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(54) **SASH WITH BLOCKING ELEMENT FOR TRANSVERSAL ELEMENT**

SCHIEBERRAHMEN MIT SPERRELEMENT FÜR EIN TRANSVERSALES ELEMENT

CHÂSSIS AYANT UN ÉLÉMENT DE BLOCAGE POUR ÉLÉMENT TRANSVERSAL

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(73) Proprietor: **Europrofili Group S.p.A.**
25045 Castegnato, Brescia (IT)

(72) Inventor: **MUSSINELLI, Giorgio**
I-25045 Castegnato, BRESCIA (IT)

(74) Representative: **Gamba, Alessandro**
Jacobacci & Partners S.p.A.
Piazza della Vittoria, 11
25122 Brescia (IT)

(56) References cited:
EP-A2- 0 792 993
CH-A5- 674 044
DE-A1- 2 065 100
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Description

[0001] The present invention relates to a sash and a method of assembling the sash.

[0002] A sash is usually known as a component adapted to close an architectural opening; in other words, sashes are known to make a division between two rooms otherwise communicating via such as an architectural opening.

[0003] It is also known that embodiments of sashes exist, containing multiple parts and multiple portions, for example comprising movable parts, generally rotatable, known as doors, and fixed parts, locked to the sub-frame, known as frame.

[0004] According to some embodiments, sashes divide the exteriors from the interiors, or divide two interiors.

[0005] According to some embodiments, the sashes that divide two interiors, or the sashes that divide an interior from an exterior, can have different features to respond to different needs, for example according to the conditions present in these environments, i.e. depending on which elements are present or not.

[0006] For example, the sash object of the present invention is particularly suitable for the division of an interior from an exterior but can also be used to divide two interiors.

[0007] In particular, the sashes of the present invention are of the type having a wooden part and a part in another material, such as aluminium or PVC. Specifically, the wooden part is facing towards the interior while the aluminium or PVC is facing outwards and is subject to weather conditions.

[0008] Many solutions of sashes of this type are already known in the art; examples of sashes of this type are described in documents EP15168696 and EP15168701, on behalf of the Applicant.

[0009] DE 20 2006 004 609 U1 discloses a sash according to the preamble of claim 1.

[0010] The main problem of this type of sashes is to have many difficulties in assembling the various components and in the subsequent installation of the sash, with particular reference to the cover frame.

[0011] The object of the present invention is to provide a sash which minimises and/or resolve such difficulties of assembly and installation.

[0012] This object is achieved by a sash and an assembly method according to the following description and claims.

[0013] The object of the present invention will now be described in detail, with the aid of the accompanying drawings, in which:

- figures 1a and 1b respectively show two perspective views in separate parts on opposite sides of a sash according to a preferred embodiment;
- figures 2a, 2b and 2c show three front views of a cover frame of a sash, object of the present invention, according to three preferred embodiments;
- figures 2d, 2e and 2f show three front views of a cover frame of a sash, object of the present invention, according to further preferred embodiment variants;
- figures 3a, 3b and 3c describe three enlarged perspective views of a detail of the sash shown in figure 2a in three locking steps of an upright element with a transversal element by means of a locking element according to a preferred embodiment: respectively of the insertion of the upright portion of the locking element into the upright groove, of the rotation of the locking element, and of the snap-locking of the transversal portion of the locking element into the transversal cavity;
- figures 4 and 4' schematically show the locking steps shown in figures 3a, 3b and 3c;
- figures 5a and 5b show two perspective views of the locking element, according to a preferred embodiment, shown in figures 3a, 3b and 3c;
- figure 6 shows an enlarged perspective view of a detail of the sash shown in figure 2a, where the upright element is locked to the transversal element by means of a locking element according to an example not falling within the scope of the claimed invention;
- figures 6a, 6a, 6b and 6b' show two perspective views respectively assembled and in separate parts of the locking element according to the example, which is not part of the claimed invention, shown in figure 6;
- figure 7 shows an enlarged perspective view of a detail of the sash shown in figure 2a, where the upright element is locked to the transversal element by means of a locking element according to yet a further preferred embodiment;
- figures 7a and 7b show two perspective views of the locking element according to the embodiment shown in figure 7.

[0014] With reference to the tables above, reference numeral 1 denotes, as a whole, a sash for closing an architectural opening. Preferably, sash 1 has an inner side I, facing an internal environment, and an outer side E, facing an external environment, for example open and therefore subject to weather.

[0015] Preferably, sash 1 is a window or a French window. Preferably, "window" and "French window" means in the following description any solution of sash 1 in which there is a moving wing, mounted on a frame, where the window is small in size and lifted from the ground plane, while the French window is larger and extends above the ground plane; preferably, the term window is meant to also include solutions such as skylights or French doors. Moreover, in further embodiments, sash 1 has a fixed wing mounted on a frame, or only the frame itself. In other words, sash 1 object of the present invention, as described hereinafter, has embodiments in which it has both movable and fixed portions, and embodiments in which it is totally fixed.

[0016] Moreover, the sash 1 comprises at least one

transparent element 2, preferably of a planar shape, suitable to allow the passage of light, having an inner face 21 and an outer face 22. Preferably, in the embodiments described hereinafter, in which there is a transversal element added, the transparent elements 2 are two.

[0017] Preferably, the transparent element 2 is a glass plate, or is double glazing, or triple glazing, or a glass block, or a glass block with integrated curtain.

[0018] According to the invention, sash 1 comprises a weight-bearing frame 3 adapted to support the transparent element 2, fixing it by engaging the inner face 21.

[0019] In a preferred embodiment, the weight-bearing frame 3 is made of wood.

[0020] The weight-bearing frame 3 is placed towards the inside.

[0021] According to the invention, the sash comprises a cover frame 4 adapted to protect the weight-bearing frame 3.

[0022] The cover frame 4 is placed towards the outside.

[0023] Preferably, the cover frame 4 is of a suitable material to resist weathering, such as aluminium; there are also embodiments in which said cover frame 4 is made of polymeric material such as PVC.

[0024] According to a preferred embodiment, sash 1 comprises a plurality of fixing elements 20 attached to weight-bearing frame 3 and supporting the cover frame 4; preferably, the cover frame 4, widely described hereinafter, is suitable to be snap-engaged on said fixing elements 20.

[0025] In a preferred embodiment, the fixing body 20 comprises a fixing portion 210 adapted to engage the transparent element 2 to secure it on the weight-bearing frame 3 and a support portion 250 suitable for being snap-engaged by the cover frame 4 to fix it to the weight-bearing frame 3.

[0026] According to the invention, the cover frame 4 comprises a structure 40 comprising upright elements 41 and transversal elements 42 suitable to engage to each other.

[0027] Preferably, the upright elements 41 and the transversal elements 42 are suitable to mutually arrange so as to lie on the same plane. They are arranged perpendicularly to one another.

[0028] According to the invention, the upright element 41 defines, along its extension, an upright cavity 410'. In other words, the upright element 41 has a substantially C-shaped or U-shaped section.

[0029] The upright element 41 defines, along its extension, an upright groove 410", in other words, in length, preferably a lateral end, a groove is provided which is typically suitable to contain a seal also suitable to engage the transparent element 2.

[0030] According to the invention, the transversal element 42 also defines, along its extension, a transversal cavity 420. In other words, the transversal element 42 has a substantially C-shaped or U-shaped section.

[0031] Preferably, the transversal element 42 also defines a transversal groove 420" extending in length, which is suitable to contain a seal also suitable to engage the transparent element 2.

[0032] According to the possible embodiments, the upright elements 42 comprise an upper transversal element, and/or an added central transversal element, and/or an added lower transversal element and/or a lower transversal element. Preferably, the upper and lower transversal elements are suitable to join the two upright elements 41 of a structure 40 at the upper and lower ends, while the added elements are placed between said lower and upper transversal elements as shown in figures 2a, 2b and 2c.

[0033] According to the invention, sash 1 object of the present invention comprises a plurality of locking elements 10 adapted to implement the lock between an upright element 41 and a transversal element 42.

[0034] In particular, the locking element 10 comprises an upright portion 110 adapted to be housed in the upright cavity 410' and/or in the upright groove 410"; moreover, the locking element 10 comprises a transversal portion 120 adapted to be snap-engaged in the transversal cavity 420 of the transversal element 42.

[0035] Therefore, the upright portion 110 and the transversal portion 120 are mutually interacting in such a way that the engagement between the transversal portion 120 and transversal element 42 transmits an action that forcibly locks the upright element 41 to the transversal element 42.

[0036] According to a preferred embodiment, the transversal portion 120 comprises two locking wings 125, one in front of the other, which extend in length along the transversal portion 120, suitable to snap-engage the walls that delimit the transversal cavity 420. Preferably, the locking wings 125 are elastically yielding 125 in such a way as to allow (by squeezing) access of the transversal portion 120 inside the transversal cavity 420 and allow (by widening) the locking to the transversal element 120.

[0037] Preferably, each locking wing 125 comprises a plurality of locking teeth 125'. For example, preferably, the locking teeth 125' part of a locking wing 125 axially mutually side by side are two or three.

[0038] According to a preferred embodiment, the locking elements 10 are particularly efficient by operating between added upright elements 41 and transversal elements 42. In fact, in a preferred embodiment, the cover frame 4 comprises joint elements 400, preferably L-shaped, suitable to perform the locking between the upright element 41 and the upper transversal element and/or lower transversal element coming to be housed in a portion of the upright cavity 401 and in a portion of the transversal cavity 402 (as shown in some of the accompanying figures).

[0039] According to the invention, the locking element 10 consists of a single piece (such as shown in the embodiments in figures 3, 5 and 7). Preferably, the locking element 10 is of a material selected from polymeric alloys, for example it is of fiberglass reinforced nylon.

[0040] According to an example not falling within the scope of the claimed invention, the upright portion 110 and the transversal portion 120 are two separate components (as is instead shown in the solution in figure 6) . Preferably, the upright portion 110 comprises a coupling body 111 and the transversal portion 120 comprises a housing 121 in which the coupling body 111 of the supporting portion 110 is housed. Preferably, the upright portion 110 is made of a material selected from among the metallic alloys, and the transversal portion 120 is made of a material selected from the polymeric alloys, for example it is of fiberglass reinforced nylon.

