(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 836 095 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
07.06.2017 Bulletin 2017/23

(21) Application number: **13774972.7**

(22) Date of filing: **09.04.2013**

(51) Int Cl.:
A45D 31/00 *(2006.01)* ***G09F 3/02*** *(2006.01)*
G09F 3/10 *(2006.01)* ***B44C 3/02*** *(2006.01)*

(86) International application number:
PCT/US2013/035817

(87) International publication number:
WO 2013/155094 (17.10.2013 Gazette 2013/42)

(54) METALLIC FOIL NAIL APPLIQUÉS

METALLFOLIENNAGELAPPLIKATION

APPLIQUÉS D'ONGLE À FEUILLE MÉTALLIQUE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **09.04.2012 US 201261621887 P**
15.03.2013 US 201361799386 P

(43) Date of publication of application:
18.02.2015 Bulletin 2015/08

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EP 2 836 095 B1

Description

Cross-Reference to Related Applications

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 61/621,887, filed April 9, 2012, and U.S. Provisional Patent Application No. 61/799,386, filed March 15, 2013.

Field of the Invention

[0002] The present invention relates to the field of nail polish and nail decorations, and, more specifically, to nail appliqués for adorning a fingernail or toenail.

Background of the Invention

[0003] The use of an instant fingernail coating product whereby nail polish is applied to a fingernail by adhesively securing to it a dry form of nail polish has become a popular method of providing a manicure. Such products, also known as "nail appliqués", allow a user to rapidly decorate finger or toe nails with colors, designs or images, or with metallic sheens. Such sheens may be provided through the use of nail appliqués containing metallic foils or films (hereinafter, "foil appliqués").

Summary of the Invention

[0004] A nail appliqué according to an embodiment of the present invention includes a self-adhesive nail appliqué having a first adhesive layer; a partially-cured base coat on the first adhesive layer; a second adhesive layer on the base coat; a metallic foil layer on the second adhesive layer; and a partially-cured top coat on the metallic foil layer. In some embodiments, the second adhesive layer cures by exposure to ultraviolet radiation. In some other embodiments, the nail appliqué is stretchable and the base coat, the second adhesive layer, and the top coat are stretchable at substantially the same rates as each other. In yet other embodiments, the base coat, the second adhesive layer, and the top coat are coextensive with each other in an uncured state, a partially-cured state, and a cured state. In further embodiments, the metallic foil layer is a single layer coextensive with the second adhesive layer.

[0005] A method of manufacturing a self-adhesive nail appliqué according to an embodiment of the present invention includes the steps of forming a first adhesive layer; forming a partially-cured base coat on the first adhesive layer; forming a second adhesive layer on the base coat; forming a metallic foil layer on the second adhesive layer; and forming a partially-cured top coat on the metallic foil layer. In some embodiments, the step of forming the second adhesive layer includes the step of exposing the adhesive to ultraviolet radiation after the step of forming the metallic foil layer.

Brief Description of the Drawings

[0006] For a more complete understanding of the present invention, reference is made to the following detailed description of the invention considered in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic diagram of a vertical cross-section of a multilayer foil nail appliqué on a removable substrate according to an embodiment of the present invention; and

FIG. 2 is a schematic top plan view of a set of foil appliqués after they have been cut from a laminated sheet prepared according to an embodiment of a method of the present invention.

Detailed Description of the Invention

[0007] In some embodiments, the present invention includes a multi-layered nail appliqué having metallic foil or film as at least one of the layers ("foil appliqué). In a method according to an embodiment of the present invention, the foil appliqué is built up in a layer-by-layer fashion on top of a releasable substrate. The foil appliqué is soft and stretchable to cover a user's fingernail or toenail, but is hardened (e.g., with the aid of a user's body heat, or at room temperature) when it is applied to the fingernail or toe nail. For the purposes of the present disclosure, fingernails and toenails are referred to, collectively, as "nails".

[0008] FIG. 1 is a schematic diagram of a vertical cross-section of foil appliqué 10 according to an embodiment of the present invention. In one embodiment, the foil appliqué 10 is provided adhered to a removable substrate 12 from which the foil appliqué 10 can be detached. Turning to FIG. 1, a foil appliqué 10 according to an embodiment of the present invention is a multi-layer structure including: a first adhesive layer 14, comprising an adhesive suitable for adhering the foil appliqué to the nail and removably adhering the foil appliqué to the substrate 12; a base coat 16 comprising nail enamel residing on the first adhesive layer 14; a second adhesive layer 18 residing on the base coat 16; a layer of metallic foil or film 20 residing on the second adhesive layer 18; and a top coat of a clear nail enamel 22 covering the metallic foil or film. The second adhesive layer 18 includes an adhesive substance that may be cured (e.g., gelled and/or hardened) by exposure to ultraviolet radiation (also referred to as "UV radiation"), and is also referred to herein as a "UV adhesive layer".

