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(54) **ENERGY SAVING SLIDING DOOR ASSEMBLY**

ENERGIESPARENDE SCHIEBETÜRANORDNUNG

ENSEMBLE DE PORTE COULISSANTE À ÉCONOMIE D'ÉNERGIE

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(73) Proprietor: **SEU PLASTICS ONE MAN L.L.C.**
62122 Serres (GR)

(72) Inventor: **ALEXANDROS, MYLONAS**
55236 Panorama Thessalonikis (GR)

(74) Representative: **Samuelides, Emmanuel**
Leof. Alexandras 43
114 73 Athens (GR)

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Description

[0001] The invention relates to sliding leafs and in particular to locking arrangements for sliding leafs. The invention further relates to profiles for the movable frame of a sliding leaf. Sliding leafs may refer to sliding doors, sliding windows or any other sliding separators.

[0002] Known sliding doors include one or more sliding leafs and a stationary frame built in a wall. Usually, the stationary frame may be metallic, wooden or from plastic and it is attached to the wall. The sliding leaf has a panel, i.e. glazing, pane, usually from glass and a movable frame, i.e. a casement or sash around it. The movable frame surrounds the glass and it is formed by profiles, i.e. vertical stiles and profiles interconnecting the vertical stiles. The sliding door has also a locking mechanism with a handle to operate the locking mechanism. As shown schematically in Figure 1, which presents a known sliding door, the locking mechanism is at least partially housed within the movable frame and the handle projects from the movable frame along a line that is normal to the plane of the glass panel. Locking of the sliding door is effected either by locking the sliding leaf to the stationary frame or interlocking two sliding leafs to each other, as for example shown in FR 2 877 378.

[0003] When the sliding door is in closed or locked position, the movable frame acts as a thermal bridge and transfers the heat from one side of the sliding door to the other, i.e. from outside to inside or vice versa, resulting in energy losses. Means that have been used to reduce the losses are insulating means inserted within the profiles of the movable frame.

[0004] The invention relates to profiles for a movable frame of a sliding leaf and to sliding leafs. An object of the invention is a profile that minimizes heat transfer there through. A further object of the invention is a sliding leaf with such a profile, so as to minimize the heat transfer therethrough.

[0005] According to the invention a sliding leaf has a movable frame comprising a profile with a chamber housing locking means within the chamber, and a panel held on the profile by a holding member connectable to the movable frame, whereby the locking means has locking elements and operating means to operate the locking elements. The operating means exits from the chamber along a line that is parallel to the panel and penetrates the holding member.

[0006] According to the invention, a profile for a movable frame of a sliding leaf includes a chamber housing locking means, the chamber being defined between two side walls that are opposite to each other, a rear wall that is between the two side walls and bridges the two side walls and a front wall that is between the two side walls and bridges the two side walls, whereby the rear wall and the front wall are opposite to each other, the front wall has supporting means outside the chamber to support a panel of the sliding leaf against at least unidirectional lateral movement parallel to the front wall and the locking

means has locking elements and operating means to operate the locking elements, which locking elements projects through the rear wall outwards from the chamber. According to the invention the operating means projects outwards from the chamber through the front wall.

[0007] In an embodiment of the invention, the side walls project from the front wall outwards from the chamber and the operating means projects through the front wall between the projections of the side walls. A face of the projection of a side wall may be an abutment to support the panel of the sliding leaf against at least unidirectional lateral movement parallel to the front wall.

[0008] The chamber may be subdivided into three consecutive sub-chambers i.e. two side sub-chambers and one mid sub-chamber between the two side sub-chambers, by two webs that are within the profile. Optionally the locking means is housed in a side sub-chamber profile.

[0009] The profile may be one single aluminum profile or it may include two aluminum profile portions connected with plastic strips. Such strips are common to reduce thermal losses.

[0010] The holding member associated with the profile housing the locking means may be a continuous element. Alternatively the holding member has three segments arranged along the profile, i.e. a first segment, a second segment and a cover between the first segment and the second segment, whereby the operating means penetrate the cover.

[0011] In operation, the movable frame and a stationary frame form an assembly. The movable frame may be locked to the stationary frame that has a stationary profile with a channel. The stationary profile has complementary locking means that co-operates with the locking elements. The operating means that are housed in the chamber of the profile are operable between a first position to lock the stationary frame with the movable frame and an unlocked position to allow the movement of the movable frame with respect to the stationary frame. When in locked position, the profile and optionally the holding member or the first and second segments thereof is/are received within the channel.

[0012] When in locked position, the stationary frame and the movable frame are interlocked and although the profile of the movable frame is fully received within the channel of the stationary frame, the user may operate the locking means. This is possible because the locking means project from the profile of the movable frame through the front wall.

[0013] With a movable frame having a profile according to the invention, the view through the door, window or any other transparent separator is maximized and the thermal losses through the sliding leaf are minimized.

[0014] Preferred embodiments of the invention are described with reference to **Figures 1 to 13**:

Figure 1 presents a known sliding leaf,

Figure 2 presents a door with two sliding leaves locked to the stationary frame,

Figure 3 presents the door of **Figure 2** with two sliding leaves free to slide,

Figure 4 presents the cross-section of an example of a profile of a movable frame, according to the invention,

Figure 5 presents a system including a profile of the movable frame with locking means and a holding member,

Figure 6 presents in three dimensions the profile of **Figure 5**,

Figure 7 presents the cross-section of a sliding leaf with three panels,

Figure 8 presents the cross-section of **Figure 7** locked in a stationary frame mounted to a wall,

Figure 9 presents a side view of an example of a profile according to the invention,

Figure 10 presents the profile of **Figure 9** and a stationary frame interlocked,

Figure 11 presents a stationary frame for a sliding door mounted to a wall,

Figure 12 presents an example of an optional handle connectable to a holding member according to the invention,

Figure 13 presents the optional handle of **Figure 12** attached to the holding member,

Figure 14 shows an example of the invention embodied in a door with a single leaf.

[0015] A door assembly includes a sliding leaf **10** and a stationary frame with a stationary frame member **50**. The sliding leaf **10** has a panel, or pane, **15** and a movable frame or sash around it. The sash has profiles, i.e. vertical profiles or stiles and horizontal profiles that interconnect the stiles. The vertical profile of the sash that is designated with **11** in the figures, houses at least partially the first locking means **21**, **23**, **25**. **Figure 2** and **Figure 3** present schematically a balcony door with two sliding leaves **10**, with the sliding leaves **10** and the stationary frame locked to each other and the sliding leaves **10** unlocked and free to slide, respectively.

[0016] In general, the sash has four linear profile elements that surround the panel **15**, which is usually made of glass. The profiles have means to receive the edges of the panel or panels **15** that extend laterally towards both sides of the panel or panels **15**, as shown in **Figure 7**.

[0017] **Figure 4** shows a cross section of the profile **11** that houses the locking means. The profile **11** has a rear wall **111**, a front wall **112** and two side walls **113**, **114** that are opposite to each other. The rear wall **111** and the front wall **112** bridge the side walls **113**, **114**, so as to form a closed chamber **117**. Optionally, the chamber **117** may be subdivided in sub-chambers by inner webs. In the embodiment presented in **Figure 4**, the chamber **117** is subdivided in three consecutive sub-chambers, two side sub-chambers and one mid-chamber, by inner

webs bridging the rear wall **111** and the front wall **112**. The locking means **21**, **23**, **25** are housed in a side sub-chamber of chamber **117**. The front wall **112** is planar and provided with supporting means **115** to support the panels **15** against at least unidirectional lateral movement, i. e. movement of the panel **15** parallel to the front wall **112**. Such means may be abutments projecting from the outer face of the front wall **112** as also shown in **Figure 6**.

[0018] In one example the front wall **111** and the rear wall **112** intersect the side walls **113**, **114**. As shown in the example of **Figure 4** both side walls **113**, **114** project laterally from the front wall **112** outwards from the chamber **117**. The projection of wall **114** provide an abutment **115** for a first panel **15** and a face of a further wall that projects from the front wall **112**, between the side walls **113**, **114** provide an abutment **115** for a second panel **15**. The rear wall **111** may be stepped. In the example shown in **Figure 4** the rear wall **111** and the projections of the side walls **113**, **114** form two cavities **143**, **144** respectively that may be covered by cups **153**, **154** respectively.

[0019] The first locking means **21**, **23**, **25** includes a gear box **21** with locking elements **27**, levers **23**, and operating means that can be an operating handle **25**. The locking elements **27** projects through the rear wall **111** outwards from the chamber **117** and co-operates with complementary locking means **57** that are provided on the stationary frame member **50**. The locking means **21**, **23**, **25** is operated between a locked position and unlocked position. When in locked position the sliding leaf **10** and the stationary frame member **50** are locked to each other and when in the unlocked position, the sliding leaf **10** may slide freely towards or away from the stationary frame member **50**. **Figure 5** shows the profile **11** and the locking means **21**, **23**, **25** outside the chamber **117** of the profile **11**.

[0020] The gear box **21** of the first locking means is housed within the chamber **117** provided in profile **11**. Levers **23** operate the locking elements **27** of the gear box **21**, between a position that lock the sliding leaf **10** to the stationary frame member **50** and an unlocked position that allows the sliding leaf **10** to slide with respect to the stationary frame member **50**. Operating handle **25** projects from the front wall **112**, between the side walls **113**, **114** and extends from the profile **11** along a line - dashed line **A-A** in **Figure 9** - that is parallel to the panel **15**. Thus, the operating handle **25** is accessible by the user even when the profile **11** is neither visible nor accessible when the sliding leaf **10** and the stationary frame member **50** are interlocked.