[0041] According to the invention, the upright portion 110 includes a locking lip 112 that engages the walls of the upright cavity 410' and/or in the upright groove 410" in the action of locking the locking element 10 to the respective upright element 41. For example, said locking lip 112 is specially shaped as a hook or spike form to engage the respective wall or portion of the upright element 41 (as shown by way of example in figures 3, 5, 6).

[0042] According to a further embodiment (shown in figure 7), the upright portion 110 is suitable for being snap-engaged in the upright cavity 410' of the upright element 41. Preferably, in this embodiment, the upright portion 110 has a shape similar to the transversal portion 120.

[0043] Another object of the present invention is also an assembly method of a sash 1, according to embodiments described above. Such an assembly method comprises the steps of:

- positioning the transversal element 42 at a predefined height with respect to the upright element 41;
- inserting the upright portion 110 of the locking element 10 inside the upright cavity 410' or inside the upright groove 410";
- rotating the locking element 10, maintaining the upright portion 110 in position, until the transversal portion 120 is inserted and snap-locked inside the respective transversal cavity 420.

[0044] In other words, the upright portion 110 and in particular the locking lip 112 is inserted transversely to the upright portion 410' and the upright groove 410" and during the rotation of the locking element 10, the locking lip 112 starts to cooperate with the walls of the respective housing to ensure the locking between upright element 41 and transversal element 42.

[0045] In other words, the described rotation of the locking element 10 performs an angle of substantially 90°.

[0046] In the present description, the details of some features of some components of sash 1, among others of the upright element, of the transversal element and of the fixing element are not given. For the features not described herein, complete reference is made to what described in documents EP15168696 and EP15168701, on behalf of the Applicant. In particular, the reference to the cited documents by the Applicant makes complete reference to the features of the upright element and of the transversal element, such as their mutual engagement at the corner, or the presence of break-drop elements; or to the features of the fixing element, in particular how it is suitable for fixing the cover frame to the weight-bearing frame and support the transparent element on the latter (in such documents by the Applicant it is called locking element); or additionally to the geometric and operational features of the joint element and how this is suitable to mutually lock transversal element and upright element at the corner.

[0047] Innovatively, the sash object of the present invention achieves the object of the present invention by providing minimised and/or resolved difficulties of assembling and mounting.

[0048] Advantageously the cover frame is easy to mount and assemble. Advantageously, in fact, the locking of the transversal element to the upright element using the locking element takes place in a simple and intuitive and error-free manner.

[0049] Moreover, advantageously, the locking element is adapted to facilitate any welding work between transversal element and upright element, for example prior to the painting of the cover frame, keeping the transversal element and upright element in a predefined position thereof.

[0050] According to a further advantageous aspect, the locking element is suitable for allowing the locking between upright element and any type of transversal element, for example upper upright element, lower upright element, added central upright element, added lower upright element.

[0051] An advantageous aspect of the locking element in the embodiments in which the upright portion is housed in the upright groove is to not take up space in said upright cavity, in which, therefore, fixing elements are housed for fixing the cover frame to the weight-bearing frame, and/or the joint elements adapted to lock the upright element with the transversal element to the corner.

[0052] An even further advantage occurs in the assembly of the sash, and in particular of the cover frame, particularly this step is greatly simplified by not requiring special attention of the installer when assembling the transversal element on the upright element, or special operations such as screwing or tightening, to carry out the mutual locking.

[0053] Moreover, advantageously, the locking element, as it is a single element, is easily manufactured, for example through plastic moulding.

[0054] Advantageously, with the sashes having the features described in documents EP15168696 and EP15168701, on behalf of the Applicant, the above advantages are surprisingly found even more.

[0055] A man skilled in the art may make several changes or replacements of elements or components or steps with other functionally equivalent ones to the embodiments of the above sash, locking element and as-

sembly method in order to meet specific needs.

[0056] Also such variants are included within the scope of protection as far as they are defined by by the following claims.

[0057] Further embodiments of sash 1 object of the present invention are, in fact, shown in figures 2d, 2e and 2f.

[0058] These figures show embodiments of the sash alternative to those described above; in these alternative embodiments, the upright elements and the transversal elements are mutually joined together by the locking elements described above and achieve the advantages outlined above, but have a reciprocal placement that is reversed than described.

[0059] In other words, these alternative embodiments, referring by "upright element" to the components that extend vertically and by "transversal element" to the components that extend horizontally, for the frame elements of sash 1, and by "added upright" and "added transversal element" to the internal components of the cover frame 4, the locking elements 10 described above are used to join: one added upright element to two transversal elements (fig. 2d), and/or two added transversal elements to two transversal elements (fig. 2e), and/or one added upright element to two transversal elements and/or one added transversal element to said upright element added to one upright element (fig. 2f).

[0060] Preferably, the locking element 10 has the same features described above, except that, unlike what is described above, its upright portion 110 is adapted to be housed in the transversal cavity 420 and/or in the transversal groove 420", while its transversal portion 120 is adapted to be snap-housed in the upright cavity 41 of the respective added upright element 410.

[0061] Consequently, these embodiments of sash 1 and in particular of the cover frame 4 are also advantageous as described above.

Claims

1. Sash (1) for closing an architectural opening, comprising:

i) weight-bearing frame (3), placed towards the inside, preferably in wood;
ii) at least one transparent element (2), preferably of a planar shape, suitable to allow the passage of light through the sash (1), housed on, and supported by, the weight-bearing frame (3);
iii) a cover frame (4), placed towards the outside, preferably in aluminium, fitted on the weight-bearing frame (3), suitable to protect the latter on the outer side;

wherein the cover frame (4) comprises:

n) a structure (40) comprising upright elements (41) and transversal elements (42) suitable to engage each other perpendicularly, wherein which the upright element (41) identifies, along its extension, an upright cavity (410') and/or an upright groove (410") and the transversal element (42) identifies, along its extension, a transversal cavity (420);
m) a plurality of locking elements (10), each locking element is made in one piece and comprises:

- an upright portion (110) comprising a locking lip (112) suitable to be housed, with a transverse insertion, in the upright groove (410"); **characterised in that** each locking element further comprises:

- a transversal portion (120) suitable to be snap-engaged, with a rotation of the locking element (10), in the transversal cavity (420) of the transversal element (42) ; and

wherein the upright portion (110) and transversal portion (120) are mutually interacting in such a way that the snap-engagement between the transversal portion (120) and transversal element (42) reached by the rotation of the locking element (10), transmits an action to the locking lip (112) that engages the walls of the upright groove (410") wherein is housed and that forcibly locks the upright element (41) to the transversal element (42).

2. Sash (1) according to claim 1, wherein the transversal elements (42) comprise an upper transversal element, and/or an added central transversal element, and/or an added lower transversal element and/or a lower transversal element, wherein one of said transversal elements (42) is locked to an upright element (41) by means of a locking element (10).

3. Sash (1) according to any of the preceding claims, wherein the locking element (10) is made of a material selected from among the polymeric alloys, preferably of nylon reinforced with fibreglass.

4. Sash (1) according to any of the preceding claims, wherein the transversal portion (120) comprises two locking wings (125), one in front of the other, which extend in length along the transversal portion (120), suitable to snap-engage the walls that delimit the transversal cavity (420).

5. Sash (1) according to claim 4, wherein each locking wing (125) comprises a plurality of locking teeth (125').

6. Sash (1) according to any of the preceding claims, comprising a plurality of fastening bodies (20) fixable

to the weight-bearing frame (3), wherein a fastening body (20) comprises:

i) a fastening portion (210) suitable to engage the transparent element (2) to secure it to the weight-bearing frame (3);
ii) a support portion (250) suitable to be snap-engaged by the cover frame (4), housing in the upright cavity (410') and transversal cavity (420), to perform its fastening to the weight-bearing frame (3).

7. Sash (1) according to claim 6, wherein the cover frame (4) comprises joint elements (400), preferably L-shaped, suitable to perform the locking between the upright element (41) and the upper transversal element and/or lower transversal element coming to be housed in a portion of the upright cavity (401) and in a portion of the transversal cavity (402).

8. Sash (1) according to any of the previous claims, wherein the transparent element (2) is a glass plate, or is double glazing, or triple glazing, or a glass block, or a glass block with integrated curtain.

9. Sash (1) according to any of the previous claims wherein the sash (1) is a window or French window.

10. Assembly method of a sash (1) according to any of the previous claims, comprising the steps of:

- positioning the transversal element (42) at a predefined height with respect to the upright element (41) ;
- inserting the upright portion (110) of the locking element (11) inside the upright cavity (410') or inside the upright groove (410");
- rotating the locking element (11), maintaining the upright portion (110) in position, until the transversal portion (120) is inserted and snap-locked inside the respective transversal cavity (420).

Patentansprüche

1. Fenster- bzw. Schieberahmen (1) zum Verschließen einer architektonischen Öffnung, umfassend:

i) einen gewichtstragenden Rahmen (3), der nach innen hin platziert ist, vorzugsweise aus Holz;
ii) zumindest ein transparentes Element (2), vorzugsweise von planarer Form, das geeignet ist, den Durchtritt von Licht durch den Fensterrahmen (1) zu erlauben, und das auf dem gewichtstragenden Rahmen (3) untergebracht ist und durch diesen getragen wird;
iii) Abdeckungsrahmen (4), der nach außen hin platziert ist, vorzugsweise aus Aluminium, der an den gewichtstragenden Rahmen (3) gepasst ist und dazu geeignet ist, diesen an der Außenseite zu schützen;

wobei der Abdeckungsrahmen (4) umfasst:

n) eine Struktur (40) mit aufrechten Elementen (41) und transversalen Elementen (42), die dazu geeignet sind, senkrecht ineinanderzugreifen, wobei das aufrechte Element (41) entlang seiner Erstreckung einen aufrechten Hohlraum (410') und/oder eine aufrechte Nut (410") definiert und das transversale Element (42) entlang seiner Erstreckung einen transversalen Hohlraum (420) definiert;
m) eine Mehrzahl von Verriegelungselementen (10), wobei jedes Verriegelungselement einstückig hergestellt ist und umfasst:

- einen aufrechten Abschnitt (110) mit einer Verriegelungslippe (112), die geeignet ist, mit einer transversalen Einsetzung in der aufrechten Nut (410") untergebracht zu werden;

dadurch gekennzeichnet, dass jedes Verriegelungselement ferner umfasst:

- einen transversalen Abschnitt (120), der geeignet ist, mit einer Drehung des Verriegelungselements (10) in den transversalen Hohlraum (420) des transversalen Elements (42) einzuschnappen; und

wobei der aufrechte Abschnitt (110) und der transversale Abschnitt (120) derart miteinander in Wechselwirkung stehen, dass der Schnappeingriff zwischen dem transversalen Abschnitt (120) und dem transversalen Element (42), der durch die Drehung des Verriegelungselements (10) erreicht wird, eine Aktion auf die Verriegelungslippe (112) überträgt, die in die Wände der aufrechten Nut (410") eingreift, in der das aufrechte Element (41) untergebracht ist und gewaltsam mit dem transversalen Element (42) verriegelt wird.

