



- (51) **International Patent Classification:**
B32B 17/12 (2006.01) *B44C 1/22* (2006.01)
B44F 1/06 (2006.01)
- (21) **International Application Number:** PCT/IB2014/059387
- (22) **International Filing Date:** 3 March 2014 (03.03.2014)
- (25) **Filing Language:** Italian
- (26) **Publication Language:** English
- (30) **Priority Data:**
PI2013A000018 14 March 2013 (14.03.2013) IT
- (72) **Inventors; and**
- (71) **Applicants :** MAZZANTI, Francesco [IT/IT]; Via Livornese, 1, Staffoli, I-56029 Santa Croce sull'Arno (PI) (IT). BONELLI, Simona [IT/IT]; Via delle Fosse, 35, I-56031 Bientina (PI) (IT).
- (74) **Agent:** ITALBREVETTI S.R.L.; Leotta Alfio, Leotta Antonio, Via Salvo D'acquisto, 40/N, I-56025 Pontedera (PI) (IT).
- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) **Title:** DECORATIVE LAMINATED GLAZING AND METHOD OF MANUFACTURING THE SAME

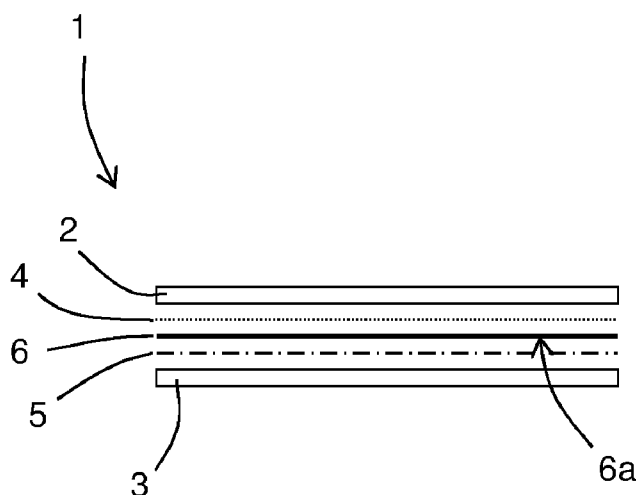


FIG. 1a

(57) **Abstract:** A decorative laminated glazing (1) comprising at least two panes of glass (2, 3) with a metal leaf layer (6) interposed therebetween, includes double-sided metalized decorative patterns and is obtained by a special production process in which one or more sheets of metallic material are layer on a first pane of glass (2) and are made to adhere thereto by means of a high transparency adhesive film (4). Desired decorative patterns can be made by etching the metal leaf layer (6), then the glass is layered by traditional techniques that include interposition of a dim of thermoplastic material (5) between the metal layer (6) and a second pane of glass (3),



Description

DECORATIVE LAMINATED GLAZING AND METHOD OF MANUFACTURING THE SAME

Technical Field

- [1] The present invention relates to a laminated decorative glazing, of the type including at least two panes of glass joined by interposition of a plastic film selected from PVB, EVA or TPU or other thermoplastic material for layering and subsequent heating, and wherein at least one further layer suitable to achieve a decorative effect is interposed between the two panes.
- [2] The present invention also relates to a method for the production of laminated glazing decorative panes.

