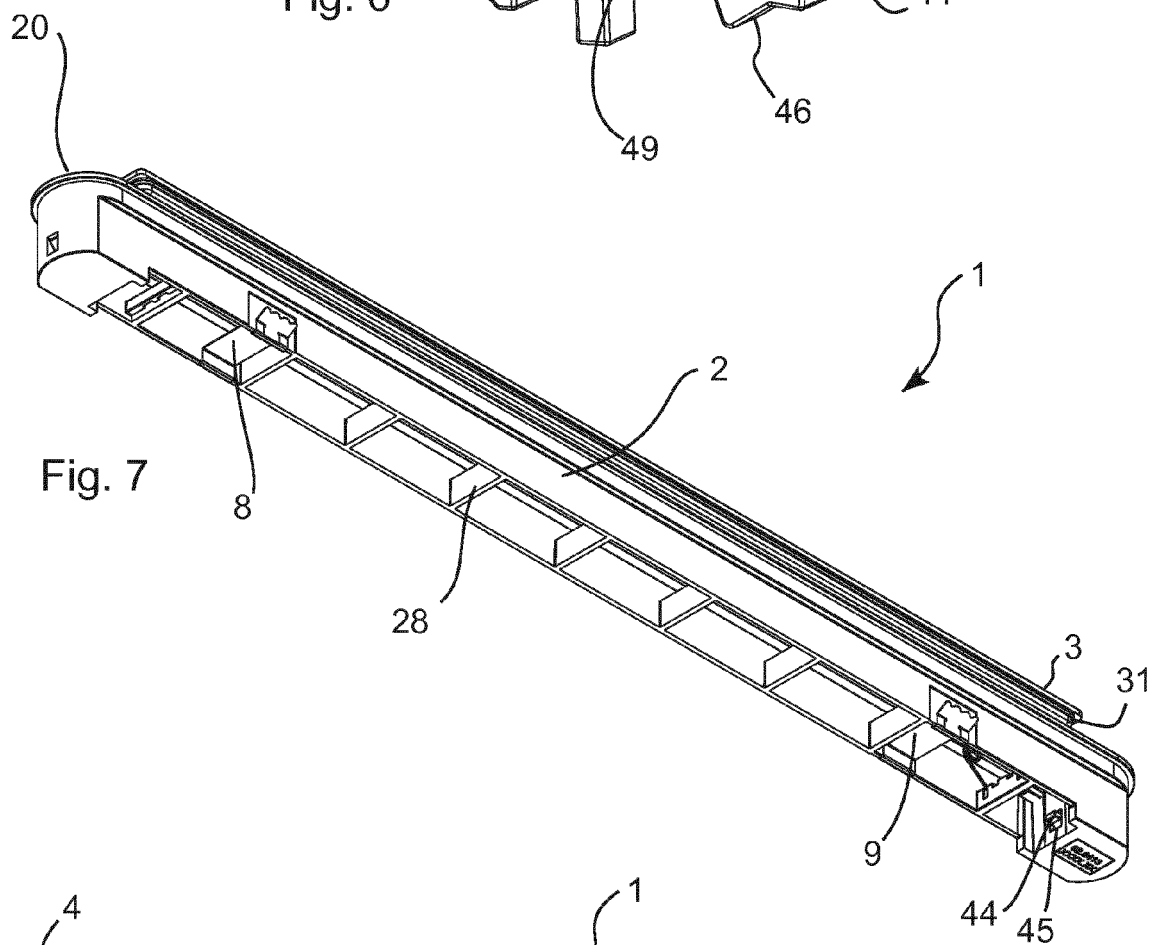
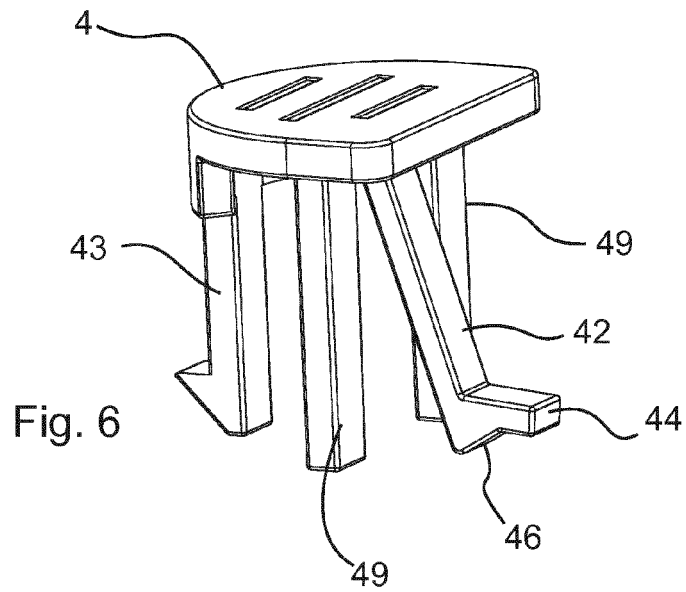
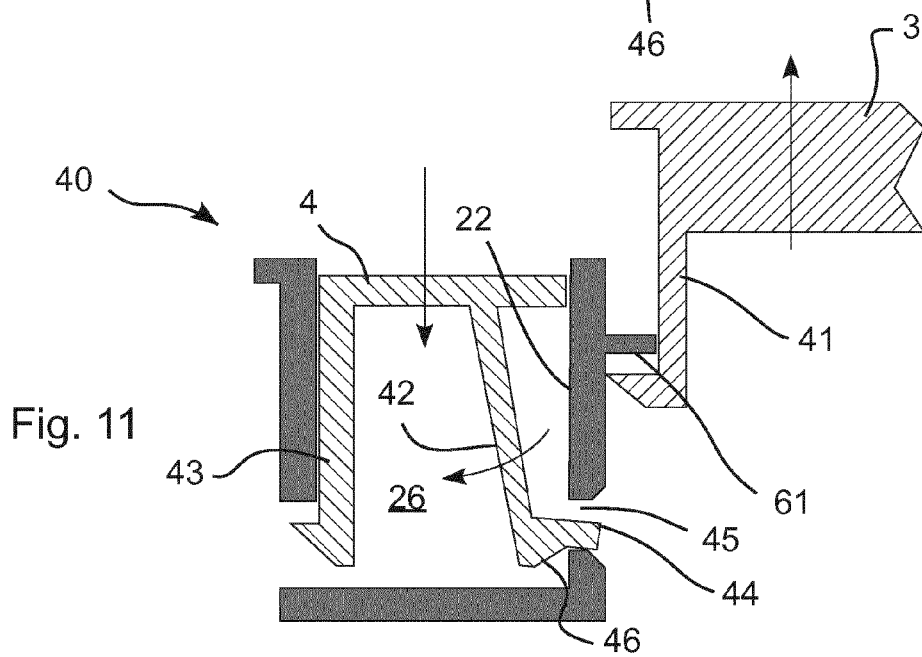
