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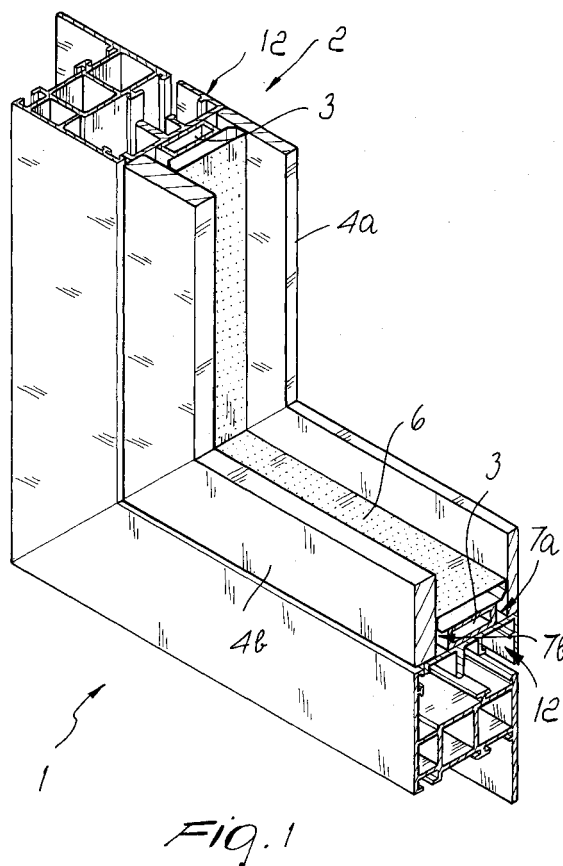
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(54) **Door or window assembly, particularly for windows or glass faces**

(57) A door or window assembly (1), particularly for windows or glass faces, which has a perimetric frame (2) composed of a plurality of first profiles (3), which are mutually connected at their respective ends by welding, so as to form a polygonal structure. The assembly further has a plurality of channels (6), which are connected to the first profiles (3), and grip means (8a,8b) for a first pane (4a) and a second pane (4b). A plurality of second profiles (12) are connected to the first profiles by way of mechanical coupling means and/or structural adhesives and can be associated detachably to a fixed part that can be associated perimetrically with an opening in a wall.



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Description

[0001] The present invention relates to a door or window assembly that is particularly usable for example to produce windows, French doors or glass walls.

[0002] Door or window assemblies are currently used which comprise a double-glazing unit provided with two glass panes between which a perimetric frame is interposed, acting as a spacer, and is arranged inside a perimetric framework that constitutes the wing.

[0003] Such perimetric frame is usually formed by means of four metallic profiles or channels, which have an approximately rectangular cross-section and are mutually connected at their ends.

[0004] In order to prevent the infiltration of air and/or vapor between the pane and the channel, it is also known to use suitable impermeabilization means, such as for example a thin layer of butyl, advantageously interposed between each pane and the perimetric frame along its entire length, and sealing.

[0005] It is also known to provide, in the metal channels, seats that affect all or part of their length for accommodating air dehydration means, such as for example grains of salt.

[0006] Such seats are connected to the gap between the two panes by way of suitable microperforations, thus allowing the migration of water molecules suspended in the air toward the dehydration means.

[0007] One thus avoids low-temperature condensation of the moisture that is present in the air inside the gap.

[0008] The known type of method described above arranges the resulting double-glazing unit, which comprises the pair of panes and the interposed perimetric frame, within the likewise rectangular support and protection framework, which surrounds the perimetric edge of the double-glazing unit.

[0009] The main drawback of this known type of process for manufacturing door or window assemblies is that such assemblies are essentially constituted by two separate intermediate components, the framework and the double-glazing unit, whose interconnection requires a considerable expenditure of time and an increase in costs.

[0010] Another disadvantage is that the framework, made for example of wood or other metallic material, has a considerable weight and bulk, since it constitutes the supporting structure of the door or window assembly and must therefore bear the weight of the panes and withstand the applied mechanical stresses.

[0011] Another drawback of known types is that the presence of the framework, the edge of which has dimensions that are usually not negligible with respect to the dimensions of the window, allows to have a considerably reduced transparent surface with respect to the dimensions of the opening provided in the wall.

[0012] Another important drawback is that the need to provide an aesthetically pleasant window often re-

quires the use of large amounts of expensive materials in order to provide the framework.

[0013] Another important drawback is that the costs for assembling said door or window assembly are very high, since the presence of a workforce capable of installing the double-glazing unit within the framework is required.

[0014] Another drawback is that the outer side of the framework, exposed to atmospheric agents, is subject to deterioration, which often entails periodic maintenance.

[0015] The aim of the present invention is to solve the above-noted problems, eliminating the drawbacks of the cited known art, by providing a door or window assembly that by minimizing the space occupation of the supporting structure has a very large transparent surface.

[0016] Within this aim, an object of the invention is to provide an assembly whose structural strength is comparable to that of the best known types of door or window assembly and at the same time has a reduced framework size.

[0017] Another object is to provide an assembly whose aesthetic appearance can be modified easily according to the interior decoration of the dwelling or building or according to the personal aesthetic taste of the user.

[0018] Another object is to reduce considerably the manufacturing costs, particularly the costs generated by the assembly and purchase of high-value materials.

[0019] Another object of the present invention is to provide high-level thermal insulation characteristics.

[0020] Another object is to provide an assembly that requires minimum maintenance, since it is scarcely subject to the deterioration caused by atmospheric agents.

[0021] Another object is to provide an assembly that is structurally simple and can be provided with conventional known types of machinery.

[0022] This aim and these and other objects that will become better apparent hereinafter are achieved by a door or window assembly, particularly for windows or glass faces, which comprises a first pane and a second pane, arranged parallel to each other with the interposition of at least one channel, characterized in that it comprises at least a first perimetric profile, which is connected to said first and second panes and at least one channel and is interposed among them and associated, in a lower region, with at least a second profile, which can be connected detachably to a fixed support.

[0023] Further characteristics and advantages of the invention will become better apparent from the following detailed description of six preferred but not exclusive embodiments thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a partially sectional perspective view of a first embodiment of the invention, associated by way of example with a fixed part that can be associated perimetrically with an opening in a wall;

Figure 2 is a transverse sectional view of the door or window assembly, associated with a fixed part; Figure 3 is a partially sectional perspective view of a second embodiment of the invention, associated with a fixed part;

Figure 4 is a transverse sectional view of the door or window assembly according to a second embodiment, associated with a fixed part;

Figure 5 is a transverse sectional view of the door or window assembly according to a third embodiment, associated with a fixed part;

Figure 6 is a transverse sectional view of the door or window assembly according to a fourth embodiment, associated with a fixed part;

Figure 7 is a transverse sectional view of the door or window assembly according to a fifth embodiment, associated with a fixed part;

Figure 8 is a transverse sectional view of the door or window assembly according to a sixth embodiment, associated with a fixed part;

Figure 9 is a transverse sectional view of a constructive variation of the sixth embodiment, associated with a fixed part.

[0024] In the embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other embodiments.

[0025] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0026] With reference to the figures, a door or window assembly, generally designated by the reference numeral 1, comprises a perimetric frame 2, which is constituted for example by a plurality of first profiles 3, mutually associated at their ends, so as to provide a polygonal configuration.

[0027] In the example of Figures 1 and 2, the door or window assembly 1, which is shown only partially and, by way of example, in association with a fixed part that can be associated perimetrically with an opening in a wall, has a quadrangular shape; likewise, the perimetric frame 2, constituted by four first profiles 3, which are parallel in pairs (only two of which, arranged contiguously, are visible in the figures), has a similar quadrangular shape.

[0028] Obviously, the shape of the door or window assembly 1 and of the perimetric frame 2 may be any, in order to match the shape of an opening in a wall in which said door or window assembly is to be inserted.

[0029] The first profiles 3 have a closed cross-section, for example a square or rectangular one, and are interposed between a first glass pane 4a, arranged on the side of the door or window assembly 1 that is directed toward the inside of the building in which the door or window assembly 1 is installed, and a second glass pane 4b, which is parallel to the first pane 4a and ar-

ranged on the side of the door or window assembly 1 that is directed outward.

[0030] The first and second panes are both approximately rectangular or in any case shaped approximately like the perimetric frame 2, and their dimensions are approximately equal to those of the perimetric frame 2, so that the first profiles 3 are arranged at the perimetric ends of said first and second panes.

[0031] By way of example, the first profiles 3 can be made of steel, optionally stainless steel, or PVC (polyvinyl chloride), so that they can be joined easily at their ends by welding, so as to provide the perimetric frame 2.