Background Art

- [3] Decorative laminated glazing glasses are known, which show the effect of a metalized inner surface. These laminated glazing glasses are obtained according to a known technique, by joining at least two panes of glass between which at least one intermediate layer is interposed, which is painted or coated with paints based on resins containing metallic pigments. An example of a method for the production of a decorative laminated glazing, as briefly outlined above, is disclosed in EP 0565494, according to which, on one face of a glass pane, there is applied a layer of transparent epoxy resin, on which a decorative pattern is transferred, which is then covered with a layer of paint containing gold or silver pigments. Finally, the layering of the glass is performed by joining a further pane of glass to the painted side, with the interposition of a film of PVB and by heating. The panes of laminated glazing obtained with the method outlined above have decorative patterns with a metalized effect, which, however, is relatively opaque and with unnatural colors as compared to those of the metal leaf.
- [4] Furthermore, there are known types of laminated glazing in which there is at least one intermediate layer, usually composite, which is interposed to give the laminated glazing peculiar mechanical characteristics, light radiation selective absorption, or other characteristics. In some cases, the above intermediate composite layer comprises at least one layer consisting of a metalized coating on a polymeric substrate, obtained according metalization processes, such as vacuum coating or vacuum deposition. An intermediate composite layer of this type is described, for example, in the international patent application WO 03/074270. In these cases, the metal layer does not have any decorative purpose, but fulfills specific technical functions.
- [5] Also known are decorative supports, such as briquetted, tiles, wooden frames, or the like, on which a decorative pattern with a metallic effect is obtained by applying a metal leaf layer on the support, with the interposition of a specific adhesive. In some cases, these supports, on which the decorative pattern is made by application of a metal

leaf, are layered, by applying a glass pane on the layer of the metal leaf, for example by heat-joining the latter with the interposition of a film of a thermoplastic material, such as PVB, or they are coated, for example with an epoxy or polyurethane resin, in order to form a transparent protective layer. In any case, in this type of decorative products, the metal leaf remains visible only from one side, because the pane which acts as a support for the application of the metal leaf is chosen from substantially non-transparent materials. The need to apply the metal leaf onto a non-transparent support derives from the fact that, whatever the support is, once dried, the adhesive used to join the metal leaf to the support is not perfectly transparent or presents not perfectly transparent zones that, in any case, alter the aesthetic effect of the metal leaf. For this reason, namely to make the above-mentioned imperfections not visible, when the decorative elements are made of metal leaf, the use of non-transparent substrates is conventionally preferred, in such a way that the decorative effect deriving from the presence of the metal leaf is visible only from the side opposite to the bonding of the same metal leaf.

Disclosure of Invention

Technical Problem

- [6] The general object of the present invention is then to propose a decorative laminated glazing comprising decorative elements suitable to realize a metallic effect with high aesthetic qualities.
- [7] A further object of the present invention is to provide a decorative and / or structural, substantially two-dimensional product comprising at least one layer of metal leaf therein, wherein the metal leaf layer is visible with aesthetic effect substantially identical from both sides of the product.
- [8] Yet a further object of the present invention is to propose a method for the production of panes of decorative laminated glazing, in which the decorative effect consists in the presence of at least an inner layer including metallic effect decorative patterns.
- [9] Another object of the present invention is to propose a method for the production of decorative laminated glazing comprising at least one intermediate layer consisting of metal leaf.

Technical Solution

- [10] According to an aspect of the present invention, the above objects and others are achieved by a laminated glazing as set forth and characterized in the independent claim 1.
- [11] The claims dependent on claim 1 describe other characteristics of the present invention or variants to the main solution idea.
- [12] A decorative laminated glazing conventionally includes at least two panes of glass with a film of thermoplastic material interposed therebetween, which can be used as adhesive in glass layering processes, such as TPU, PVB or EVA.