[0021] Holding members, i.e. glazing beads, which are provided on one side of the panel **15** and along its edges, hold the panel **15** to the sash. Sealing elements may be further provided between the sash and the holding members. In the embodiment shown in **Figure 5**, the holding member that holds panel **15** to the profile **11** housing the locking means **21**, **23**, **25** has three distinct segments, i.

e. holding profiles **12** and **13** and a cover **14** therebetween. The holding profiles **12**, **13** are attached to the profile **11** by claspings or with fasteners or any other suitable means. In another embodiment not shown in the figures, the holding member is a continuous profile and the operating handle **25** penetrates the holding member through openings provided in two opposite walls of the holding member or through any other appropriate arrangement. A slit **118** that may be formed between two walls that project from the front wall **112** of profile **11** receives the continuous holding member or its segments **12**, **13**, **14**.

[0022] When the sash and the stationary frame member **50** are locked together, the profile **11**, the holding profiles **12**, **13** and optionally the cover **14** are received within a channel **53** of the stationary frame member **50** as it is described below.

[0023] The stationary frame member **50** has a channel **53** to receive the sliding leaf **10**. The channel **53** has a width and a depth that are measured on a cross-section of the stationary frame member **50**, see **Figure 8** and **Figure 11**. The width of the channel **53**, designated with w , is defined as the minimum distance between the opposite walls of the stationary frame member **50** along a line that is normal to the panel **15** of the sliding leaf **10**. The depth of the channel **53**, designated with h , is the maximum length of the overlapping areas of the sliding leaf **10** and the walls of the stationary frame member **50**, which is measured on the cross-section and along a line that is normal to the direction of the width, i.e. along the sliding direction of the sliding leaf **10**, when the sliding leaf **10** and the stationary frame member **50** are in the locked position.

[0024] When the sliding leaf **10** is locked with the stationary frame member **50** the profile **11** and the holding profiles **12**, **13** are received almost entirely within the channel **53** of the stationary frame member **50**. In a preferred embodiment of the invention the depth of the channel **53** is equal or almost equal to the height of the profile **11** and the holding profiles **12**, **13** as presented in **Figures 8** and **10**. With such a configuration, the profile **11** and the holding profiles **12**, **13** are received within the channel **53** of the stationary frame member **50** when the sliding leaf **10** and the stationary frame member **50** are interlocked, so that thermal losses through the sash are minimized.

[0025] The first locking means **21**, **23**, **25** associates with the moving leaf **10** and the complementary locking means **57** associates with the stationary frame member **50**. The operating handle **25** of the locking means **21**, **23**, **25** exits from profile **11** and projects from profile **11** along a line **A-A** that is parallel with respect to the panel **15** and extends through channel **53**. In this way the operating handle **25** is accessible by the user even if the profile **11** and the holding profiles **12**, **13** are entirely received within the channel **53**. Prior art sliding leaves, such as the sliding leaf that is shown in **Figure 1**, has operating means, which projects from the profile and stile along a

line that is normal to the panel and does not intersect with the stationary frame member and its channel. The direction of the line along which the operating means projects from the profile that houses it, is defined as the direction of the tangent to the operating means at the exit point of the operating means from the profile.

[0026] In the embodiment shown in **Figure 8** to **Figure 11** the profile **11** that houses the locking means **21**, **23**, **25** and the holding profiles **12**, **13** are configured to be received within the stationary frame member **50** with the complementary locking means **57**, when the sliding leaf **10** and the stationary frame are interlocked. The operating handle **25** of the locking means **21**, **23**, **25** is partially covered by the cover member **14** and projects therefrom.

[0027] The pulling or pushing of the sliding leaf **10** to the closed or open position may be facilitated by one or two further optional handles **61** that are provided, if there are two, one on each side of the sliding leaf **10**. The two optional handles **61** assisting the slide of the sliding leaf **10** are attached to the profile **11** that houses the locking means **21**, **23**, **25** via openings **63** and project from the channel **53** of the stationary frame member **50** even when the profile **11** and the holding profiles **12**, **13** are entirely received within the channel **53** as shown in **Figure 8** and **Figure 10**. Alternatively the optional handle or optional handles **61** may be attached to the holding member. When the holding member has three segments, i.e. holding profiles **12** and **13** and a cover **14** therebetween, an optional handle **61** may be attached to the cover **14** as shown in **Figure 12** and **Figure 13**. In the example of **Figure 12** and **Figure 13** the optional handle **61** is attached to a face of the cover **14** that is parallel or almost parallel to the panel **15**.

[0028] **Figure 10** shows schematically the operating means **25** projecting from the channel **53** of the stationary profile **10**. In this embodiment both holding profiles **12** and **13**, which extend along the respective ends of the cover **14** are not visible, as they are within the channel **53** of the stationary frame member **50**. The further, optional handles **61** facilitate the sliding of the sliding leaf **10**.

[0029] **Figure 8** shows a system of a sliding leaf **10** and the stationary frame member **50** interlocked. The sliding leaf **10** has three panels **15** to improve thermal insulation. As it is shown the profile **11** that houses the locking means **21**, **23**, **25** and the holding elements are fully received within the channel **53** of the stationary frame member **50**, when the sliding leaf **10** and the stationary frame member **50** are interlocked. The system of **Figure 8** corresponds to a window door with two sliding leafs. **Figure 14** depicts a system of a sliding leaf **10** and the stationary frame member **50** interlocked, which corresponds to a window door with one sliding leaf. As it may be seen the invention may be embodied within the sash of a sliding leaf and with the invention there is no need to intervene to the stationary frame **50** or the wall of the building.

[0030] A sash of a sliding leaf according to the invention

has at least a profile housing locking means in a chamber, which is defined between a rear wall, a front wall and two side walls that are opposite to each other. The rear wall intersects the side walls, the front wall intersects the side walls and the side walls project from the front wall outwards from the chamber. The front wall has supporting means outside the chamber and between the side walls, to support a panel of the sliding leaf against at least uni-directional lateral movement parallel to the front wall. The locking means has locking elements and operating means to operate the locking elements. The locking elements project outwards from the chamber from the rear wall and the operating means project outwards from the chamber. According to the invention, the operating means project through the front wall.

[0031] The profiles of the sash are aluminum. A profile may be one piece or it may consist of two pieces interconnected with plastic strips to reduce thermal losses.

List of reference signs

[0032]

10: sliding leaf
 11: vertical profile housing the locking means
 12, 13: segments of holding member
 14: cover of holding member
 15: panel
 111: rear wall of profile 11
 112: front wall of profile 11
 113, 114: side walls of profile 11
 115: supporting means of profile 11 to support the panels
 117: chamber of profile 11
 118: sit for holding member
 143, 144: cavities
 153, 154: cups
 21: gearbox
 23: levers
 25: operating means
 27: locking elements
 50: stationary frame member.
 57: complementary locking means
 53: channel of stationary frame member
 61: optional handles
 63: openings in profile 11 to attach the optional handles 61
 h: height of channel 53
 w: width of channel 53

Claims

1. A sliding leaf (10) with a movable frame comprising locking means and a profile (11) with a chamber (117) housing said locking means (21, 23, 25) within the chamber (117), and a panel (15) held on the profile by a holding member (12, 13, 14) connectable to

the movable frame, whereby the locking means (21, 23, 25) has locking elements (27) and operating means (25) to operate the locking elements (27) **characterized in that**, the operating means exits from the chamber (117) along a line that is parallel to the panel (15) and penetrates the holding member (12, 13, 14).

2. A sliding leaf (10) according to claim 1, whereby the holding member (12, 13, 14) has three distinct segments arranged along the profile (11), i.e. a first segment (12), a second segment (13) and a cover (14) between the first segment (12) and the second segment (13), whereby the operating means (25) penetrate the cover (14).

3. A sliding leaf (10) according to claim 1 or claim 2, comprising a handle (61) rigidly connected to the holding member (12, 13, 14) or to the profile (11) to assist a user to slide the sliding leaf (10).

4. A sliding leaf (10) according to any one of claims 1 to 3, whereby the profile (11) is aluminum.

5. A sliding leaf (10) according to any one of claims 1 to 4, whereby the profile (11) includes two aluminum elongated elements joined with a non-metallic element.

6. A system of a sliding leaf according to any one of claims 1 to 5 and a stationary frame having a stationary profile (50) with a channel (53) to receive the sliding leaf (10), whereby the stationary profile (50) has complementary locking means (57) that co-operates with the locking elements (27) and the operating means (25) are operable between a first position to lock the stationary frame with the sliding leaf (10) and an unlocked position to allow the movement of the sliding leaf (10) with respect to the stationary frame.

7. A system according to claim 6, whereby when in locked position the holding member (12, 13, 14) is received within the channel (53).

8. A system according to claim 6, whereby the holding member (12, 13, 14) has three distinct segments arranged along the profile (11), i.e. a first segment (12), a second segment (13) and a cover (14) between the first segment (12) and the second segment (13), and whereby when in locked position the first segment (12) and the second segment (13) are received within the channel (53).