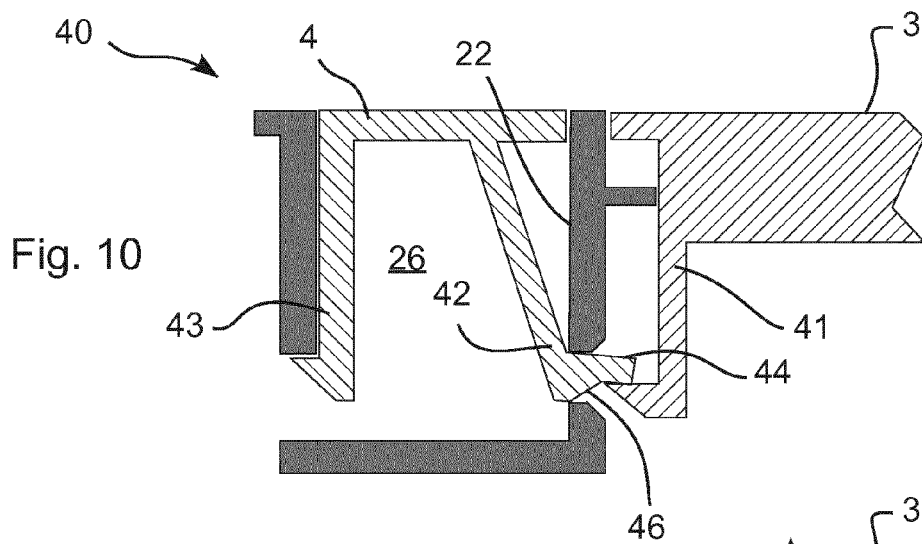
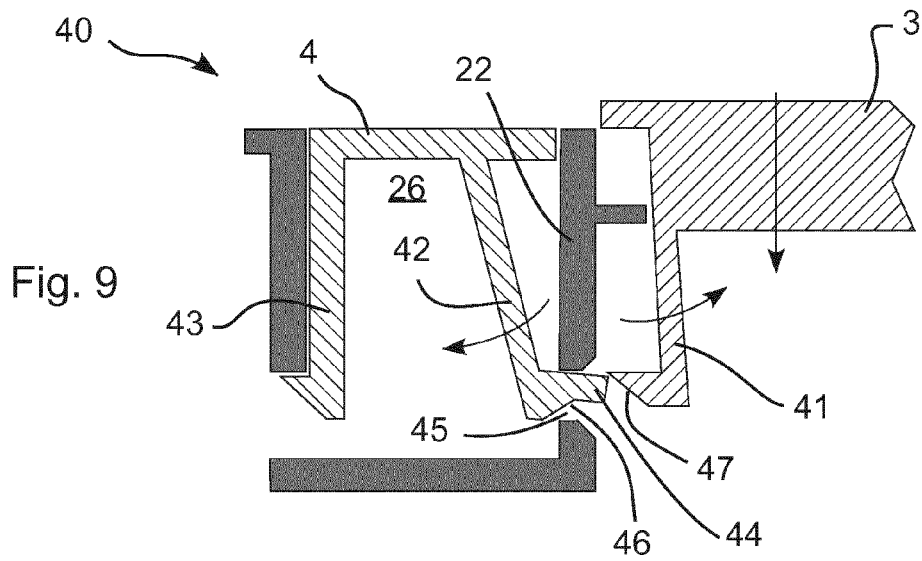


Fig. 3







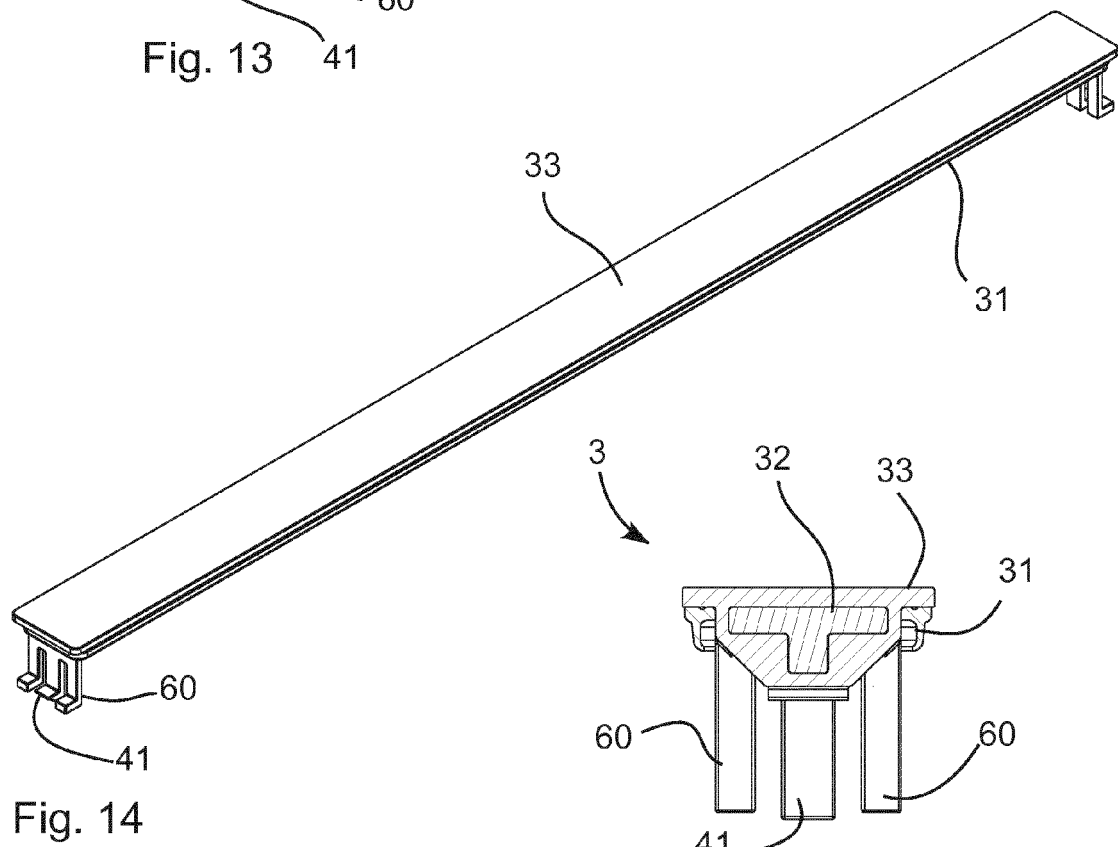
