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(54) **DOOR/WINDOW WITH FIXED WING FOR OUTDOORS SETTINGS**

(57) Door/window with fixed wing for outdoor settings, which comprises a fixed framework (2) which supports the fixed wing (3) by means of anchorage means (6) provided with a plurality of pawls (8) projecting from the fixed wing (3) towards the support frame (20) of the fixed framework (2), and a corresponding plurality of lever clips (9) pivoted to the fixed framework (2) in a position opposite to the pawls (8) and defining a retention seat (95) for engaging the pawls (8). Each lever clip (9) comprises an arm (9B) manually actuatable to rotate between a retention position (A) of the fixed wing (3), in which the retention seat (95) retains the pawl (8), and a release position (B) of the fixed wing (3), in which the retention seat (95) releases the pawl (8), freeing the fixed wing (3).

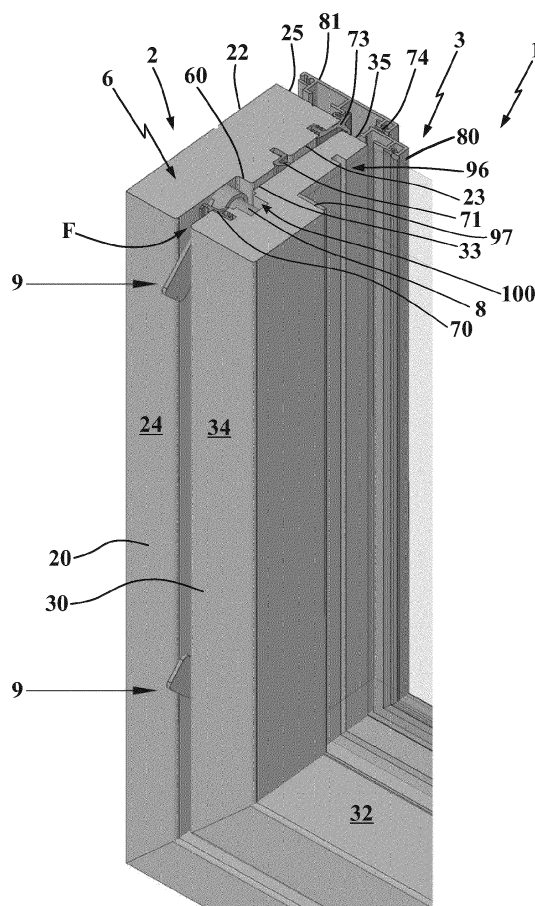


Fig. 1

Description

Field of application

[0001] The present invention refers to a door/window with fixed wing for outdoor settings, such as in particular a window or a French window for closing a wall opening, according to the preamble of the main independent claim.

[0002] The present door/window is in general inserted in the industrial field of production of doors/windows, in particular but not exclusively of the type provided with a wood frame externally covered with aluminum sections.

[0003] The door/window, object of the present invention, can be associated with the internal walling of the building with different finishes, such as by means of plaster holder sections, plasterboard panels, or counter-frameworks made of wood and with installations which can for example be flush with the wall, or at the center of the walling or with installation on support structure of the type with metallic frameworks commonly indicated as SFS frameworks, acronym of "Steel Framing System" with which the frameworks with Metsec® trademark are commercially known.

[0004] The door/window, object of the present invention, can be placed side-by-side other fixed wings or even movable wings with different opening solutions and is therefore of the type generically employable for obstructing, in a fixed manner, an opening made in a load-bearing structure of a building, being inserted as stated in the industrial field for producing doors/windows.

State of the art

[0005] Doors/windows have been known for some time that are of the type employable for closing openings made on load-bearing structures of buildings, e.g. constituted by a window or by a French window, provided with a fixed framework and with a wing rigidly and mechanically connected to the fixed framework.

[0006] More in detail, the present door/window with fixed wing is generically composed of a framework fixed to the walling, or more generally to the load-bearing structure of a building, and a panel, usually constituted by multilayer glass, directly mounted on the framework and fixed thereto by means of anchorage means, for example constituted by a frame.

[0007] The fixed framework consists of two first vertical uprights and two first horizontal crosspieces rigidly fixed to the vertical uprights at the ends in order to form a substantially quadrangular shape. The fixed framework is intended to be fixed to the load-bearing structure, whether this is a metallic structure or a walling, and more precisely is intended to be fixed to the internal faces of the walls which delimit the opening with which the door/window is associated.

[0008] Also known from the patent EP 0965718 is a door/window in which the anchorage means comprise a first element fixed to the fixed framework and provided

with a plurality of externally-projecting teeth, and a second element slidably associated with a frame of the wing and provided with a second plurality of teeth engageable after a top to bottom movement of the first element in order to retain the wing on the framework. Such door/window solution with fixed wing has in practice demonstrated that is excessively complex, both to make and install.

[0009] Also known, for example from patent EP 1353816, is a door/window which provides for fixing the glass panel to the framework by means of anchorage means constituted by a glue layer.

[0010] Also such door/window solution with fixed wing has in practice demonstrated that it is not satisfactory, since in case of maintenance of the wing, i.e. for example of substitution of the glass panel, it is necessary to separate the wing from the framework with operations that are difficult due to the presence of the glue layer.

Presentation of the invention

[0011] In this situation, the problem underlying the present invention is therefore that of overcoming the drawbacks manifested by the solutions of known type, by providing a door/window with fixed wing for outdoor settings which allows rigidly associating the wing to the framework in a facilitated and quick manner.

[0012] A further object of the present invention is that of providing a door/window with fixed wing for outdoor settings, which allows easily removing the fixed wing for each type of maintenance.

[0013] A further object of the present invention is that of providing a door/window with fixed wing for outdoor settings which is entirely safe and reliable in operation.