[0009] Turning now to the materials that may be used to form the layers of the foil appliqué 10, it may first be noted that suitable materials for each of the adhesive or nail enamel layers 14, 16, 18, 22 may be obtained commercially, or may be developed on a custom basis using materials and methods known in the art. In embodiments of the invention, the aforesaid layers should maintain their dimensional stability during curing in the manufac-

turing process and/or while on the user's nail. If the dimensions of the layers do change, such changes should occur to a similar degree across each of the layers 14, 16, 18, 22 such that the layers 14, 16, 18, 22 remain coextensive (i.e., cover each other to the same extent) to avoid wrinkling or distortion of the foil appliqué, or, more specifically, the foil layer. The dimensional stability of the metallic foil or film layer 20 will typically be less of a concern for reasons discussed elsewhere herein. The materials used for the various layers should also, when working together, provide a structure having physically properties (e.g., stretchability, flexibility, tear resistance, etc.) that are desired in the final product (i.e., the foil appliqué), and should stretch or flex without wrinkling the appliqué or the foil layer. These properties may be similar to those of certain nail enamel appliques presently known in the art, such as those described in U.S. Patent Application No. 11/126,862, filed May 11, 2005, (published as U.S. Patent Publication No. 2005/0255061, published November 17, 2005), the entire disclosures of both of which are incorporated by reference herein.

[0010] Turning to the first adhesive layer 14, the adhesive used therein should be able to adhere firmly to a nail when cured. The adhesive may be applied to the substrate 12 as a liquid or melted from a hardened state, and may contain solvents that volatilize readily at a human body temperature or below, such as low-molecular-weight acetates or alcohols. The adhesive of the first adhesive layer 14 should also be of a type that will release readily from the substrate 12, which may be made of a material, such as a thin sheet of silicon-coated release liner paper or aluminum laminate plastic film. A suitable thickness for the first adhesive layer in some embodiments of the present invention would be about 10-15% of the total thickness of the finished appliqué. Adhesives and substrates suitable for use in the present invention are similar to those discussed further in the aforesaid U.S. Patent Application No. 11/126,862 with regard to nail enamel appliqués. Exemplary adhesives suitable for the present invention include acrylic co-polymer adhesives.

[0011] Turning to the base coat 16 and top coat 22, it should be noted that, in embodiments of the present invention, these coats may be formed from commercially-available or custom-made nail enamels. In one embodiment of the present invention, the top coat 22 is made from a clear (e.g., transparent or translucent) enamel, so that the foil layer 20 may be seen, and the finished appliqué 10 has the desired metallic color and sheen. In some embodiments, the clear coat may include a color, or may include additives (e.g., glitter or mica chips) to enhance the appearance of the finished appliqué. In such embodiments, the top coat should be formulated so that the foil layer remains visible. The base coat 16 may also be made of a clear enamel, but its purpose is to provide a mechanical barrier between the first adhesive layer 14 and the UV adhesive layer 18, and also provide a smooth surface for application of the UV adhesive layer 18. Suitable thicknesses for the top and bottom coats 16, 22 include those in the range of about 35-45% of the total thickness of the finished appliqué. The nail enamel may be organic solvent-based, or aqueous-based, or be of a UV-curable type. Desirable physical properties and compositions of the nail enamels will depend on such factors as the method of applying the respective base or top layers 16, 22, or the temperature at which the layer 16, 18 is to be cured. Organic solvent-based nail enamels having viscosities of 1500-4000 centipoise (60 rpm) at room temperature (e.g., about 20° C) may have particular utility in the present invention. Nail enamel properties and formulations are discussed in the aforesaid U.S. Patent Application No. 11/126,862 with regard to nail enamel appliqués, any may readily be adapted by those having ordinary skill in the art to produce clear coats suitable for use with the present invention.

[0012] The UV adhesive layer 18 may include any of a broad range of materials that cure to a gelled or tacky state after an initial exposure to ultraviolet light, and are non-toxic in their cured form. Numerous such materials are available commercially, and include polyurethane resins, epoxy resins, polyacrylate resins, and mixtures thereof. One such material has a composition range, by weight, of:

10-25%	Polyurethane resin;
1-25%	Epoxy resin;
1-20%	Polyacrylate resin; and
1-10%	Photoinitiators and stabilizers.

[0013] Turning to the metal foil or film layer 20, there are numerous commercially-available products that are suitable for use in the present invention. These products generally comprise a metallic film deposited on a plastic sheet (also referred to as a "metallized plastic sheet"). Such products are available in a number of metallic colors, including silver and gold, in multicolored forms, or in a holographic-finished form. Aluminum is the metal most commonly-available on plastic sheet, with polyethylene terephthalate (PET) being among the most commonly-used plastics. The metal films may have thicknesses in the range of 10-1000 nm, more typically 50-100 nm for aluminum. These thicknesses are sometimes expressed in the angstrom units (A), in which 1 nm equals 10 A. At such thicknesses, the metallic film can readily be transferred intact onto an adhesive surface, such as that of UV adhesive layer 18 by simple contact between the film and the adhesive. The resulting foil or film layer 20 is typically porous (i.e., there are very small gaps between metallic particles), but it appears to be solid in the appliqué, and may be highly reflective. Because the metallic film is porous and so thin, it may deform (e.g., stretch) to some degree without adversely affecting the appearance of the appliqué. There are numerous cold-stamp foils suitable for use with the present invention that will be recognized by those having ordinary skill in the

art and possession of the present disclosure.