9. System comprising locking means and a profile (11) for a movable frame of a sliding leaf (10), which profile includes a chamber (117) housing said locking means (21, 23, 25), the chamber (117) being defined

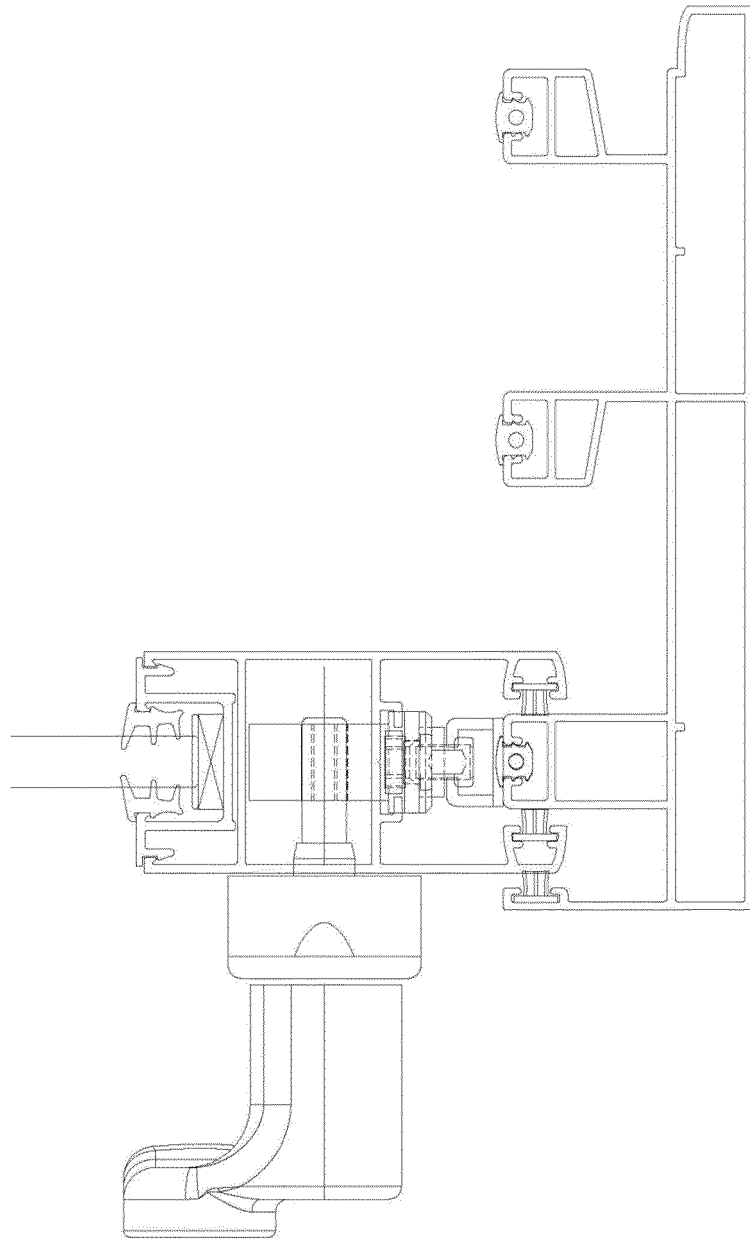
- between two side walls (113, 114) that are opposite to each other, a rear wall (111) that is between the two side walls (113, 114) and bridges the two side walls (113, 114) and a front wall (112) that is between the two side walls (113, 114) and bridges the two side walls (113, 114), whereby the rear wall (111) and the front wall (112) are opposite to each other, the front wall (112) has supporting means (115) outside the chamber (117) to support a panel (15) of the sliding leaf (10) against at least unidirectional lateral movement parallel to the front wall (112) and the locking means (21, 23, 25) has locking elements (27) and operating means (25) to operate the locking elements (27), which locking elements (27) projects through the rear wall (111) outwards from the chamber (117), **characterized in that** the operating means (25) projects outwards from the chamber (117) through the front wall (112).
10. System **according to claim 9**, whereby the side walls (113, 114) project from the front wall (112) outwards from the chamber and the operating means (25) projects through the front wall (112) between the projections of the side walls (113, 114).
11. System **according to claim 9 or claim 10**, whereby a face of the projection of the side wall (114) that projects from the front wall (111) forms an abutment (115) to support the panel (15) of the sliding leaf (10) against at least unidirectional lateral movement parallel to the front wall (111).
12. System **according to any one of claims 9 to 11**, whereby the chamber (117) is subdivided into three consecutive sub-chambers, i.e. two side sub-chambers and one mid sub-chamber between the two side sub-chambers, by two webs that are within the profile, and the locking means (21, 23, 25) is housed in a side sub-chamber.
13. System **according to any one of claims 9 to 12** including at least an aluminum profile portion.
14. An assembly comprising a system **according to any one of claims 9 to 13** and a holding member (12, 13, 14) to support the panel (15) against at least unidirectional lateral movement parallel to the front wall (112), whereby the operating means (25) projects through the holding member (12, 13, 14).
15. An assembly **according to claim 14**, whereby the holding member (12, 13, 14) has three segments arranged along the profile (11), i.e. a first segment (12), a second segment (13) and a cover (14) between the first segment (12) and the second segment (13), whereby the operating means (25) penetrate the cover (14).
- ### Patentansprüche
1. Schiebeflügel (10) mit einem Verschieberahmen, die ein Verriegelungsmittel und ein Profil (11) umfassen, mit einer Kammer (117), in der die Verriegelungsmittel (21, 23, 25) in der Kammer (117) eingeschlossen sind, und einem Panel (15) auf dem Profil durch ein Halteelement (12, 13, 14) festgehalten, das mit dem Verschieberahmen verbunden werden kann, wobei das Verriegelungsmittel (21, 23, 25) Verriegelungselemente (27) und Betätigungsmittel (25) zum Betätigen der Verriegelungselemente aufweist (27), **dadurch gekennzeichnet, dass** die Betätigungsmittel aus der Kammer (117) entlang einer Linie ausgeht, die parallel zum Panel (15) verläuft und in das Halteelement (12, 13, 14) eindringt.
 2. Schiebeflügel (10) **nach Anspruch 1**, wobei das Halteelement (12, 13, 14) drei verschiedene Teile aufweist, die entlang des Profils (11) angeordnet sind, d.h. ein erster Teil (12), ein zweiter Teil (13) und ein Deckel (14) zwischen dem ersten Teil (12) und dem zweiten Teil (13), wobei die Betätigungsmittel (25) in den Deckel (14) eindringen.
 3. Schiebeflügel (10) **nach Anspruch 1 oder Anspruch 2**, umfassend einen Griff (61), der fest mit dem Halteelement (12, 13, 14) oder dem Profil (11) verbunden ist, um einen Benutzer beim Schieben des Schiebeflügels zu unterstützen (10).
 4. Schiebeflügel (10) **nach einem der Ansprüche 1 bis 3**, wobei das Profil (11) Aluminium ist.
 5. Schiebeflügel (10) **nach einem der Ansprüche 1 bis 4**, wobei das Profil (11) zwei längliche Aluminiumelemente enthält, die mit einem nichtmetallischen Element verbunden sind.
 6. System mit einem Schiebeflügel **nach einem der Ansprüche 1 bis 5** und einem stationären Rahmen mit einem stationären Profil (50) und einem Kanal (53) zum Aufnehmen des Schiebeflügels (10), wobei das stationäre Profil (50) ein zusätzliche Verriegelungsmittel hat (57), die mit den Verriegelungselementen (27) zusammenwirken, und die Betätigungsmittel (25) können zwischen einer ersten Position zum Verriegeln des stationären Rahmens mit dem Schiebeflügel (10) und einer entriegelten Position zum Ermöglichen der Bewegungen des Gleitblattes (10) in Bezug auf den stationären Rahmen betätigt werden.
 7. System **nach Anspruch 6**, wobei in Verriegelungsposition das Halteelement (12, 13, 14) innerhalb des Kanals (53) aufgenommen wird.
 8. System **nach Anspruch 6**, wobei das Halteelement

- (12, 13, 14) drei verschiedene Teile aufweist, die entlang des Profils (11) angeordnet sind, d.h. ein erster Teil (12), ein zweiter Teil (13) und ein Deckel (14) zwischen dem ersten Teil (12) und dem zweiten Teil (13), und wobei in Verriegelungsposition der erste Teil (12) und der zweite Teil (13) innerhalb des Kanals (53) aufgenommen werden.
9. System, das Verriegelungsmitteln und einen Profil (11) für einen Verschieberahmen eines Schiebeflügels (10) umfasst, wobei das Profil eine Kammer (117) enthält, wo die o.g. Verriegelungsmittel (21, 23, 25) eingeschlossen sind, wobei die Kammer (117) zwischen zwei einander gegenüberliegenden Seitenwänden (113, 114), eine Rückwand (111), die sich zwischen den beiden Seitenwänden (113, 114) befindet und die beiden Seitenwände (113, 114) überbrückt, und eine Vorderwand (112), die sich zwischen den beiden Seitenwänden (113, 114) überbrückt, definiert ist, wobei die Rückwand (111) und die Vorderwand (112) einander gegenüberliegen, wobei die Vorderwand (112) Stützmittel (115) außerhalb der Kammer (117) hat, um einen Panel (15) des Schiebeflügels (10) gegen mindestens eine unidirektionale seitliche Bewegung parallel zur Vorderwand (112) zu stützen und wobei die Verriegelungsmittel (21, 23, 25) Verriegelungselemente (27) und Betätigungsmittel (25) aufweisen, um die Verriegelungselemente (27) zu betätigen, welche Verriegelungselemente (27) durch die Rückwand (111) von der Kammer (117) nach außen ragen, **dadurch gekennzeichnet, dass** das Betätigungsmittel (25) von der Kammer (117) durch die Vorderwand (112) nach außen ragt.
10. System **nach Anspruch 9**, wobei die Seitenwände (113, 114) von der Vorderwand (112) nach außen aus der Kammer herausragen und die Betätigungsmittel (25) durch die Vorderwand (112) zwischen den Vorsprüngen der Seitenwände (113, 114) ragt.
11. System **nach Anspruch 9 oder Anspruch 10**, wobei eine Fläche des Vorsprungs der Seitenwand (114), die von der Vorderwand (111) vorsteht, einen Stützpfeiler (115) bildet, um den Panel (15) des Schiebeflügels (10) gegen mindestens unidirektionale seitliche Bewegung parallel zur Vorderwand (111) zu stützen.
12. System **nach einem der Ansprüche 9 bis 11**, wobei die Kammer (117) durch zwei in drei aufeinanderfolgende Unterkammern unterteilt ist, d.h. zwei seitliche Unterkammern und eine mittlere Unterkammer zwischen den zwei seitlichen Unterkammern, die sich innerhalb des Profils befinden, und die Verriegelungsmittel (21, 23, 25) in einer seitlichen Unterkammer eingeschlossen sind.
13. System **nach einem der Ansprüche 9 bis 12**, einschließlich mindestens eines Aluminiumprofilteils.
14. Baugruppe, die ein System **nach einem der Ansprüche 9 bis 13** und ein Halteelement (12, 13, 14) umfasst, um den Panel (15) gegen mindestens eine unidirektionale seitliche Bewegung parallel zur Vorderwand (112) zu stützen, wobei die Betätigungsmittel (25) durch das Halteelement (12, 13, 14) ragen.
15. Baugruppe **nach Anspruch 14**, wobei das Halteelement (12, 13, 14) drei Teile aufweist, die entlang des Profils (11) angeordnet sind, d.h. ein erster Teil (12), ein zweiter Teil (13) und ein Deckel (14) zwischen dem ersten Teil (12) und dem zweiten Teil (13), wobei die Betätigungsmittel (25) in den Deckel (14) eindringen.