Brief description of the drawings

[0014] The technical characteristics of the invention, according to the aforesaid objects, are clearly seen in the contents of the below-reported claims and the advantages thereof will be more evident in the following detailed description, made with reference to the enclosed drawings, which represent a merely exemplifying and non-limiting embodiment of the invention in which:

- figure 1 shows a perspective view of an angular portion of the door/window with fixed wing for outdoor settings, object of the present invention, with two lever clips illustrated in intermediate position between a position of retention of the fixed wing to the fixed framework and a position of release of the fixed wing from the fixed framework;
- figure 2 shows a second perspective view of the door/window with fixed wing for outdoor settings, object of the present invention, taken at a cross section, with the two lever clips illustrated in a position of retention of the fixed wing to the fixed framework;
- figure 3 shows a third perspective view of the door/window with fixed wing for outdoor settings, ob-

- ject of the present invention, taken at a cross section, with the two lever clips illustrated in a position of release of the fixed wing from the fixed framework;
- figure 4 shows a perspective view of an angular portion of a detail of the door/window for outdoor settings, object of the present invention, relative to the fixed framework;
 - figure 5 shows a perspective view of an angular portion of a detail of the door/window for outdoor settings, object of the present invention, relative to the fixed wing;
 - figure 6 shows a cross section view of a portion of the door/window, object of the present invention, made at the first frame of the fixed wing and at the second frame of the fixed framework;
 - figure 7 shows a detail of the door/window, object of the present invention, relative to a lever clip of the anchorage means represented in a perspective view;
 - figures 8A and 8B show two different embodiments of a detail of the door/window, object of the present invention, relative to a pawl of the anchorage means represented in a perspective view;
 - figure 9 shows a detail of the door/window, object of the present invention, relative to the lever clip in accordance with an embodiment variant.

Detailed description of a preferred embodiment

[0015] With reference to the enclosed drawings, reference number 1 overall indicates the door/window with fixed wing for outdoor settings, object of the present invention.

[0016] Such door/window is operatively engageable for closing, in a fixed manner, an opening made in a load-bearing structure of a building, e.g. a wall structure. Such opening can for example be for a window, a door or a French window or other similar doors/windows.

[0017] Such opening is usually defined in the walling of a building between two lateral, substantially vertical walls, a substantially horizontal lower wall and a substantially horizontal upper wall.

[0018] Such opening can otherwise be defined between parts of the walling or load-bearing structure of the building and other doors/windows whether they are of the type with fixed wing or with movable wing.

[0019] Such opening will preferably have quadrangular shape, and more in detail rectangular or square shape.

[0020] The door/window with fixed wing for outdoor settings 1 comprises, in a per se conventional manner, a fixed wing 3 provided with a first support frame 30 and with at least one glass panel 40 (with one or more panes) perimetally fixed to the aforesaid support frame 30, and a fixed framework 2, which supports the fixed wing 3, and comprises at least one second support frame 20.

[0021] The door/window for outdoor settings 1, object of the present invention, can be advantageously employed for making single or double fixed wings of windows

or French windows or for similar doors/windows of the type for example with a fixed wing and a movable wing.

[0022] The door/window 1 also comprises anchorage means 6 for rigidly connecting the first support frame 30 of the fixed wing 3 and the second support frame 20 of the fixed framework 2.

[0023] More in detail, the first support frame 30 of the fixed wing 3 is provided with a first perimeter face 32, which is directed towards the interior of the support frame 30, and which mechanically carries the glass panel 40 associated therewith, and with a second perimeter face 33, which is directed towards the exterior of the support frame 30, i.e. towards the second support frame 20 of the fixed framework 2, and is provided with at least one shaped seat 100.

[0024] Advantageously, the first and the second perimeter face 32, 33 of the first frame 30 of the fixed wing 3 are extended between a first internal surface 34 and a first external surface 35 of the first frame 30, which are respectively directed towards the interior and exterior of a building when the door/window 1 is mounted on the load-bearing structure. In turn, the second support frame 20 of the fixed framework 2 is provided with a third perimeter face 22, which is intended to be fixed to the load-bearing structure of a building at the opening, and with a fourth perimeter face 23, which is directed towards the fixed wing 3, and is opposite the first perimeter face 33 of the first frame 30 of the fixed wing 3, when this is fixed to the fixed framework 2.

[0025] More in detail, the fourth perimeter face 23 is directed towards the first support frame 30 of the fixed wing 3 and is susceptible of being anchored to the first perimeter face 33 of the first frame 30 of the fixed wing 3 by means of the abovementioned anchorage means 6.

[0026] In addition, the fourth perimeter face 23 comprises a sunken section 23A which is opposite the shaped seat 100, made in the second perimeter face 33 of the first support frame 30 of the fixed wing 3, and a raised section 23B.

[0027] Advantageously, the third and the fourth perimeter face 22, 23 of the second frame 20 of the fixed framework 2 are extended between a second internal surface 24 and a second external surface 25 of the second frame 20, which are respectively directed towards the interior and towards the exterior of a building when the door/window 1 is mounted on the load-bearing structure.

[0028] In accordance with the aforesaid configuration, the second perimeter face 33 of the first frame 30 of the fixed wing 3 and the fourth perimeter face 23 of the second frame 20 of the fixed framework 2 define two opposite perimeter faces 33, 23 delimiting a slit F. Seal means 7 are then advantageously provided, mechanically associated with one of the two opposite perimeter faces 33, 23 of the first and of the second frame 30, 20 in order to seal the fixed wing 3 on the fixed framework 2.

[0029] In accordance with the idea underlying the present invention, the anchorage means 6 comprise a plurality of pawls 8, projecting from the at least one afore-

said shaped seat 100 of the first support frame 30 of the fixed wing 3 towards the second support frame 20 of the fixed framework 2 and a corresponding plurality of lever clips 9. The shaped seat 100 preferably has perimeter extension, as can be appreciated for example in figure 5, so as to use the frame of a movable wing which has such shaped seat in order to contain the normal opening and closing hardware and possibly also the hinges. Otherwise, shaped seats 100 can also be provided, each for receiving a corresponding pawl 8.

[0030] Each lever clip 9 comprises a head 9A pivoted to the sunken section 23A of the second support frame 20 of the fixed framework 2 in a position opposite a corresponding pawl 8 and an arm 9B projecting from the head 9A and manually actuatable to rotate around the head 9A.

[0031] More in detail the head 9A is provided with a retention seat 95 for the pawl 8, provided with an opening 91 susceptible of being transversely crossed by the pawl 8. Advantageously, the retention seat 95 is defined by means of a curved rib 90 which projects towards the first support frame 30 of the fixed wing 3.

[0032] The arm 9B is advantageously obtained in a single body with the head 9A and is manually actuatable to rotate around the head 9A between a retention position A of the fixed wing 3 (figure 2), in which advantageously the arm 9B is aligned with the perimeter extension of the second support frame 20 of the fixed framework 2, and in which the curved rib 90 retains in the 95 the pawl 8, and a release position B of the fixed wing 3 (figure 3), in which the arm 9B advantageously projects transversely to the plane of the second support frame 20 of the fixed framework 2, and in which the curved rib 90 releases the passage of the pawl 8 to exit from the retention seat 95 through the opening 91.

[0033] The lever clips 9 can rotate with the arm 9B thereof within the slit F defined between the two frames 20 and 30 of the fixed framework 2 and of the fixed wing 3.