[0014] In a method of fabricating a foil appliqué, such as foil appliqué 10, according to an embodiment of the present invention, a laminated sheet of material is prepared having the layered structure desired for the foil appliqué. The sheet is built up in a layer-by-layer fashion on the releasable substrate 12 by a continuous fabrication process. Such a continuous process is discussed in the aforesaid U.S. Patent Application No. 11/126,862 with regard to nail enamel appliqués, and suitable adaptations of this process for use in the present invention will be apparent to those having ordinary skill in the art and possession of the present disclosure.

[0015] Using foil appliqué 10 as a reference, the adhesive layer 14 is deposited directly onto the substrate 12 as a liquid or by melting a solid adhesive onto the substrate 12. Suitable means for depositing an adhesive layer onto a surface during a continuous fabrication process are known in the art. The adhesive is allowed to gel or harden, while retaining its tackiness, before the next layer (i.e., base coat 16) is applied.

[0016] Turning to base coat 16, nail enamel is applied directly to the adhesive layer 14, so as to cover the adhesive layer 14, and form a smooth surface for subsequent application of the UV adhesive layer 18. Nail enamels containing organic solvents or water may be heated to evaporate a portion of the solvents or water, thus partially curing the base coat 16. The evaporation step may also be performed at room temperature, depending on the composition of the nail enamel used and the thickness of the base coat 16. The temperature and dwell time for this process are a matter of engineering choice, as they should be coordinated with the overall process rate and the desired quality of the final product. In embodiments of the present invention, a portion of the solvent or water is allowed to remain in the enamel (i.e., the enamel is "partially-cured"), so that the base coat 16 has a desired degree of stretchability. If a UV-curable nail enamel is used, a heating step may not be needed, since the typical UV-curable enamel typically would not contain solvents or water. Instead, the enamel would be exposed to UV radiation to initiate the curing process. The duration and intensity of the exposure would depend on the formulation of the nail enamel, and would be understood by those knowledgeable in the relevant chemical art, or could be selected according to instructions provided by the manufacturer of the nail enamel.

[0017] Turning to the UV adhesive layer 18 and foil layer 20, the UV-curable mixture is applied to the surface of the base coat 16. In some embodiments of the present invention, the UV-curable mixture is not exposed to UV radiation until after the foil layer 20 is applied. In such an embodiment of the present invention, the metallic surface of a roll of metallized plastic sheet is put in contact with the UV-curable mixture using methods known in various arts (e.g., in continuous contact printing). The foil adheres to the UV-curable mixture in a porous layer and separates from the plastic sheet. This "cold stamping" process, which may be performed at room temperature, has advantages over the "hot stamping" process that is commonly used. Hot stamping requires that application of heat to the foil, which would heat the entire multilayered structure, causing the lower layers of the appliqué to dry out and, possibly, disrupting them. The hot stamping method also requires a die to transfer heat to the appliqué. Such dies often must be specially made. Neither a die nor the application of damaging degrees of heat are required for the cold stamping method used in embodiments of the present invention.

[0018] After the foil layer 20 is applied, the UV-curable mixture is exposed to UV radiation through the porous metallic foil to initiate the curing process. As discussed with respect to the UV nail enamel of some embodiments of base coat 16, the duration and intensity of the exposure would depend on the formulation of the UV-curable mixture, and would be understood by those knowledgeable in the relevant chemical art, or could be selected according to instructions provided by the manufacturer of the adhesive.

[0019] Turning to top coat 22, nail enamel is applied directly over the foil layer 20, so as to cover the foil layer 20 and the UV adhesive layer 18. The top coat 22 can include a single layer or multiple layers of nail enamel. Nail enamels containing organic solvents or water may be heated to evaporate a portion of the solvents or water, thus partially curing the top coat 22. The evaporation step may also be performed at room temperature, depending on the composition of the nail enamel used and the thickness of the top coat 22. As with the base coat 16, the temperature and dwell time for this process are a matter of engineering choice, as they should be coordinated with the overall process rate and the desired quality of the final product. In embodiments of the present invention, a portion of the solvent or water is allowed to remain in the enamel (i.e., the enamel is "partially-cured"), so that the top coat 16 has a desired degree of stretchability. If a UV-curable nail enamel is used, a heating step may not be needed, since the typical UV-curable enamel typically would not contain solvents or water. Instead, the enamel would be exposed to UV radiation to initiate the curing process. The duration and intensity of the exposure would depend on the formulation of the nail enamel, and would be understood by those knowledgeable in the relevant chemical art, or could be selected according to instructions provided by the manufacturer of the nail enamel.