Revendications

1. Un vantail coulissant (10) avec un cadre mobile comprenant des dispositifs de verrouillage et un profil (11) avec une chambre (117), où lesdits dispositifs de verrouillage se situent (21, 23, 25) dans la chambre (117), et un panneau (15) tenu sur le profil par un élément de fixation (12, 13, 14) connectable au cadre mobile, où les dispositifs de verrouillage (21, 23, 25) avec des éléments de verrouillage (27) et un dispositif opérationnel (25) pour manipuler les éléments de verrouillage (27), **caractérisé en ce que** le dispositif opérationnel sort de la chambre (117) au long d'une ligne parallèle au panneau (15) et pénètre dans l'élément de fixation (12, 13, 14).
2. Un vantail coulissant (10) **selon la revendication 1**, où l'élément de fixation (12, 13, 14) consiste en trois segments distincts, arrangés au long du profil (11), i.e. le premier segment (12), le deuxième segment (13), et un couvercle (14) entre le premier segment (12) et le deuxième segment (13), où le dispositif opérationnel (25) pénètre dans le couvercle (14).
3. Un vantail coulissant (10) **selon la revendication 1 ou la revendication 2**, comprenant une poignée (61) fixée de façon immobile sur l'élément de fixation (12, 13, 14) ou sur le profil (11) pour aider l'utilisateur à faire glisser le vantail coulissant (10).
4. Un vantail coulissant (10) **selon l'une quelconque des revendications 1 à 3**, où le profil (11) est en aluminium.
5. Un vantail coulissant (10) **selon l'une quelconque des revendications 1 à 4**, où le profil (11) comporte deux éléments oblongs en aluminium, joints à un élément non-métallique.

6. Un système composé d'un vantail coulissant **selon l'une quelconque des revendications 1 à 5** et d'un cadre fixe avec un profil fixe (50), avec un canal (53) pour guider le vantail coulissant (10), où le profil fixe (50) possède un dispositif de verrouillage complémentaire (57) qui complète les éléments de verrouillage (27), et le dispositif opérationnel (25) qui se déplace entre la première position pour verrouiller le cadre fixe avec le vantail coulissant (10) et la position déverrouillée pour permettre le mouvement du vantail coulissant (10) par rapport au cadre fixe. 5
7. Un système **selon la revendication 6**, où l'élément de fixation (12, 13, 14) entre dans le canal (53) en position verrouillée. 10
8. Un système **selon la revendication 6**, où l'élément de fixation (12, 13, 14) consiste en trois segments distincts, arrangés au long du profil (11), i.e. le premier segment (12), le deuxième segment (13), et un couvercle (14) entre le premier segment (12) et le deuxième segment (13), et où le premier segment (12) et le deuxième segment (13) entrent dans le canal (53) en position verrouillée. 15
9. Système comprenant des dispositifs de verrouillage et un profil (11) pour un cadre mobile du vantail coulissant (10), le profil comporte une chambre (117) où lesdits dispositifs de verrouillage se situent (21, 23, 25), cette chambre (117) étant située entre les deux parois (113, 114) opposées l'une à l'autre, une paroi arrière (111) située entre les deux parois (113, 114) et reliant les deux parois (113, 114), et une paroi frontale (112) située entre les deux parois (113, 114) et reliant les deux parois (113, 114), où la paroi arrière (111) et la paroi frontale (112) sont opposées l'une à l'autre, la paroi frontale (112) a des dispositifs de support (115) à l'extérieur de la chambre (117) pour supporter un panneau (15) du vantail coulissant (10) contre tout mouvement latéral unidirectionnel parallèle à la paroi frontale (112), et les dispositifs de verrouillage (21, 23, 25) avec des éléments de verrouillage (27) et un dispositif opérationnel (25) pour manipuler les éléments de verrouillage (27), ces éléments de verrouillage (27) passent à travers la paroi arrière (111) à l'extérieur de la chambre (117), **caractérisé en ce que** le dispositif opérationnel (25) passe à l'extérieur de la chambre (117) à travers la paroi frontale (112). 20 25 30 35 40 45 50
10. Système **selon la revendication 9**, où les parois (113, 114) se projettent de la paroi frontale (112) à l'extérieur de la chambre, et le dispositif opérationnel (25) passe à travers la paroi frontale (112) entre les projections des parois (113, 114). 55
11. Système **selon la revendication 9 ou la revendication 10**, où une surface de la projection de la paroi (114) et de la paroi frontale (111) forme un aboutement (115) pour supporter le panneau (15) du vantail coulissant (10) contre tout mouvement latéral unidirectionnel parallèle à la paroi frontale (111).
12. Système **selon l'une quelconque des revendications 9 à 11**, où la chambre (117) est subdivisée en trois sous-chambres consécutives, i.e. deux sous-chambres latérales et une sous-chambre au milieu entre les deux sous-chambres latérales, par deux toiles situées dans le profil, et les dispositifs de verrouillage (21, 23, 25) se situent dans la sous-chambre latérale.
13. Système **selon l'une quelconque des revendications 9 à 12**, comportant au moins une portion du profil en aluminium.
14. Un ensemble comprenant un système **selon l'une quelconque des revendications 9 à 13** et un élément de fixation (12, 13, 14) pour supporter le panneau (15) contre tout mouvement latéral unidirectionnel parallèle à la paroi frontale (112), où le dispositif opérationnel (25) passe à travers l'élément de fixation (12, 13, 14).
15. Un ensemble **selon la revendication 14**, où l'élément de fixation (12, 13, 14) consiste en trois segments, arrangés au long du profil (11), i.e. le premier segment (12), le deuxième segment (13), et un couvercle (14) entre le premier segment (12) et le deuxième segment (13), où le dispositif opérationnel (25) pénètre dans le couvercle (14).