- [13] According to a characteristic aspect of the present invention, the decorative laminated glazing of the invention includes a first intermediate layer, adjacent to a first layer of glass, consisting of an adhesive film obtained by partially drying an adhesive substance consisting of an acrylic resin in percentage not exceeding 4% by weight, water in a percentage in the range of 40% to 70% by weight, and an alcohol, selected from the group including isopropyl alcohol and ethyl alcohol, in percentage in the range of 20% to 50%; and a second intermediate layer, made from a metal leaf with thickness in the range of 0.01 to 100 micrometers, interposed between the first intermediate layer and the film of thermoplastic material.
- [14] The flat decorative product as outlined above has the peculiarity of including, as a decorative element, a metal leaf that, thanks to the adhesive with which it is applied to the first layer of glass, can be seen substantially without aesthetic differences from both sides of the product.
- [15] Advantageously, the intermediate layer of metal leaf presents gaps in the form of predefined decorative patterns.
- [16] According to another aspect of the present invention, the above-mentioned objects are achieved by means of a method for producing a decorative laminated glazing including at least two panes of glass, in which the method includes the step of
- application, on one side of a first one of said two panes of glass, of a layer of an adhesive of acrylic resin in hydro-alcoholic dispersion,
 - partial drying of said adhesive layer until an adhesive film is obtained,
 - applying one or more metal leafs with thickness ranging between 0.01 and 100 micrometers, onto the partially dried adhesive film, so that a metal leaf layer is obtained,
 - sanding / polishing of said metal leaf layer,
 - layering said glass by joining a second one of said two panes of glass that include interposition of a film of thermoplastic material between the metal layer and a second pane of glass, the film being of the type which can be used as adhesive in glass layering processes, such as for example TPU, PVB or EVA, followed by application of heat and / or pressure.
- [17] The method of the invention is characterized in that the metalized layer is not obtained by deposition under vacuum, painting, or other processes, but by application of metallic material already in leaf form, that is a sheet of small thickness, made on a support consisting of a glass pane, such application being made possible by the special type of adhesive that is interposed between the glass pane and the metal leaf.
- [18] Advantageously, etching operations are performed on the metal leaf layer between the step of burnishing (sanding or polishing) and the step of layering, to remove portions of said metal leaf layer, in order to realize predefined decorative patterns.
- [19] In alternative, predefined decorative patterns are made by adding a step of provisional applying of a template onto the pane of glass before the step of applying the

adhesive; the template consists of a layer of material with openings having the shape of the decorative pattern to be realized; then, a step of removing said template is performed after the step of applying the adhesive layer said template, on which, in this case, the adhesive is applied.

Description of Drawings

[20] These and other characteristics of the invention will become more comprehensible from the following description of embodiments thereof, given as non limiting examples, with reference to the enclosed figures, in which:

- Figure 1 shows a first embodiment of a laminated glazing according to the present invention: Fig. 1a shows a schematic side view, Figs. 1b and 1c show front views of typical examples of decorative patterns obtained with the above mentioned first embodiment;
- Figure 2 shows a second embodiment of a laminated glazing according to the present invention: Fig. 2a shows a schematic side view, Fig. 2b show a front view of a typical example of decorative pattern obtained with the above mentioned second embodiment.

Mode for Invention

[21] Fig. 1a shows schematically the structure of a pane of decorative laminated glazing, 1, according to the present invention. The laminated glazing 1 comprises at least two panes of glass 2, 3, between which there are included a layer of a special high transparency adhesive film, 4, a transparent film of thermoplastic material, 5, and, interposed therebetween, a metal leaf layer, 6, consisting of one or more overlapping metal leafs with thickness ranging between 0.01 and 100 micrometers. Generally, the following description refers to leaf material, thin leaf, thin sheet, understood as synonymous to describe a two-dimensional element of a thickness not exceeding 100 microns and having flexibility characteristics typical of the sheet elements.

[22] The above-mentioned laminated glazing 1 is obtained thanks to a special production process.

[23] On one side of a first glass pane 2, for example, advantageously, float extra-clear type, tempered glass with thickness between 3 and 6 mm, a layer of an adhesive in liquid state is applied, consisting of acrylic resins in hydro-alcoholic dispersion, in which the percentage of acrylic resin is less than 4% by weight, the percentage of water is not less than 57% by weight and the percentage of alcohol is not less than 38% by weight.

[24] Advantageously, the alcohol present in said adhesive is isopropyl alcohol and / or ethyl alcohol, with gradation equal to at least 99%.

[25] Application of the adhesive in the liquid state can be carried out by brush or roller, but, more advantageously, it is carried out within a spray paint booth, in which the glass pane 2 is made to move forward, supported in a horizontal configuration on a belt or roller conveyor.