[0032] An approximately rectangular channel 6 is further interposed inside the first profiles 3, between the first and second panes 4a and 4b, in order to accommodate a known type of molecular sieve for air dehydration.

[0033] The molecular sieve is provided by means of hygroscopic salts, which are contained in the channel 6 and, by way of microperforations conveniently provided on the surface of the channel that is directed toward the inside of the assembly 1, are capable of absorbing the humidity of the air contained between the first and second panes, which might otherwise condense on the internal walls of the panes in case of low temperatures.

[0034] Advantageously, the channel 6 is wider than the first profile 3, so as to form at the sides of said profile a first seat 7a and a second seat 7b for accommodating first and second grip means 8a and 8b for the first pane 4a and for the second pane 4b, respectively.

[0035] The first and second grip means 8a and 8b are advantageously constituted by rectangular beads that have an approximately rectangular transverse cross-section that is shaped complementarily to the first and second seats 7a and 7b.

[0036] As shown in Figures 1 and 2, the first and second grip means 8a and 8b can be interposed at the first and second perimetric edges, designated by the reference numerals 9a and 9b, of the first and second panes 4a and 4b.

[0037] In this embodiment, the first and second grip means 8a and 8b are preferably made of sealing materials of the structural type, such as for example structural silicones (such as the one known by the trade-name DC993, marketed by the Dow Corning company).

[0038] If the physical characteristics of the structural sealants do not provide complete impermeabilization with respect to vapor or other gases, it is possible to provide impermeabilization also by way of the arrangement of suitable impermeabilization means at the lateral surfaces, designated by the reference numerals 10a and 10b, of the channel 6.

[0039] Such impermeabilization means can be constituted for example by a first layer 11a and a second layer 11b, which are made of a material such as polyisobutylene (abbreviated hereinafter as "butyl") and are arranged along the entire perimeter constituted by the channel 6.

[0040] As an alternative to the use of sealing materials

such as structural silicones, it is possible to use as first and second grip means 8a and 8b materials such as acrylic or polyurethane adhesives, the latter being further impermeable to air and vapor.

[0041] In this manner, the use of the polyurethane materials makes it substantially superfluous to use the impermeabilization means 11a and 11b.

[0042] The size of the beads that constitute the first and second grip means is determined according to the maximum load to be carried, and therefore according to the surface and thickness of the first and second panes 4a and 4b, according to the estimated pressure that can be applied by wind, and according to the operating temperatures.

[0043] Further, the joining of the first profiles 3 at their ends by welding ensures, in cooperation with the insulating layers described above, excellent tightness against infiltrations of water vapor from outside, eliminating the need to insert additional devices for connection and sealing in the joining points between the first profiles.

[0044] Moreover, a second profile 12, made for example of aluminum, is associated with each first profile 3 in a lower region, along the entire perimeter of the door or window assembly 1, and comprises an upper cross-member 13, which is suitable to close completely the first and second seats 7a and 7b, so that the first and second grip means 8a and 8b are protected from contact with the outside environment and are not visible.

[0045] Advantageously, the coupling between the first profile 3 and the second profile 12 can be provided by way of mechanical coupling means, such as for example screws, nails or rivets, by using structural adhesives, or by combining these systems.

[0046] Moreover, two wings 14a and 14b, provided with an L-shaped profile in the embodiment shown here, are formed on the second profile 12 and constitute a seat for accommodating accessories for opening and closing the door or window assembly and for the hinges, which are not shown in the figures.

[0047] The second profile 12 also forms a first tab 15, which protrudes, substantially at right angles to the upper cross-member 13, on the opposite side with respect to the first pane 4a and is arranged so that its face directed toward the inside of the building is substantially co-planar with respect to the face of the pane 4a that is directed inward, so as to constitute the internal trim of the door or window assembly.

[0048] A second tab 16, which protrudes from the second profile 12 so that it is substantially parallel to the first tab 15 and in the opposite direction with respect to the channel 6, acts as an abutment for a gasket, not shown in the figures, which is coupled to a fixed part that is associated perimetrically with the opening in the wall and is suitable to block any cold air drafts which, by penetrating between the second profile 12 and said fixed part, are directed toward the inside of the building.

[0049] A third tab 17 acts as an abutment with the

fixed part that is perimetrically associated with the opening in the wall, further limiting the extent of said drafts.

[0050] Figures 3 and 4 illustrate a second embodiment of the invention, shown by way of example in association with a fixed part, which is constituted by a second door or window assembly 101, which comprises a double-glazing unit provided with a perimetric frame 102, which can be interposed between a first pane 104a and a second pane 104b.

[0051] The perimetric frame 102 is constituted, for example, by a plurality of first profiles 103, which are mutually associated at their ends so as to provide a polygonal configuration, in a manner fully similar to what has been described above in relation to the first embodiment.

[0052] By way of example, in the embodiment shown in the figure, the hygroscopic sieve is contained in a first channel 106a and in a second channel 106b, which are arranged adjacent to the first profile 103 and inside the assembly 1, between the first pane 104a and the second pane 104b, said channels being arranged side by side and being in mutual contact by means of one side.

[0053] A first layer 111a and a second layer 111b of impermeabilizing material are interposed respectively between the first pane 104a and the second pane 104b and the outer lateral faces 110a and 110b of the channels 106a and 106b, while a third layer of impermeabilizing material 111c is arranged between the mutually opposite lateral faces of said channels.

[0054] Equally excellent results can be obtained of course by inserting, instead of the two channels 106a and 106b, a third channel 106c, which is not shown in the figure and is approximately as wide as the total width of the two channels 106a and 106b arranged side by side.

[0055] Advantageously, the total width of the first and second channels 106a and 106b arranged side by side is greater than the width of the first profile 103, said first and second channels protruding on both sides with respect to the profile 103 so as to form, at its sides, a first seat 107a and a second seat 107b, shown in Figure 3, for accommodating first and second grip means 108a and 108b, respectively, for the first pane 104a and the second pane 104b.

[0056] Such grip means can be fully identical to the ones described above in the case of the first embodiment of the invention; all the considerations made therein remain equally valid.

[0057] A second profile 112, made for example of aluminum, is further associated with the first profile 103 in a lower region, along the entire perimeter of the door or window assembly 101 and by way of means similar to the ones described above regarding the first embodiment of the invention; said profile comprises an upper cross-member 113, which protrudes beyond the base of the first profile 103 toward the outside of the door or window assembly 101 approximately up to the outer surface of the second pane 104b, so as to constitute a sup-

port for a third profile 118, which also can be made for example of aluminum and is rigidly coupled to the second profile 112 by way of methods similar to the ones described for the coupling between the first profile 103 and the second profile.

[0058] The third profile 118, by resting on the second profile 112, constitutes, by way of its portion that protrudes outward beyond the second pane 104b, a sill for the door or window assembly 1.

[0059] The third profile 118 thus can also act as a support for the second pane 104b if said panel accidentally disengages from the second grip means 108b, preventing its fall.

[0060] Moreover, the third profile 118 comprises a third tab 117, which is substantially parallel to the second pane 104b and abuts against the fixed part that is perimetrically associated with the opening in the wall.

[0061] In the example described here, the first pane 104a has a larger surface than the second pane 104b, so that its perimetric edge 109a covers completely the first tab 115 of the second profile 112.

[0062] A first gasket, not shown in the figure, can be coupled to an appropriately provided seat provided in the fixed part and can abut against a second tab 116, which protrudes from the second profile 112 in the opposite direction with respect to the second pane 104a, acting as a barrier against drafts that penetrate between the third profile 118 and the fixed part.

[0063] As an alternative to the first gasket, or in addition to it, the door or window assembly 101 can comprise a second gasket 119, which can be accommodated within the third seat 120 formed by the fourth tabs 121a and 121 b provided on a first tab 115 of the second profile 112 and is suitable to prevent the passage of air between the second profile and the fixed part associated with the wall and to ensure good acoustic insulation.

[0064] The second profile 112 further forms two wings 114a and 114b, which have for example an L-shaped profile and are suitable to constitute a seat for accessories for opening and closing the door or window assembly and for hinges, not shown in the figures.

[0065] Obviously, the second embodiment described here can be provided also by providing the third profile 118 monolithically with the second profile 112, without altering anything in the functionality of the door or window assembly 101.

[0066] Figure 5 illustrates a third constructive embodiment of a door or window assembly according to the invention, illustrated by way of example in association with a fixed part and generally designated by the reference numeral 201, which comprises a double-glazing unit provided with a perimetric frame 202, which is provided in a manner fully similar to the one described above for the preceding embodiments and can be interposed between a first pane 204a and a second pane 204b.