PRIOR ART

Figure 1

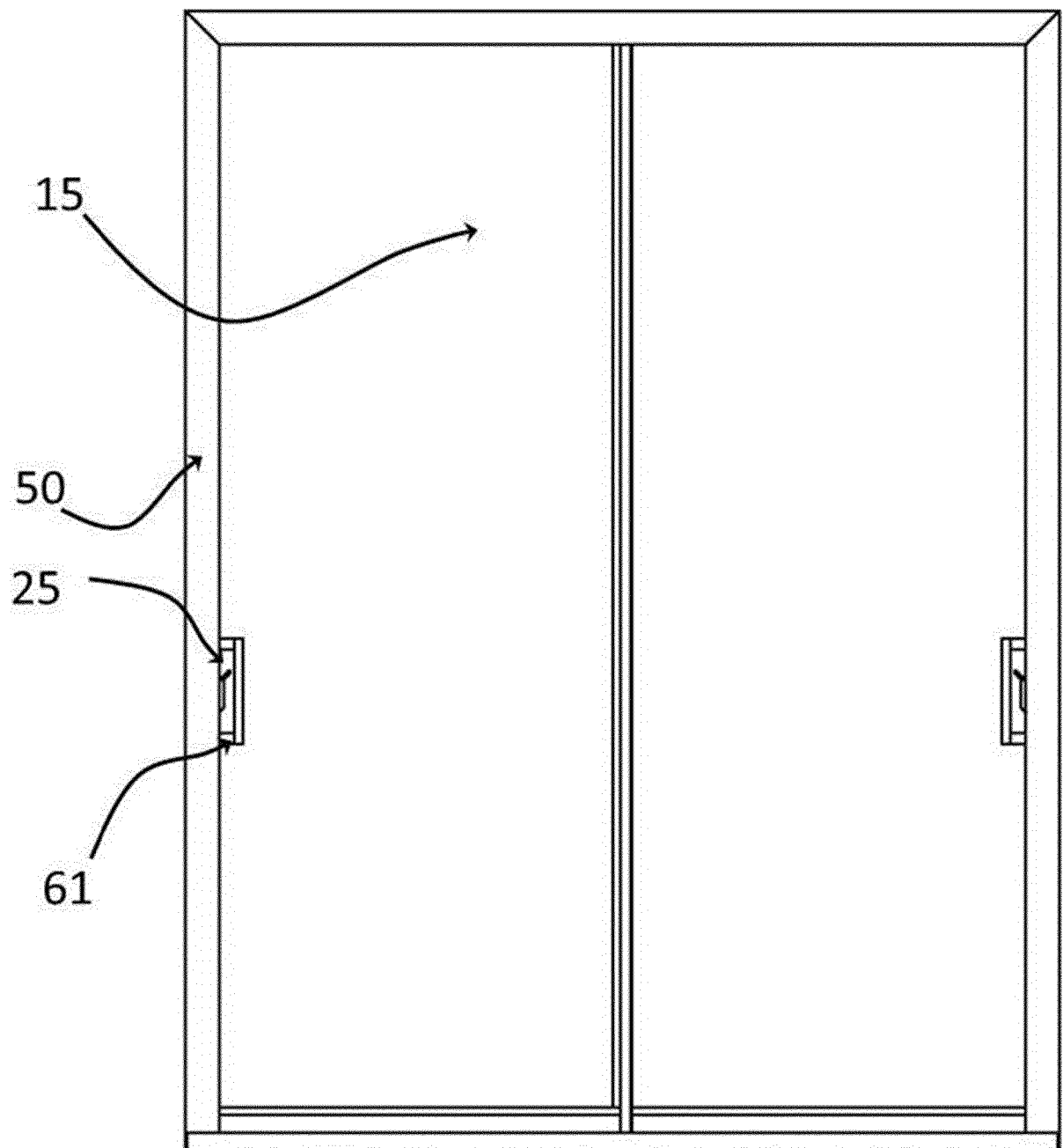


Figure 2

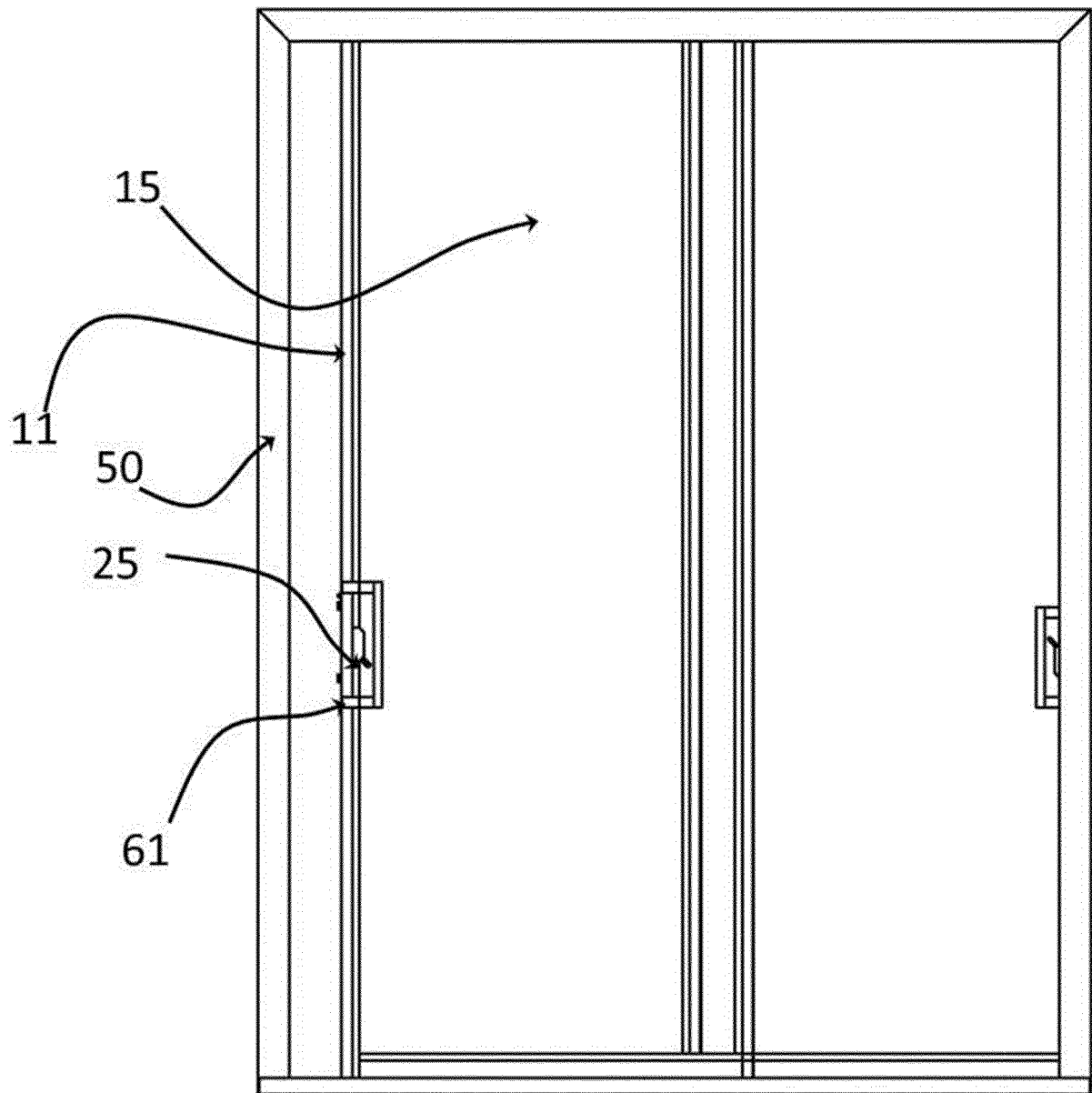


Figure 3

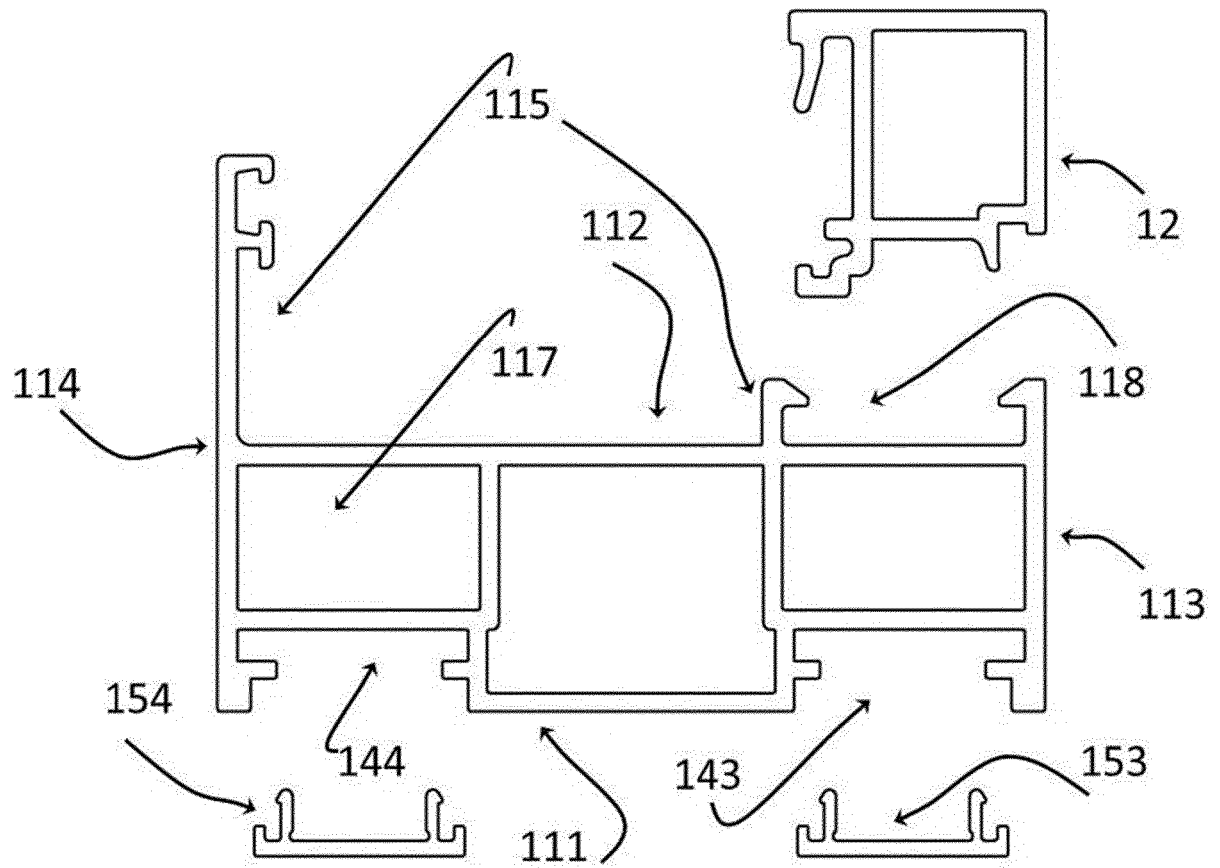


Figure 4