2. Fensterrahmen (1) nach Anspruch 1, wobei die transversalen Elementen (42) ein oberes transversales Element und/oder ein hinzugefügtes zentrales transversalen Element und/oder ein hinzugefügtes unteres transversales Element und/oder ein unteres transversalen Element umfassen, wobei eines der transversalen Elemente (42) mittels eines Verriegelungselements (10) an einem aufrechten Element (41) verriegelt ist.

3. Fensterrahmen (1) nach einem der vorhergehenden Ansprüche, wobei das Verriegelungselement (10) aus einem Material hergestellt ist, das aus den Polymerlegierungen, vorzugsweise aus glasfaserverstärktem Nylon ausgewählt ist.

4. Fensterrahmen (1) nach einem der vorhergehenden Ansprüche, wobei der transversale Abschnitt (120) zwei Verriegelungsflügel (125) umfasst, einer vor dem anderen, die sich in Länge entlang des transversalen Abschnitts (120) erstrecken und geeignet sind, in die Wände einzuschnappen, die den transversalen Hohlraum (420) begrenzen.

5. Fensterrahmen (1) nach Anspruch 4, wobei jeder Verriegelungsflügel (125) eine Mehrzahl von Verriegelungszähnen (125') umfasst.

6. Fensterrahmen (1) nach einem der vorhergehenden Ansprüche, umfassend eine Mehrzahl von Befestigungskörpern (20), die an dem gewichtstragenden Rahmen (3) fixierbar bzw. anbringbar sind, wobei ein Befestigungskörper (20) umfasst:

i) einen Befestigungsabschnitt (210), der geeignet ist, in das transparente Element (2) einzugreifen, um es an dem gewichtstragenden Rahmen (3) zu befestigen;
ii) einen Stütz- bzw. Trägerabschnitt (250), der geeignet ist, durch den Abdeckungsrahmen (4) in Schnappeingriff genommen zu werden, der in dem aufrechten Hohlraum (410') und dem transversalen Hohlraum (420) untergebracht ist, um dessen Befestigung an dem gewichtstragenden Rahmen (3) durchzuführen.

7. Fensterrahmen (1) nach Anspruch 6, wobei der Abdeckungsrahmen (4) Gelenkelemente (400) umfasst, die vorzugsweise L-förmig sind und dazu geeignet sind, die Verriegelung zwischen dem aufrechten Element (41) und dem oberen transversalen Element und/oder dem unteren transversalen Element durchzuführen, das bzw. die in einem Abschnitt des aufrechten Hohlraums (401) und in einem Abschnitt des transversalen Hohlraums (402) unterzubringen ist bzw. sind.

8. Fensterrahmen (1) nach einem der vorhergehenden Ansprüche, wobei das transparente Element (2) eine Glasplatte oder eine Doppelverglasung oder eine Dreifachverglasung oder ein Glasblock oder ein Glasblock mit integriertem Vorhang ist.

9. Fensterrahmen (1) nach einem der vorhergehenden Ansprüche, wobei der Fensterrahmen (1) ein Fenster oder eine Fenstertür bzw. ein französisches Fenster ist.

10. Montageverfahren eines Fensterrahmens (1) nach einem der vorhergehenden Ansprüche, umfassend die Schritte:

- Positionieren des transversalen Elements (42) auf einer vordefinierten Höhe in Bezug auf das aufrechte Element (41);
- Einsetzen des aufrechten Abschnitts (110) des Verriegelungselements (11) in den aufrechten Hohlraum (410') oder in die aufrechte Nut (410");
- Drehen des Verriegelungselements (11), wobei der aufrechte Abschnitt (110) in Position gehalten wird, bis der transversale Abschnitt (120) in den jeweiligen transversalen Hohlraum (420) eingesetzt und eingerastet bzw. in Schnappverriegelung ist.

Revendications

1. Châssis (1) pour fermer une ouverture architecturale, comprenant :

i) un cadre d'appui (3), placé en direction de l'intérieur, de préférence en bois ;
ii) au moins un élément transparent (2), de préférence d'une forme plane, adapté à permettre le passage de lumière à travers le châssis (1), logé sur, et supporté par, le cadre d'appui (3) ;
iii) un cadre de couverture (4), placé en direction de l'extérieur, de préférence en aluminium, ajusté sur le cadre d'appui (3), adapté à protéger ce dernier sur le côté externe ;

dans lequel le cadre de couverture (4) comprend :

n) une structure (40) comprenant des éléments verticaux (41) et des éléments transversaux (42) adaptés à entrer en prise les uns avec les autres perpendiculairement, dans lequel l'élément vertical (41) identifie, le long de son extension, une cavité verticale (410') et/ou une rainure verticale (410") et l'élément transversal (42) identifie, le long de son extension, une cavité transversale (420) ;
m) une pluralité d'éléments de verrouillage (10), chaque élément de verrouillage étant fabriqué d'une seule pièce et comprenant :

- une partie verticale (110) comprenant une lèvre de verrouillage (112) adaptée à être logée, avec une insertion transverse, dans la rainure verticale (410") ; **caractérisé en ce que** chaque élément de verrouillage comprend en outre :

- une partie transversale (120) adaptée

à être encliquetée, avec une rotation de l'élément de verrouillage (10), dans la cavité transversale (420) de l'élément transversal (42) ; et

dans lequel la partie verticale (110) et la partie transversale (120) interagissent mutuellement de sorte que l'encliquetage entre la partie transversale (120) et l'élément transversal (42) atteint par la rotation de l'élément de verrouillage (10) transmette une action à la lèvre de verrouillage (112) qui entre en prise avec les parois de la rainure verticale (410") dans laquelle elle est logée et qui verrouille par la force l'élément vertical (41) à l'élément transversal (42).

2. Châssis (1) selon la revendication 1, dans lequel les éléments transversaux (42) comprennent un élément transversal supérieur, et/ou un élément transversal central ajouté, et/ou un élément transversal inférieur ajouté et/ou un élément transversal inférieur, dans lequel l'un desdits éléments transversaux (42) est verrouillé à un élément vertical (41) au moyen d'un élément de verrouillage (10).

3. Châssis (1) selon l'une quelconque des revendications précédentes, dans lequel l'élément de verrouillage (10) est composé d'un matériau sélectionné parmi les alliages polymères, de préférence du nylon renforcé de fibres de verre.

4. Châssis (1) selon l'une quelconque des revendications précédentes, dans lequel la partie transversale (120) comprend deux ailes de verrouillage (125), l'une devant l'autre, qui s'étendent dans la longueur le long de la partie transversale (120), adaptées à encliqueter les parois qui délimitent la cavité transversale (420).

5. Châssis (1) selon la revendication 4, dans lequel chaque aile de verrouillage (125) comprend une pluralité de dents de verrouillage (125').

6. Châssis (1) selon l'une quelconque des revendications précédentes, comprenant une pluralité de corps de fixation (20) pouvant être fixés au cadre d'appui (3), dans lequel un corps de fixation (20) comprend :

i) une partie de fixation (210) adaptée à entrer en prise avec l'élément transparent (2) pour attacher ce dernier au cadre d'appui (3) ;
ii) une partie de support (250) adaptée à être encliquetée par le cadre de couverture (4), logée dans la cavité verticale (410') et la cavité transversale (420), pour réaliser sa fixation sur le cadre d'appui (3).

7. Châssis (1) selon la revendication 6, dans lequel le cadre de couverture (4) comprend des éléments de joint (400), de préférence en forme de L, adaptés à réaliser le verrouillage entre l'élément vertical (41) et l'élément transversal supérieur et/ou l'élément transversal inférieur qui entrent pour être logés dans une partie de la cavité verticale (401) et dans une partie de la cavité transversale (402).

8. Châssis (1) selon l'une quelconque des revendications précédentes, dans lequel l'élément transparent (2) est une plaque de verre, ou est un double vitrage, ou un triple vitrage, ou une brique de verre, ou une brique de verre à rideau intégré.

9. Châssis (1) selon l'une quelconque des revendications précédentes dans lequel le châssis (1) est une fenêtre ou une porte-fenêtre.

10. Procédé d'assemblage d'un châssis (1) selon l'une quelconque des revendications précédentes, comprenant les étapes de :

- positionnement de l'élément transversal (42) à une hauteur prédéfinie par rapport à l'élément vertical (41) ;
- insertion de la partie verticale (110) de l'élément de verrouillage (11) à l'intérieur de la cavité verticale (410') ou à l'intérieur de la rainure verticale (410") ;
- rotation de l'élément de verrouillage (11), maintenant la partie verticale (110) en position, jusqu'à ce que la partie transversale (120) soit insérée et encliquetée à l'intérieur de la cavité transversale respective (420).