- [26] The adhesive in the liquid state is left to dry for such a time as to allow formation of an adhesive film 4, and then the layer of metal leaf 6 is applied. The partial drying step takes about 30 minutes in a free atmosphere. Advantageously, the drying time is reduced by introducing the glass pane 2 in a drying oven, with controlled atmosphere, in which one or more of the following conditions can be adjusted: temperature, pressure, humidity, and the circulation speed of forced air.
- [27] Advantageously, the drying oven is part of the forward motion line of said conveyor, on which the glass is supported for the adhesive application step, and is located immediately downstream of the spray booth.
- [28] The application of said metal leaf is carried out according to an known artisan technique, so-called 'book-like'. The above technique consists in picking up individually, using a brush, small sheets of metal material of a thickness advantageously comprised between 0.01 and 0.08 microns, and laying them on the aforementioned adhesive film 4, side by side and partially overlapping, until the entire surface, on which a metallic decorative effect must be present, is covered, which surface, in the present exemplary embodiment, is the entire surface of the glass pane 2 on which the adhesive film 4 is applied.
- [29] Alternatively, the application of the metal leaf takes place according to at least partially automated techniques.
- [30] For example, there may be a sheet separator able to withdraw individually a sheet of metal leaf from a stack of sheets, and to deposit it lying on the adhesive film while this moves forward along a conveyor, then placing a sheet subsequently taken partially overlaying the previous one, and repeating the above steps until the glass pane 2 is completely covered. When the thickness of the metal leaf is very small, namely not more than 0.1 micrometers, this has a high brittleness and each sheet has, preferably, dimension not larger than 20cm x 20cm. In this case the coverage of the glass pane 2 occurs preferably by laying a plurality of sheets partially overlapping one another. Increasing the thickness of the metal leaf, preferably also the size of the single sheet is increased. In this case, sometimes, it may be possible to lay a single sheet of metal leaf to cover the entire glass pane 2. Obviously the choice of one or other technique also depends on the size of the glass pane 2.
- [31] According to another preferred embodiment of the present invention, the glass pane on the conveyor, after the exit from the drying oven, reaches a station of application of the metal leaf, in which an unwinder, synchronized with the forward motion of the glass pane, unwinds the metal leaf from a roll laying it onto the pane of glass, and one or more pressure rollers press the band of metal leaf 6 onto the pane of glass, so making the same metal leaf adhere thereto thanks to the presence of the adhesive film 4. Once the band of metallic material has been applied on the whole length of the glass pane, a special tool cuts the band. Obviously, this type of procedure requires a discontinuous operation of the unwinder which unwinds the metal leaf from

the roll in a synchronized manner with the forward motion of the glass on the belt and only in the presence of a pane. In addition, when the metal leaf is originally in the form of a roll, the thickness of the metal leaf is advantageously greater than the case of the so-called 'book-like' application, in order to avoid that the band of material be torn during the application. In this case, the thickness of the metal leaf can be up to 100 microns.

[32] According to an embodiment variation, in the case of glass panes of large size in the direction transverse to the forward motion direction of the conveyor, more metal leaf rolls can be used arranged crosswise partially overlapping, and providing each pair of subsequent rolls longitudinally offset.

[33] Preferably, Preferably, the metal leaf is made of a material or alloy selected from gold, silver, bronze or copper, but it might also be another material or metal alloy, or imitations of the above materials of the type commonly available on the market.

[34] According to a variant embodiment of the invention, during all the phases described above, namely from application of the adhesive up to the completion of the metal leaf laying, the pane of glass is kept in atmosphere protected against dust and dirt in general. For example, in the above case, when the glass pane 2 is disposed on a conveyor, or on multiple consecutive conveyors, these conveyors are totally placed in a closed or substantially closed space by means of perimeter walls that protect the internal environment from the entrance of dust. The aforementioned closed space can also be advantageously provided with systems of air suction.

