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(54) MULTILAYER LAMINAR ELEMENT AND METHOD FOR TRANSFERRING IMAGES TO A THREE-DIMENSIONAL SURFACE

MEHRSCHICHTIGES LAMINARES ELEMENT UND VERFAHREN ZUR ÜBERTRAGUNG VON BILDERN AUF EINE DREIDIMENSIONALE OBERFLÄCHE

ÉLÉMENT LAMELLAIRE MULTICOUCHE ET PROCÉDÉ DE TRANSFERT D'IMAGES SUR UNE SURFACE TRIDIMENSIONNELLE

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Description

Technical Field

[0001] The invention relates to a multilayer laminar element conceived for making it easy to transfer or apply images to a body, object or surface, particularly a three-dimensional surface, with primarily decorative functions, by superimposing and attaching one of the laminar layers of the multilayer laminar element integrating a printed image on said three-dimensional surface and eliminating another layer or layers.

[0002] The invention also relates to a method for transferring images to a body using the mentioned multilayer laminar element.

[0003] The reference made to "image" in the present specification must be understood as being extensive to any graphic composition, with images or a mixed composite with text and images.

Background of the Invention

[0004] Patent document EP 1 102 122 B1, belonging to the same inventor as the present invention, discloses a method for transferring an image to a three-dimensional body using a gelatin sheet. This invention proposes the steps of:

- providing an unsupported gelatin sheet;
- printing an image onto the gelatin sheet when it is in the solid state (with a water content less than 10%);
- moistening the sheet such that it becomes soft and flexible, and
- applying the sheet in this soft and flexible state on a three-dimensional surface or body, where, taking advantage of the elasticity and of the fact that it is adhesive in this state, it is fixed by said application to said three-dimensional surface or body, providing the printed image and being applied in situ.

[0005] Printing on the sheet is advantageously performed by means of ink-jet printing.

[0006] In a preferred embodiment, the sheet is subjected to heating at a temperature in the order of 35 to 45°C, during the step of applying it to said three-dimensional surface or body.

[0007] The printed image is generally not on the contact surface of the gelatin sheet and the three-dimensional body/object or surface, but the sheet can also be attached on a surface such that the image is on contact face with said surface. In this case, if the ink of the image is impermeable the, contact face of said surface must be impregnated with an adhesive.

[0008] Although the described method has been shown to be very useful, it suffers from the drawback derived from the dimensional instability of gelatin taking into account that the gelatin sheet must be attached at all times to the three-dimensional surface, as a support for the transferred printed image. Said instability is particularly due to changes and/or variations that may be experienced in relative humidity and temperature of the environment surrounding the sheet over time, which can compromise the fixing thereof to the three-dimensional surface and deteriorate the image it supports.

[0009] For this reason, the invention proposes an alternative laminar element and a method for transferring images to a three-dimensional surface using said multilayer laminar element.

Description of the invention

[0010] For that purpose, the invention proposes a multilayer laminar element for transferring images to a three-dimensional body or surface comprising in a basic embodiment:

- a first gelatin layer in the solid state (water content less than 10%), and
- a second layer (or several layers) superimposed on the preceding layer, integrating a transparent, elastic (or one that acquires elasticity due to moistening) and printable (advantageously by means of an ink-jet printer) cover for thus receiving the image to be transferred.

[0011] The mentioned first layer, when moistened, becomes soft and elastic as explained in the European patent mentioned as a background document, which allows, particularly by means of the use of an adhesive arranged on the second layer or cover, after printing thereof with the image to be transferred, applying the composition to said three-dimensional surface with the printed face of the cover facing and in contact with said surface. Then, the aforementioned first gelatin layer, in the moistened state, can be readily separated from the cover, the image accompanying it then being completely integrated on the three-dimensional surface of interest.

[0012] It is obvious that the mentioned adhesive for fixing the proposed multilayer laminar element could be deposited on the three-dimensional surface to which it must be attached, placing the mentioned cover against the surface with adhesive.

[0013] In other words, in the present invention the gelatin sheet is used as a support for the second layer or cover which is where the image will be printed and which will be applied to the three-dimensional surface or body.

[0014] In the event that more than one of the layer or layers could be used, as a cover they have the feature of being transparent and printable. With respect to being elastic, this will be due to the nature of the material of the sheet or it is the result of the humidity provided to the gelatin sheet prior to or during the operation of applying the multilayer element on the three-dimensional surface for transferring the image

[0015] The transparent cover can have various compositions, such as a polyurethane, an acrylic copolymer

and mixtures thereof. Some conditions relating to the material used will be indicated below, depending on the ink used in the printing process.