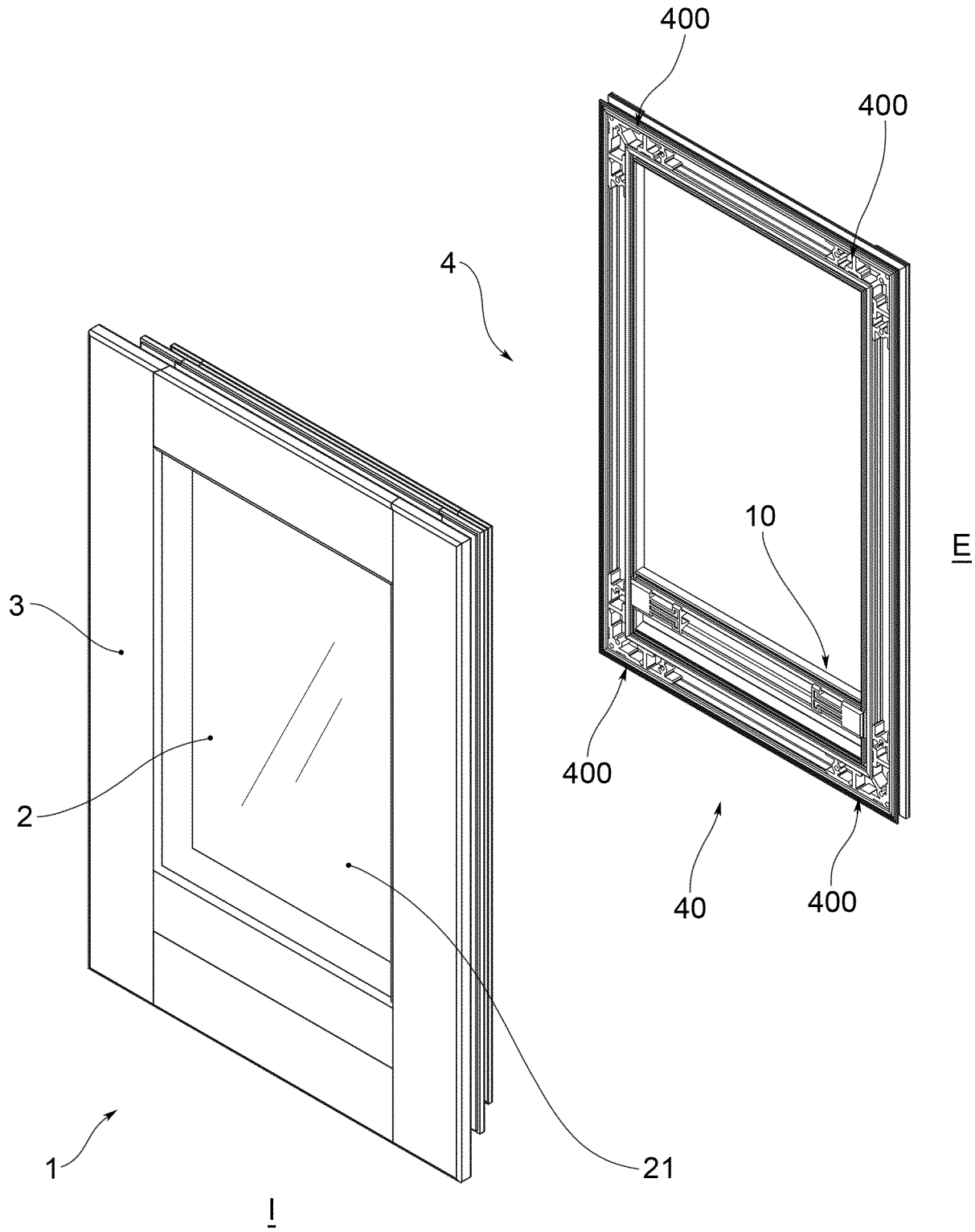


FIG.1a

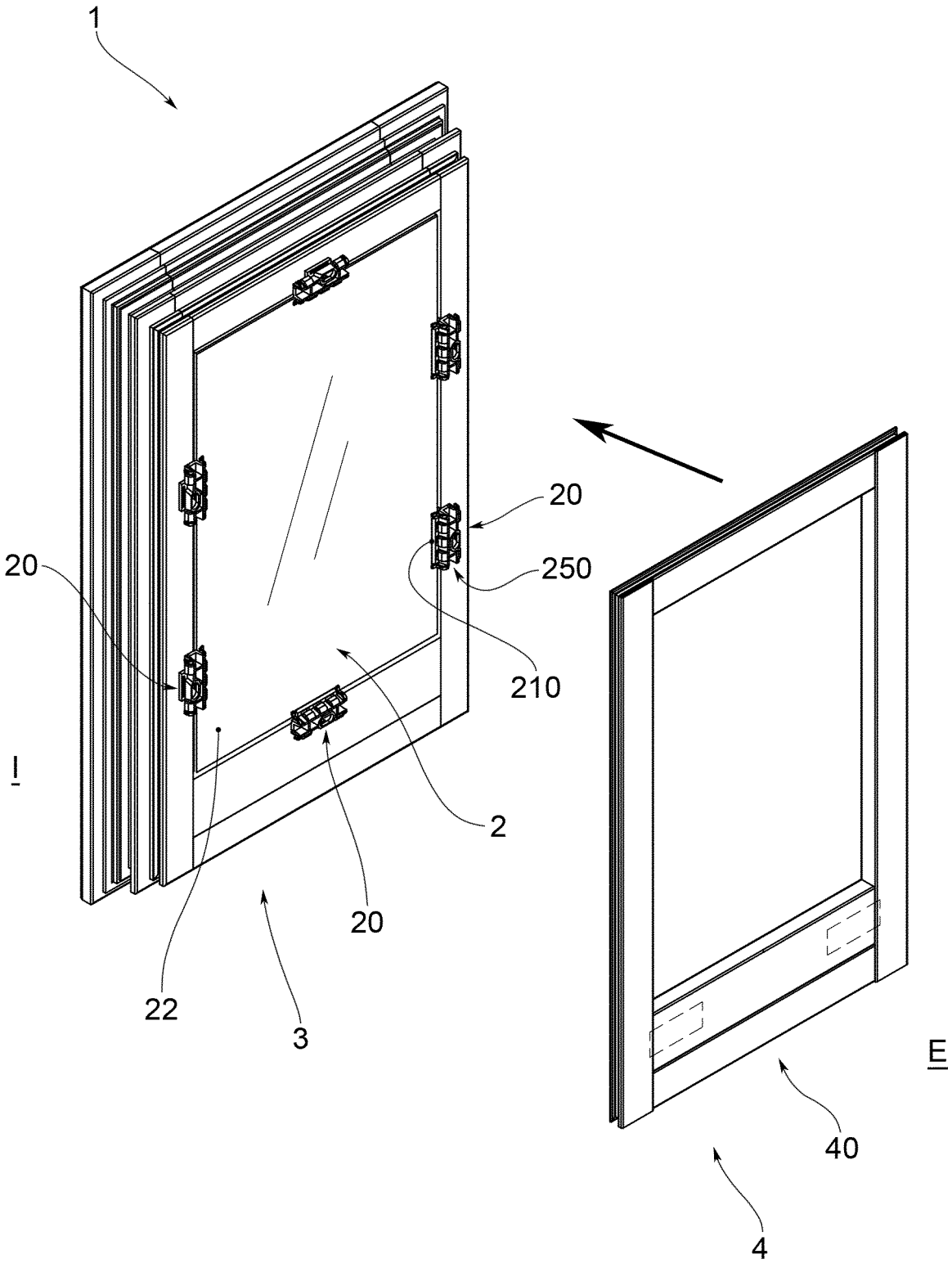


FIG.1b

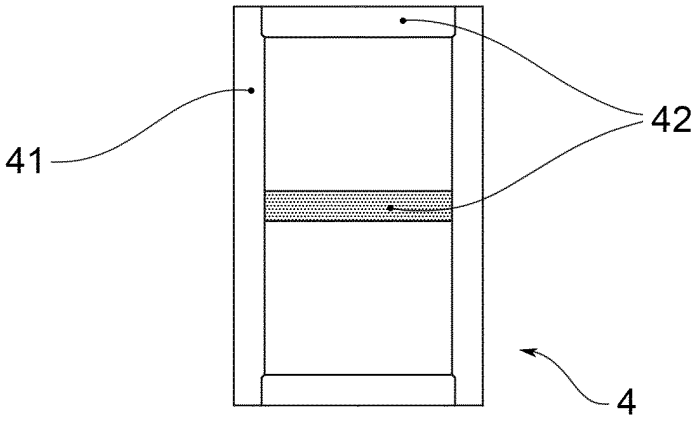


FIG.2a

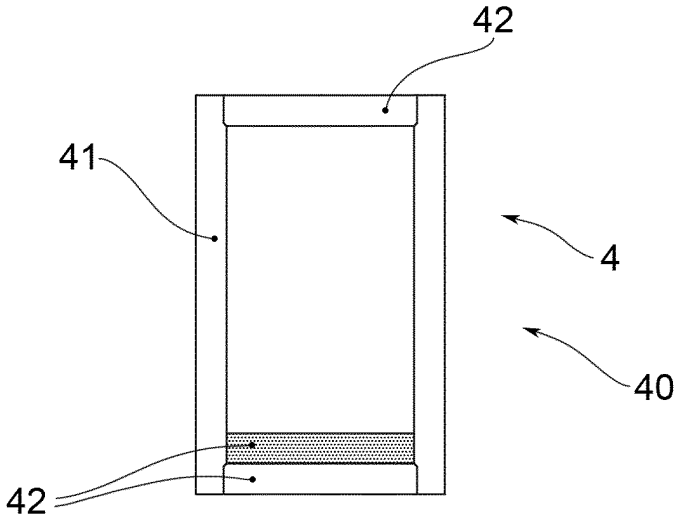


FIG.2b