[0020] When the top coat 22 of the foil appliqué has been partially-cured, sets of foil appliqués on the substrate 12 are cut from the laminated sheet. FIG. 2 is a schematic top plan view of an exemplary set 24 of foil appliqués made according to the foregoing method. Each set 24 may include appliqués of different sizes, such as appliqués 26, 28, 30, 32, 34, to accommodate nails of different sizes. In some embodiments, the appliqués 26, 28, 30, 32, 34 are integrated with a connector 36.

[0021] In some of the embodiments of the invention

discussed above, the laminated sheet, and thus the foil appliqués, includes a small amount of solvent to keep the appliqués stretchable until they are used. Thus, the appliqué set 24 is sealed inside a package (not shown) that includes a vapor barrier to prevent the loss of solvent from the appliqués.

[0022] To use the foil appliqué, the user opens the package and removes the desired appliqué 26, 28, 30, 32, 34 from the connector 36. The user separates the appliqué from its substrate, and applies the adhesive layer 14 (see FIG. 1) to the nail. The user then stretches the appliqué to cover the nail, removes any excess appliqué overhanging the nail, and trims the appliqué to match the end of the nail (e.g., using a nail file). Body heat from the finger or toe completes the curing process, hardening the appliqué. Since the finished appliqué, as provided in the package, is thin (e.g., about 3.5-5.5 mil, or about 0.10-0.15 mm in overall thickness), the residual solvent can evaporate quickly (e.g., in less than an hour, depending on the user's body temperature and environmental conditions). The hardened appliqué can be detached from the nail using conventional nail polish remover.

[0023] It will be understood that the embodiments described herein are merely exemplary and that a person skilled in the art may make many variations and modifications without departing from the scope of the invention. All such variations and modifications are intended to be included within the scope of the invention, as embodied in the appended claims.

Claims

1. A self-adhesive nail appliqué (10), comprising:

- a first adhesive layer (14);
- a partially-cured base coat 16 on said first adhesive layer (14); a second adhesive layer (18) on said base coat (16) opposite said first adhesive layer (14);
- a metallic foil layer (20) on said second adhesive layer (18) opposite said second base coat (16); and
- a partially-cured top coat (22) on said metallic foil layer (20) opposite said second adhesive layer (18).

2. The nail appliqué (10) of claim 1, wherein said second adhesive layer (18) is cured by exposure to ultraviolet radiation.

3. The nail appliqué (10) of one of the preceding claims, wherein said nail appliqué (10) is stretchable and said base coat (16), said second adhesive layer (18), and said top coat (22) are stretchable at substantially the same rates as each other.

4. The nail appliqué (10) of one of the preceding claims, wherein said base coat (16), said second adhesive layer (18), and said top coat (22) are coextensive with each other in an uncured state, a partially-cured state, and a cured state.

5. The nail appliqué (10) of one of the preceding claims, wherein said metallic foil layer (20) is a single layer coextensive with said second adhesive layer (18) and said top coat
(22); or wherein said metallic foil layer (20) covers substantially all of the second adhesive layer 18 and is covered by substantially all of said top coat (22); or wherein said metallic foil layer (20) has a thickness in the range of about 10 to about 1000 nm.

6. The nail appliqué (10) of one of claims 1 to 5, wherein said base coat (16) is configured to form a mechanical barrier between said first adhesive layer (14) and said second adhesive layer (18) and to provide a smooth surface to which said second adhesive layer (18) is adhered.

7. The nail appliqué (10) of one of the preceding claims, wherein said second adhesive layer (18) includes a polyurethane resin, an epoxy resin, and a polyacetate resin
or wherein each of said base coat (16) and said top coat (22) includes nail enamel.

8. The nail appliqué (10) of one of the preceding claims, wherein said nail appliqué (10) has a thickness in the range of about 0.10 mm to about 0.15 mm.

9. The nail appliqué (10) of one of the preceding claims, further comprising a substrate (12), said first adhesive layer (14) being releasably adhered to said substrate (12).

10. A method of manufacturing a self-adhesive nail appliqué (10), comprising the steps of:

- forming a first adhesive layer (14);
- forming a partially-cured base coat (16) on the first adhesive layer (14);
- forming a second adhesive layer (18) on the base coat (16) opposite the first adhesive layer (14);
- forming a metallic foil layer (20) on the second adhesive layer (18) opposite the base coat (16); and
- forming a partially-cured top coat (22) on the metallic foil layer (20) opposite the second adhesive layer (18).

11. The method of claim 10, wherein said step of forming the second adhesive layer (18) includes the steps of applying an adhesive curable by exposure to ultraviolet radiation to the base coat (16), and exposing

the adhesive to ultraviolet radiation after the step of forming the metallic foil layer (20).

