



(11) **EP 2 960 366 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
15.02.2017 Bulletin 2017/07

(51) Int Cl.:
D06N 3/00 ^(2006.01) **D06N 7/00** ^(2006.01)
A45B 23/00 ^(2006.01)

(21) Application number: **14173986.2**

(22) Date of filing: **25.06.2014**

(54) **Sunshade and method of preparing a canopy**

Sonnenblende und Verfahren zur Herstellung einer Überdachung

Pare-soleil et procédé de préparation d'un auvent

(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

(43) Date of publication of application:
30.12.2015 Bulletin 2015/53

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Description**BACKGROUND**

[0001] This invention relates to a method of preparing a canopy, more particularly to a sunshade with a canopy which includes a light-transmissible fabric sheet of undyed yarns and an opaque enamel coating.

[0002] A conventional method for preparing a canopy of a sunshade with waterproof and sunshade functions includes a step of coating a waterproof coating material on a fabric sheet of dyed yarns.

[0003] Formation of the dyed yarns involves immersing undyed yarns into a dyeing bath. During the dyeing process, dye enters an interior of each fiber of the undyed yarns so as to impart an opaque property to the dyed yarns. The preparation of the canopy requires the dyeing of the undyed yarns and the coating of the waterproof coating material to be processed separately, which complicates the process of preparing the canopy. Moreover, the dyeing process results in generation of a considerable amount of dyeing waste water, which is difficult to be disposed of.

[0004] Therefore, an object of the present invention is to provide a method of preparing the canopy of a sunshade that can overcome the aforesaid drawbacks associated with the prior art.

Each of EP0913518, EP0807708, EP0410055 and US2006/003650 discloses a method of preparing a canopy as set forth in the pre-characterizing portion of the accompanying claim 1.

SUMMARY OF THE INVENTION

[0005] The present invention is applicable to a sunshade comprising: a support frame and a canopy. The canopy is connected to the support frame and includes a light-transmissible fabric sheet of undyed yarns and an opaque enamel coating coated on at least one side of the light-transmissible fabric sheet. The undyed yarns are woven and cross one another to form fabric pores thereamong. The opaque enamel coating fills the fabric pores.

[0006] According to an aspect of this invention, there is provided a method of preparing a canopy as set forth in the accompanying claim 1. The method comprises: providing a light-transmissible fabric sheet of undyed yarns; coating an enamel composition on at least one side of the light-transmissible fabric sheet to form an opaque enamel coating on the light-transmissible fabric sheet; drying the opaque enamel coating; and dipping the light-transmissible fabric sheet coated with the opaque enamel coating into a hot water bath before drying the opaque enamel coating, followed by dipping the light-transmissible fabric sheet coated with the opaque enamel coating into a cold water bath.

The temperature of the hot water bath ranges from 100 to 120°C, and the temperature of the cold water bath

ranges from 30 to 50°C.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Fig. 1 discloses a partly sectional view of a sunshade prepared according to the method of the present invention;

Fig. 2 discloses a sectional view of a canopy of the sunshade disclosed in Fig. 1;

Fig. 3 is an enlarged schematic view of a light-transmissible fabric sheet of the canopy used in the method of the present invention;

Fig. 4 discloses a sectional view of an alternative application of the present invention to the canopy of the sunshade;

Fig. 5 discloses a sectional view of a further alternative application of the present invention to the canopy of the sunshade;

Fig. 6 is a flow chart of consecutive steps of a method for preparing a canopy of the prior art and

Fig. 7 is a schematic view of a processing system that can be used in the method of preparing the canopy of the present invention.

[0008] Before the present invention is described in greater detail with reference to the accompanying disclosures, it should be noted herein that like elements are denoted by the same reference numerals throughout the disclosure.

DETAILED DESCRIPTION

[0009] Figs. 1, 2 and 3 disclose a sunshade prepared according to the method of the present invention. The sunshade includes a support frame 1 and a canopy 2 connected to the support frame 1. The structure and shape of the support frame 1 are not limited. The sunshade may be portable, such as an umbrella, or fixed, such as a garden sunshade.

[0010] The canopy 2 includes a light-transmissible fabric sheet 21 of undyed yarns and an opaque enamel coating 22 coated on one side of the light-transmissible fabric sheet 21.

[0011] Preferably, the light-transmissible fabric sheet 21 is a woven fabric. The undyed yarns are woven and cross one another to form fabric pores 211 thereamong. The opaque enamel coating 22 fills the fabric pores 211, and covers sealingly the undyed yarns at said one side of the light-transmissible fabric sheet 21, so that said one side of the light-transmissible fabric sheet 21 is waterproof and opaque.