[0016] Generally the cover has a thickness that is much less than that of the gelatin layer, which is from 60 to 70 microns, whereas said cover can be from 3 to 40 microns, and generally between 3 and 20 microns. Said reduced thickness results in applying the printed image with minimal alteration of the features of the three-dimensional surface on which it is fixed through the mentioned cover, leading to full integration printing of the image on said outer surface.

[0017] Efforts will be made so that with the humidity provided in the process of application, the gelatin sheet will readily detach from the cover. In an alternative embodiment, it is envisaged as having an intermediate layer that is soluble with the humidity, selected from, for example, acacia gum or polyvinyl alcohol.

[0018] An important aspect to be taken into account is based on the ink used for the ink-jet printing process.

[0019] Three fundamental types of ink have been identified and tested for said (ink-jet) printing process to implement this invention:

- Ultraviolet-curable inks, which adhere perfectly in a wide range of materials, which allows using a polyurethane, an acrylic copolymer, a vinyl resin or mixtures thereof as a cover.
- Solvent and eco-solvent inks. Polyurethanes, acrylic resins as well as mixtures of both can be used to assure correct printing.
- Aqueous inks. There are a number of formulations in the state of the art which allow for correct printing. The cover on which the image is printed has to be water-absorbent in this case and it must also absorb other components present in the ink. Suitable formulations can comprise polyvinyl alcohol (PVA) or some polyurethanes.

[0020] In the case of aqueous inks and given that the ink-receiving layer (the cover) must necessarily be water-absorbent, are proposed two configurations:

- The adhesive used, which is superimposed on the cover, is aqueous, such that it will transmit humidity to the set of layers, making it elastic and adherent in this process.
- The adhesive used is an aqueous adhesive, but an impermeable layer is arranged between the image-receiving layer (cover) and the gelatin sheet. This impermeable interposed layer will provide features of impermeability, transparency and elasticity. An acrylic copolymer can be used for said impermeable layer.

[0021] Furthermore and to improve the rate of absorption of the aqueous inks, permeable covers (microporous or nanoporous), which would be applied on the cover before printing, have been described.

[0022] If the adhesive is not aqueous, the multilayer composition will be taken, in a rigid state, to the object to which it would be adhered superficially, subsequently moistening the gelatin layer to make it elastic and then pressing the laminar element against the three-dimensional surface where the cover must be attached, finally proceeding to detach the gelatin layer.

[0023] On the other hand, the adhesive used can be different types of adhesives:

- ultraviolet-curable (UV-curable) adhesive;
- polyvinyl acetate,
- pressure-sensitive adhesive

[0024] The proposed method for transferring images comprises performing the following steps:

- preparing a multilayer laminar element by applying a cover of a transparent, elastic (or one that acquires elasticity due to pressure-sensitive) and printable material on a gelatin layer in the solid state (humidity content less than 10%);
- printing said cover advantageously by means of an ink-jet printing process;
- applying an adhesive (which can be provided by the surface on which the laminar element is applied);
- moistening said multilayer laminar element (if it was not moistened by the applied adhesive);
- applying the moistened and elastic laminar element on a three-dimensional surface or body with said cover facing and in contact with said three-dimensional surface or body; and
- removing said gelatin layer, separating it from the cover which remains adhered to said three-dimensional surface or body.

[0025] Once the cover has been printed, the method for transferring the multilayer element to a three-dimensional surface can be carried out in several ways according to the nature of the layer or layers constituting said multilayer laminar element.

[0026] If the cover is permeable, an aqueous adhesive is applied so that when the multilayer composition receives humidity, it becomes elastic and readily adheres to the three-dimensional surface of a body or object.

[0027] If the multilayer laminar element integrates an impermeable and elastic layer, which is either the actual cover receiving the printing or an additional layer, interposed between said cover and the gelatin layer, the composition is superficially adhered to the irregular surface or object by means of an adhesive arranged on said cover; humidity is subsequently applied to the gelatin layer so it becomes elastic; the multilayer element is then pressed against the three-dimensional surface and is adhered to same; and the gelatin layer is finally removed as a result of the humidity.

[0028] In the case of aqueous inks, the cover can be-

come adhesive when it is moistened, which would allow applying said cover on the three-dimensional surface without requiring additional adhesives. The moistened gelatin layer would finally be removed as explained above.