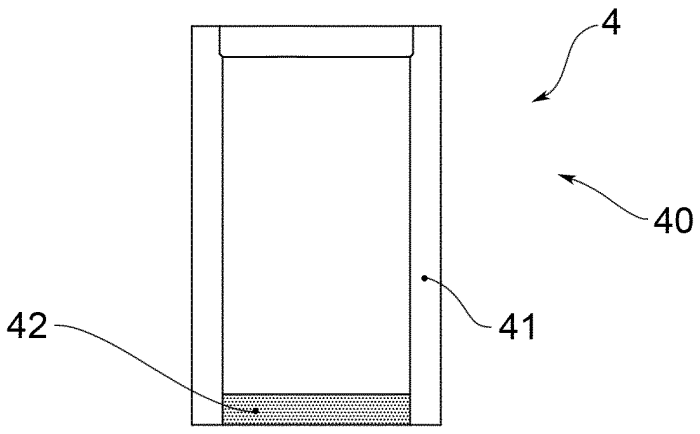


FIG.2c

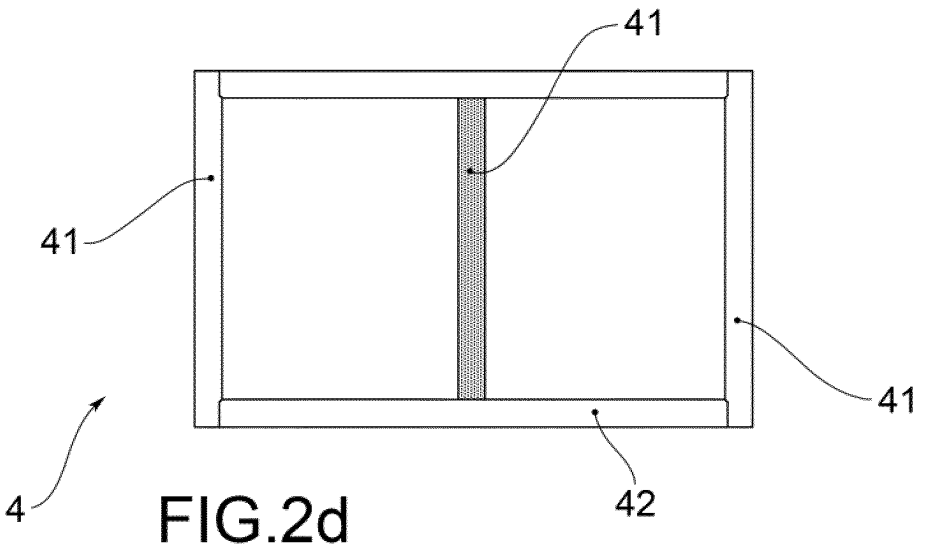


FIG.2d

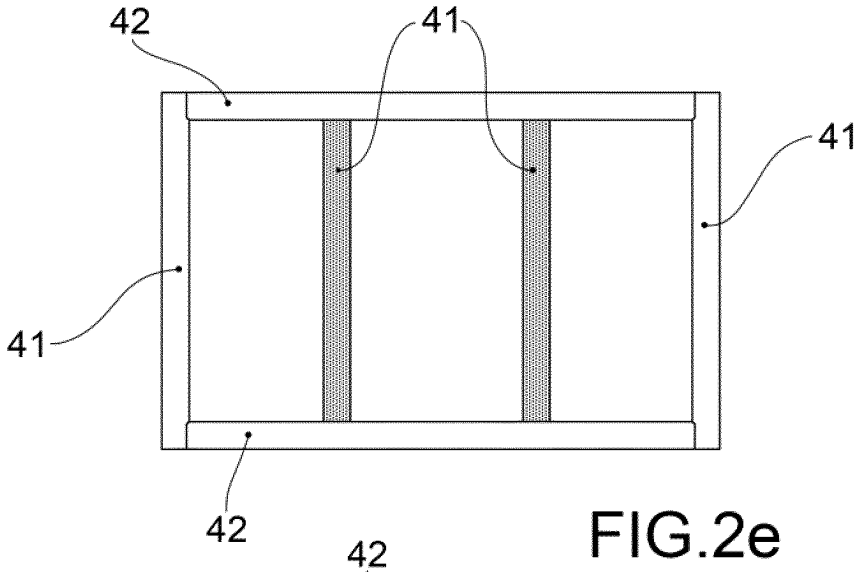


FIG.2e

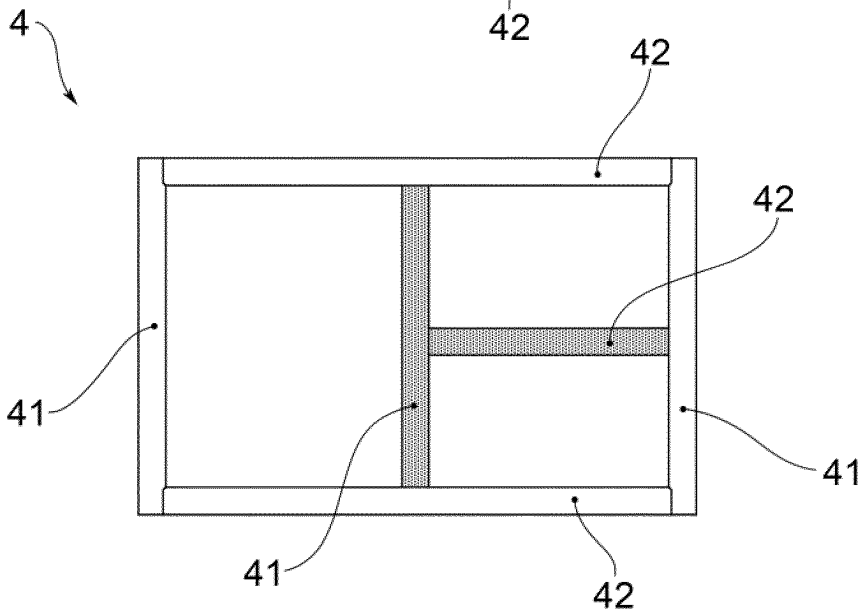


FIG.2f

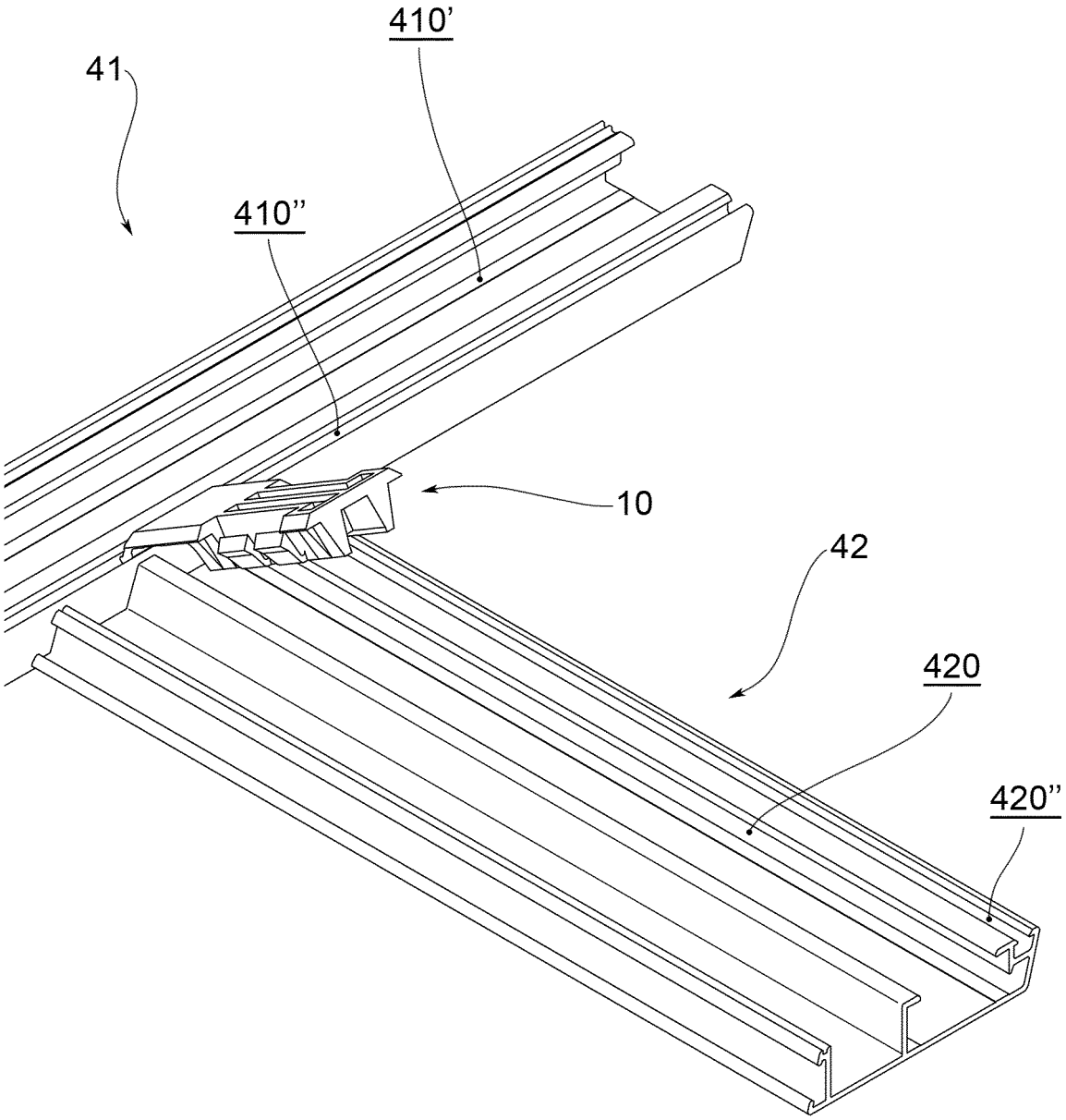