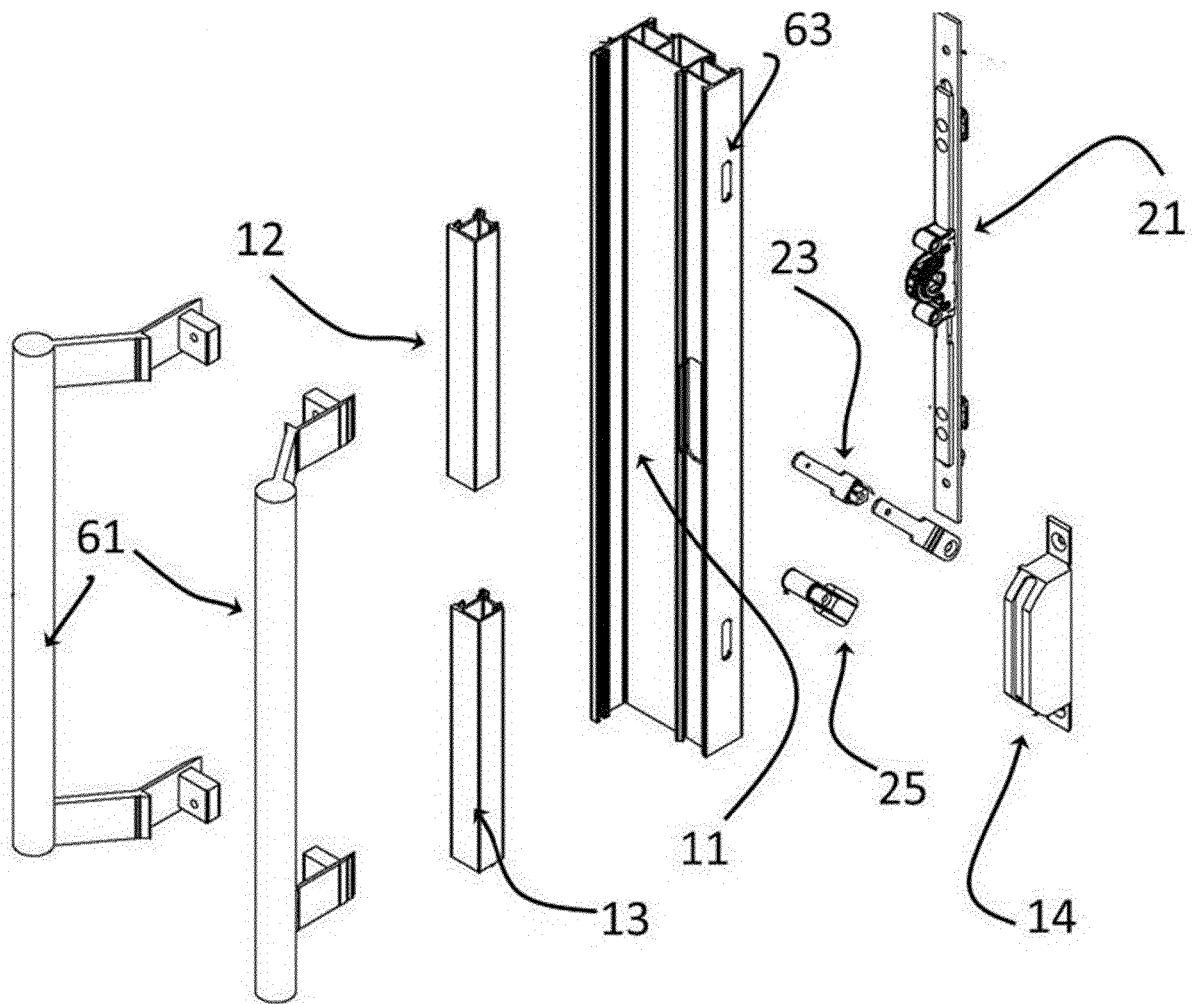


Figure 5

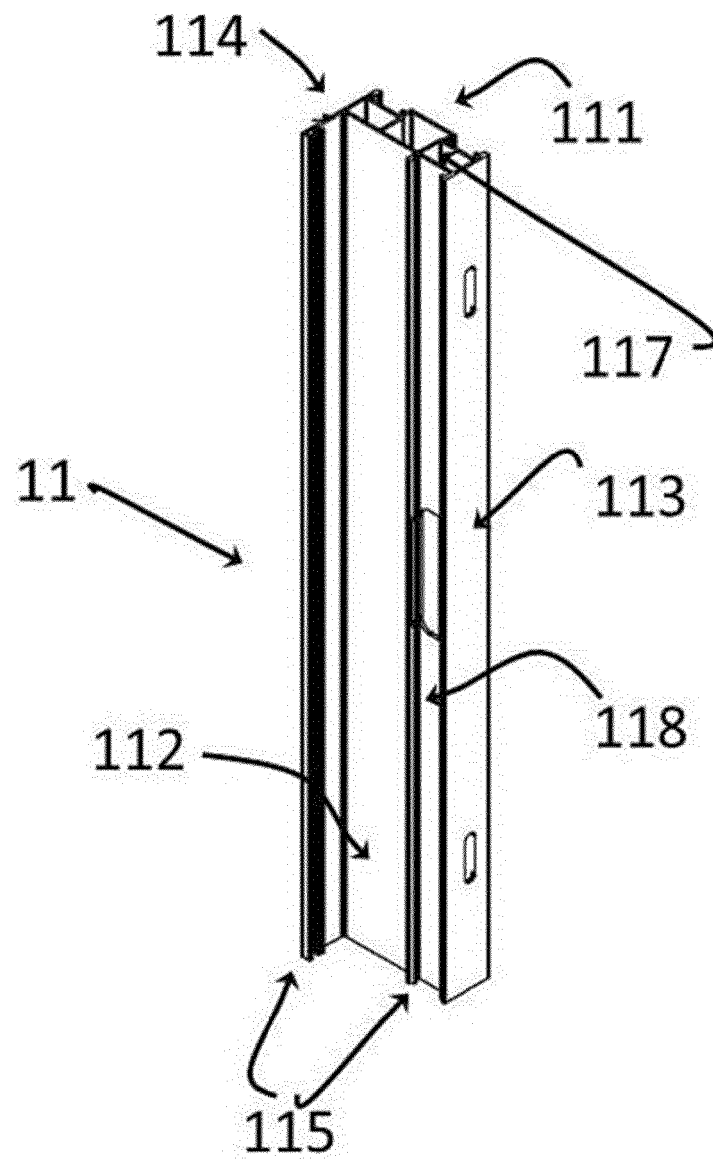


Figure 6

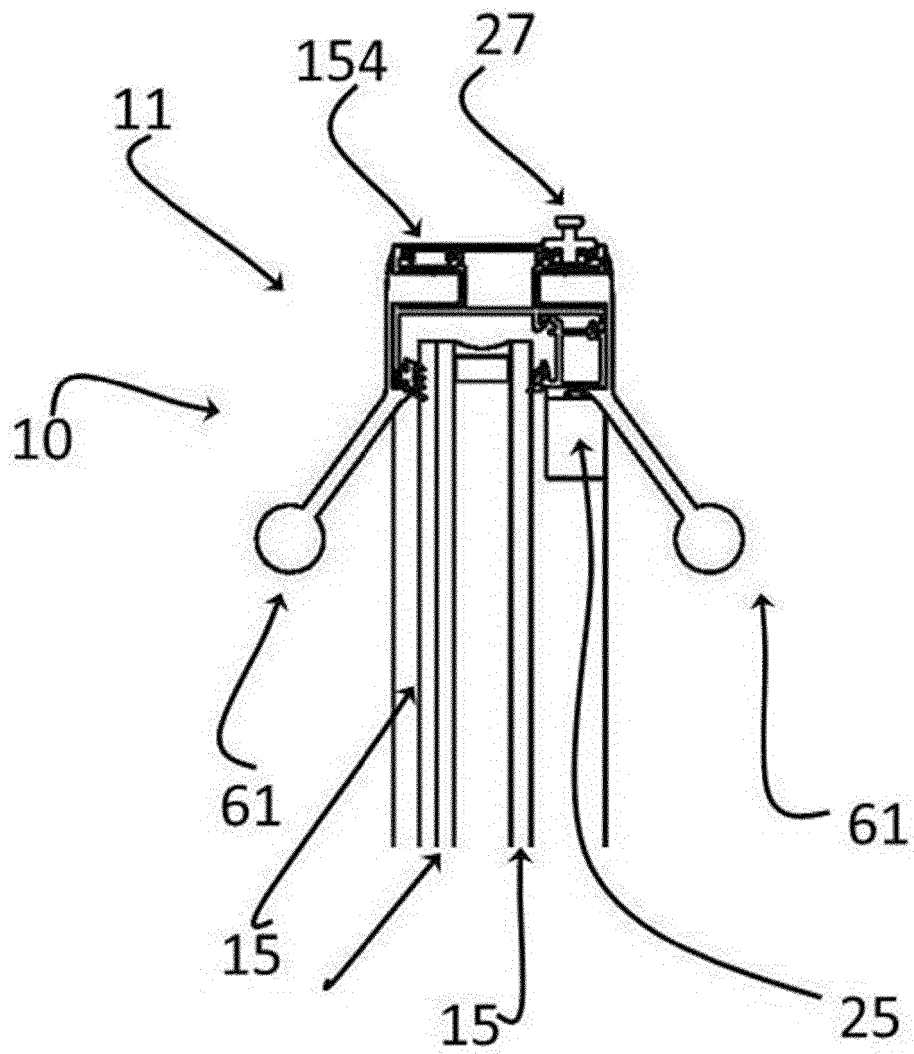


Figure 7

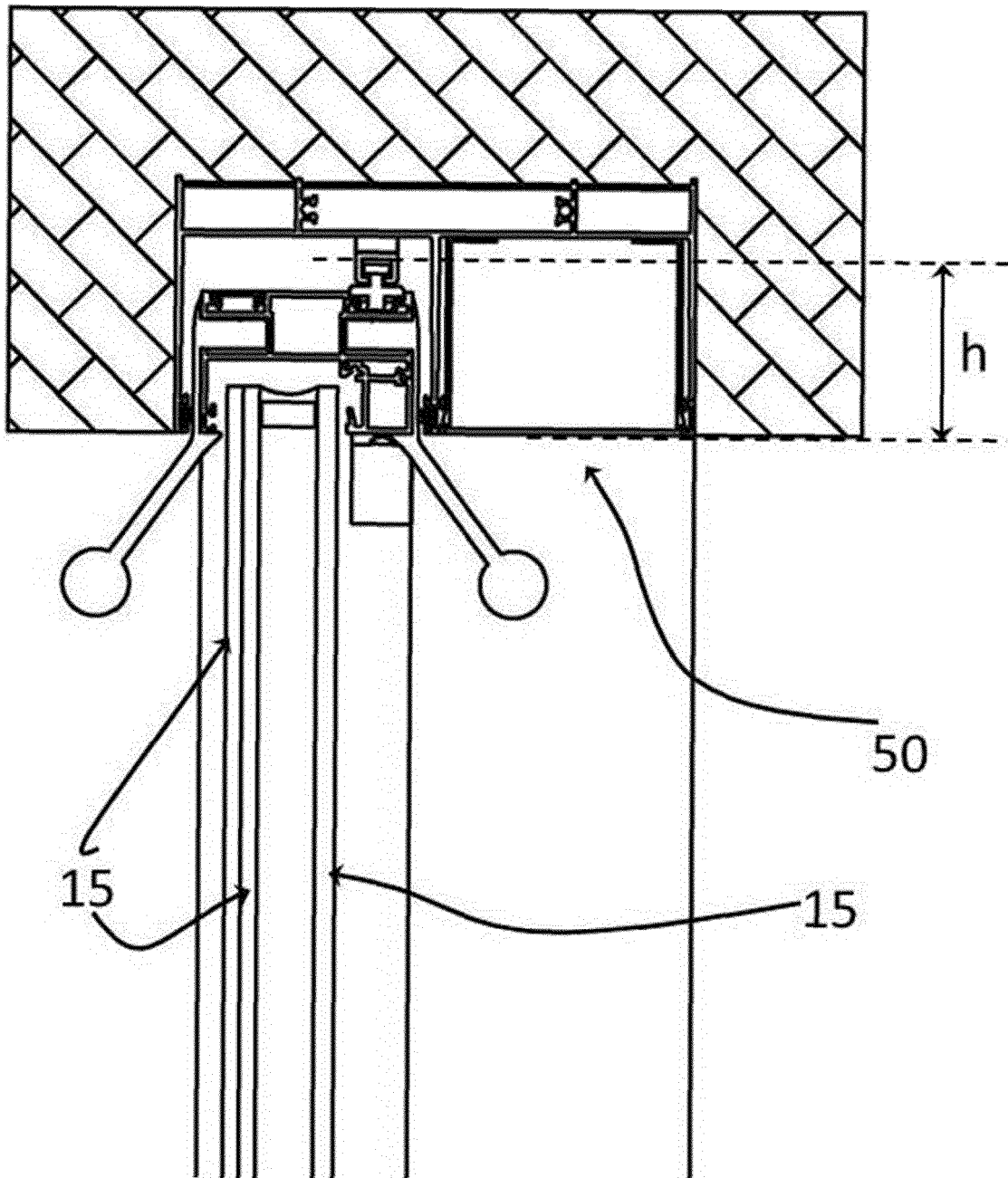


Figure 8