12. The method of claims 10 or 11, wherein said step of forming a partially-cured base coat (16) includes the steps of applying a first nail enamel having a first solvent to the first adhesive layer (14), and evaporating a portion of the first solvent such that said base coat (16) is stretchable
or wherein said step of forming a partially-cured top coat (22) includes the steps of applying a second nail enamel having a second solvent to the metallic foil layer (20), and evaporating a portion of the second solvent such that said top coat (22) is stretchable.

13. The method of any of claims 10 to 12, wherein said step of forming a metallic foil (20) on the second adhesive layer (18) includes the steps of providing a substrate having a metallic foil 20 thereupon, the metal foil (20) having a thickness in the range of about 0 nm to about 1000 nm, contacting the metal foil (20) with the second adhesive layer (18), and retracting the substrate such that the metallic foil (20) adheres to the second adhesive layer (18) and separates from the substrate.

14. The method of any of claims 10 to 13, wherein the first adhesive layer (14) is formed on a releasable substrate (12) by said step of forming a first adhesive layer (14), said method including the further steps of removing the nail appliqué (10) from the substrate (12), applying the first adhesive layer (14) to a nail of a user, stretching the nail appliqué (10) to cover the nail, and further curing the base coat (16) and top coat (22) with the body heat of the user, thereby hardening the nail appliqué (10).

15. The method of claim 14, wherein the base coat (16), the second adhesive layer (18), and the top coat (22) stretch at substantially the same rate
or wherein the base coat (16), the second adhesive layer (18), and the top coat (22) shrink by substantially the same amount during the further curing step, so as to inhibit the foil layer (20) from wrinkling.

Patentansprüche

1. Selbsthaftende Nagelapplikation (10), welche Folgendes aufweist:

- eine erste haftende Lage (14);
- eine teilweise gehärtete Basisschicht (16) auf der ersten haftenden Lage (14);
- eine zweite haftende Lage (18) auf der Basisschicht (16), und zwar gegenüberliegend zu der ersten haftenden Lage (14);
- eine Metallfolienlage (20) auf der zweiten haftenden Lage (18), und zwar gegenüberliegend zu der zweiten Basisschicht (16); und
- eine teilweise gehärtete Deckschicht (22) auf der Metallfolienlage (20), und zwar gegenüberliegend zu der zweiten haftenden Lage (18).

2. Nagelapplikation (10) nach Anspruch 1,
wobei die zweite haftende Lage (18) mittels Aussetzung ultravioletter Strahlung gehärtet ist.

3. Nagelapplikation (10) nach einem der vorhergehenden Ansprüche, wobei die Nagelapplikation (10) dehnbar ist und die Basisschicht (16), die zweite haftende Lage (18) und die Deckschicht (22) im Wesentlichen zu gleichen Anteilen zueinander dehnbar sind.

4. Nagelapplikation (10) nach einem der vorhergehenden Ansprüche, wobei die Basisschicht (16), die zweite haftende Lage (18), und die Deckschicht (22) in einem ungehärteten Zustand, einem teilweise gehärteten Zustand, und einem gehärteten Zustand koextensiv zueinander sind.

5. Nagelapplikation (10) nach einem der vorhergehenden Ansprüche, wobei die Metallfolienlage (20) eine einzelne Lage ist, welche koextensiv zu der zweiten haftenden Lage (18) und der Deckschicht (22) ist; oder wobei die Metallfolienlage (20) im Wesentlichen die gesamte zweite haftende Lage (18) bedeckt und mittels der Deckschicht (22) im Wesentlichen vollständig bedeckt ist;
oder wobei die Metallfolienlage (20) eine Dicke im Bereich von etwa 10 bis etwa 1000 nm aufweist.

6. Nagelapplikation (10) nach einem der Ansprüche 1 bis 5,
wobei die Basisschicht (16) dazu ausgebildet ist, eine mechanische Barriere zwischen der ersten haftenden Lage (14) und der zweiten haftenden Lage (18) auszubilden und eine ebene Oberfläche bereitzustellen, an welcher die zweite haftende Lage (18) haftet.

7. Nagelapplikation (10) nach einem der vorhergehenden Ansprüche, wobei die zweite haftende Lage (18) ein Polyurethanharz, ein Epoxidharz, und ein Polyacetatharz aufweist,
oder wobei jede Schicht von der Basisschicht (16) und der Deckschicht (22) Nagellack aufweist.

8. Nagelapplikation (10) nach einem der vorhergehenden Ansprüche, wobei die Nagelapplikation (10) eine Dicke in einem Bereich von etwa 0,10 mm bis etwa 0,15 mm aufweist.

9. Nagelapplikation (10) nach einem der vorhergehen-

den Ansprüche, welche ferner ein Substrat (12) aufweist, wobei die erste haftende Lage (14) lösbar an dem Substrat (12) haftet.