[0067] A third pane 204c, which has a smaller surface than the first pane 204a and the second pane 204b, is

arranged between the first and second panes and parallel thereto, and rests by means of the lower side of its perimetric profile on the upper face 203a, directed toward the inside the double-glazing unit, of one of the first profiles 203, for example at the centerline of said face.

[0068] Conveniently, the third pane can have a surface that is slightly smaller than the surface delimited by the internal perimeter of the perimetric frame 202, so as to allow to recover any differential thermal expansions that depend on the characteristics of the various materials used in the production of the various components of the assembly 201.

[0069] Each one of the upper faces 203a further supports, at a first chamber 222a and at a second chamber 222b formed by the first, second and third panes, a first channel 206a and a second channel 206b, which contain hygroscopic salts as described above.

[0070] The first channel 206a is in contact, by way of its lateral surfaces 210a and 210b, with the first and third panes 204a and 204c, and protrudes from the upper face 203a of the first profile 203 so as to form a first seat 207a that is suitable to accommodate a first grip means 208a.

[0071] Likewise, the second channel 206b is in contact, by way of its lateral surfaces, with the second and third panes 204b and 204c and protrudes from the upper face 203a of the first profile 203 so as to form a second seat 207b, which is suitable to accommodate a second grip means 208b.

[0072] The first and second grip means 208a and 208b can be fully similar to the ones described above with reference to the first embodiment of the invention.

[0073] A first layer and a second layer of impermeabilizing material 211 a and 211 b are interposed respectively between the first pane 204a and the third pane 204c and the lateral faces of the first channel 206a, while a third layer and a fourth layer of impermeabilizing material 211c and 211d are arranged between the lateral faces of the second channel 206b, so as to seal the two chambers 222a and 222b perimetrically.

[0074] Further, a second profile 212, made for example of aluminum, is associated with the first profile 203 in a lower region, along the entire perimeter of the door or window assembly 201 and with the joining means described with reference to the first embodiment, and comprises an upper cross-member 213, which is arranged in contact with the first profile 203 and is suitable to close completely the first and second seats 297a and 297b so that the first and second grip means 208a and 208b are protected from contact with the outside environment and are not visible.

[0075] The second profile 212 forms a first tab 215, which protrudes at right angles with respect to the upper cross-member 213 on the opposite side with respect to the first and second channels 206a and 206b, proximate to the perimetric edge 209a of the first pane 204a.

[0076] Two wings 214a and 214b, which have an L-

shaped profile in the embodiment shown here, are further formed on the second profile 212 and constitute a seat for accessories for opening and closing the door or window assembly and for hinges, not shown in the figures.

[0077] A second tab 216, which is substantially parallel to the first tab 215 and protrudes from the upper cross-member 213 in the same direction as said first tab, acts as an abutment for a gasket, not shown in the figures, which is rigidly coupled to the fixed part perimetrically associated with the opening in the wall and is suitable to block any cold air drafts which, by penetrating between the second profile 212 and the fixed part, are directed toward the inside of the building.

[0078] A third tab 217 acts as an abutment against the fixed part perimetrically associated with the opening in the wall, further limiting the extent of said drafts.

[0079] In the example shown here, the first pane 204a has a larger surface than the second pane 204b, so that its perimetric edge 209a completely covers the first tab 215 of the second profile 212.

[0080] A fourth embodiment of the invention, illustrated by way of example in association with a fixed part, is shown in Figure 6, wherein the reference numeral 301 generally designates a door or window assembly, which comprises a double-glazing unit provided with a perimetric frame 302 that can be interposed between a first pane 304a and a second pane 304b, which are parallel and face each other.

[0081] The perimetric frame 302 is constituted, in a manner fully similar to what has been described above with reference to the previous embodiments, by a plurality of first profiles 303, which are mutually interconnected at their respective ends so as to form a closed structure, for example a quadrangular one, which is inserted between the first pane 304a and the second pane 304b.

[0082] Inside the chamber 322 formed between the two panes 304a and 304b, a channel 306 is connected to the first profile 303, is suitable to act as a hygroscopic sieve as described above, and is wider than the first profile 303 so as to form a first seat 307a and a second seat 307b, which are suitable to accommodate respectively a first grip means 308a and a second grip means 308b, which can be provided in a manner similar to what has been described with reference to the first embodiment of the invention.

[0083] A first layer and a second layer of impermeabilizing material 311 a and 311 b are interposed respectively between the lateral faces 310a and 310b of the channel 306 and the first and second panes 304a and 304b, so as to seal the chamber 322 completely.

[0084] A second profile 312, made for example of aluminum, is further associated with the first profile 303 in a lower region along the entire perimeter of the door or window assembly 301 and by way of means similar to the ones described with reference to the first embodiment of the invention, and comprises an upper cross-

member 313, which is suitable to close completely the first seat 307a and from which a first tab 315 protrudes approximately on the same plane as the outer surface of the first pane 304a and in an opposite direction with respect to it, constituting the internal trim of the door or window assembly.

[0085] Further, on the second profile 312 there are two wings 314a and 314b, provided in a manner fully similar to what has been described above for the preceding embodiments, which have for example an L-shaped profile so as to constitute a seat for accessories for opening and closing the door or window assembly and for hinges, not shown in the figures, and there is a second tab 316, against which a gasket, not shown in the figure, abuts, said gasket being coupled to said fixed part and being suitable to prevent the passage of cold air from the outside environment toward the inside of the building in which the door or window assembly 301 is installed.

[0086] The second pane 304b, which is arranged toward the outside of the building, in the example described here has a larger surface than the first pane 304a, and thus protrudes beyond the perimetric border 302 toward the fixed part, in order to limit the passage section for the air that can penetrate from outside between the door or window assembly 1 and said fixed part.

[0087] Moreover, the second pane 304b can be arranged so that its outermost face 323 is in any case arranged internally with respect to the outermost region of the fixed part, so that in case of accidental separation of the second pane 304b from the second grip means 308b it can in any case be supported by the fixed part.

[0088] The arrangement described above allows to obtain, with the fourth embodiment, a door or window assembly whose overall thickness is smaller than in the other embodiments, since the distance between the first pane and the second pane can be reduced.

[0089] As shown in Figure 7, the assembly 401 can use second profiles 412 made of wood and be functionally entirely similar to the embodiments described earlier.

[0090] Another material suitable for providing the second profiles can be PVC (polyvinyl chloride).

[0091] Figure 8 is a view of a sixth embodiment of the invention, shown by way of example in association with a fixed part and generally designated by the reference numeral 501, which comprises a double-glazing unit provided with a perimetric frame 502, which is constituted for example by a plurality of first profiles 503, which are mutually associated at their ends so as to provide a polygonal configuration.

[0092] Each one of the first profiles 503 advantageously has an open polygonal cross-section, which is constituted by a base 503a, above which there is an abutment 524, which preferably has a rectangular or trapezoidal cross-section, is arranged longitudinally in a central position, and can be interposed partially be-

tween the first channel 506a and the second channel 506b, so as to define the position of the first profile 503.

[0093] A first wall 525 and a second wall 526 protrude at right angles below the base 503a at its lateral ends, and an approximately rectangular box-like partition 527 protrudes centrally.

[0094] The first and second walls 525 and 526 and the partition 527 form, below the first profile 503, a first seat 528 and a second seat 529, both of which have a preferably rectangular or square polygonal cross-section and are open downward.

[0095] A second profile 512, made for example of aluminum, is further associated with the first profile 503 in a lower region, along the entire perimeter of the door or window assembly 501, and is constituted by an upper cross-member 513, from which a first longitudinal bead 530 protrudes in an upper region, said bead having an internally hollow box-like structure that is shaped complementarily to the first seat 528, so that it can be inserted by interlocking inside said seat.

[0096] The door or window assembly 501 further comprises a fourth profile 531, which is also preferably made of aluminum, is associable in a lower region with respect to the first profile 503, and is provided in an upper region with a second longitudinal bead 532, which has an internally hollow box-like structure that is shaped complementarily to the second seat 529, so that it can be inserted by interlocking inside it.

[0097] The second and fourth profiles 512 and 531 can be rigidly coupled to the first profile 503 by means of a plurality of known approximately L-shaped tension cleats, which can be inserted, at each corner of the door or window assembly, within the cavities formed by the first and second ridges 530 and 532.

[0098] Such known cleats, not shown in the figures, are composed of two wings arranged approximately at right angles to each other and mutually joined by a screw; an action on said screw in the direction that arranges said wings mutually adjacent and mutually couple them allows to force the second and fourth profiles against the first profiles 503, providing coupling by friction between them.

[0099] As an alternative, it is possible to insert known cleats of the plugged type or connecting elements of another type.