[0012] Preferably, the opaque enamel coating 22 includes a pigment and polyurethane-acrylic polymer. More preferably, the opaque enamel coating 22 includes hexamethylene diisocyanate (HDI).

[0013] The undyed yarns are preferably made from a

material selected from the group consisting of polyvinyl chloride, polyurethane, aliphatic diisocyanate, and combinations thereof. Aliphatic diisocyanate may be hexamethylene diisocyanate (HDI). More preferably, the undyed yarns are made from HDI.

[0014] Fig. 4 illustrates a second sunshade prepared according to the method of the present invention. The second sunshade (Fig.4) differs from the first sunshade (Fig.1) in that said one side of the light-transmissible fabric sheet 21 is coated with two different opaque enamel coatings 22, 23 at two different regions, respectively. Compositions of the opaque enamel coatings 22, 23 are different, so that the two different regions of the light-transmissible fabric sheet 1 have different colors and/or properties.

[0015] Fig. 5 illustrates a third sunshade prepared according to the method of the present invention. The third sunshade (Fig.5) differs from the second sunshade (Fig.4) in that the two opaque enamel coatings 22, 23 are coated on two opposite sides of the light-transmissible fabric sheet 21, respectively.

[0016] Fig. 6 illustrates consecutive steps of a method for preparing a canopy of the prior art.

[0017] The method includes the steps of: providing a light-transmissible fabric sheet 21 of undyed yarns (step 71) ; coating an enamel composition 20 on at least one side of the light-transmissible fabric sheet 21 to form an opaque enamel coating 22 on the light-transmissible fabric sheet 21 (step 72); and drying the opaque enamel coating 22 (step 73).

[0018] Fig. 7 illustrates a processing system that can be used in the method shown in Fig. 6. As shown in Figs. 6 and 7, in step 71, a supply reel 41 is provided for supplying the light-transmissible fabric sheet 21 to undergo subsequent coating and drying operations. The enamel composition 20 is stored in a tank 24. When conducting coating of step 72, the enamel composition 20 is guided to one side of the light-transmissible fabric sheet 21 using a die head 25, followed by spreading the enamel composition 20 using a scraper 26 so that the opaque enamel coating 22 is uniformly coated on the light-transmissible fabric sheet 21. In step 73, a dryer 3 is provided for drying the opaque enamel coating 22 on the continuous light-transmissible fabric sheet 21 processed by the scraper 26 so as to obtain the canopy 2. A pickup reel 42 is provided for collecting the canopy 2 thus obtained.

[0019] Preferably, the enamel composition 20 includes a pigment, polyurethane-acrylic polymer, and a solvent. Based on the total weight of the enamel composition 20, the pigment is in an amount ranging from 12 to 17 wt%, the polyurethane-acrylic polymer is in an amount ranging from 40 to 60 wt%, and the solvent is in an amount ranging from 20 to 40 wt%. More preferably, the amount of the pigment is 15 wt%, the amount of the polyurethane-acrylic polymer is 50 wt%, and the amount of the solvent is 35 wt%.

[0020] Examples of the solvent are dimethylformamide (DMF) and toluene.

[0021] Preferably, the enamel composition 20 further includes a cross-linking agent. The cross-linking agent is in an amount ranging from 1 to 4 wt% of the total weight of the enamel composition 20.

[0022] The method of the present invention of preparing the canopy 2 further includes dipping the light-transmissible fabric sheet 21 coated with the opaque enamel coating 22 into a hot water bath (not shown) to wash away excess opaque enamel coating 22 before drying the opaque enamel coating 22, followed by dipping the light-transmissible fabric sheet 21 coated with the opaque enamel coating 22 into a cold water bath (not shown) to cool and solidify the opaque enamel coating 22. The temperature of the hot water bath ranges from 100 to 120°C, and the temperature of the cold water bath ranges from 30 to 50°C.

[0023] Preferably, drying of the opaque enamel coating 22 is conducted by subjecting the opaque enamel coating 22 on the continuous light-transmissible fabric sheet 21 to a hot air blowing treatment.