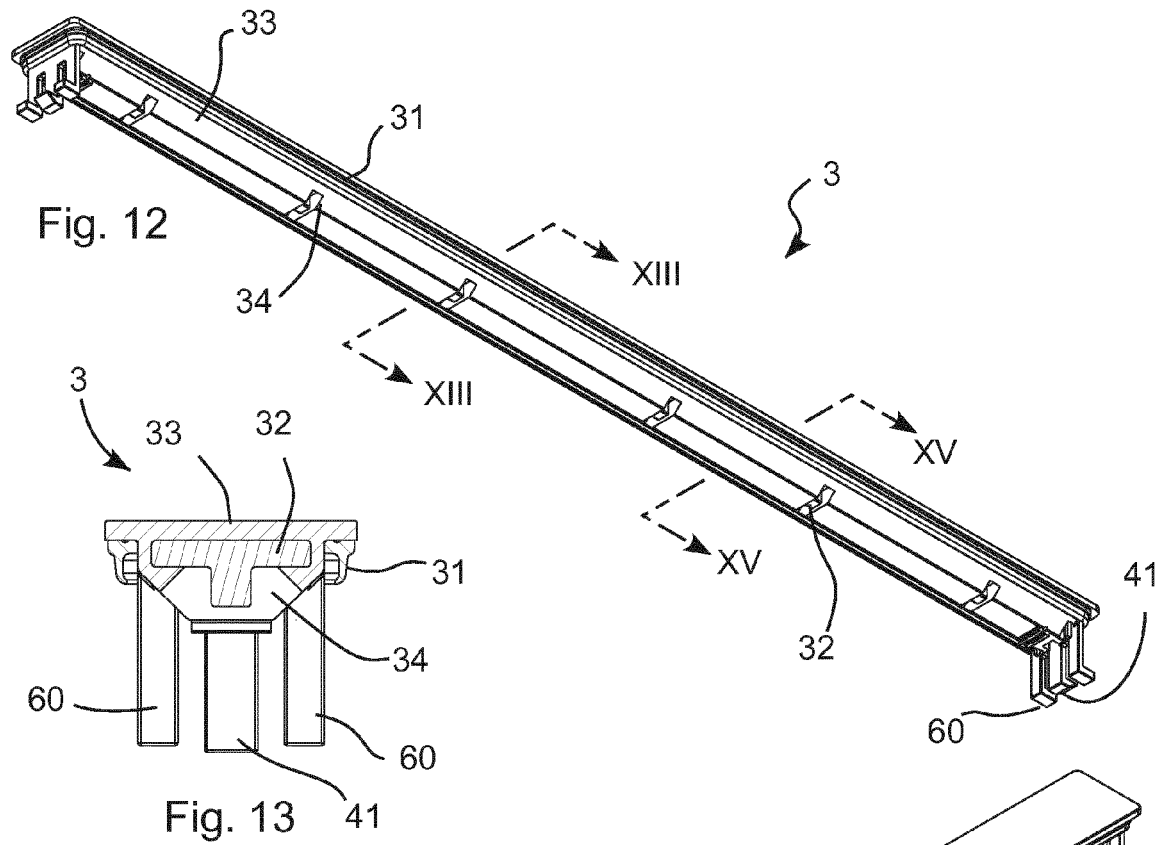


Fig. 16

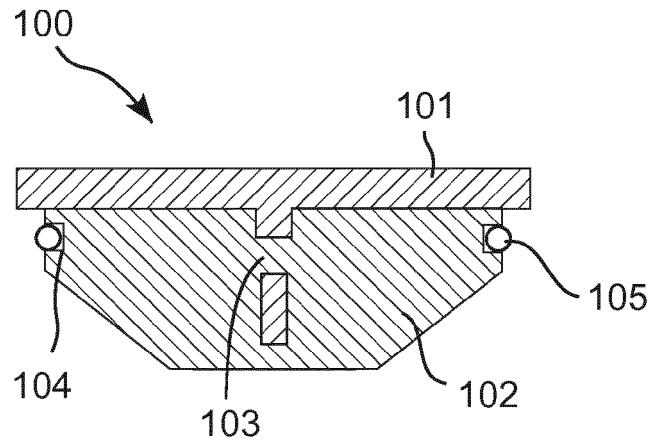


Fig. 17

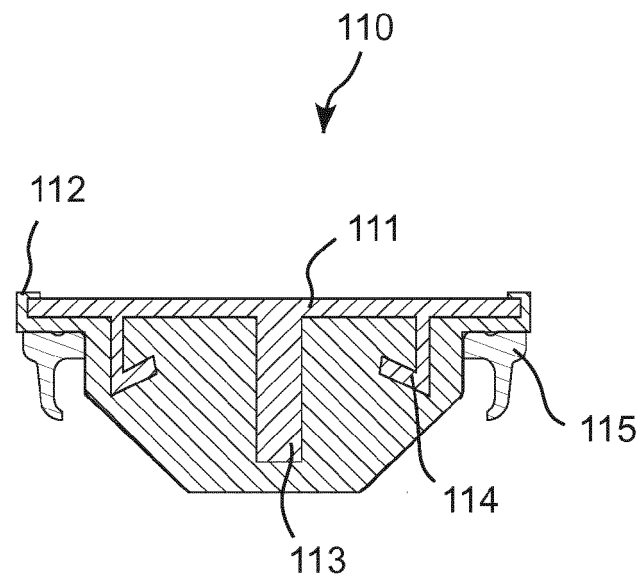
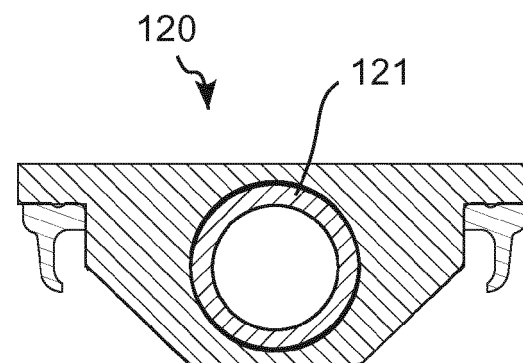


Fig. 18



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 20011184 U1 [0002]
- DK 122840 B [0002]
- GB 2311848 B [0002]
- US 7393271 B2 [0002]
- WO 9010777 A1 [0002]
- WO 9735087 A1 [0002]
- EP 1917483 A1 [0002]
- EP 2231985 A1 [0002]