[0100] This makes it unnecessary to interpose threaded connecting elements, rivets or adhesives, achieving rapid and precise assembly of the door or window assembly; in order to make the mutual coupling of the first, second and fourth profiles even more stable, it is in any case possible to interpose among them a layer of adhesive or sealant.

[0101] It is also possible to interpose an additional and separate layer of sealant between the first profile and the first and second channels, in order to ensure an optimum overall vapor-tightness of the door or window assembly.

[0102] Advantageously, the partition 527 is inter-

posed longitudinally between the second and fourth profiles, so as to interrupt transversely the continuity of the perimetric frame 2 and, if the first profile is made of PVC (polyvinyl chloride) or other thermally insulating material, limit the dispersion of heat from the inside of the building toward the outside environment, providing a so-called thermal break.

[0103] The first profiles 503 conveniently have thicknesses that are suitable to ensure high structural rigidity, at the same time allowing their easy assembly for example by thermal welding or ultrasonic welding.

[0104] Figure 9 illustrates a variation 601 of the sixth embodiment, in which the fourth profile is replaced with a gasket 633 that protrudes downward from the first profile 603, which has a box-like structure.

[0105] Advantageously, said gasket can be formed monolithically with respect to the first profile 603 and can thus also be made of PVC (polyvinyl chloride).

[0106] Use is therefore as follows: with reference to the cited figures, the various described embodiments of the door or window assembly can be associated easily with currently commercially available fixed parts of a known type, since engagement means that have been shaped beforehand in the chosen manner protrude from the outer edge of the profiles.

[0107] It has thus been found that the invention has achieved the intended aim and objects, a door or window assembly having been devised which allows to obtain for example a window or glass face that has a very large transparent surface that closely approximates the maximum usable surface.

[0108] This occurs because the first perimetric frame acts both as a spacer between the two panes and as a structural element.

[0109] The presence of the structural sealant along the perimeter between the pane and the profile allows to utilize to the maximum extent the structural properties of the pane, so as to make it unnecessary to provide an external containment frame.

[0110] The invention therefore has a high structural strength, comparable with the best known types of door or window assembly, while having a considerably smaller space occupation.

[0111] Moreover, the manufacturing costs are rather low, since assembly is quite simple: in particular, the possibility to assemble the perimetric frame by welding the first profiles allows to provide joints that are strong and airtight and impermeable to water vapor without requiring the use of additional connecting means, such as cleats or the like, or sealants.

[0112] Further, the door or window assembly according to the present invention has very high thermal insulation characteristics which can in any case vary according to the user's requirements depending on the type of embodiment used.

[0113] The fact of not having, in the outer face exposed to the weather, a containment framework made for example of wood ensures that the invention requires

very limited maintenance, since it is scarcely subject to deterioration caused by atmospheric agents.

[0114] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0115] The materials used, as well as the dimensions of the individual components of the invention, may of course be more pertinent according to specific requirements.

[0116] For example, an advantageous combination uses steel to provide the first profiles, while the second profiles can be made of aluminum or aluminum alloy or of a plastic material having suitable mechanical characteristics, such as for example PVC (polyvinyl chloride).

[0117] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0118] The disclosures in Italian Patent Application No. TV2003A000143 from which this application claims priority are incorporated herein by reference.

[0119] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A door or window assembly, particularly for windows or glass faces, comprising a first pane and a second pane, which are arranged parallel to each other with the interposition of at least one channel, **characterized in that** it comprises at least one first perimetric profile, which is connected to said first and second panes and at least one channel and is interposed among them and associated, in a lower region, with at least one second profile, which can be connected detachably to a fixed part.
2. The door or window assembly according to claim 1, **characterized in that** it comprises a first seat and a second seat for first and second grip means for supporting said first and second panes, and **in that** said at least one channel is wider, in a transverse sectional view, than said at least one first profile, protruding with respect to it on both sides toward said first and second panes and forming, at the sides of said at least one first profile, said first and second seats.
3. The door or window assembly according to claim 1, **characterized in that** it comprises a first seat and a second seat for first and second grip means for

supporting said first and second panes, and **in that** it comprises at least one first channel and at least one second channel, which are arranged longitudinally side by side in contact with said first profile and protrude with respect to it respectively toward said first pane and said second pane, forming said first and second seats at the sides of said at least one first profile.

4. The door or window assembly according to the preceding claims, **characterized in that** it comprises a perimetric frame composed of a plurality of said first profiles, which are mutually associated at the ends so as to provide a polygonal shape, said first profiles preferably having a substantially square or rectangular or polygonal open transverse cross-section, and **in that** said first profiles are joined at their ends by welding so as to provide said perimetric frame.
5. The door or window assembly according to claims 1, 3 and 4, **characterized in that** each one of said first profiles has an open polygonal cross-section, which is constituted by a base above which an abutment preferably having an approximately rectangular or trapezoidal cross-section is formed, said abutment being arranged longitudinally in a central position and being partially interposable by interlocking between said first and second channels.
6. The door or window assembly according to claims 1, 3 and 5, **characterized in that** a first wall and a second wall protrude at right angles below said base at its lateral ends and an approximately rectangular box-like partition protrudes centrally therefrom, said fourth and fifth tabs and said partition forming, below said first profile, a first seat and a second seat, which have a rectangular or square cross-section and are open in a lower region.
7. The door or window assembly according to one or more of the preceding claims, **characterized in that** said first profiles are made of steel or PVC (polyvinyl chloride).
8. The door or window assembly according to one or more of the preceding claims, **characterized in that** said at least one second profile has, in a transverse sectional view, at least one upper cross-member, which can be associated in a lower region with said at least one first profile.
9. The door or window assembly according to one or more of the preceding claims, **characterized in that** at least one preferably L-shaped wing is formed on said at least one second profile, for the detachable connection of said second profile to said fixed part.

10. The door or window assembly according to one or more of the preceding claims, **characterized in that** said second profile forms at least one first tab that protrudes, substantially at right angles to said upper cross-member, on the opposite side with respect to said first pane, said first tab being arranged preferably so that one of its faces directed toward the inside of a wall in which said door or window assembly is installed is substantially coplanar with respect to a face of said first pane that is directed toward the inside of said wall, so as to constitute the internal trim of said door or window assembly.
11. The door or window assembly according to one or more of the preceding claims, **characterized in that** said second profile comprises at least one second tab, which protrudes from said second profile so that it is substantially parallel to said first tab and is directed in the opposite direction with respect to said channel, so as to abut against a first gasket that is rigidly coupled to said fixed part.
12. The door or window assembly according to one or more of the preceding claims, **characterized in that** said second profile comprises at least one third tab, which is preferably parallel to said first and second tabs and is arranged proximate to said fixed part so as to limit infiltrations of air arriving from the outside environment between said second profile and said fixed part.
13. The door or window assembly according to claims 1 and 11, **characterized in that** said upper cross-member of said second profile extends beyond the base of said first profile toward the outside of said door or window assembly approximately up to the outer surface of said second pane, so as to constitute a support for a third profile, which can be coupled permanently to said second profile and protrudes outward beyond said second pane, so as to constitute a sill for said door or window assembly.
14. The door or window assembly according to claims 1 and 13, **characterized in that** said third profile comprises at least one third tab, which is parallel to said first and second tabs and is arranged proximate to said fixed part so as to limit infiltrations of air arriving from the outside environment between said second profile and said fixed part.
15. The door or window assembly according to claims 1 and 14, **characterized in that** it comprises a second gasket, which can be accommodated within a third seat, which is formed by fourth tabs provided on said first tab of said second profile, said gasket abutting against said fixed part.
16. The door or window assembly according to one or more of the preceding claims, **characterized in that** said at least one second profile is associated with said at least one first profile by way of mechanical joining means, such as screws, nails or rivets, or by using structural adhesives, or by combining said systems.
17. The door or window assembly according to claims 1, 5, 6 and 11, **characterized in that** a first longitudinal ridge protrudes in an upper region from said upper cross-member of said second profile and has an internally hollow box-like structure that is shaped complementarily to said first seat formed below said first profile, so that it can be inserted therein by interlocking.
18. The door or window assembly according to claims 1, 5, 6 and 17, **characterized in that** it comprises a fourth profile, which is provided in an upper region with a second longitudinal ridge, which has an internally hollow box-like structure shaped complementarily to said second seat formed below said first profile, so that it can be inserted therein by interlocking.
19. The door or window assembly according to claims 1, 5, 6 and 18, **characterized in that** said second and fourth profiles can be associated, in a lower region, with said first profile and can be coupled thereto by means of a plurality of approximately L-shaped cleats, preferably of the tension type, which can be inserted at each corner of said door or window assembly, inside said first and second ridges, and act so as to force said second and fourth profiles against said first profiles, so as to provide coupling by friction between them.
20. The door or window assembly according to one or more of the preceding claims, **characterized in that** said second, third and fourth profiles are made of aluminum alloy, wood, or PVC (polyvinyl chloride).
21. The door or window assembly according to one or more of the preceding claims, **characterized in that** said frame is suitable to accommodate a third pane, which is approximately parallel to said first and second panes and is interposed between them, so as to form two separate air chambers.
22. The door or window assembly according to one or more of the preceding claims, **characterized in that** said first and second grip means are advantageously constituted by rectangular beads that have an approximately rectangular transverse cross-section that is shaped complementarily to said first and second seats respectively.