[0024] The advantages of the present invention can be summarized as follows. As compared to the method of preparing the conventional canopy, both the opaque and waterproof properties are imparted to the light-transmissible fabric sheet 21 in only one single step, i.e., the step of coating the opaque enamel coating 22 on the light-transmissible fabric sheet 21, and undyed yarns of the light-transmissible fabric sheet 21 are not required to undergo the dyeing process in advance, thereby eliminating the aforesaid problem of generation of dyeing waste water. In addition, the method of the present invention allows coating of the light-transmissible fabric sheet 21 at different regions thereof with different colors of the opaque enamel coatings 22 so as to permit formation of various designs and features on the light-transmissible fabric sheet 1.

Claims

1. A method of preparing a canopy, comprising:

providing a light-transmissible fabric sheet (21) of undyed yarns;

coating an enamel composition (20) on at least one side of the light-transmissible fabric sheet (21) to form an opaque enamel coating (22) on the light-transmissible fabric sheet (21); and drying the opaque enamel coating (22);

characterized in that the method further comprises dipping the light-transmissible fabric sheet (21) coated with the opaque enamel coating (22) into a hot water bath before drying the opaque enamel coating (22), followed by dipping the light-transmissible fabric sheet (21) coated with the opaque enamel coating (22) into a cold water bath, wherein the temperature of the hot water bath

ranges from 100 to 120°C, and the temperature of the cold water bath ranges from 30 to 50°C.

2. The method of claim 1, wherein the enamel composition (20) includes a pigment, polyurethane-acrylic polymer, and a solvent, and, based on the total weight of the enamel composition (20), the pigment is in an amount ranging from 12 to 17 wt%, the polyurethane-acrylic polymer is in an amount ranging from 40 to 60 wt%, and the solvent is in an amount ranging from 20 to 40 wt%.
3. The method of claim 1, wherein drying of the opaque enamel coating (22) is conducted by subjecting the opaque enamel coating (22) to a hot air blowing treatment.

Patentansprüche

1. Verfahren zur Herstellung eines Sonnendachs, wobei dieses folgendes umfasst:

Bereitstellen einer lichtdurchlässigen Stofflage (21) aus ungefärbten Garnen;

Auftragen einer Emailzusammensetzung (20) auf wenigstens eine Seite der lichtdurchlässigen Stofflage (21), so dass ein opaker Emailüberzug (22) auf der lichtdurchlässigen Stofflage (21) gebildet wird; und

Trocknen des opaken Emailüberzugs (22);

dadurch gekennzeichnet, dass das Verfahren ferner folgendes umfasst: das Tauchen der mit dem opaken Emailüberzug (22) überzogenen lichtdurchlässigen Stofflage (21) in ein heißes Wasserbad vor dem Trocknen des opaken Emailüberzugs (22), gefolgt von Tauchen der mit dem opaken Emailüberzug (22) überzogenen lichtdurchlässigen Stofflage (21) in ein kaltes Wasserbad,

wobei die Temperatur des heißen Wasserbads zwischen 100 und 120 °C liegt, und wobei die Temperatur des kalten Wasserbads zwischen 30 und 50 °C liegt.

2. Verfahren nach Anspruch 1, wobei die Emailzusammensetzung (20) ein Pigment, Polyurethanacrylpolymer und ein Lösungsmittel aufweist, und wobei auf der Basis des Gesamtgewichts der Emailzusammensetzung (20) das Pigment in einer Menge von 12 bis 17 Gewichtsprozent, das Polyurethanacrylpolymer in einer Menge von 40 bis 60 Gewichtsprozent und das Lösungsmittel in einer Menge von 20 bis 40 Gewichtsprozent vorhanden ist.
3. Verfahren nach Anspruch 1, wobei das Trocknen des opaken Emailüberzugs (22) ausgeführt wird, indem der opake Emailüberzug (22) einer Heißluft-

blasbehandlung unterzogen wird.

Revendications

1. Procédé de préparation d'un auvent, comprenant les étapes consistant à :

fournir une feuille de tissu léger transmettant la lumière (21) en fils non teints ;

appliquer une composition d'émail (20) sur au moins un côté de la feuille de tissu léger transmettant la lumière (21) pour former un revêtement d'émail opaque (22) sur la feuille de tissu léger transmettant la lumière (21) ;

et faire sécher la couche d'émail opaque (22) ;

caractérisé en ce que le procédé comprend en outre l'étape consistant à tremper la feuille de tissu léger transmettant la lumière (21) recouverte de la couche d'émail opaque (22) dans un bain d'eau chaude avant de faire sécher la couche d'émail opaque (22), suivie par l'étape consistant à tremper la feuille de tissu léger transmettant la lumière (21) recouverte de la couche d'émail opaque (22) dans un bain d'eau froide, la température du bain d'eau chaude étant comprise entre 100 et 120 °C et la température du bain d'eau froide étant comprise entre 30 et 50 °C.