[0034] The fixed wing 2 is inserted from the indoor setting into the space defined by the fixed framework 3 up to abutting against an abutment 60 directed towards the indoor setting.

[0035] The fixed wing 2 is then extractible from the fixed framework 2, to which it is rigidly anchored by means of the anchorage means 6, by manually moving the lever clips 9 from the retention position A to the release position B. The abutment is for example attained through the abutment of the pawls 8 against a step 60 made on the fourth perimeter face 23 of the second frame 20 of the fixed framework 2.

[0036] More clearly, in accordance with the example illustrated in the enclosed figures, when the arms 9B of all the lever clips 9 are horizontally oriented towards the indoor setting, it is possible to extract the pawls 8 integral with the first frame 30 of the fixed wing 3 from the retention seats 95 of the same lever clips 9; when instead the arms 9B of the lever clips 9 are oriented along the extension of the frames 20, 30 then the pawls 8 interfere with the

ribs 90 of the lever clips 9 and the fixed wing 3 is retained integral with the fixed framework 2.

[0037] Advantageously, for such purpose, the openings 91 of the retention seats 95 of the lever clips 9 are substantially oriented towards the extension of the respective arms 9B. Preferably, the openings 91 of at least two contiguous lever clips 9 are directed, when the latter are in retention position A, with orientation in opposite directions in order to avoid undesired clearances of the fixed wing 3 along a common direction of the openings 91. In figure 1, two arms 9B of the lever clips 9 are visible in a nearly final retention position and with the openings 91 as well as the relative arms 9B aligned with the openings 91, directed opposite.

[0038] Due to the present invention, the fixed wing 3 is integrally and securely retained on the fixed framework 2 but simultaneously can be easily removed for example for maintenance operations, by simply manually rotating the arms 9B of the various lever clips 9.

[0039] In accordance with the preferred embodiment of the present invention, the pawl 8 is fixed to the bottom of the shaped seat 100 of the first support frame 30 of the fixed wing 3 by means of at least one first screw 82. In addition, the pawl 8 in particular has cylindrical shape with the first screw 82 which is axially arranged within the tubular cylindrical body 8' of the pawl 8.

[0040] In turn, the lever clip 9 has substantially elongated plate form with the curved rib 90 that delimits the retention seat 95 provided at one end thereof.

[0041] Advantageously, the lever clip 9 is pivoted to the sunken section 23A of the second support frame 20 of the fixed framework 2 by means of at least one second screw 92, which is advantageously provided on the head 9A of the lever clip 9, on the bottom of the retention seat 95 and at the center of the curved rib 90.

[0042] As can be appreciated in figure 6, advantageously the first and the second screw 82, 92 are aligned with each other along the axis Y in figure 6.

[0043] In order to ensure a correct rigid retention of the fixed wing 3 on the fixed framework 2, the pawls 8 and the lever clips 9 of the corresponding pluralities are distributed along the sides of the perimeter of the first and of the second frame 20, 30 at a mutual distance D comprised between 25 and 55 cm and preferably of about 40 cm.

[0044] The abovementioned slit F is extended between an internal opening F1 and an external opening F2 respectively delimited between the first internal surfaces 34, 24 and the second external surfaces 35, 25 of the aforesaid first and second frame 30, 20.

[0045] The door/window 1 also comprises seal means 7, which are mechanically associated with one of the two perimeter faces 33, 23 of the two frames 30, 20 and are susceptible of sealing the fixed wing 3 on the fixed framework 2 when the fixed wing 3 is in closed position A.

[0046] The aforesaid seal means 7 for example comprise one or more gaskets which close the slit F between the indoor setting and the outdoor setting. For example,

a first perimeter gasket 70 and a second perimeter gasket 71 are provided. The first perimeter gasket 70 is fixed to one of the two opposite perimeter faces 33, 23 of the two frames 30, 20 (and preferably to the first frame 30 of the fixed wing 3), and is susceptible of acting against an opposite first flat section 23A of the perimeter face 23 of the opposite frame 20, 30. The second perimeter gasket 71 is fixed to one of the two opposite perimeter faces 33, 23 of the first and of the second frame 30, 20, and is susceptible of acting against an opposite second flat section 33A of the perimeter face 33 of the opposite frame 20, 30, placed at an intermediate position between the internal opening F1 and the external opening F2 of the slit F.

[0047] The first perimeter gasket 70 is arranged at the enlarged section F" of the slit F towards the internal opening F1 and is susceptible of concealing from view, from the interior, the lever clips 9 when the latter are rotated in retention position A.

[0048] Advantageously, in accordance with a possible embodiment variant illustrated in figure 8B, each pawl 8 is extended along an axis extended starting from a section having a non-circular geometric shape, i.e. provided with at least one larger axis D and with at least one smaller axis d, in particular obtained with an elliptical profile. The pawl 8 in this manner defines a narrow size directed towards the interior of the door/window and a widened size directed along the extension of the shaped seat 100.

[0049] Each pawl 8, fixed in the shaped seat 100 of the fixed wing 3 for example by means of the first screw 82, is also further engaged in the same shaped seat 100 due to a counter-shaped portion 800, e.g. in the form of an annular plate, which prevents the axial rotation thereof.

[0050] In operation, the pawl 8 enters into the retention seat 95 of the head 9A of the lever clip 9 in a facilitated manner by crossing the opening 91 thereof, due to its orientation which brings it to pass with its narrow size and then it is fittingly engaged with friction in the same retention seat 95 once the lever clip 9 has been rotated in the retention position A. Advantageously, the arm 9B of the lever clip for its actuation in rotation can have a tapered shape towards the free end as shown in figure 9, and advantageously can also have an edge with at least one step 900 in order to be able to grip with a tool when the arm 9B is in retention position A within the slit F.

[0051] The shaped seat 100 can be obtained by advantageously using that normally provided in a movable wing, in such case provided at its interior not with anchorage means but rather with hinging means as well as the hardware necessary for closing the fixed wing 3 on the fixed framework 2.

[0052] Such shaped seat 100 of the second perimeter face 33 of the first frame 30 of the fixed wing 3 is arranged at the enlarged section F" of the slit F in order to make the arm 9B of the lever clips pass in a facilitated manner.

[0053] Advantageously, the seal means 7 comprise a third perimeter gasket 73, which is fixed to the fourth pe-

rimeter face 23 of the second frame 20 of the fixed framework 2 at the external opening F2 of the slit F.

[0054] In accordance with the preferred embodiment illustrated in the enclosed figures, the door/window 1 comprises a first protection framework 80, fixed to the first external surface 35 of the first frame 30 of the fixed wing 3 and a second protection framework 81 fixed to the second external surface 25 of the second frame 20 of the fixed framework 2.