[0029] In particular embodiment, the multilayer laminar element is applied to a three-dimensional object using to that end a mold envisaged for shaping said object. In this case, the printed and moistened multilayer laminar element is fitted to the walls of a mold, arranging the gelatin layer in contact with the inner wall of the mold. A material is then deposited inside the mold and said mold is optionally closed. When, due to the molding process, the material has set, it is removed from the mold, with the multilayer laminar element adhered by the cover layer thereof to the outer surface of the molded body. Finally, the gelatin layer is removed from the multilayer laminar element, and the body is decorated with a printed image.

[0030] The features of the invention are described in the following claims.

Claims

1. A multilayer laminar element for transferring images to a three-dimensional surface, comprising:

- a first gelatin layer with a humidity content less than 10%, which, when moistened, becomes soft and elastic, and
- at least a second layer providing a transparent cover of said first layer, said transparent cover being elastic or being able to become elastic due to humidity, and intended for being printed on so that it can receive the printed image to be transferred,
- said multilayer laminar element being able to be adhered to a three-dimensional surface by means of an adhesive, with the transparent cover facing and in contact with said three-dimensional surface and said first gelatin layer being removable in the moistened state, after applying the multilayer laminar element to a three-dimensional surface.

2. The multilayer laminar element according to claim 1, **characterized in that** said first gelatin layer has a thickness of between 60 to 70 microns, whereas said cover has a thickness of 3 to 20 microns.

3. The multilayer laminar element according to claim 1, **characterized in that** said printing is:

ink-jet printing; or
ink-jet printing selected from an ultraviolet-curable ink, a solvent or eco-solvent ink or an aqueous ink.

4. The multilayer laminar element according to claim 3, **characterized in that**:

the printing ink is an ultraviolet-curable ink and the cover is a polyurethane, an acrylic copolymer, a vinyl resin or the mixtures thereof; or
the printing ink is a solvent or eco-solvent ink and the cover is a polyurethane, an acrylic resin or a mixture of both.

5. The multilayer laminar element according to claim 3, **characterized in that** the printing ink is an aqueous ink and the cover is water-absorbent and selected from polyvinyl alcohol, polyvinylpyrrolidone or a polyurethane.

6. The multilayer laminar element according to claim 5, **characterized in that** the adhesive used is aqueous.

7. The multilayer laminar element according to claim 5, **characterized in that** said second layer incorporates a permeable cover selected from a microporous or nanoporous cover.

8. The multilayer laminar element according to claim 5, **characterized in that** it further comprises an impermeable, transparent and elastic layer between said cover-forming second layer, which is at least one in number, and said first gelatin layer.

9. The multilayer laminar element according to claim 1, **characterized in that** said adhesive is selected from a UV-curable adhesive, a vinyl adhesive or a pressure-sensitive adhesive.

10. The multilayer laminar element according to claim 1, **characterized in that** it integrates an impermeable and elastic layer, which is either the actual cover receiving the printing or an additional layer, interposed between said cover and the gelatin layer.

11. A method for transferring images to a three-dimensional surface, **characterized in that** it comprises

- preparing a multilayer laminar element by applying a cover of a transparent, elastic and printable material on a gelatin layer in the solid state (with a humidity content less than 10%);
- printing said cover with the image to be transferred;
- moistening said multilayer laminar element;
- applying the moistened multilayer laminar element on a three-dimensional surface by arranging the mentioned cover in contact with said three-dimensional surface and fixed thereto with the aid of an adhesive, and
- removing said gelatin layer, separating it from

the cover which remains adhered to said three-dimensional surface or body.

12. The method according to claim 11, **characterized in that** said adhesive is added to said cover or applied on the three-dimensional surface to be decorated.

13. The method according to claim 11, **characterized in that**:

- said multilayer laminar element is applied, printed and moistened, to the inner walls of a mold for molding an object, with the gelatin layer in contact with the inner wall of the mold;
- a material is deposited for forming the object inside the mold;
- once it has set, the molded object is taken out together with the laminar element attached to its outer surface; and
- the gelatin layer is removed from the laminar element.

14. The method according to claim 11, **characterized in that** said printing on the mentioned cover is performed by means of ink-jet printing and said ink is selected from an ultraviolet-curable ink, a solvent or eco-solvent ink, or an aqueous ink.