10. Verfahren zum Herstellen einer selbsthaftenden Nagelapplikation (10), welches folgende Schritte aufweist:

- Ausbilden einer ersten haftenden Lage (14);
- Ausbilden einer teilweise gehärteten Basisschicht (16) auf der ersten haftenden Lage (14);
- Ausbilden einer zweiten haftenden Lage (18) auf der Basisschicht (16), und zwar gegenüberliegend zu der ersten haftenden Lage (14);
- Ausbilden einer Metallfolienlage (20) auf der zweiten haftenden Lage (18), und zwar gegenüberliegend zu der Basisschicht (16); und
- Ausbilden einer teilweise gehärteten Deckschicht (22) auf der Metallschichtlage (20), und zwar gegenüberliegend zu der zweiten haftenden Lage (18).

11. Verfahren nach Anspruch 10,
wobei der Verfahrensschritt des Ausbildens der zweiten haftenden Lage (18) folgende Schritte aufweist:

- Applizieren eines Haftmittels auf die Basisschicht (16), welcher mittels Aussetzung ultravioletter Strahlung härtbar ist, und
- Aussetzen des Haftmittels ultravioletter Strahlung, und zwar nach dem Verfahrensschritt des Ausbildens der Metallfolienlage (20).

12. Verfahren nach Anspruch 10 oder 11,
wobei der Verfahrensschritt des Ausbildens der teilweise gehärteten Basisschicht (16) folgende Schritte aufweist: Applizieren eines ersten Nagellacks auf die erste haftende Lage (14), wobei der Nagellack ein erstes Lösungsmittel aufweist, und Verdampfen eines Teils des ersten Lösungsmittels derart, dass die Basisschicht (16) dehnbar ist,
oder wobei der Verfahrensschritt des Ausbildens der teilweise gehärteten Deckschicht (22) folgende Schritte aufweist: Applizieren eines zweiten Nagellacks auf die Metallfolienlage (20), wobei der zweite Nagellack ein zweites Lösungsmittel aufweist, und Verdampfen eines Teils des zweiten Lösungsmittels derart, dass die Deckschicht (22) dehnbar ist.

13. Verfahren nach einem der Ansprüche 10 bis 12,
wobei der Verfahrensschritt des Ausbildens der Metallfolie (20) auf der zweiten haftenden Lage (18) folgende Schritte aufweist: Bereitstellen eines Substrats, welches eine Metallfolie (20) darauf aufweist, wobei die Metallfolie (20) eine Dicke in einem Bereich von etwa 0 nm bis etwa 1000 nm aufweist, In-Kontakt-kommen der Metallfolie (20) mit der zweiten haftenden Lage (18), und Zurückziehen des Substrats derart, dass die Metallfolie (20) an der zweiten haftenden Lage (18) haftet und sich von dem Substrat trennt.

14. Verfahren nach einem der Ansprüche 10 bis 13,
wobei die erste haftende Lage (14) auf einem lösbaren Substrat (12) ausgebildet ist, und zwar mittels des Verfahrensschritts des Ausbildens der ersten haftenden Lage (14), wobei das Verfahren ferner folgende Schritte aufweist: Entfernen der Nagelapplikation (10) von dem Substrat (12), Applizieren der ersten haftenden Lage (14) auf einen Nagel eines Anwenders, Dehnen der Nagelapplikation (10), um den Nagel abzudecken, und weiteres Härten der Basisschicht (16) und der Deckschicht (22), und zwar mit der Körperwärme des Anwenders, so dass die Nagelapplikation (10) härtet.

15. Verfahren nach Anspruch 14,
wobei die Basisschicht (16), die zweite haftende Lage (18), und die Deckschicht (22) sich im Wesentlichen zu gleichen Anteil ausdehnen, oder wobei die Basisschicht (16), die zweite haftende Lage (18), und die Deckschicht (22) im Wesentlichen zu gleichen Anteilen schrumpfen, und zwar derart während des Verfahrensschritts des weiteren Härtens, dass eine Faltenbildung der Folienlage (20) verhindert wird.

Revendications

1. Appliqué auto-adhésif pour ongles (10), comprenant:

- une première couche adhésive (14);
- un revêtement de base (16) partiellement durci sur ladite première couche adhésive (14);
- une seconde couche adhésive (18) sur ledit revêtement de base (16) à l'opposé de ladite première couche adhésive (14);
- une couche de feuille métallique (20) sur ladite seconde couche adhésive (18) à l'opposé dudit second revêtement de base (16); et
- un revêtement de dessus (22) partiellement durci sur ladite couche de feuille métallique (20) à l'opposé de ladite seconde couche adhésive (18).

2. Appliqué pour ongles (10) selon la revendication 1, dans lequel ladite seconde couche adhésive (18) est durcie par exposition au rayonnement ultraviolet.

3. Appliqué pour ongles (10) selon l'une des revendications précédentes, dans lequel ledit appliqué pour ongles (10) est susceptible d'être étiré et ledit revêtement de base (16), ladite seconde couche adhé-

sive (18) est ledit revêtement de dessus (22) sont susceptibles d'être étirés sensiblement aux mêmes proportions les uns que les autres.