[0055] The seal means 7 comprising a fourth gasket 74 interposed between the first and the second protection framework 80, 81. The aforesaid fourth gasket 74 is advantageously mounted in a groove made on the second protection framework 81 at a section on top of the first protection framework 80 and it is directed towards the interior of the building. The first perimeter face 32 of the fixed wing 3 is provided with a perimeter seat 96 for containing the glass panel 40, and it is delimited by a second step 97 and by the first protection framework 80; the latter contributes to retaining the glass panel 40 sealed by means of gluing in said perimeter seat 96. The glass panel 40 can comprise one, two or three parallel glass panes separated by respective double glazing.

[0056] The door/window thus conceived therefore achieves the pre-established objects.

[0057] It is however clear that modifications can be made to the door/window for outdoor settings described up to now, without departing from the protective scope of the present patent.

[0058] In addition, all the details can be substituted by technically equivalent elements and the dimensions, shapes and materials used can be of any type in accordance with the requirements.

Claims

1. Door/window with fixed wing for outdoor settings, which is intended to be mounted in an opening of a building in order to separate an indoor setting from the outdoor setting, which comprises:

- a fixed wing (3) provided with a first support frame (30) and with at least one glass panel (40) perimetrically fixed to said support frame (30);
- a fixed framework (2), which supports said fixed wing (3), and comprises at least one second support frame (20);
- anchorage means (6), which rigidly connect together the first support frame (30) of said fixed wing (3) and the second support frame (20) of said fixed framework (2);

the first support frame (30) of said fixed wing (3) having:

- a first perimeter face (32), directed towards the interior of said first support frame (30), mechan-

ically carrying said glass panel (40) associated therewith;

- a second perimeter face (33), directed towards the second support frame (20) of the fixed framework (2) and provided with at least one shaped seat (100);

the second support frame (20) of said fixed framework (2) having:

- a third perimeter face (22) susceptible of being fixed to the load-bearing structure of a building at an opening,

- a fourth perimeter face (23), directed towards the first support frame (30) of said fixed wing (3), susceptible of being anchored to the first perimeter face (33) of the first frame (30) of said fixed wing (3) by means of said anchorage means, and comprising a sunken section (23A) opposite to the shaped seat (100) made in the second perimeter face (33) of the first support frame (30) of said fixed wing (3);

characterized in that said anchorage means (7) comprise:

- a plurality of pawls (8), projecting from said at least one shaped seat (100) of the first support frame (30) of said fixed wing (3) towards the second support frame (20) of said fixed framework (2),

- a corresponding plurality of lever clips (9), each of which comprises:

- a head (9A) pivoted to the sunken section (23A) of the second support frame (20) of said fixed framework (2) in a position opposite to a said corresponding pawl (8), provided with a retention seat (95) for a corresponding pawl (8) and provided with an opening (91) susceptible of being traversed by said pawl (8);

- an arm (9B) projecting from said head (9A) and manually actuatable to rotate around said head (9A) between a retention position (A) of said fixed wing (3), in which said retention seat (95) retains said pawl (8), and a release position (B) of said fixed wing (3), in which said retention seat (95) releases the passage of said pawl (8) through said opening (91).

2. Door/window with fixed wing for outdoor settings according to claim 1, **characterized in that** each said lever clip (9) delimits said retention seat (95) by means of a curved rib (90) projecting towards the first support frame (30) of said fixed wing (3), interrupted by said opening (91).

3. Door/window with fixed wing for outdoor settings according to claim 1 or 2, **characterized in that** said arm (9B) is aligned with the perimeter extension of the second support frame (20) of said fixed framework (2) in said retention position (A) of said fixed wing (3), and transversely projects from the plane of the second support frame (20) of said fixed framework (2) in said release position (B) of said fixed wing (3).

4. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** said pawl (8) is fixed to the bottom of the shaped seat (100) of the first support frame (30) of said fixed wing (3) by means of at least one first screw (82).

5. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** said lever clip (9) is substantially an elongated plate with said curved rib (90) provided at one end thereof.

6. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** said lever clip (9) is pivoted to the sunken section (23A) of the second support frame (20) of said fixed framework (2) by means of at least one second screw (92).

7. Door/window with fixed wing for outdoor settings according to claim 6, **characterized in that** said second screw (92) is provided on the head (9A) of said lever clip (9) at the center of the curved rib (90) and on the bottom of said retention seat (95).

8. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** said fixed wing (3) is mounted on said fixed framework (2) in abutment against an abutment (60) directed towards the indoor setting and is extractible from said fixed framework (2) with said lever clips (9) in release position (B) of said fixed wing (3).

9. Door/window with fixed wing for outdoor settings according to any one of the preceding claims **characterized in that** the pawls (8) of said plurality of pawls (8) and the lever clips (9) of said plurality of lever clips (9) are distributed along the sides of the perimeter of said first and second frame (20, 30) at a mutual distance (D) comprised between 25 and 55 cm and preferably of about 40 cm.

10. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** the openings (91) of said retention seats (95) are directed along the extensions of the arms (9B) of said lever clips (9).

11. Door/window with fixed wing for outdoor settings according to any one of the preceding claims, **characterized in that** each said lever clip (9) is susceptible of rotating with its arm (9B) within a slit (F) defined between the two frames (20, 30) of said fixed framework (2) and said fixed wing (3). 5
12. Door/window with fixed wing for outdoor settings according to claim 11, **characterized in that** a first perimeter gasket (70) is provided and housed to close said slit (F), concealing said lever clips (9) from view, from the interior, in said retention position (A). 10