23. The door or window assembly according to claims 1 and 22, **characterized in that** said first and second grip means are made of sealing materials of the structural type, such as for example structural silicones. 5
24. The door or window assembly according to claims 1 and 22, **characterized in that** said first and second grip means are made of acrylic or polyurethane adhesives. 10
25. The door or window assembly according to claims 1 and 2, **characterized in that** it comprises impermeabilization means arranged at the lateral surfaces of said at least one channel. 15
26. The door or window assembly according to claims 1 and 3, **characterized in that** it comprises impermeabilization means arranged at the lateral surfaces of said first and second channels. 20
27. The door or window assembly according to one or more of the preceding claims, **characterized in that** said channel contains hygroscopic salts. 25

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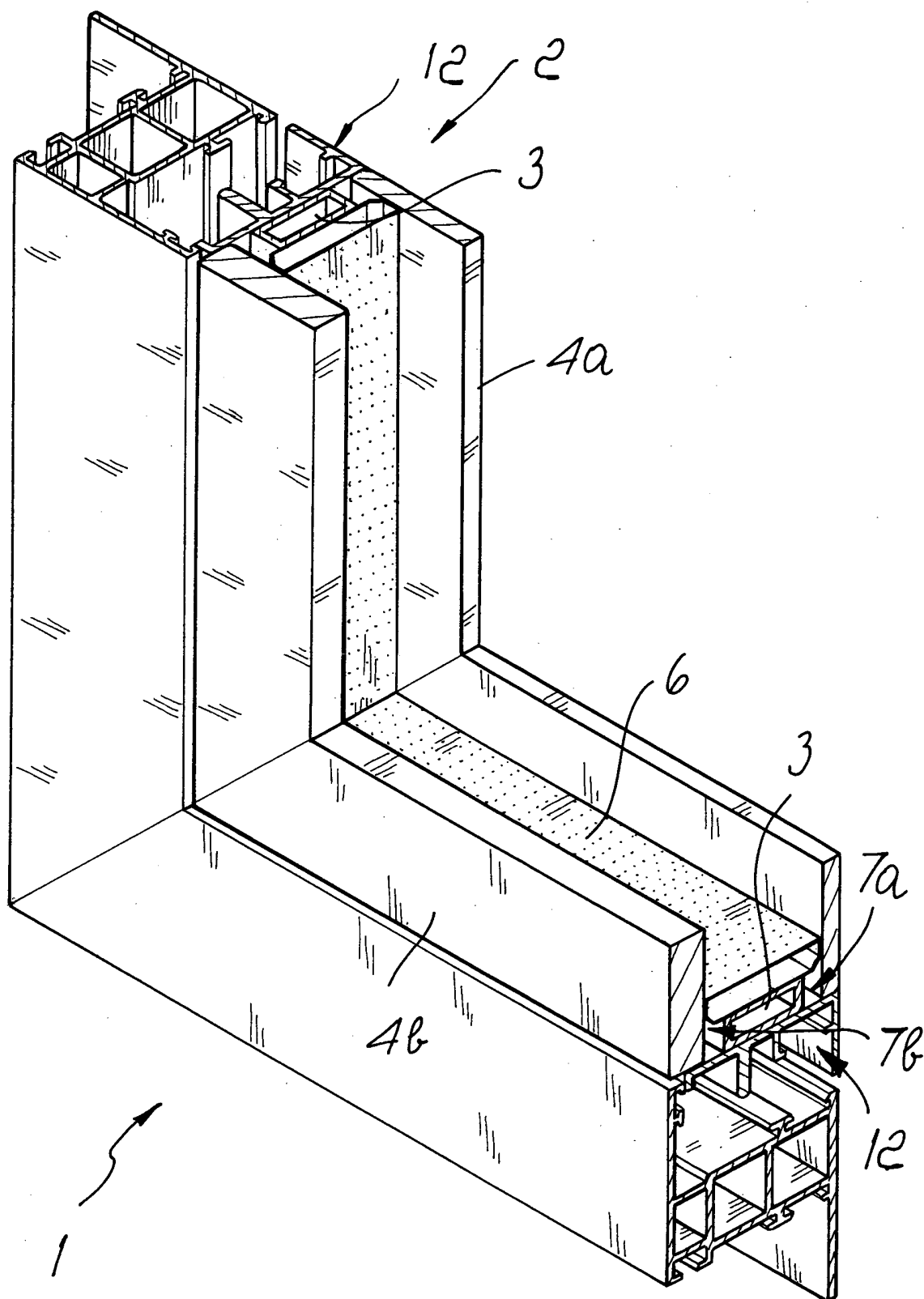
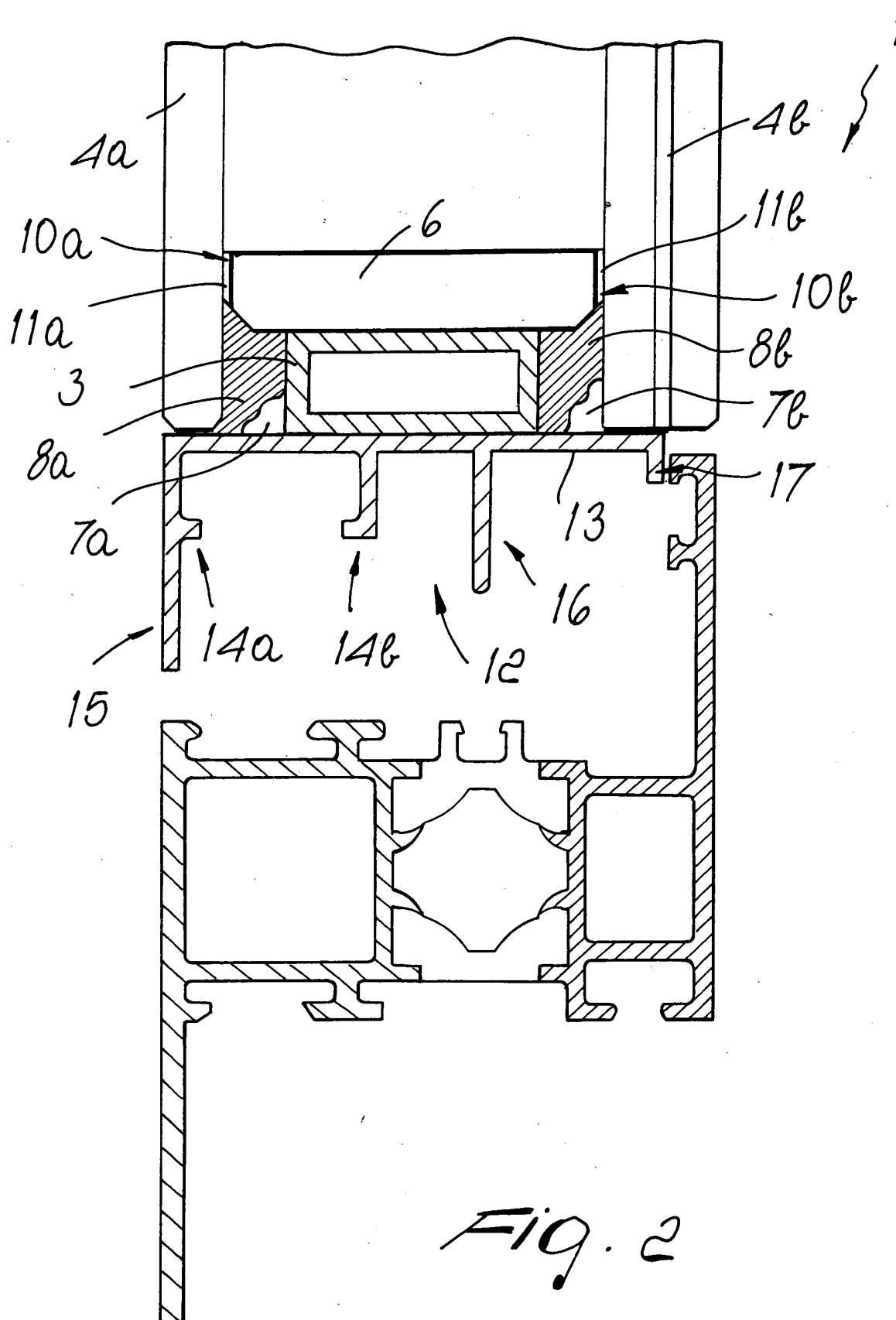