15. The method according to claim 11, **characterized in that** the multilayer laminar element furthermore integrates an impermeable and elastic layer, which is either the actual cover receiving the printing or an additional layer, interposed between said cover and the gelatin layer, and **in that** the composition is superficially adhered to the irregular surface or object by means of an adhesive arranged on said impermeable and elastic layer, the gelatin layer is moistened, so it becomes elastic; the multilayer element is pressed against the three-dimensional surface in order to be adhered to same, and the moistened gelatin layer is finally removed.

Patentansprüche

1. Mehrschichtiges laminares Element zur Übertragung von Bildern auf eine dreidimensionale Oberfläche, umfassend:

- eine erste Gelatineschicht mit einem Feuchtigkeitsgehalt unter 10%, welche, wenn sie befeuchtet wird, weich und elastisch wird, und
- mindestens eine zweite Schicht, welche eine durchsichtige Beschichtung der genannten ersten Schicht bereitstellt, wobei die genannte durchsichtige Beschichtung elastisch ist oder elastisch aufgrund von Feuchtigkeit werden kann, und welche dazu vorgesehen ist, gedruckt zu werden, so dass sie das zu übertragende bedruckte Bild bekommen kann,
- wobei das genannte mehrschichtige laminare Element auf einer dreidimensionalen Oberfläche mittels eines Klebstoffs geklebt werden kann, mit der durchsichtigen Beschichtung der genannten dreidimensionalen Oberfläche zugewandt und in Kontakt mit derselben und wobei die genannte erste Gelatineschicht im befeuchteten Zustand entfernt werden kann, nachdem das mehrschichtige laminare Element auf einer dreidimensionalen Oberfläche aufgebracht worden ist.

2. Mehrschichtiges laminares Element nach Anspruch 1, **dadurch gekennzeichnet, dass** die genannte erste Gelatineschicht eine Dicke von zwischen 60 und 70 Mikrometern aufweist, während die genannte Beschichtung eine Dicke von 3 bis 20 Mikrometern aufweist.

3. Mehrschichtiges laminares Element nach Anspruch 1, **dadurch gekennzeichnet, dass** das genannte Bedrucken Folgendes ist:

Tintenstrahldruck; oder
Tintenstrahldruck ausgewählt aus einer Ultraviolett-härtbaren Tinte, einer Lösungsmittel- oder Eco-Lösungsmitteltinte oder einer wässrigen Tinte.

4. Mehrschichtiges laminares Element nach Anspruch 3, **dadurch gekennzeichnet, dass**:

die Drucktinte eine Ultraviolett-härtbare Tinte ist und die Beschichtung ein Polyurethan, ein Acrylcopolymer, ein Vinylharz oder die Mischungen derselben ist; oder
die Drucktinte eine Lösungsmittel- oder Eco-Lösungsmitteltinte ist und die Beschichtung ein Polyurethan, ein Acrylharz oder eine Mischung aus beiden ist.

5. Mehrschichtiges laminares Element nach Anspruch 3, **dadurch gekennzeichnet, dass** die Drucktinte eine wässrige Tinte ist und die Beschichtung wasserabsorbierend ist und ausgewählt aus Polyvinylalkohol, Polyvinylpyrrolidon oder ein Polyurethan wird.

6. Mehrschichtiges laminares Element nach Anspruch 5, **dadurch gekennzeichnet, dass** der verwendete Klebstoff wässrig ist.

7. Mehrschichtiges laminares Element nach Anspruch 5, **dadurch gekennzeichnet, dass** die genannte zweite Schicht eine permeable Beschichtung aus-

gewählt aus einer mikroporösen oder nanoporösen Beschichtung enthält.

8. Mehrschichtiges laminares Element nach Anspruch 5, **dadurch gekennzeichnet, dass** es zusätzlich eine impermeable, durchsichtige und elastische Schicht zwischen der genannten mindestens einen zweiten Schicht, welche die Beschichtung bildet, und der genannten ersten Gelatineschicht umfasst.

9. Mehrschichtiges laminares Element nach Anspruch 1, **dadurch gekennzeichnet, dass** der genannte Klebstoff aus einem UV-härtbaren Klebstoff, einem Vinylklebstoff oder einem druckempfindlichen Klebstoff ausgewählt wird.

10. Mehrschichtiges laminares Element nach Anspruch 1, **dadurch gekennzeichnet, dass** es eine impermeable und elastische Schicht enthält, welche entweder die vorliegende Beschichtung, welche das Bedrucken bekommt, oder eine weitere Schicht, welche zwischen der genannten Beschichtung und der Gelatineschicht zwischengestellt wird, ist.