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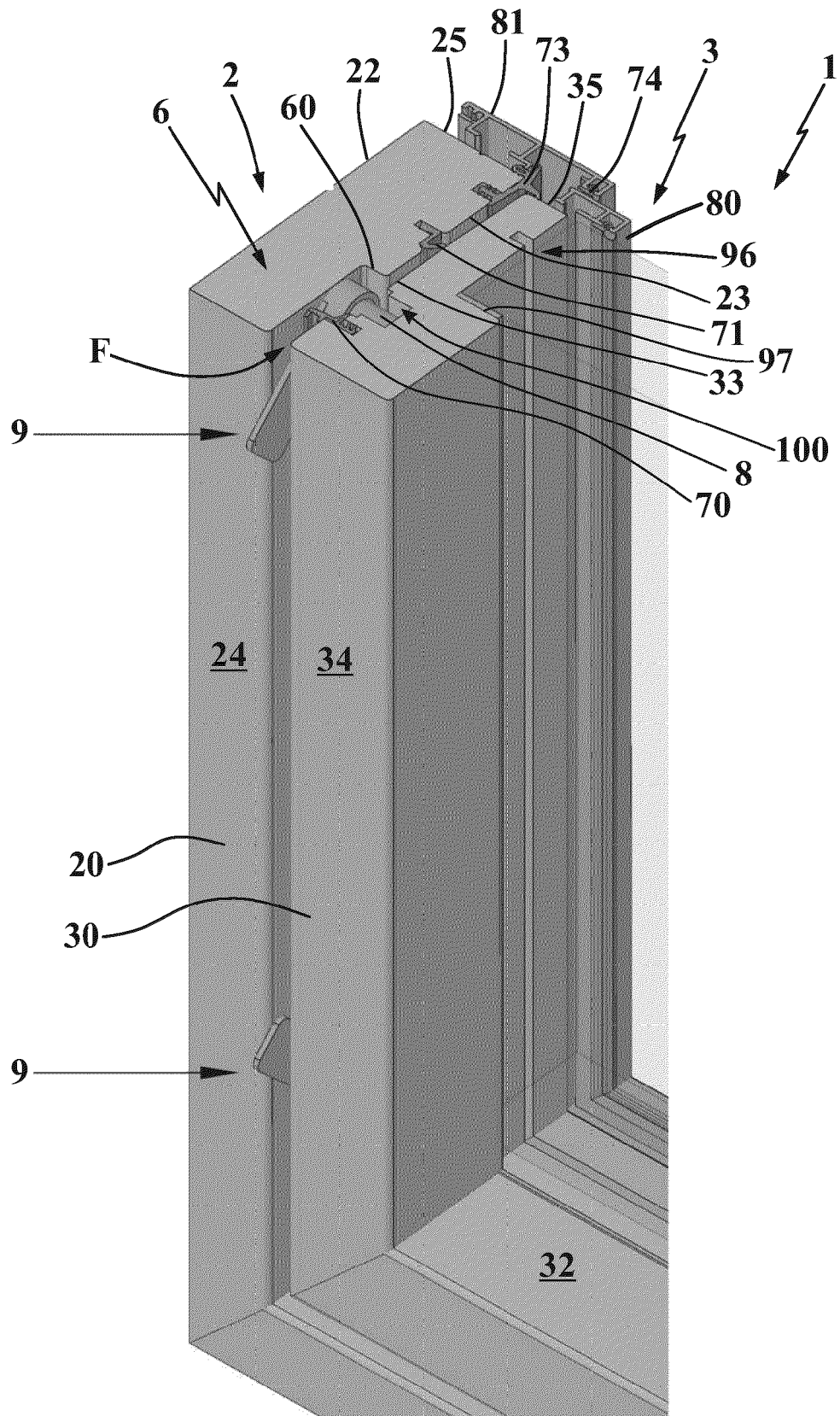