[35] Once that the adhesive layer 4 is completely fully dried, the free surface, 6a, of the metal leaf layer 6 is subjected to sanding / polishing. This operation, carried out manually or mechanically by means of suitable tools, is intended to eliminate surface imperfections to obtain a higher gloss of the metallic material layer 6.

[36] Next, in the case that the laminated glazing must be obtained with decorative patterns such as those of the pane 10 of Fig. 1b, which include metalized areas, 101, and non-metalized areas, 102, and therefore transparent ones, the decorative patterns are etched. The etching step, performed on the surface 6a of the metal leaf layer, is intended to remove the metallic material 6 and adhesive 4 layers from the non-metallic areas 102, and may be accomplished using hand tools or tools mounted on numeric control machines or other type of machinery.

[37] According to a variant embodiment of the invention, the execution of the decorative patterns on the metal leaf layer 6 is carried out by means of a machine for laser etching, with which the etching depth can be adjusted in an extremely precise manner.

[38] Alternatively, according to a different specific embodiment, the decorative patterns on the metal leaf layer 6 can be obtained by means of photo-etching techniques.

[39] Once the desired decorative motif has been made, the layering of the glass is carried out according to known techniques, by interposition of a film of thermoplastic

material between the metal leaf layer 6 and a second pane of glass 3. More specifically, for example, in the case that the thermoplastic material is PVB, a film of PVB is interposed between said metallic layer 6 and glass pane 3, and the layering process is done by heating and pressing the elements to be joined against one another. The layering process may obviously also be done using a different junction material, such as EVA, TPU or a ionoplastic material, such as that commercially known as SGP, of course varying in this case also the process of layering.

- [40] According to a variant embodiment of the invention, additional intermediate or outer layers may be provided, which are laminated through the use of a film of thermoplastic material selected from those listed above.
- [41] For example, an intermediate composite layer may be provided, such as the one described in the aforementioned application WO 03/074270, interposed between the metal leaf layer 6 and the second pane of glass 3 via a double layering, that is by interposing a film of thermoplastic material 5 between the metal leaf layer 6 and the second intermediate layer, and a further film of thermoplastic material 5 between the second intermediate layer and the second pane of glass 3.
- [42] Generalizing the above mentioned concept, a multi-layer product consisting of a first pane of glass 2, the adhesive film 4 and the metal leaf layer 6 is subjected to at least a process of layering from the side of the metal leaf 6, but it may also be subjected, on either sides, to further layering processes with other layers of suitable material, to be laminated by means of the interposition of a film of thermoplastic material 5.
- [43] In the case that the product to be implemented should have decorative metallic effect, 111, uniform over the whole pane, as in the case of the laminated glazing 11 of Fig. 1c, the subsequent layering processes are obviously made without previously performing said decorative pattern etching step.
- [44] With reference to Fig. 2a, 1' indicates a laminated glazing according to the present invention obtained by a different embodiment of a production process according to the invention. Before application of the adhesive, a template, 7, made in plastic or paper material, showing apertures with a shape corresponding to the metalized patterns that must be obtained in the laminated glazing 1', is applied to one side of the first pane of glass 2.
- [45] Then, the steps of applying the adhesive and laying the layer of metal leaf 6 are carried out in a similar manner as that described above.
- [46] Once that the adhesive film 4 is completely dried, the template 7 is removed, so that the adhesive film 4 and the metallic material layer 6 remain attached to the first pane of glass 2 only in correspondence of the openings of the template 7, thereby creating metalized decorative patterns corresponding to the openings in the template 7. Sanding and / or polishing of the metalized surface 6a can be performed before or after the removal of the template 7, and then the layering process is carried out as described

above.