FIG.3a

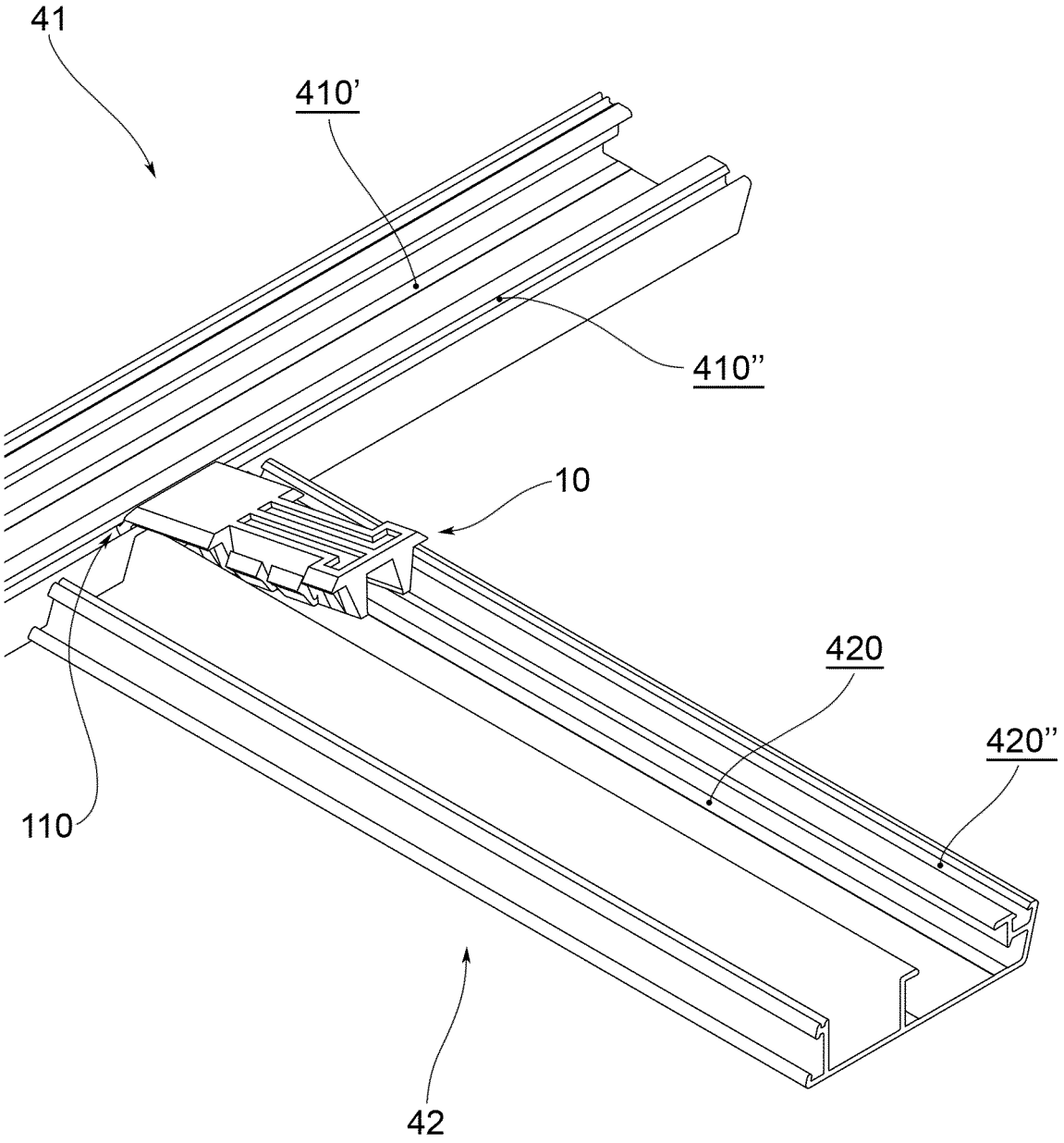


FIG.3b

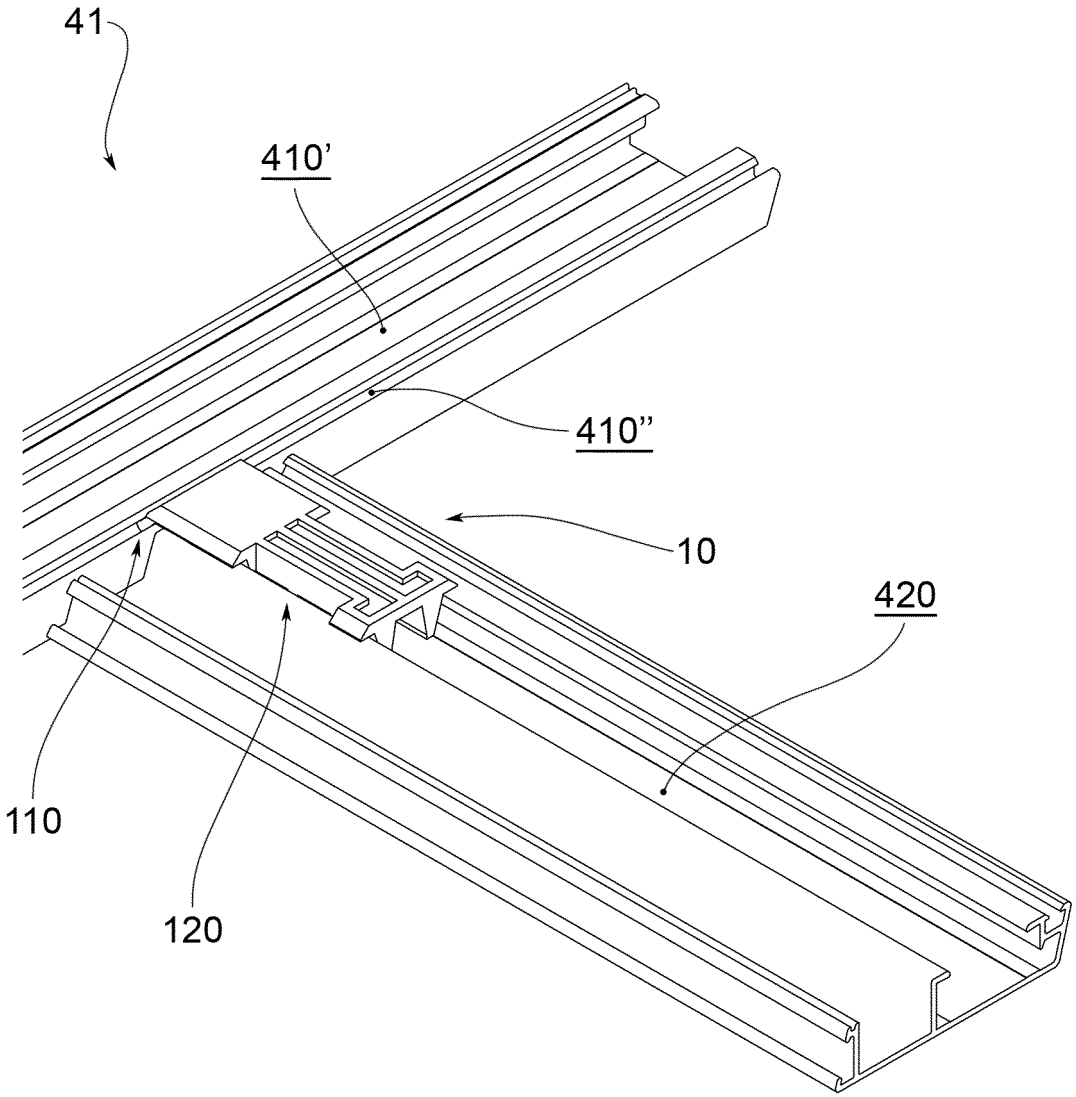


FIG.3c

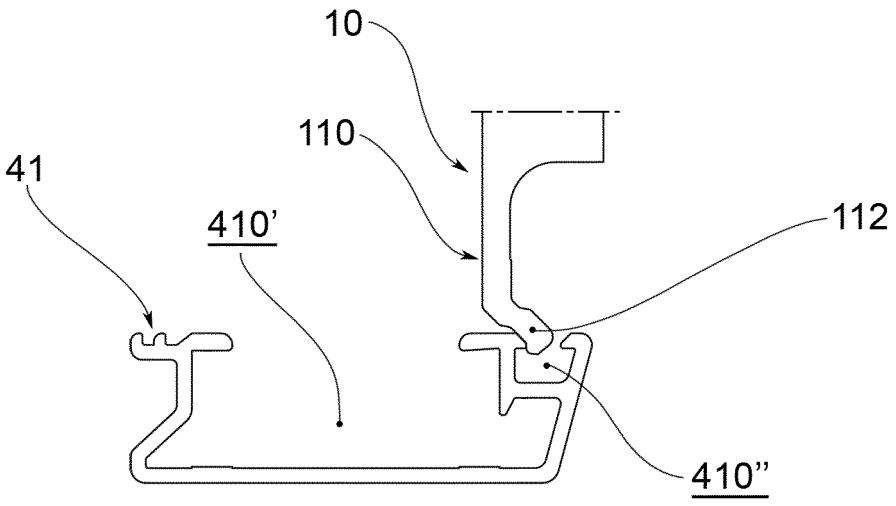


FIG.4

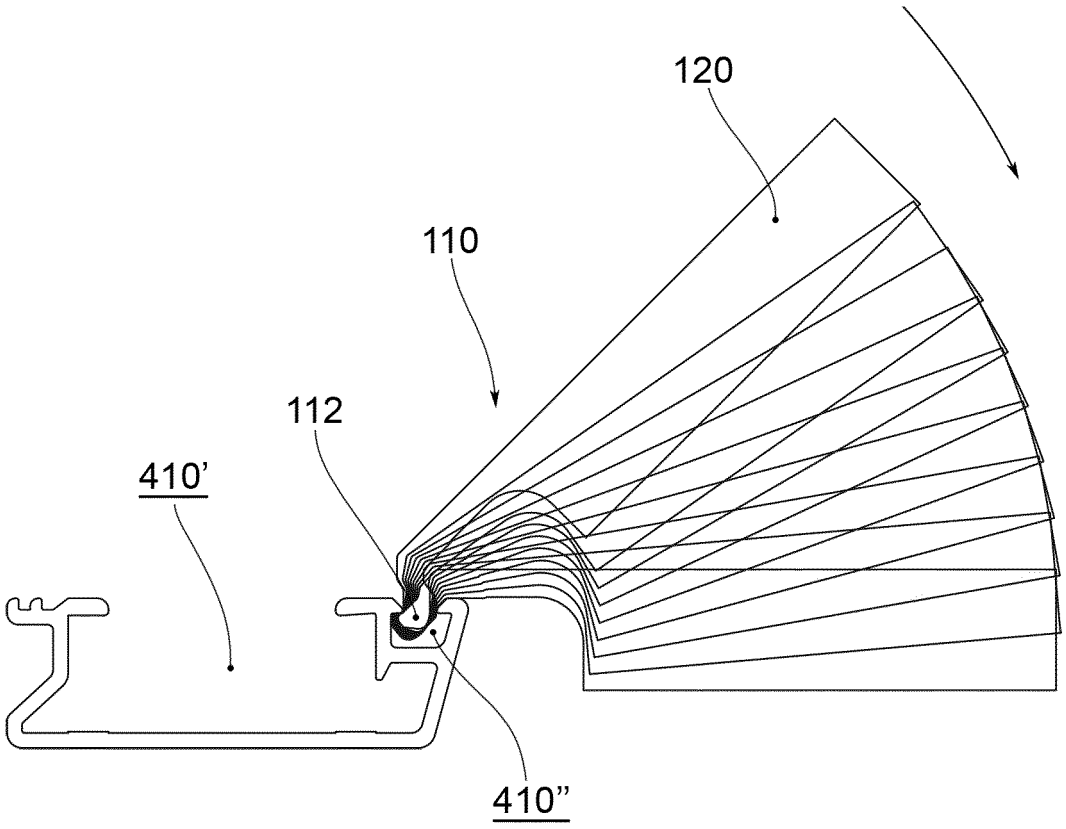


FIG.4'