Fig. 1

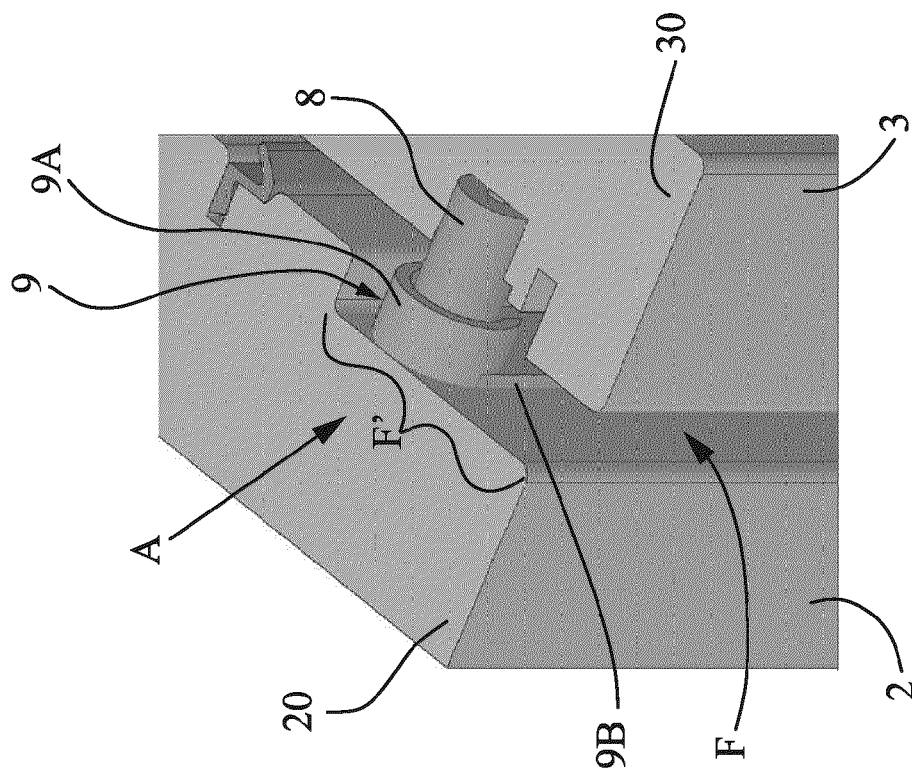


Fig. 2

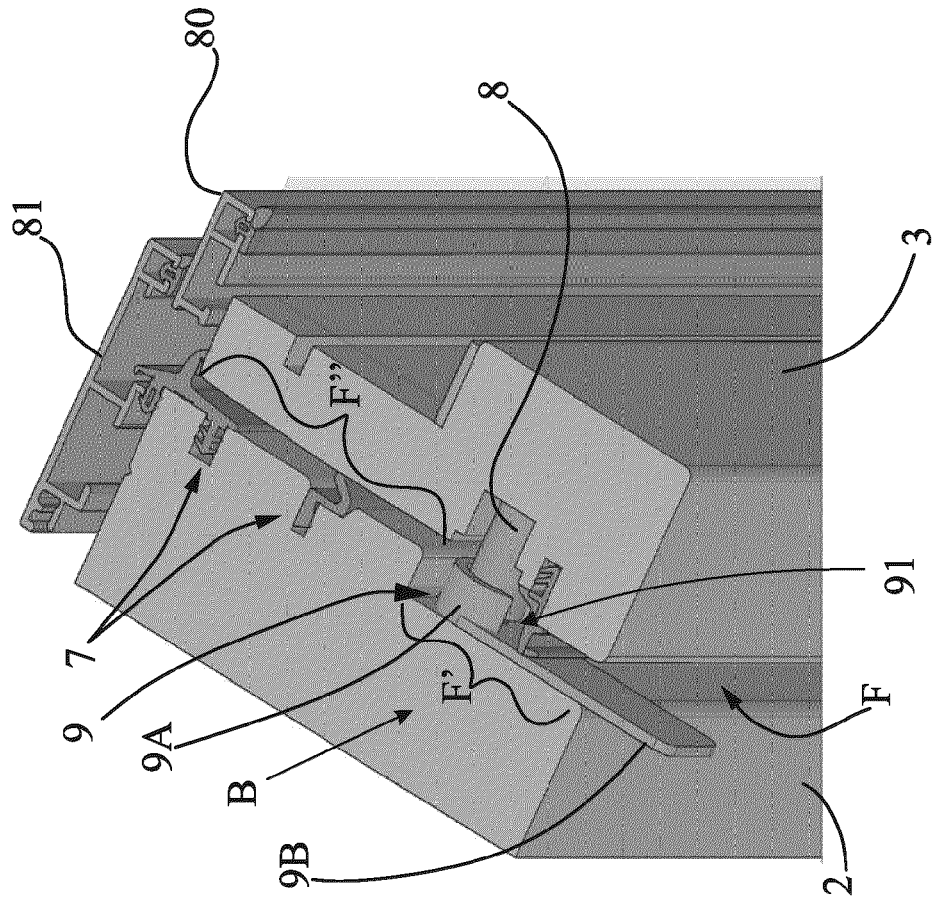
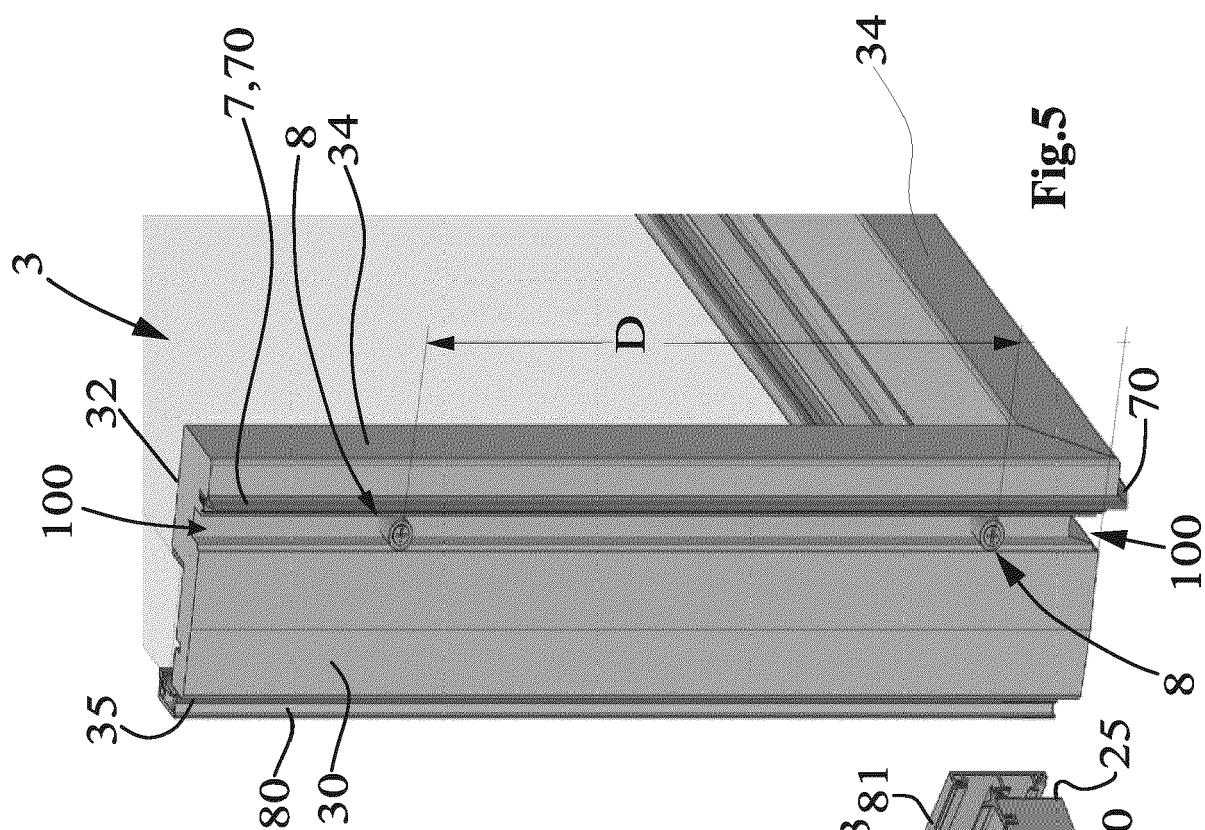
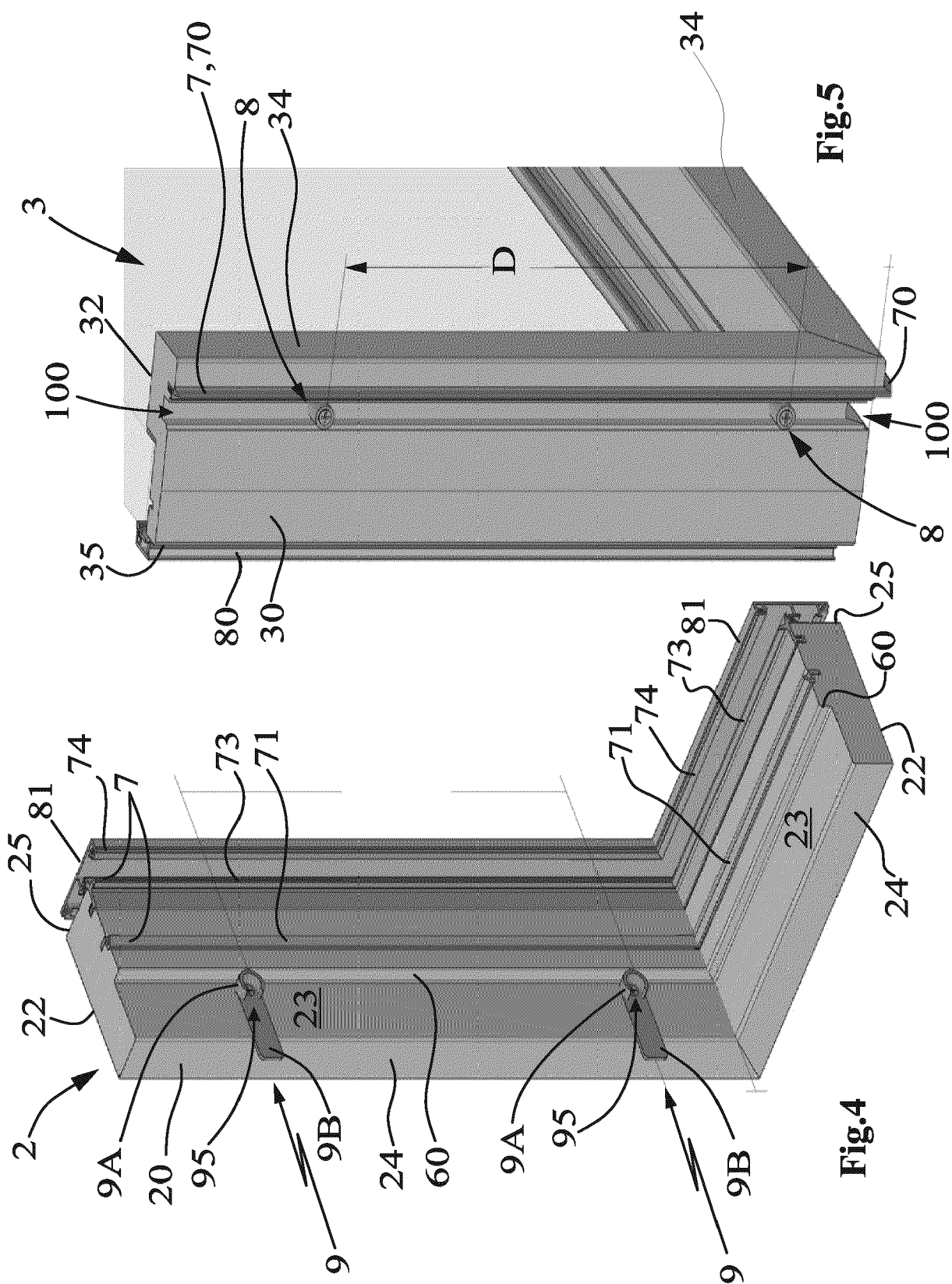