Fig. 1



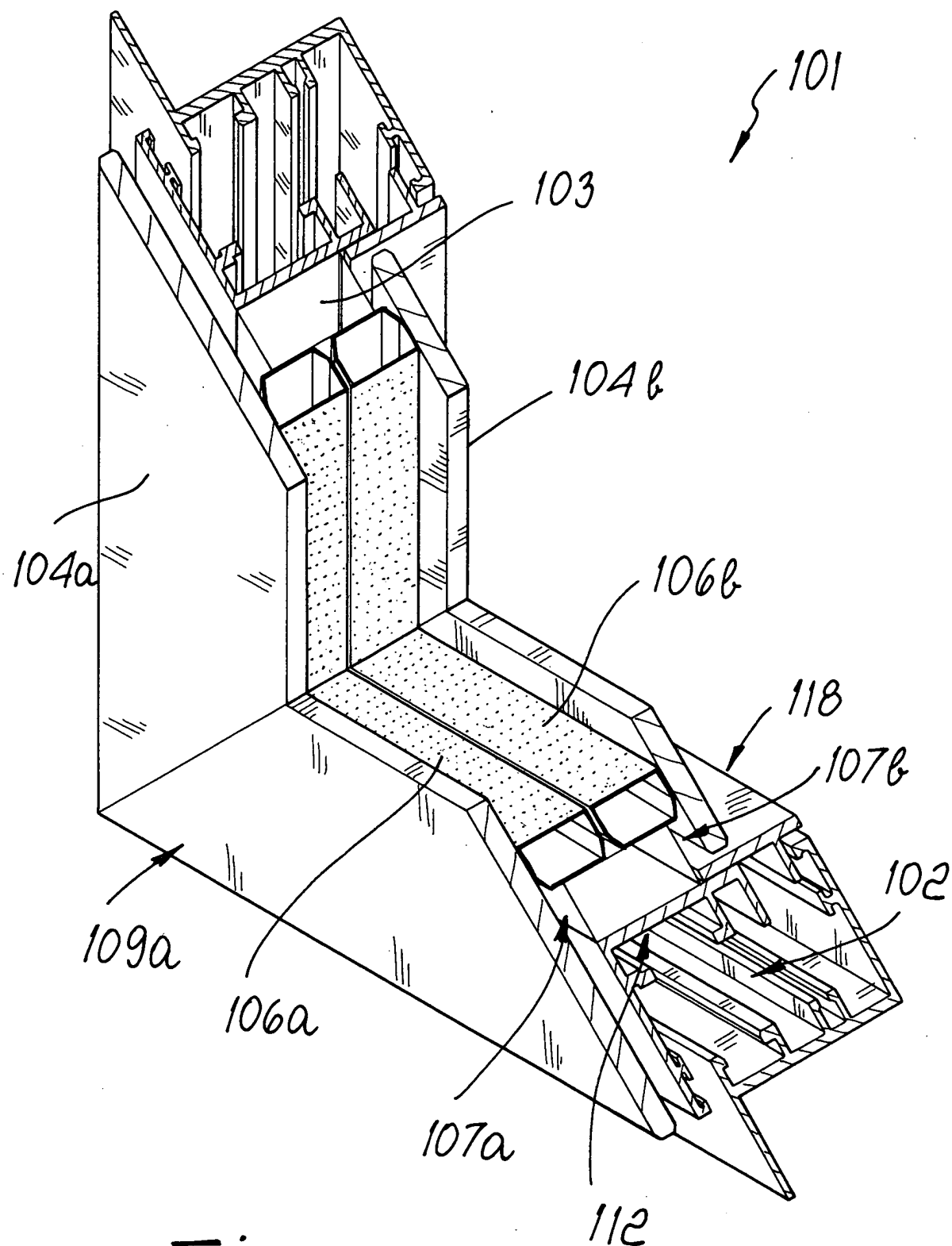
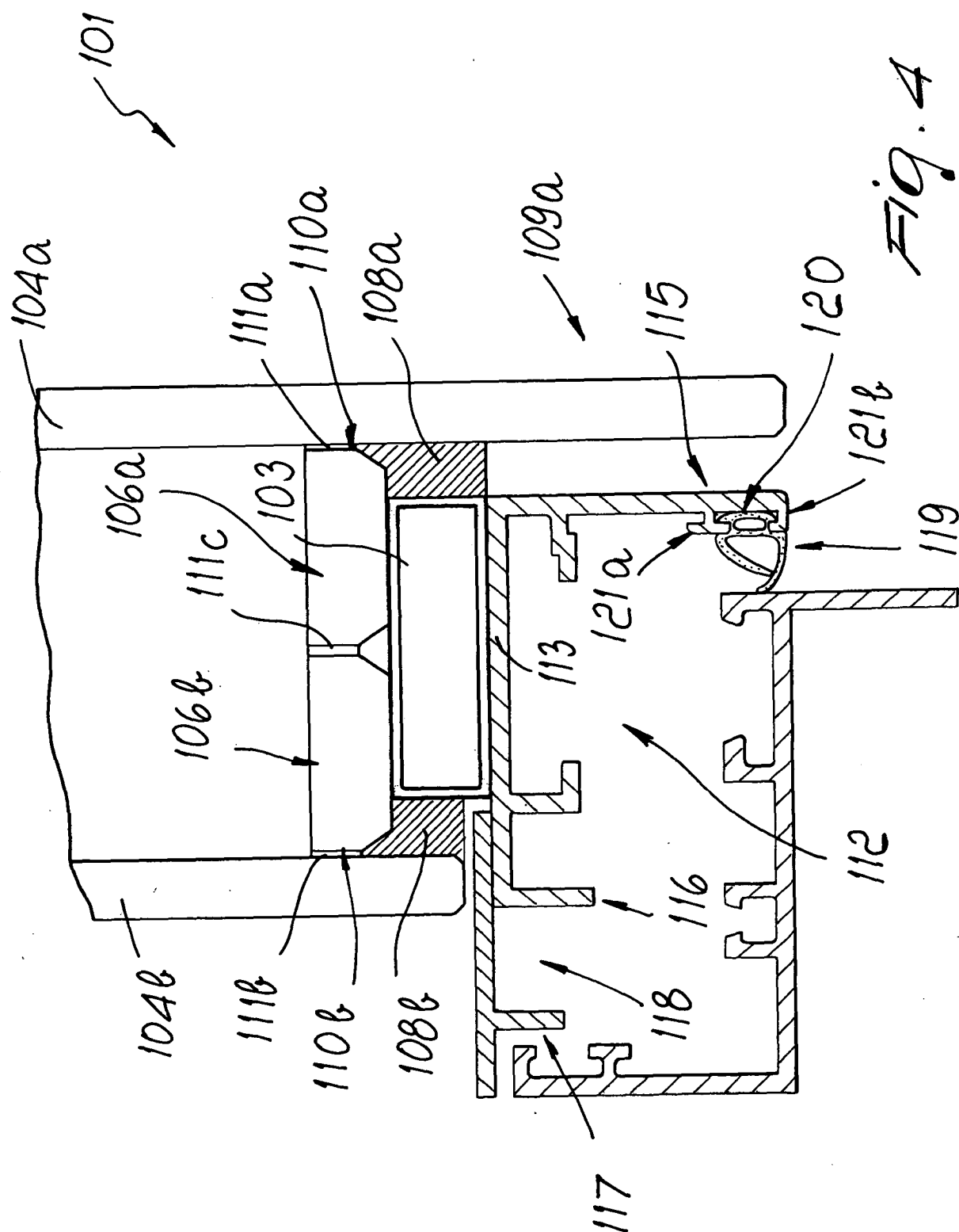