4. Appliqué pour ongles (10) selon l'une des revendications précédentes, dans lequel ledit revêtement de base (16), ladite seconde couche adhésive (18), et ledit revêtement de dessus (22) présentent la même extension les uns que les autres dans un état non durci, dans un état partiellement durci, et dans un état durci.

5. Appliqué pour ongles (10) selon l'une des revendications précédentes, dans lequel ladite couche de feuille métallique (20) est une couche unique présentant la même extension que ladite seconde couche adhésive (18) et que ledit revêtement de dessus (22); ou dans lequel ladite couche de feuille métallique (20) couvre sensiblement toute la seconde couche adhésive (18) et est couverte sensiblement par tout ledit revêtement de dessus (22); ou dans lequel ladite couche de feuille métallique (20) a une épaisseur dans la plage d'environ 10 à environ 1000 nm.

6. Appliqué pour ongles (10) selon l'une des revendications 1 à 5,
dans lequel ledit revêtement de base (16) est configuré pour former une barrière mécanique entre ladite première couche adhésive (14) et ladite seconde couche adhésive (18) et pour présenter une surface lisse sur laquelle ladite seconde couche adhésive (18) est adhérée.

7. Appliqué pour ongles (10) selon l'une des revendications précédentes, dans lequel ladite seconde couche adhésive (18) inclut une résine polyuréthane, une résine époxy, et une résine polyacétate, ou dans lequel chacun dudit revêtement de base (16) et dudit revêtement de dessus (22) inclut un vernis à ongles.

8. Appliqué pour ongles (10) selon l'une des revendications précédentes, dans lequel ledit appliqué pour ongles (10) a une épaisseur dans la plage d'environ 0,10 mm à environ 0,15 mm.

9. Appliqué pour ongles (10) selon l'une des revendications précédentes, comprenant en outre un substrat (12), ladite première couche adhésive (14) étant adhérée de façon détachable sur ledit substrat (12).

10. Procédé de fabrication d'un appliqué auto-adhésif pour ongles (10), comprenant les étapes consistant à:

- former une première couche adhésive (14);
- former un revêtement de base (16) partiellement durci sur la première couche adhésive (14);
- former une seconde couche adhésive (18) sur le revêtement de base (16) à l'opposé de la première couche adhésive (14);
- former une couche de feuille métallique (20) sur la seconde couche adhésive (18) à l'opposé du revêtement de base (16); et
- former un revêtement de dessus (22) partiellement durci sur la couche de feuille métallique (20) à l'opposé de la seconde couche adhésive (18).

11. Procédé selon la revendication 10,
dans lequel ladite étape consistant à former la seconde couche adhésive (18) inclut les étapes consistant à appliquer un adhésif durcissable par exposition au rayonnement ultraviolet sur le revêtement de base (16), et à exposer l'adhésif à un rayonnement ultraviolet après l'étape de formation de la couche de feuille métallique (20).

12. Procédé selon les revendications 10 ou 11,
dans lequel ladite étape consistant à former un revêtement de base (16) partiellement durci inclut les étapes consistant à appliquer un premier vernis à ongles ayant un premier solvant sur la première couche adhésive (14), et à faire évaporer une portion du premier solvant de telle façon que ledit revêtement de base (16) est étirable, ou dans lequel ladite étape consistant à former un revêtement de dessus (22) partiellement durci inclut les étapes consistant à appliquer un second vernis à ongles ayant un second solvant sur la couche de feuille métallique (20), et à faire évaporer une portion du second solvant de telle façon que ledit revêtement de dessus (22) est étirable.

13. Procédé selon l'une quelconque des revendications 10 à 12,
dans lequel ladite étape consistant à former une feuille métallique (20) sur la seconde couche adhésive (18) inclut les étapes consistant à prévoir un substrat ayant une feuille métallique (20) sur lui-même, la feuille métallique (20) ayant une épaisseur dans la plage d'environ 0 nm à environ 1000 nm, à mettre en contact de la feuille métallique (20) avec la seconde couche adhésive (18), et à faire rétracter le substrat de telle façon que la feuille métallique (20) adhère à la seconde couche adhésive (18) et se sépare du substrat.

14. Procédé selon l'une quelconque des revendications 10 à 13,
dans lequel la première couche adhésive (14) est formée sur un substrat (12) susceptible d'être libéré, par ladite étape de formation d'une première couche adhésive (14), ledit procédé incluant les autres étapes consistant à supprimer l'appliqué pour ongles

(10) depuis le substrat (12), à appliquer la première couche adhésive (14) sur un ongle d'un utilisateur, à étirer l'appliqué pour ongles (10) pour couvrir l'ongle, et en outre à faire durcir le revêtement de base (16) et le revêtement de dessus (22) avec la chaleur corporelle de l'utilisateur, faisant ainsi durcir l'appliqué pour ongles (10).