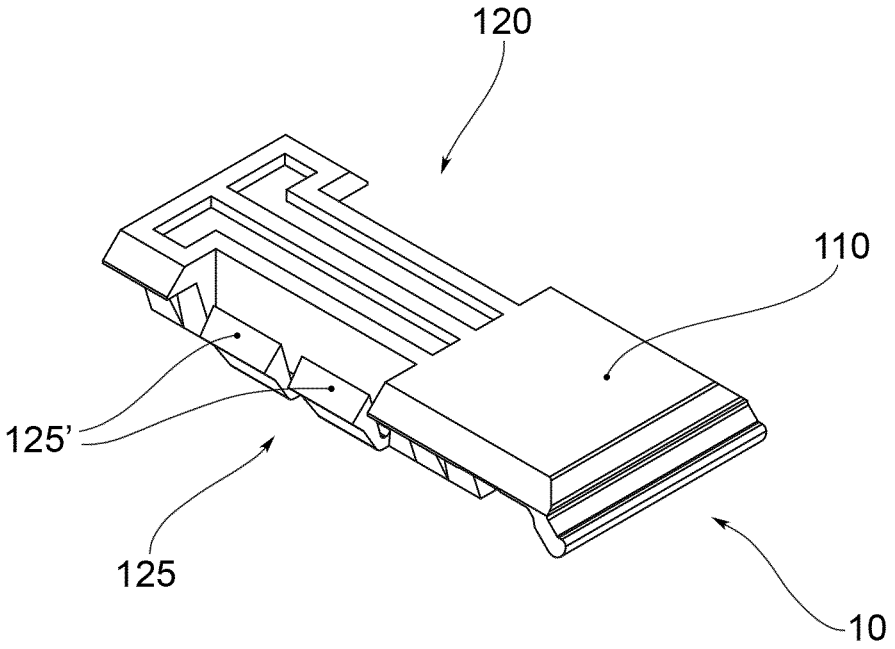


FIG.5a

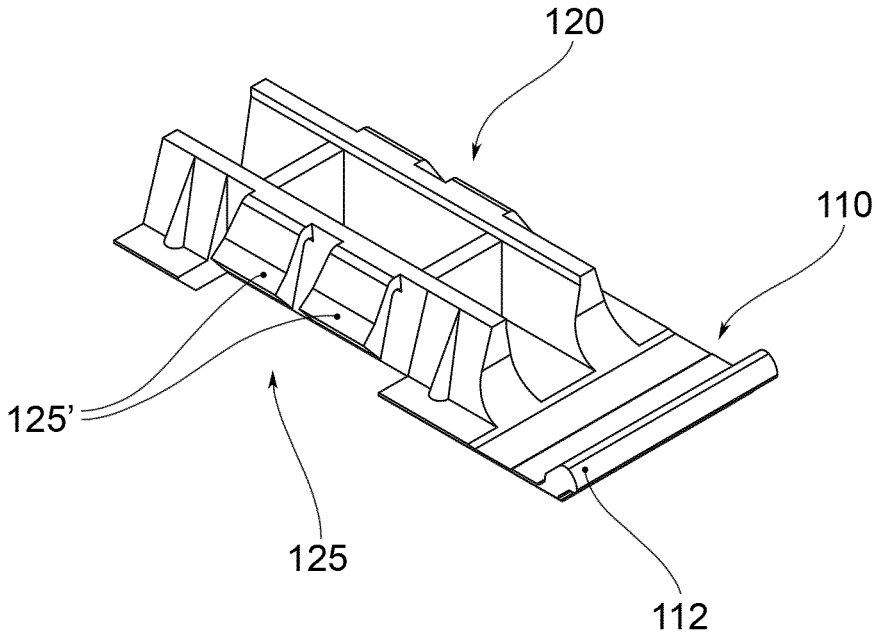


FIG.5b

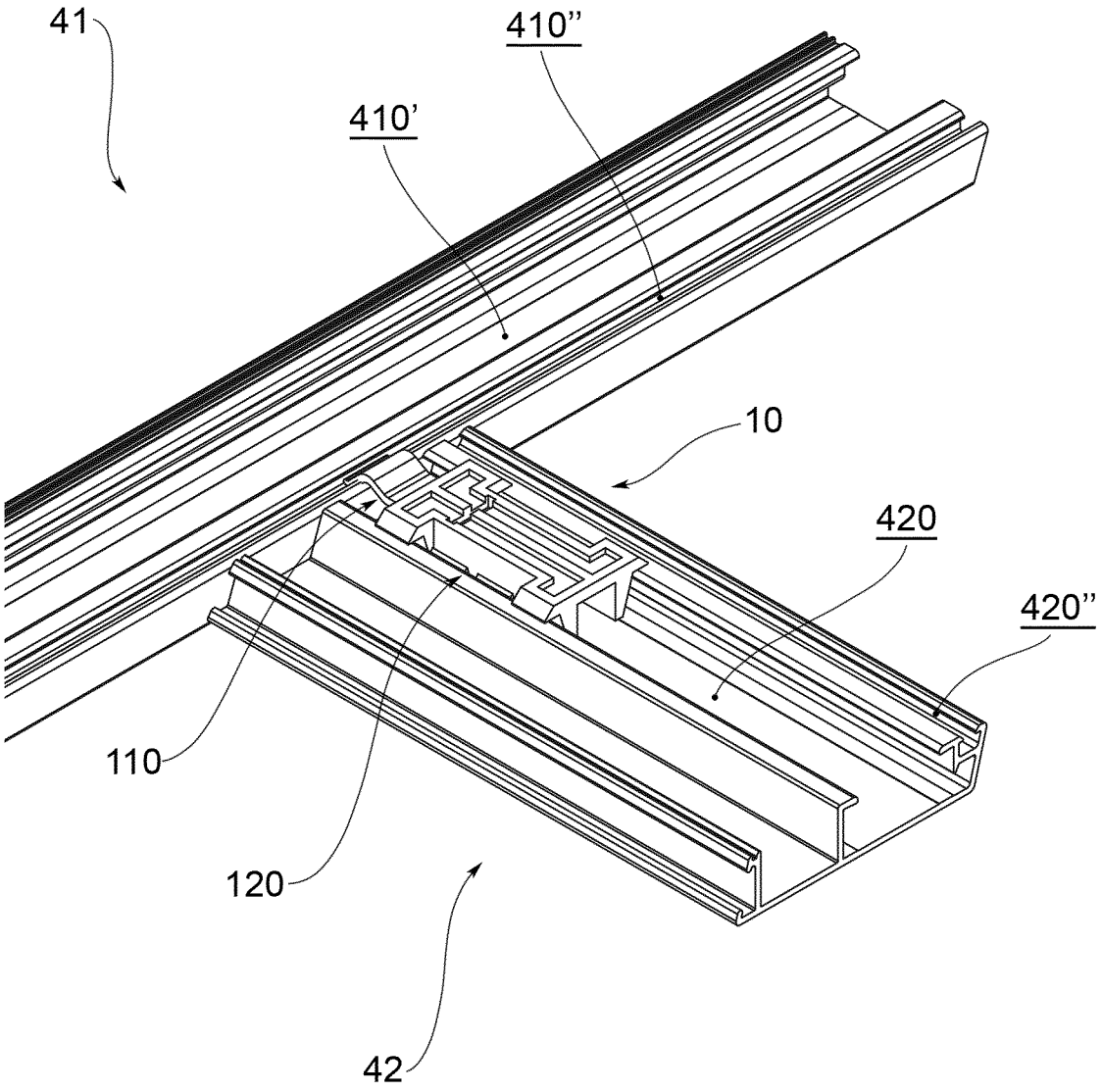


FIG.6

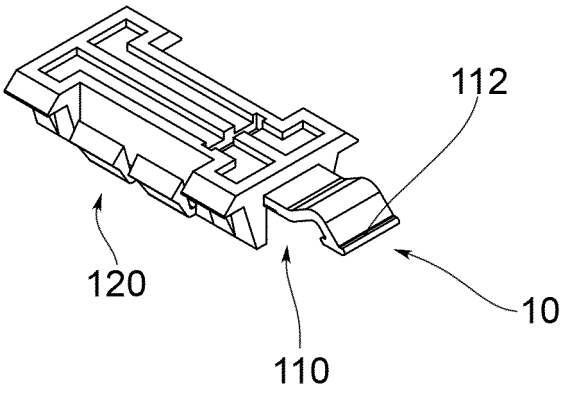


FIG.6a

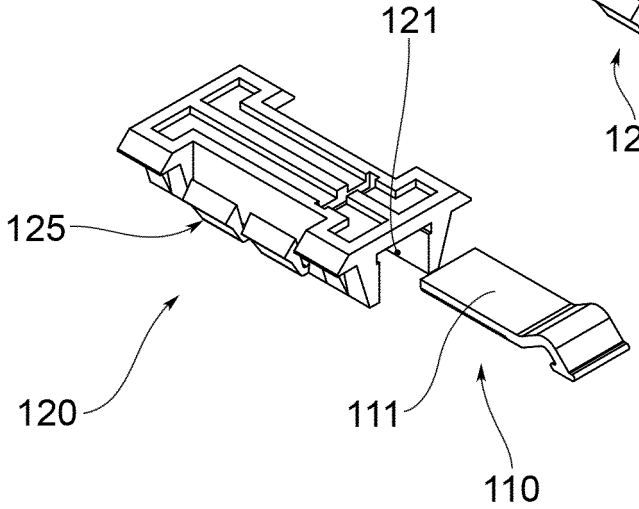


FIG.6a'