11. Verfahren zur Übertragung von Bildern auf eine dreidimensionale Oberfläche, **dadurch gekennzeichnet, dass** es Folgendes umfasst

- das Zubereiten eines mehrschichtigen laminaren Element durch das Aufbringen einer Beschichtung auf einem durchsichtigen, elastischen und bedruckbaren Materials auf einer Gelatineschicht im festen Zustand (mit einem Feuchtigkeitsgehalt unter 10%);
- das Bedrucken der genannten Beschichtung mit dem zu übertragenden Bild;
- das Befeuchten des genannten mehrschichtigen laminaren Elements;
- das Aufbringen des befeuchteten mehrschichtigen laminaren Elements auf einer dreidimensionalen Oberfläche durch das Anordnen der erwähnten Beschichtung in Kontakt mit der genannten dreidimensionalen Oberfläche und daran befestigt mit Hilfe von einem Klebstoff, und
- das Entfernen der genannten Gelatineschicht, unter Trennung derselben aus der Beschichtung, welche auf der genannten dreidimensionalen Oberfläche oder dem dreidimensionalen Körper geklebt bleibt.

12. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** der genannte Klebstoff der genannten Beschichtung hinzugefügt wird oder auf der zu dekorierenden dreidimensionalen Oberfläche aufgebracht wird.

13. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass**:

- das genannte mehrschichtige laminare Element auf den Innenwänden einer Form zum Formen eines Objekts aufgebracht, bedruckt und befeuchtet wird, mit der Gelatineschicht in Kontakt mit der Innenwand der Form;
- ein Material aufgetragen wird, um das Objekt innerhalb der Form zu bilden;
- sobald es erstarrt ist, wird das geformte Objekt zusammen mit dem laminaren Element, welches mit dessen Außenoberfläche verbunden ist, entformt wird; und
- die Gelatineschicht aus dem laminaren Element entfernt wird.

14. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** das genannte Bedrucken auf der erwähnten Beschichtung mittels Tintenstrahldruck durchgeführt wird und die genannte Tinte aus einer Ultraviolett-härtbaren Tinte, einer Lösungsmittel- oder Eco-Lösungsmitteltinte oder einer wässrigen Tinte ausgewählt wird.

15. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** das mehrschichtige laminare Element zusätzlich eine impermeable und elastische Schicht integriert, welche entweder die vorliegende Beschichtung, welche das Bedrucken bekommt, oder eine weitere Schicht, welche zwischen der genannten Beschichtung und der Gelatineschicht zwischengestellt wird, ist, und dass der Aufbau oberflächlich auf der unregelmäßigen Oberfläche oder dem unregelmäßigen Objekt mittels eines Klebstoffs, welcher auf der genannten impermeablen und elastischen Schicht angeordnet ist, geklebt wird, die Gelatineschicht befeuchtet wird, so dass sie elastisch wird; das mehrschichtige Element gegen die dreidimensionale Oberfläche gedrückt wird, um mit derselben geklebt zu werden, und die befeuchtete Gelatineschicht wird schließlich entfernt.

Revendications

1. Un élément en feuille multicouche pour transférer des images sur une surface tridimensionnelle comportant :

- une première couche de gélatine ayant une teneur en humidité inférieure à 10% qui, lorsqu'elle est humectée, devient molle et élastique ; et
- au moins une deuxième couche offrant un recouvrement transparent à cette première couche, ce recouvrement transparent étant élastique ou pouvant devenir élastique à cause de l'humidité, et destiné à être imprimé de sorte qu'il peut recevoir l'image imprimée à transférer,
- cet élément en feuille multicouche pouvant être

adhéré sur une surface tridimensionnelle au moyen d'un adhésif, le recouvrement transparent faisant face et étant en contact avec cette surface tridimensionnelle et cette première couche de gélatine pouvant être enlevée dans cet état humectée, après avoir appliqué l'élément en feuille multicouche sur une surface tridimensionnelle.

2. L'élément en feuille multicouche conformément à la revendication 1, **caractérisé en ce que** cette première couche de gélatine a une épaisseur de 60 à 70 microns, alors que ce recouvrement a une épaisseur de 3 à 20 microns.

3. L'élément en feuille multicouche conformément à la revendication 1, **caractérisé en ce que** cette impression est :

impression jet d'encre ; ou
impression jet d'encre sélectionnée entre une encre durcissable aux ultraviolets, une encre à solvant ou éco-solvant ou une encre aqueuse.