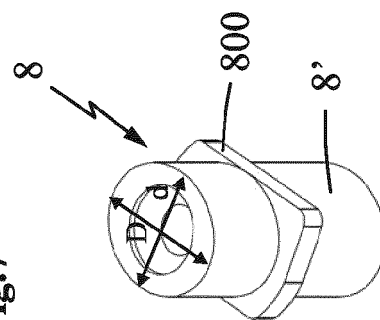
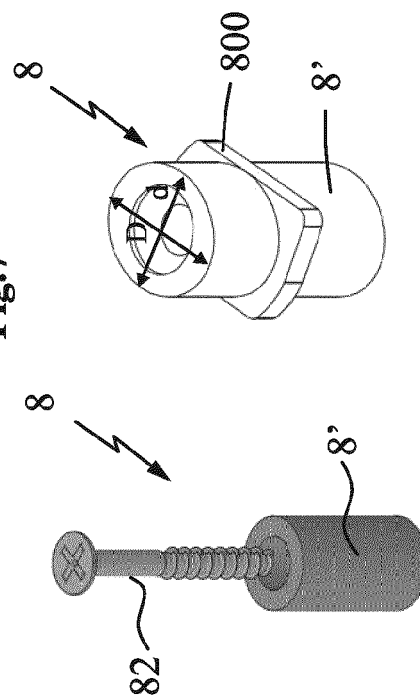
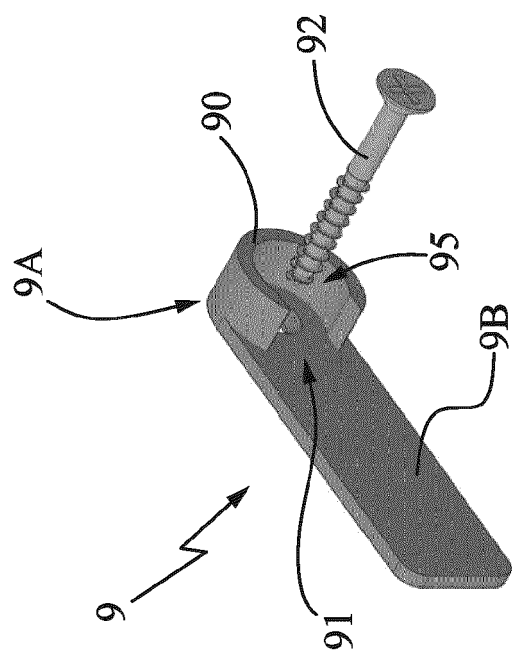
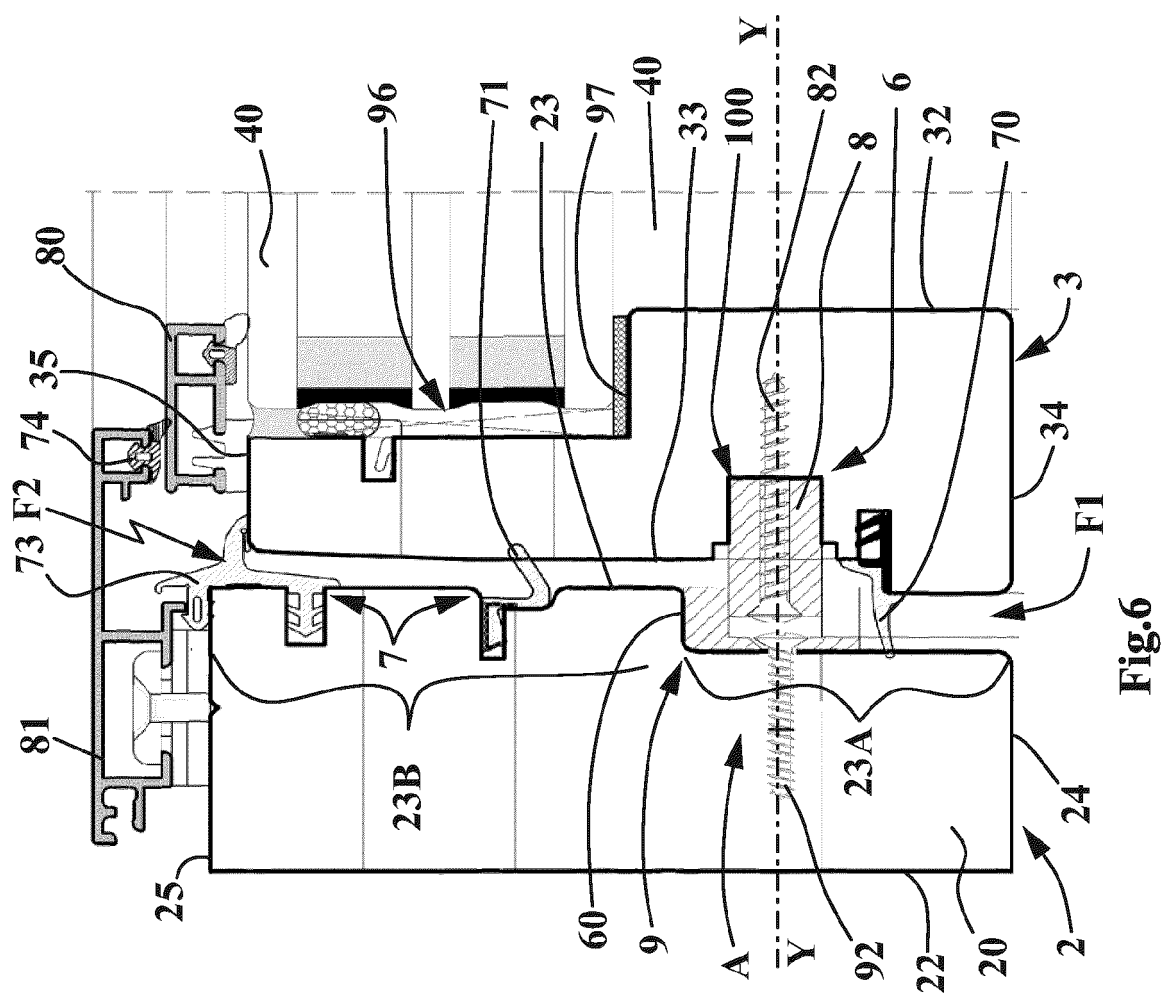