- [47] Alternatively, the removal of the template 7 can take place before the step of laying the metal leaf 6.
- [48] The variants described above of a process for the production of decorative laminated glazing according to the present invention are advantageously employed to produce the laminated glazing panes such as that indicated with 10' in Fig. 2b, in which the decorative patterns with metallic effect, 101' have a rather limited superficial extension, as compared to the total surface of the pane 10'.
- [49] In the laminated glazing panes according to the invention, the presence of the metal leaf allows to obtain metallic effects aesthetically very different and better than those obtainable with the traditional processes, that provide for the application of paints containing specific metal pigments. In addition, the panels obtained are perfectly double-sided, since, from a purely aesthetic point of view, the metallic effect obtained appears to be exactly the same from both the side of the first pane of glass 2, and from the side of the second pane of glass 3. This result is obtained thanks to the use of the adhesive layer 4, which, as it dries passing to a viscous state, allows laying of metal leaf, and once fully dried, has a high degree of transparency.
- [50] Further embodiment variants can obviously be envisaged. For example, panes of decorative laminated glazing according to the invention can also include bending, tempering or other machining operations having structural or aesthetic effects.
- [51] The advantages of the decorative laminated glazing of the invention and its method of production remain unaffected, even in the presence of further variations or modifications, which can be applied while always remaining within the scope of protection defined by the following claims.

Claims

- [1] A decorative laminated glazing (1, 1') comprising at least two panes of glass with a film of thermoplastic material (5) interposed therebetween, which can be used as adhesive in glass layering processes, **characterized by** including a first intermediate layer (4) adjacent to a first one of said two panes of glass (2) consisting of an adhesive film obtained by partially drying an adhesive substance consisting of an acrylic resin in percentage not exceeding 4% by weight, water in a percentage in the range of 40% to 70% by weight, and an alcohol, selected from the group including isopropyl alcohol and ethyl alcohol, in percentage in the range of 20% to 50%; and a second intermediate layer (6), made from a metal leaf with thickness in the range of 0.01 to 100 micrometers, interposed between said first intermediate layer (4) and said film of thermoplastic material (5).
- [2] A decorative laminated glazing (1, 1') according to claim 1, **characterized in that** said intermediate metal leaf layer (6) presents gaps in the form of predefined decorative patterns.
- [3] A decorative laminated glazing (1, 1') according to claim 1, **characterized in that** said intermediate metal leaf layer (6) consists of a material selected from the group including gold leaf, imitation gold leaf, silver leaf, imitation silver leaf, bronze leaf, imitation bronze leaf, copper leaf.
- [4] A method for producing a decorative laminated glazing (1, 1') comprising at least two panes of glass **characterized by** comprising the steps of:
- application on one side of a first one (2) of said two panes of glass of a layer of an acrylic resin-based adhesive in hydro-alcoholic dispersion,
 - partial drying of said adhesive layer until an adhesive film (4) is obtained,
 - applying one or more metal leaves with thickness ranging between 0.01 and 100 micrometers, onto the partially dried adhesive film (4), so that a metal leaf layer (6) is obtained,
 - sanding / polishing of said metal leaf layer (6),
 - layering said glass by joining a second one (3) of said two panes of glass by interposition of a film of thermoplastic material (5), of the type used as adhesive in glass layering processes, between said second pane of glass (3) and said metal leaf layer (6), followed by application of heat and / or pressure.
- [5] A method for producing a decorative laminated glazing (1) according to claim 4, **characterized in that** said acrylic resin in hydro-alcoholic dispersion consists of an acrylic resin in percentage not exceeding 4% by weight, water in a percentage in the range of 40% to 70% by weight, and an alcohol, selected from isopropyl alcohol and ethyl alcohol, in percentage in the range of 20% to 50%.