15. Procédé selon la revendication 14, dans lequel le revêtement de base (16), la seconde couche adhésive (18), et le revêtement de dessus (22) s'étirent sensiblement dans les mêmes proportions, ou dans lequel le revêtement de base (16), la seconde couche adhésive (18) et le revêtement de dessus (22) se rétractent sensiblement de la même quantité pendant l'étape de durcissement qui suit, de manière à empêcher à la couche de feuille (20) de se froisser.

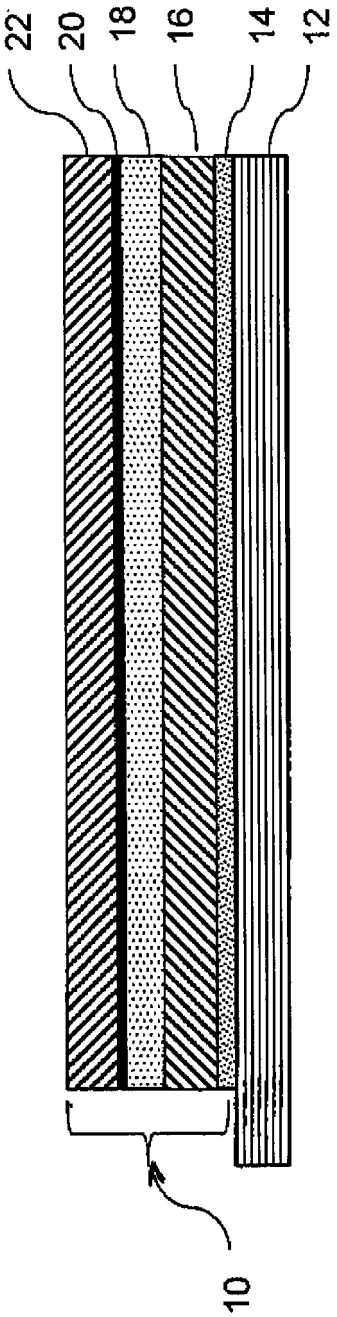

FIG. 1

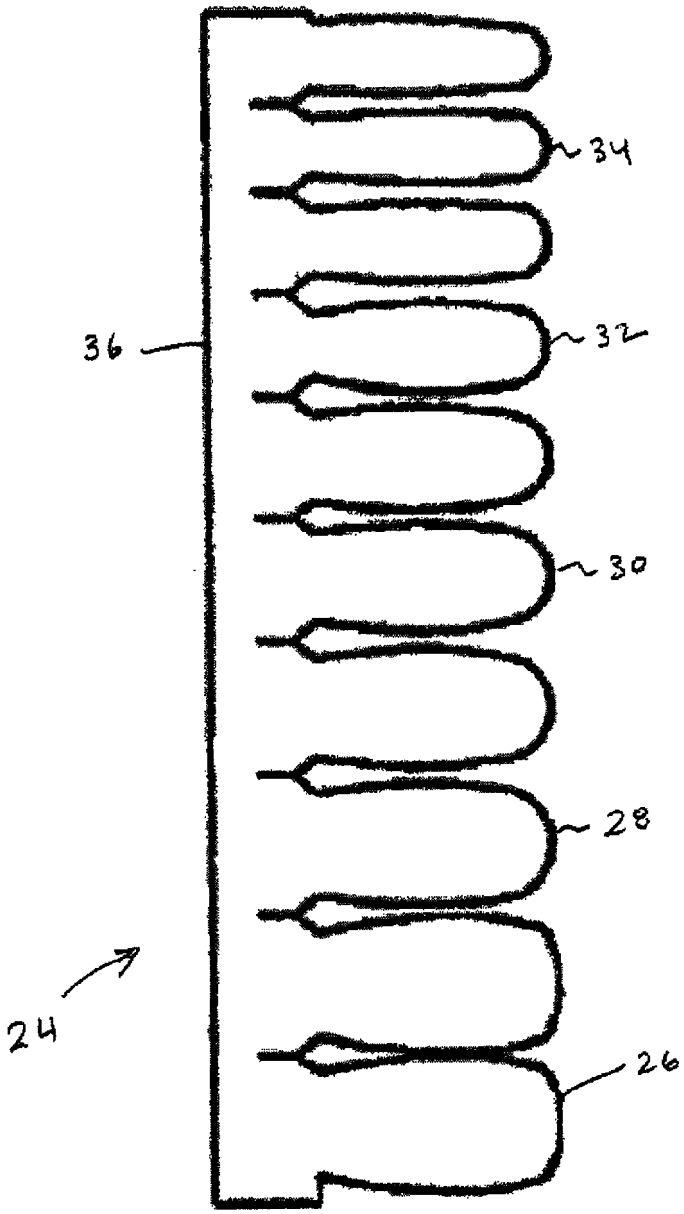

FIG. 2

REFERENCES CITED IN THE DESCRIPTION

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