Fig. 3





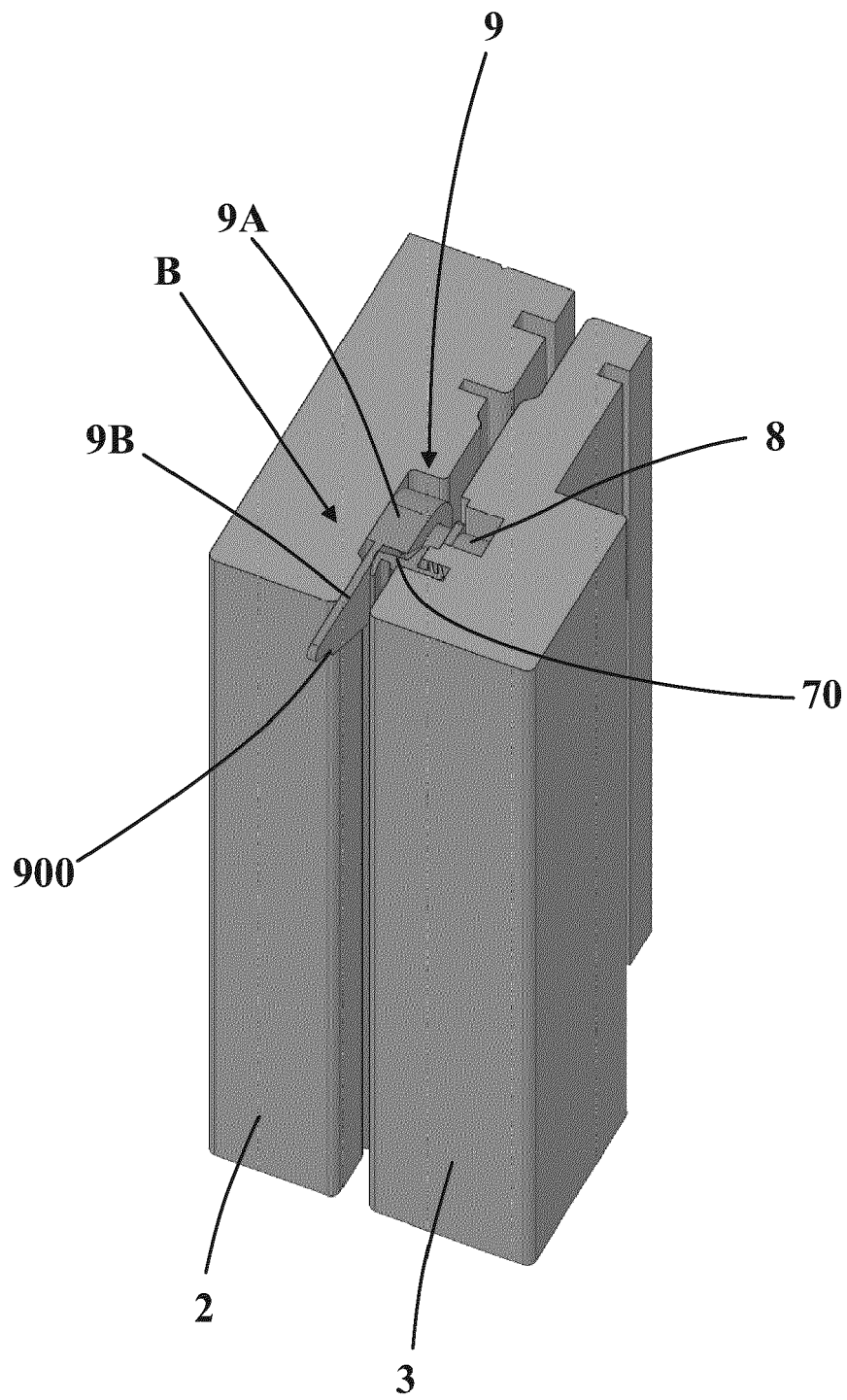


Fig. 9



EUROPEAN SEARCH REPORT

Application Number
EP 20 18 5725

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 3 296 763 A (CURL DONALD S) 10 January 1967 (1967-01-10) * figures 1-7 *	1-12	INV. E06B3/30 E06B3/10 E06B1/02 E06B1/06 E06B3/26
A	CA 677 554 A (JOSEF GARTNER AND CO WERKSTATT) 7 January 1964 (1964-01-07) * figures 1-5 *	1-12	
A	US 4 986 046 A (MAZZARANTANI RENATO E [US]) 22 January 1991 (1991-01-22) * figures 4, 8 *	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 September 2020	Examiner Crespo Vallejo, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 18 5725

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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16-09-2020

10

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3296763	A	10-01-1967	NONE	
CA 677554	A	07-01-1964	NONE	
US 4986046	A	22-01-1991	NONE	

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20

25

30

35

40

45

50

55

EPO FORM P0459

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 0965718 A [0008]
- EP 1353816 A [0009]