4. L'élément en feuille multicouche conformément à la revendication 3, **caractérisé en ce que** :

l'encre d'imprimerie est une encre durcissable par ultraviolets et le recouvrement est un polyuréthane, un copolymère acrylique, une résine vinyle ou leur mélange ; ou
l'encre d'imprimerie est une encre à solvant ou éco-solvant et le recouvrement est un polyuréthane, une résine acrylique ou leur mélange.

5. L'élément en feuille multicouche conformément à la revendication 3, **caractérisé en ce que** l'encre d'imprimerie est une encre aqueuse et le recouvrement absorbe l'eau et sélectionné entre l'alcool de polyvinyle, la polyvinylpyrrolidone ou un polyuréthane.

6. L'élément en feuille multicouche conformément à la revendication 5, **caractérisé en ce que** l'adhésif utilisé est aqueux.

7. L'élément en feuille multicouche conformément à la revendication 5, **caractérisé en ce que** cette deuxième couche incorpore un recouvrement perméable sélectionné entre un recouvrement microporeux ou nanoporeux.

8. L'élément en feuille multicouche conformément à la revendication 5, **caractérisé en ce qu'**il comporte en plus une couche imperméable, transparente et élastique entre cette deuxième couche formant le recouvrement, qui est au moins une en nombre, et cette première couche de gélatine.

9. L'élément en feuille multicouche conformément à la revendication 1, **caractérisé en ce que** cet adhésif est sélectionné entre un adhésif durcissable aux UV, un adhésif de vinyle ou un adhésif sensible à la pression.

10. L'élément en feuille multicouche conformément à la revendication 1, **caractérisé en ce qu'**il intègre une couche imperméable et élastique, qui est soit le propre recouvrement recevant l'impression soit une couche additionnelle, interposée entre ce recouvrement et la couche de gélatine.

11. Une méthode pour transférer des images sur une surface tridimensionnelle, **caractérisée en ce qu'**elle comporte :

- la préparation d'un élément en feuille multicouche par l'application d'un recouvrement en un matériau transparent, élastique et pouvant être imprimé sur une couche de gélatine à l'état solide (ayant une teneur en humidité inférieure à 10%) :
- imprimer l'image à transférer sur ce recouvrement ;
- humecter cet élément en feuille multicouche ;
- appliquer l'élément en feuille multicouche humecté sur une surface tridimensionnelle en disposant ce recouvrement en contact avec cette surface tridimensionnelle et qui y est fixé à l'aide d'un adhésif, et
- enlever cette couche de gélatine, en la séparant du recouvrement qui reste collé à cette surface tridimensionnelle ou corps.

12. La méthode conformément à la revendication 11, **caractérisée en ce que** cet adhésif est ajouté à ce recouvrement ou appliqué sur la surface tridimensionnelle à décorer.

13. La méthode conformément à le revendication 11, **caractérisée en ce que** :

- cet élément en feuille multicouche est appliqué, imprimé et humecté, sur les parois intérieures d'un moule pour mouler un objet, la couche de gélatine étant en contact avec la paroi intérieure du moule ;
- un matériau est déposé pour former l'objet à l'intérieur du moule ;
- une fois qu'il a durci, l'objet moulé est retiré en même temps que l'élément en feuille fixé sur sa surface extérieure ; et
- la couche de gélatine est retirée de l'élément en feuille.

14. La méthode conformément à la revendication 11, **caractérisée en ce que** cette impression sur ce re-

couvrement est effectuée par impression à jet d'encre et cette encre est sélectionnée entre une encre durcissable par ultraviolets, une encre à solvant ou éco-solvant, ou une encre aqueuse.

15. La méthode conformément à la revendication 11, **caractérisée en ce que** l'élément en feuille multicouche intègre en plus une couche imperméable et élastique, qui est soit le propre recouvrement recevant l'impression soit une couche additionnelle, interposée entre ce recouvrement et la couche de gélatine et **en ce que** la composition est adhérée superficiellement sur la surface irrégulière ou objet au moyen d'un adhésif disposé sur cette couche imperméable et élastique, la couche de gélatine est humectée, de sorte qu'elle devienne élastique ; l'élément multicouche est pressé contre la surface tridimensionnelle afin d'y être adhéré et la couche de gélatine humectée est finalement retirée.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1102122 B1 **[0004]**