- [6] A method for producing a decorative laminated glazing (1) according to claim 4 or 5, **characterized in that** said metal leaf layer (6) has thickness in the range of 0.01 to 100 micrometers.
- [7] A method for producing a decorative laminated glazing (1) according to the previous claim, **characterized in that** said step of applying one or more metal leafs is carried out by applying a plurality of single leafs each one with dimension not exceeding 20cm x 20cm and partially overlapping one another.
- [8] A method for producing a decorative laminated glazing (1) according to any of the claims 4 to 6, **characterized in that** said step of applying one or more metal leafs is carried out by using at least one unwinder synchronized with the forward motion of said pane of glass (2) along a conveyor, said at least one unwinder being designed to unwind a metal leaf from a roll laying it onto said pane of glass (2), with one or more pressure rollers aimed at pressing the band of metal leaf onto said pane of glass (2), so as to obtain adhesion of said metal leaf layer (6) thanks to the presence of said adhesive film (4).
- [9] A method for producing a decorative laminated glazing (1) according to the previous claim, **characterized by** including more metal leaf rolls arranged crosswise partially overlapping, and wherein two subsequent rolls are longitudinally offset.
- [10] A method for producing a decorative laminated glazing (1) according to claim 4 or the subsequent ones, **characterized in that** application of said acrylic resin in hydro-alcoholic dispersion is carried out by spraying through spray nozzles.
- [11] A method for producing a decorative laminated glazing (1) according to any of the claims 4 to 9, **characterized in that** application of said acrylic resin in hydro-alcoholic dispersion is carried out by brush.
- [12] A method for producing a decorative laminated glazing (1) according to any of the claims 4 to 9, **characterized in that** application of said acrylic resin in hydro-alcoholic dispersion is carried out by a pad mounted to a roller.
- [13] A method for producing a decorative laminated glazing (1) according to claim 4 or the subsequent ones, **characterized in that** said partial drying of said adhesive layer is carried out in environment with controlled temperature and / or pressure and / or humidity.
- [14] A method for producing a decorative laminated glazing (1) according to claim 4 or the subsequent ones, **characterized in that** said partial drying of said adhesive layer is carried out in environment with forced ventilation.
- [15] A method for producing a decorative laminated glazing (1) according to

claim 4 or the subsequent ones, **characterized in that**, said first pane of glass (2) is kept in environment protected against dust from before said step of applying said adhesive layer until after said step of laying said metal leaf (6).

- [16] A method for producing a decorative laminated glazing (1) according to claim 4 or the subsequent ones, **characterized in that** etching operations are performed on said metal leaf layer (6) between said step of sanding / polishing and said step of layering, to remove portions of said metal leaf layer (6), in order to realize predefined decorative patterns.
- [17] A method for producing a decorative laminated glazing (1) according to the previous claim, **characterized in that** said etching operations are performed by mechanical means.
- [18] A method for producing a decorative laminated glazing (1) according to claim 16, **characterized in that** said etching operations are performed by laser etching.
- [19] A method for producing a decorative laminated glazing (1) according to claim 16, **characterized in that** said etching operations are performed by photo-etching techniques.
- [20] A method for producing a decorative laminated glazing (1') according to claim 5, **characterized in that** a step of provisional applying of a template (7) onto said pane of glass is performed before said step of applying the adhesive (4), and a step of removing said template (7) is performed before said step of layering.
- [21] 1. A decorative laminated glazing (1, 1') **characterized by** being produced in accordance with the method of claim 5 or any of the subsequent claims.