Fig. 3



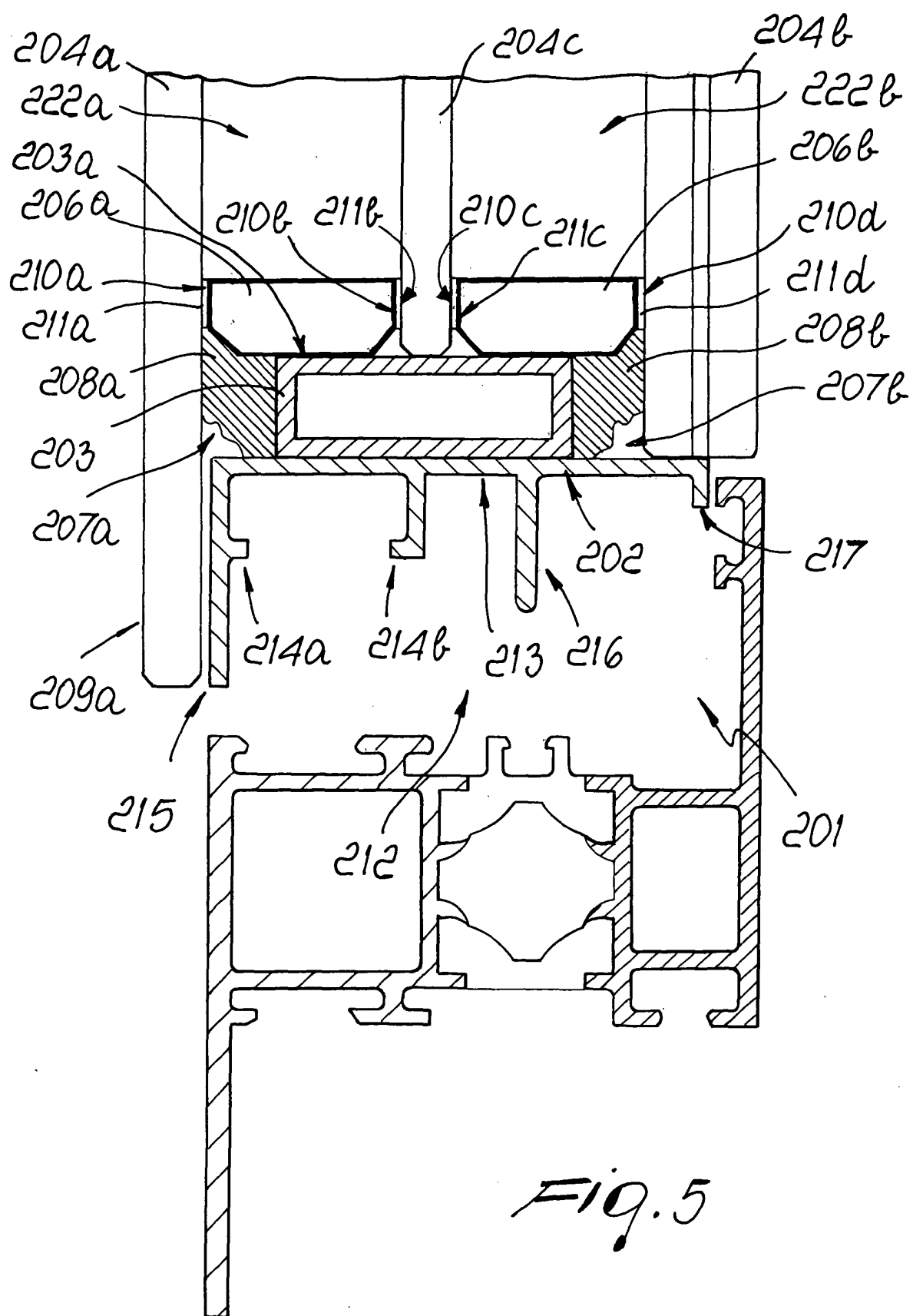


Fig. 5

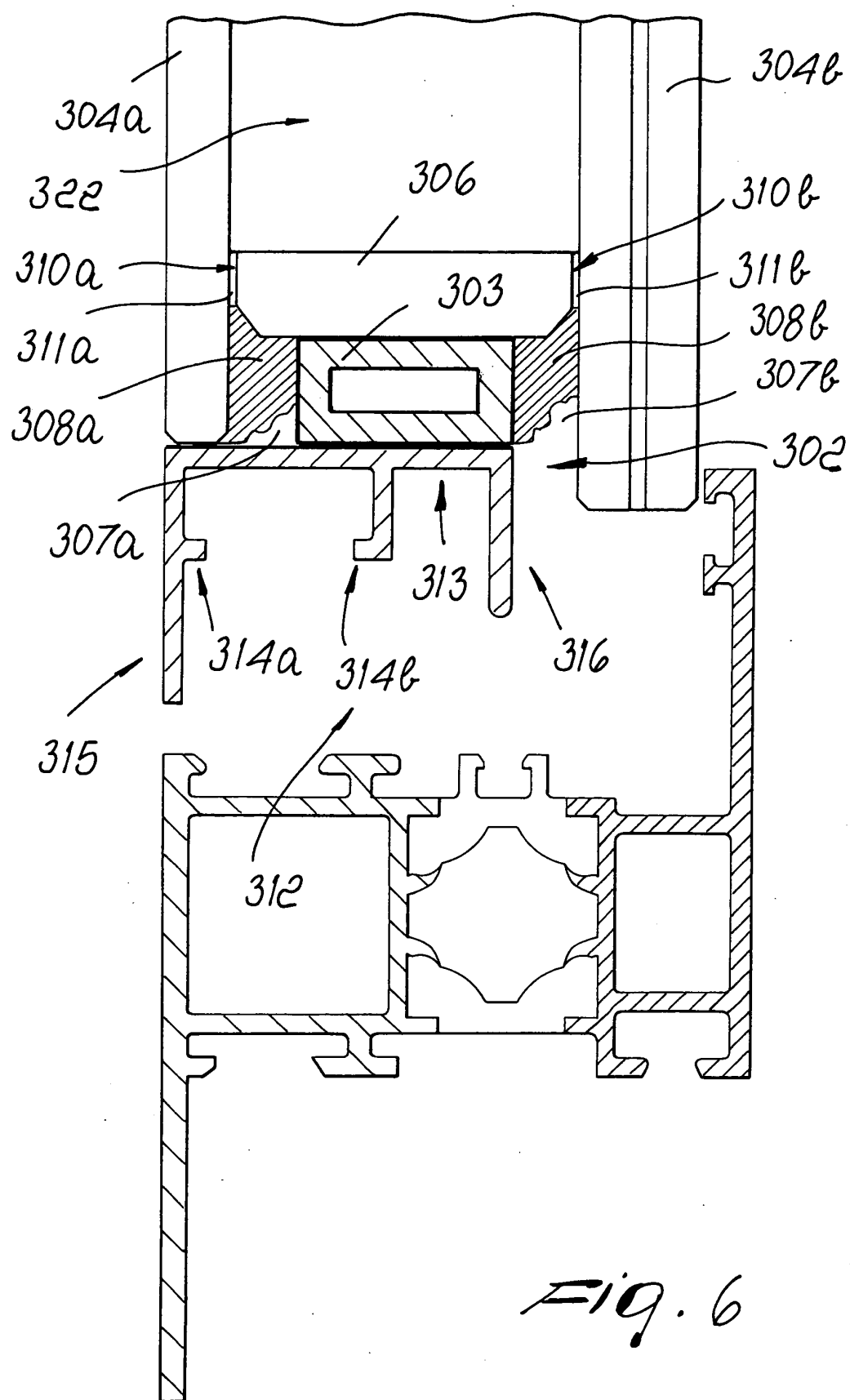


Fig. 6

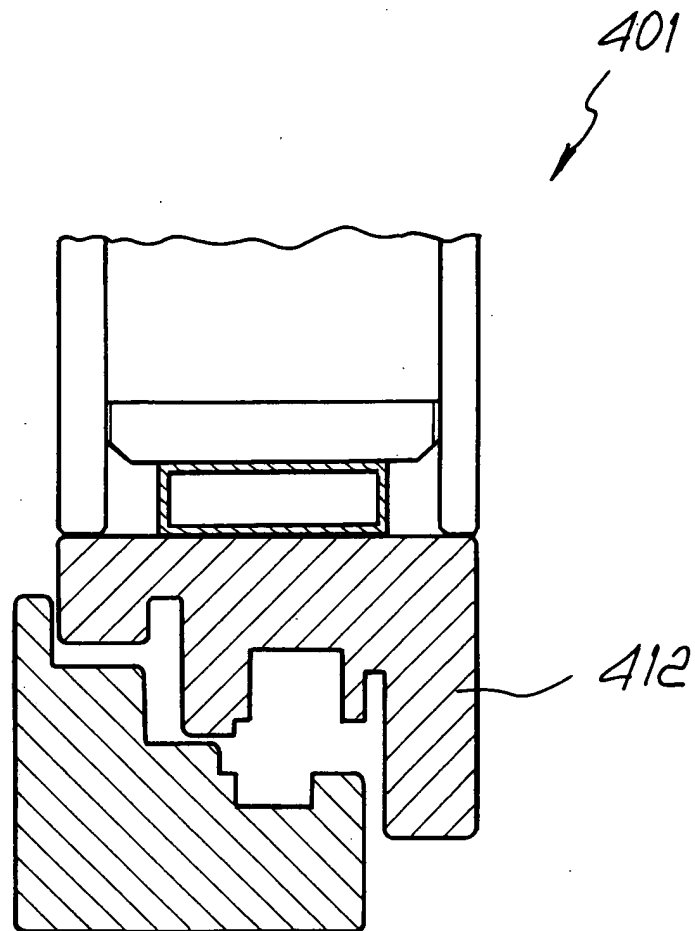


Fig. 7

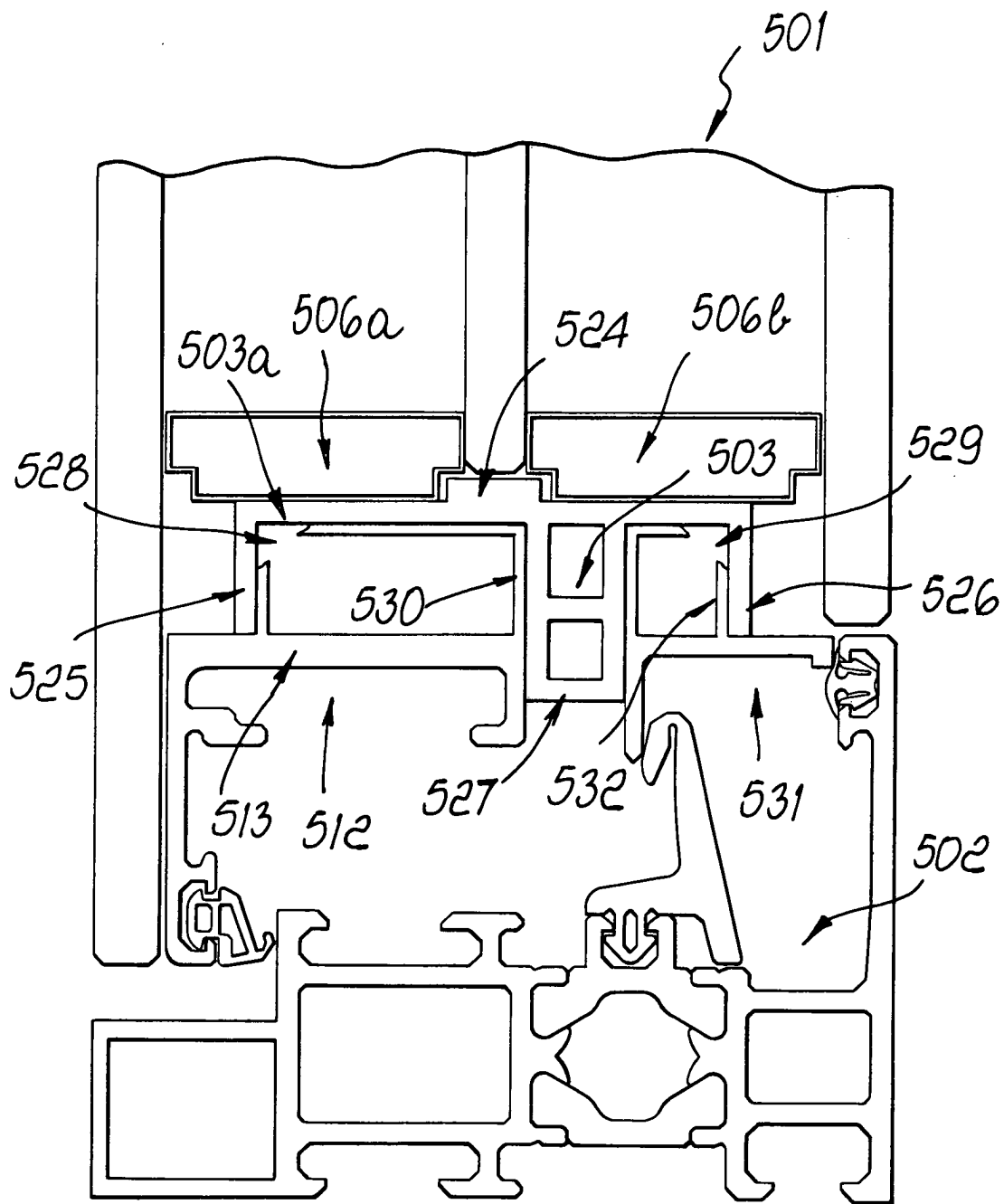


Fig. 8

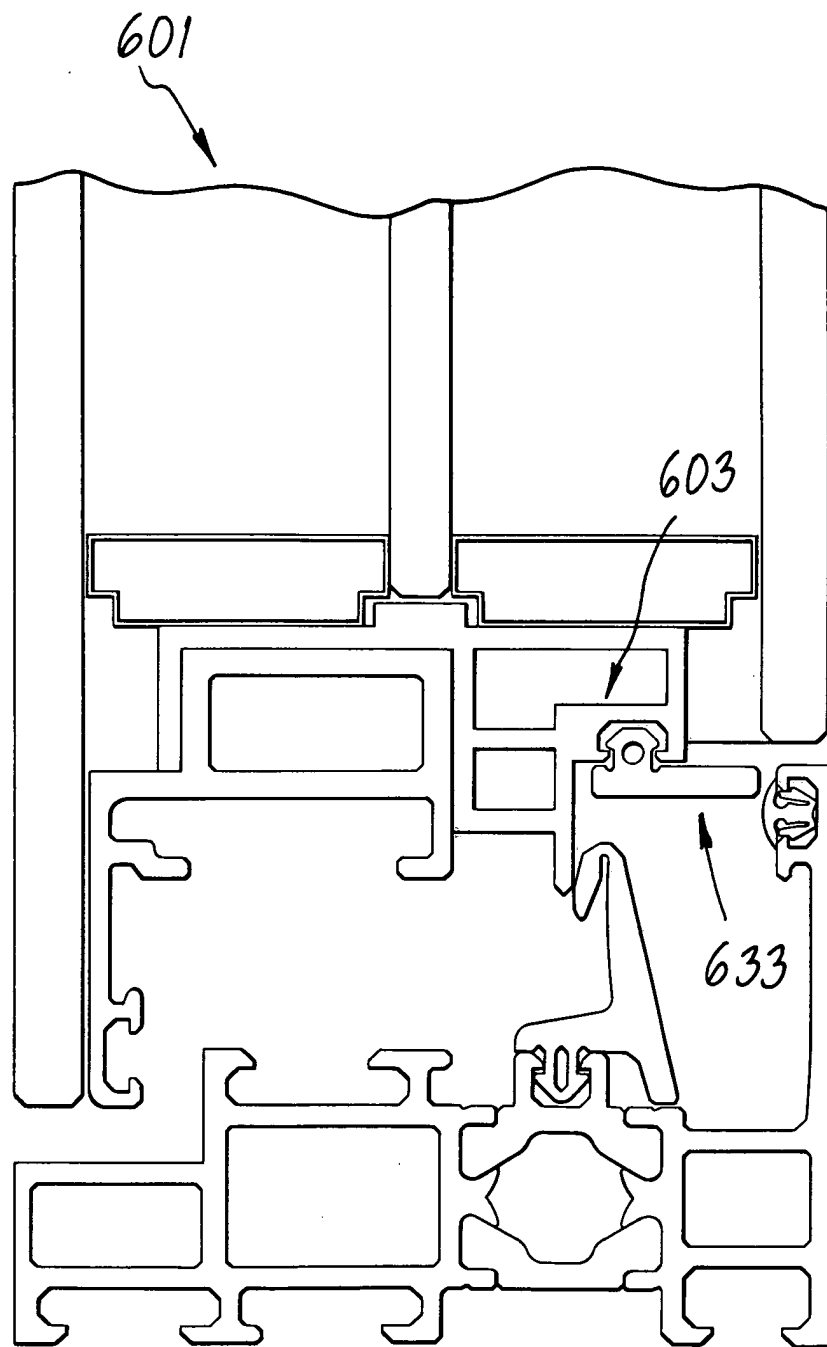


Fig. 9



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 02 3032

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 197 33 381 A (GEZE GMBH & CO) 26 March 1998 (1998-03-26) * column 9, line 40 - column 10, line 36; figures 51-58,74-76 * * column 4, lines 28-63 * * column 6, lines 24-31 * -----	1-4,7, 16, 23-25,27	E06B3/66
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X	CH 503 878 A (SULZER AG) 28 February 1971 (1971-02-28) * column 3, line 40 - column 4, line 36; claim 2; figure 4 * -----	1,4,7, 16, 23-25,27	
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 January 2005	Examiner Kofoed, P
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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