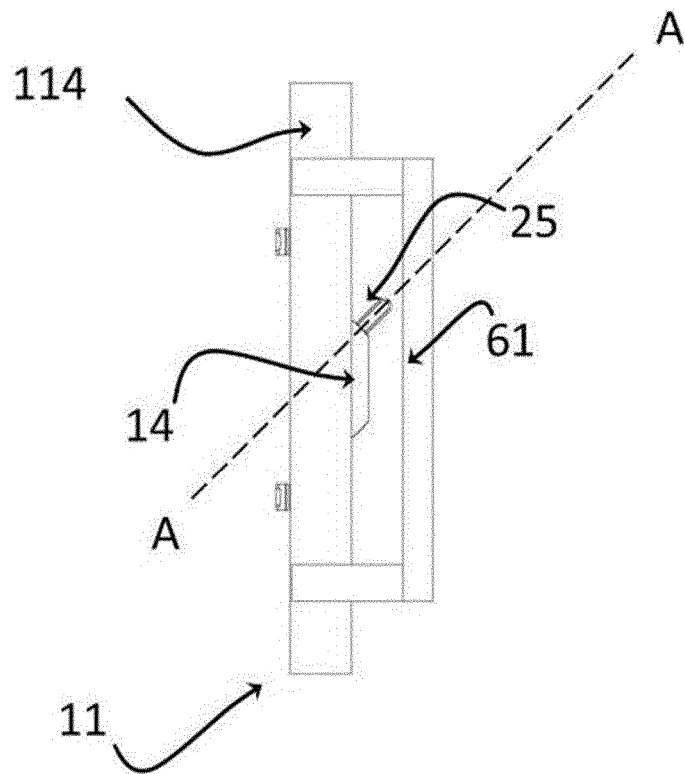


Figure 9

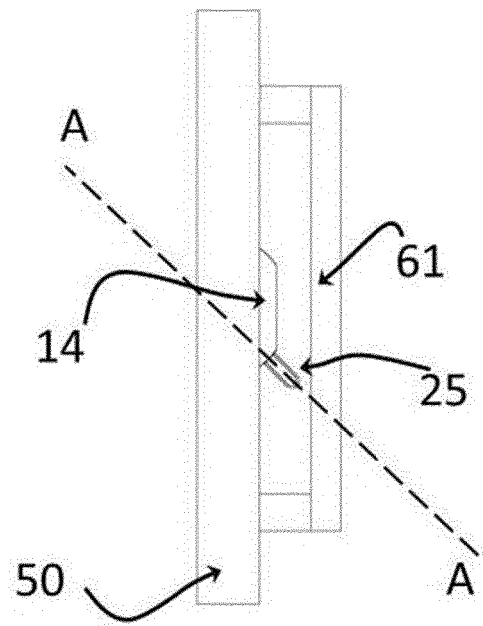


Figure 10

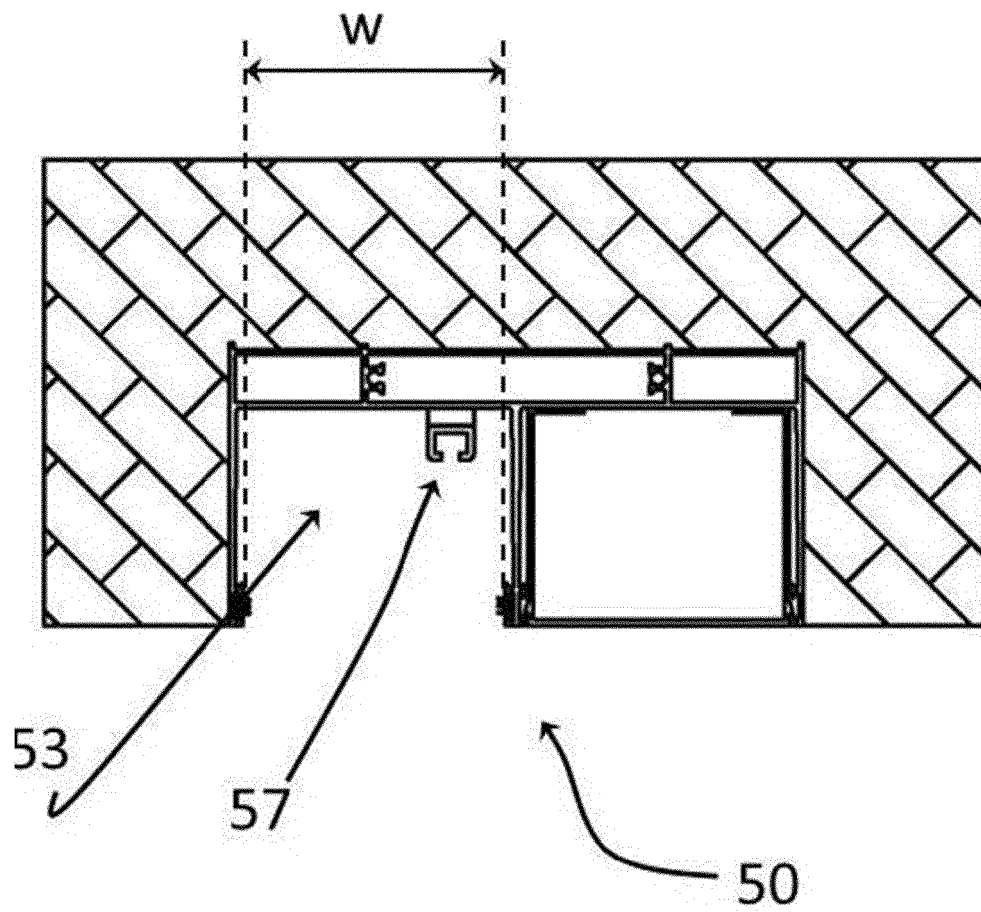


Figure 11

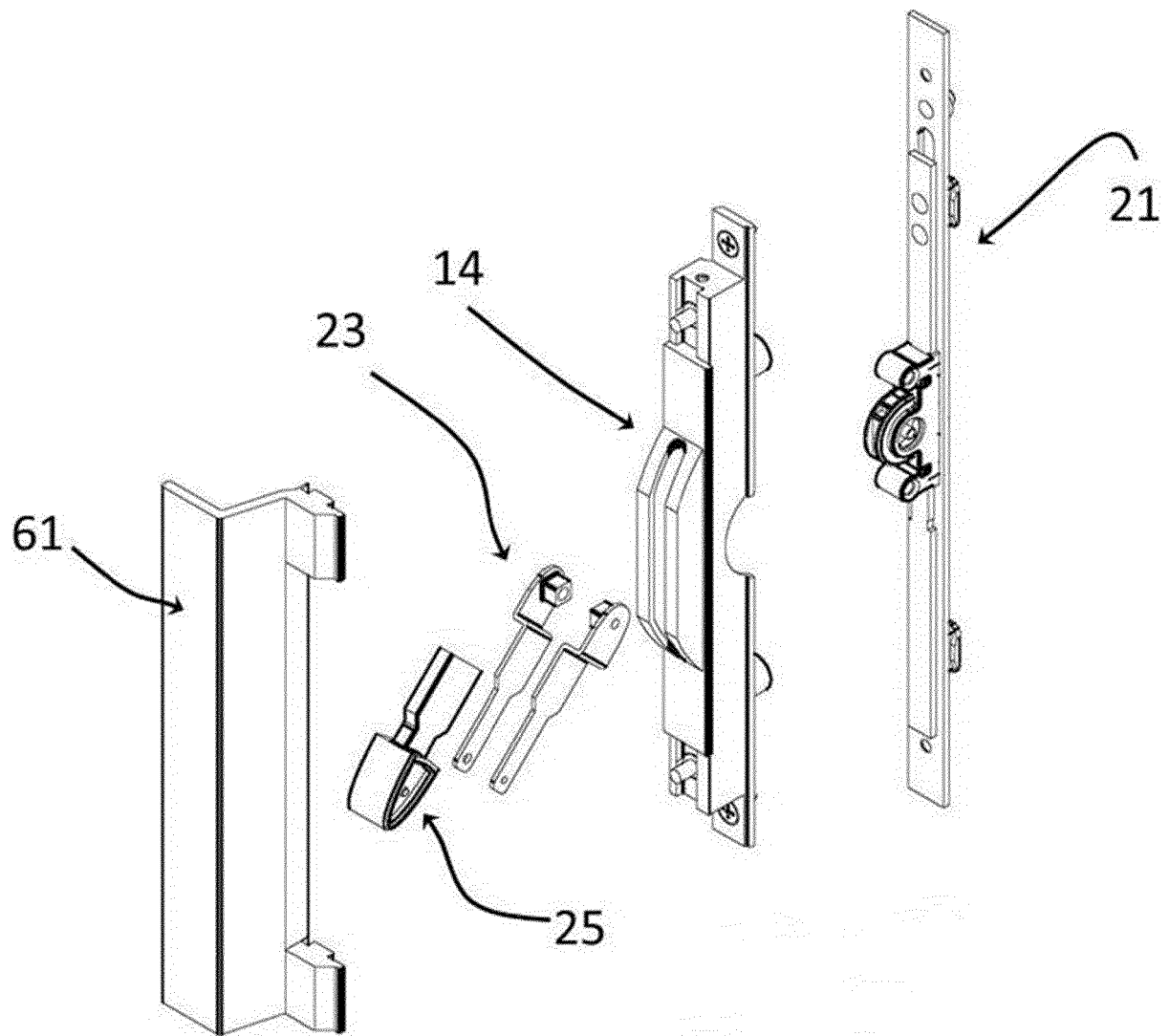