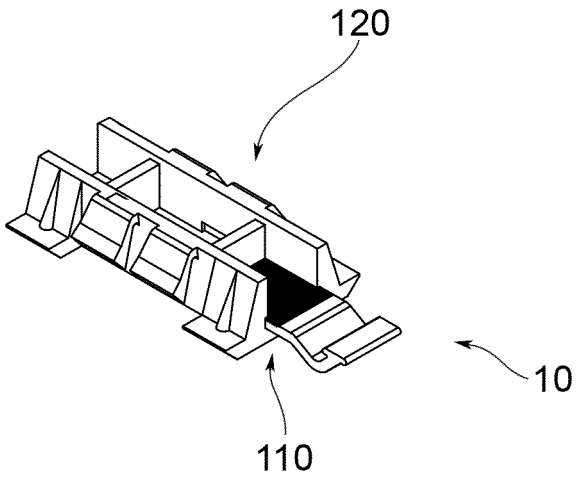


FIG.6b

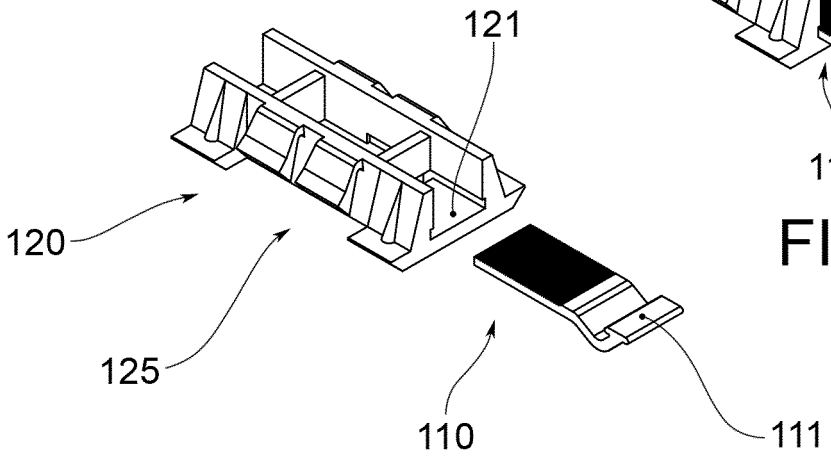


FIG.6b'

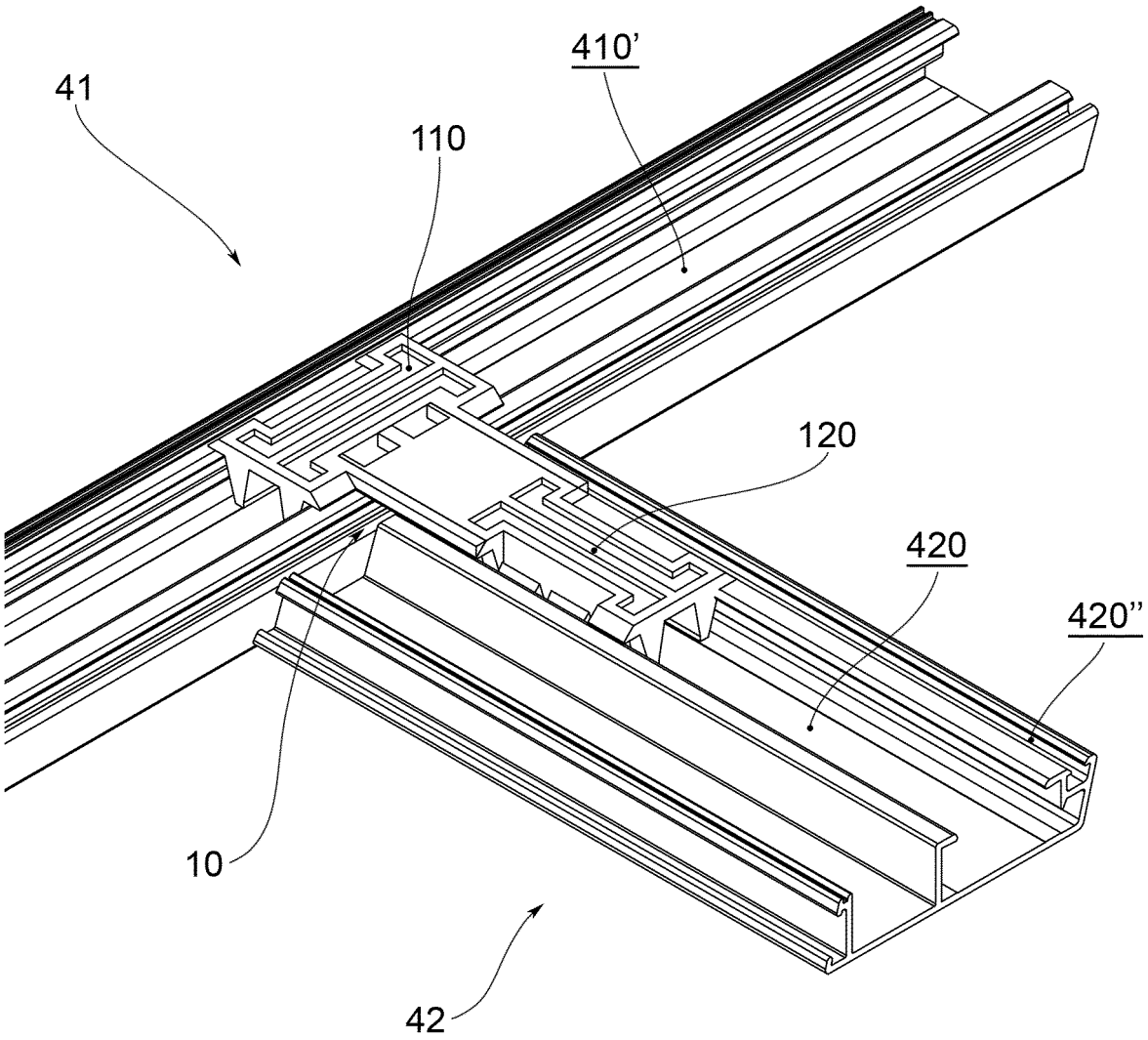


FIG.7

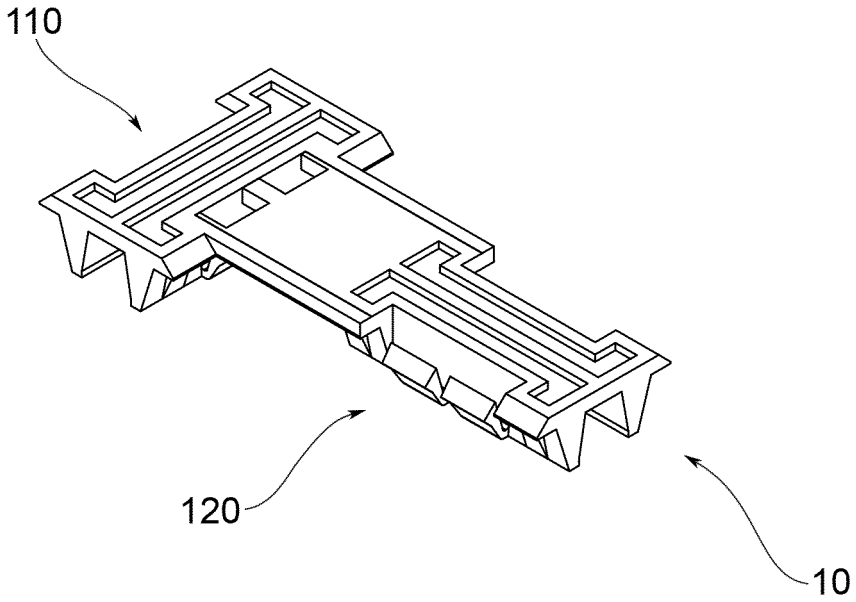


FIG.7a

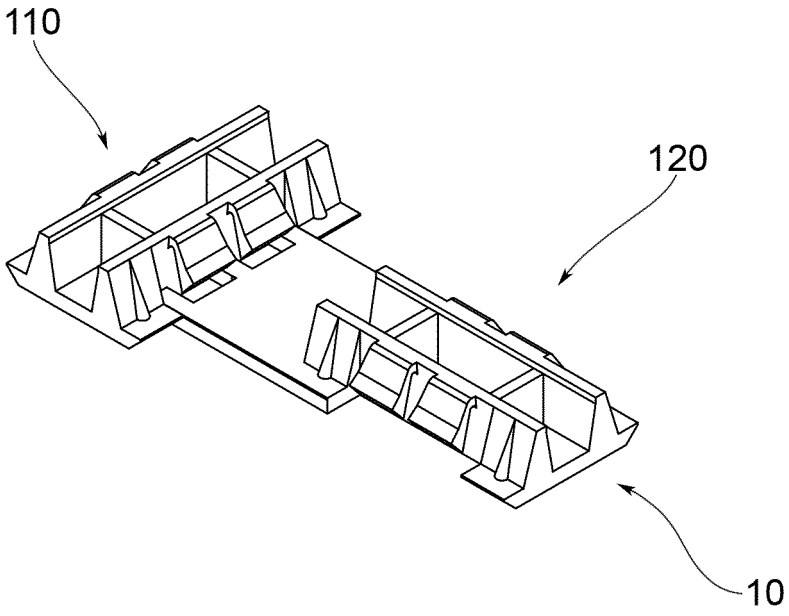


FIG.7b

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 15168696 A **[0008] [0046] [0054]**
- EP 15168701 A **[0008] [0046] [0054]**
- DE 202006004609 U1 **[0009]**