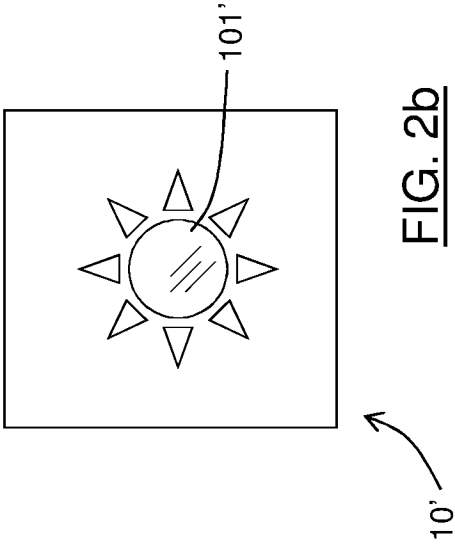
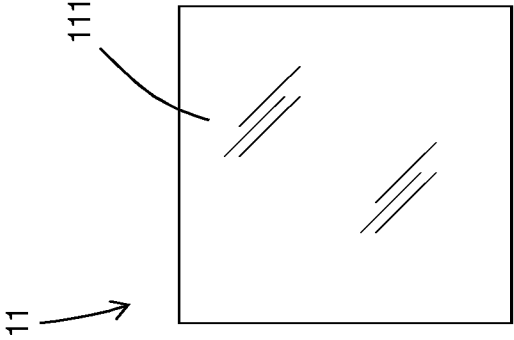
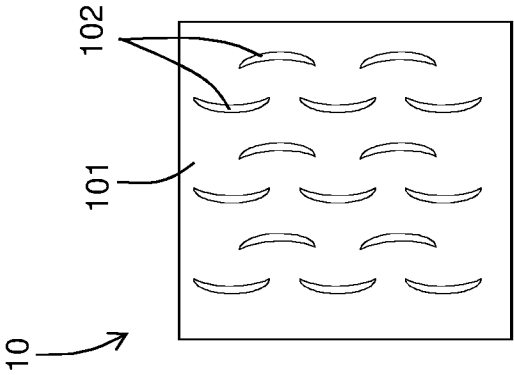
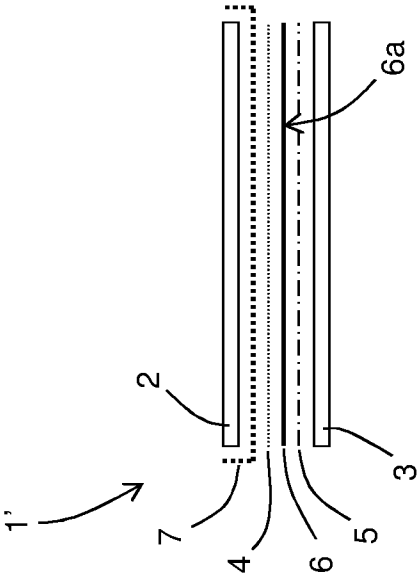
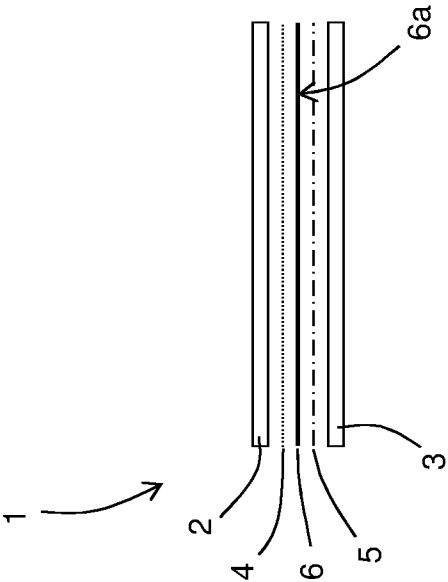


FIG. 2

FIG. 1

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/059387

A. CLASSIFICATION OF SUBJECT MATTER
INV. B32B17/12 B44F1/06
ADD. B44C1/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B32B B44C B44F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/074270 A2 (SOLUTION INC [US]; MORAN JAMES R [US]) 12 September 2003 (2003-09-12) page 4, line 1 - line 9; figure 1 page 5, line 17 - line 20 -----	1-3,21
A	EP 0 565 494 A1 (AXIVETRO SRL [IT] AXIVETRO DI MARTELLI GIULIANO [IT]) 13 October 1993 (1993-10-13) column 2, line 23 - column 3, line 31 figures 1-2 ----- -/--	1-3,21



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

9 July 2014

Date of mailing of the international search report

23/07/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

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Bataille, Laurent

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/059387

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

International application No

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