Figure 12

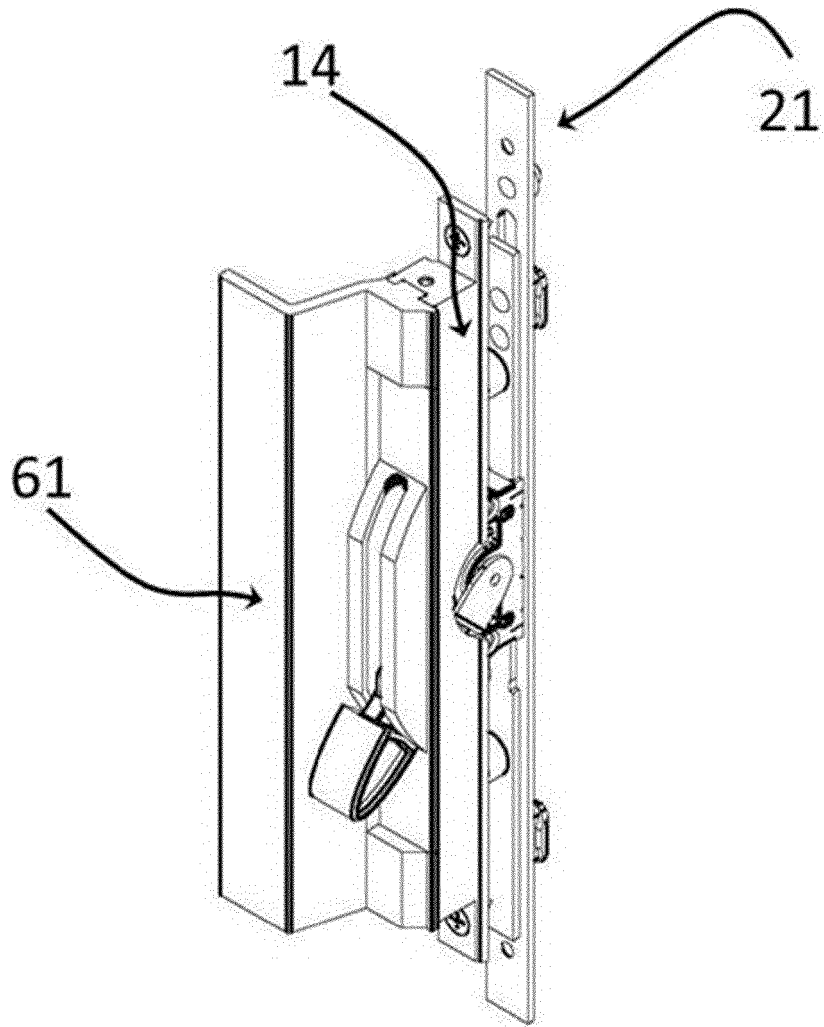


Figure 13

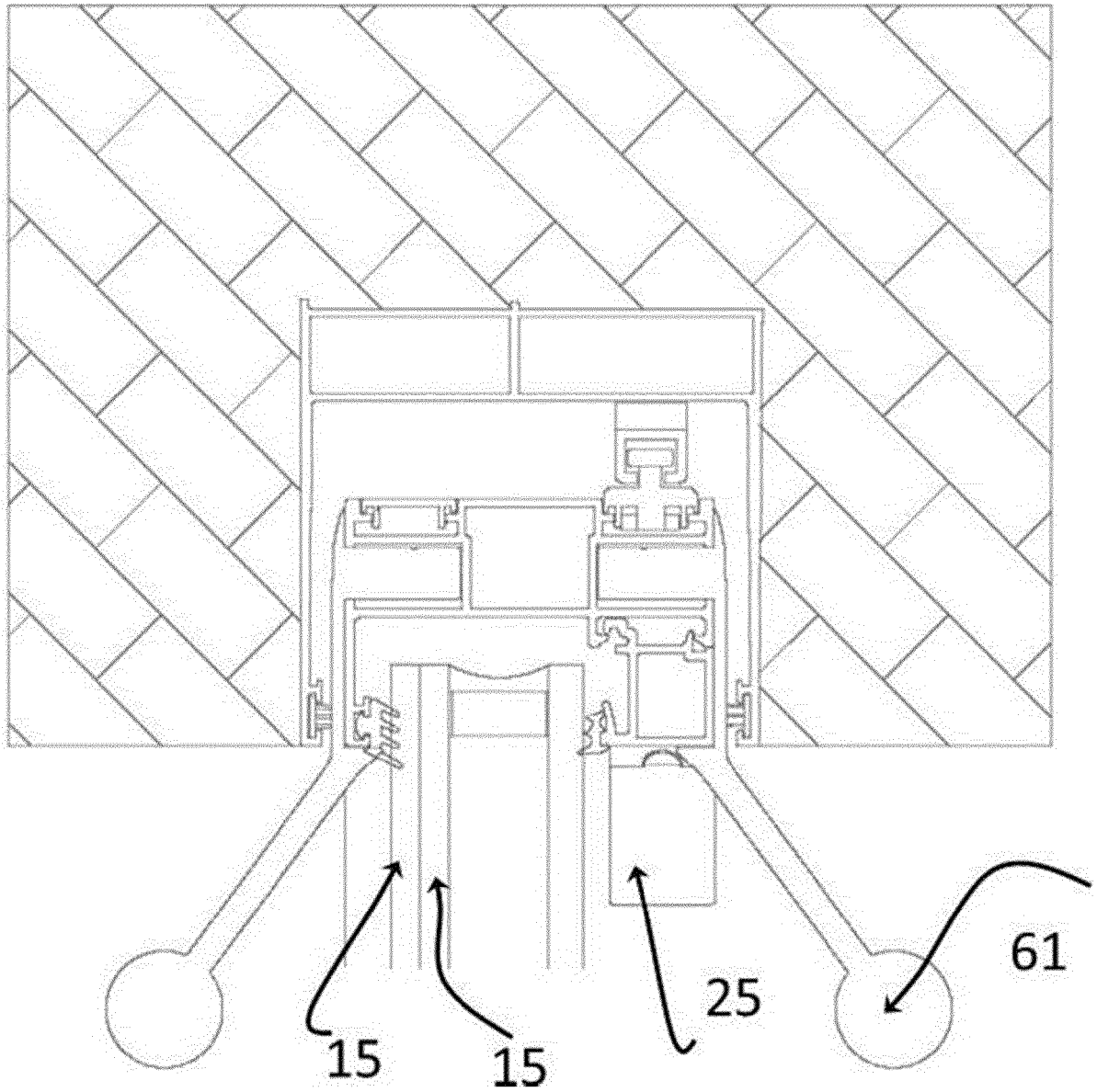


Figure 14

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 2877378 [0002]