2. Procédé selon la revendication 1, la composition d'émail (20) comprenant un pigment, un polymère polyuréthane-acrylique et un solvant et, en fonction du poids total de la composition d'émail (20), le pigment étant dans une quantité comprise entre 12 et 17 % en poids, le polymère polyuréthane-acrylique étant dans une quantité comprise entre 40 et 60 % en poids, et le solvant étant dans une quantité comprise entre 20 et 40 % en poids.
3. Procédé selon la revendication 1, le séchage de la couche d'émail opaque (22) étant réalisé en soumettant la couche d'émail opaque (22) à un traitement de soufflage d'air chaud.

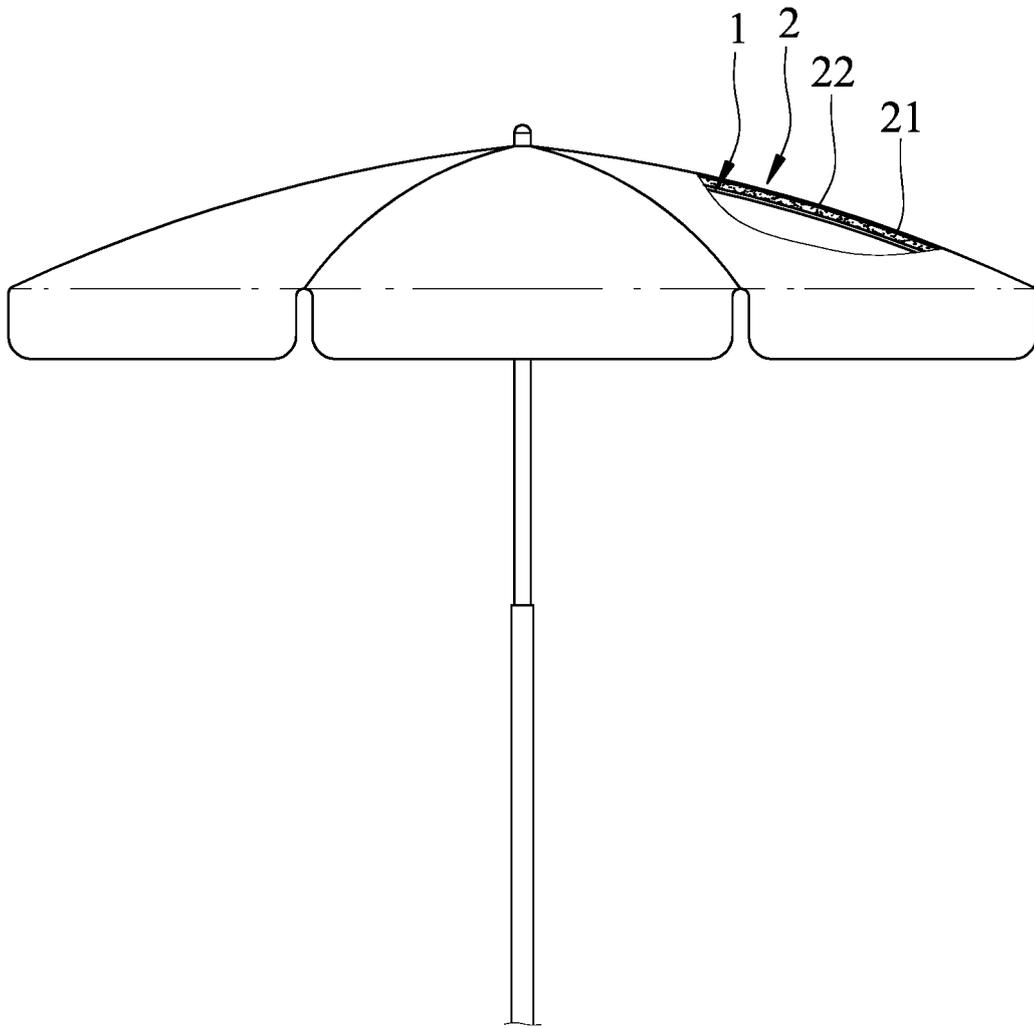


FIG.1

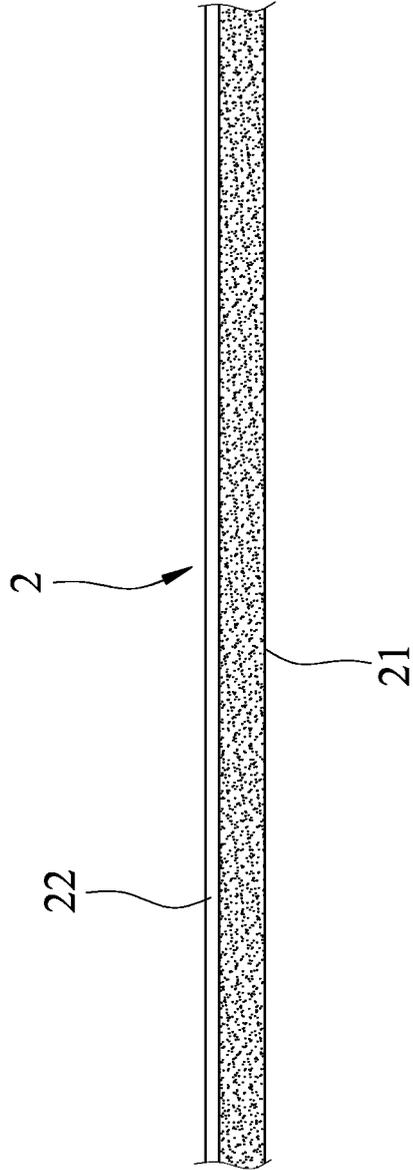


FIG.2

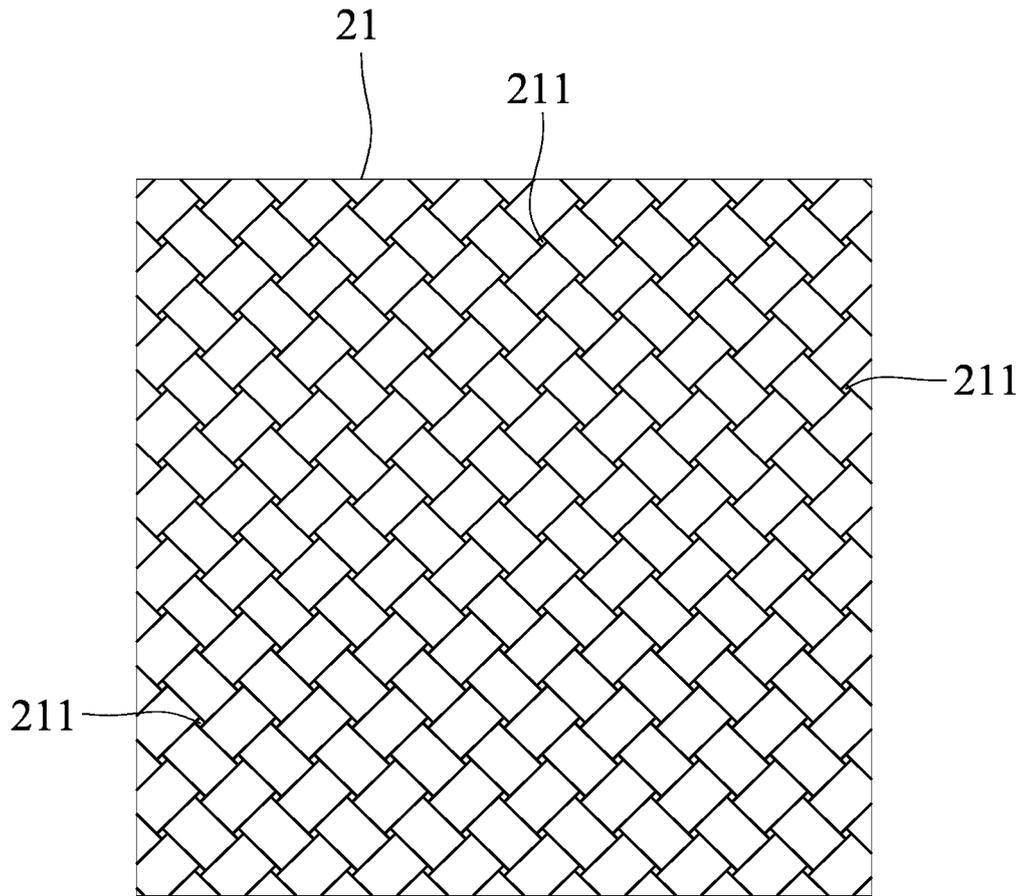


FIG.3

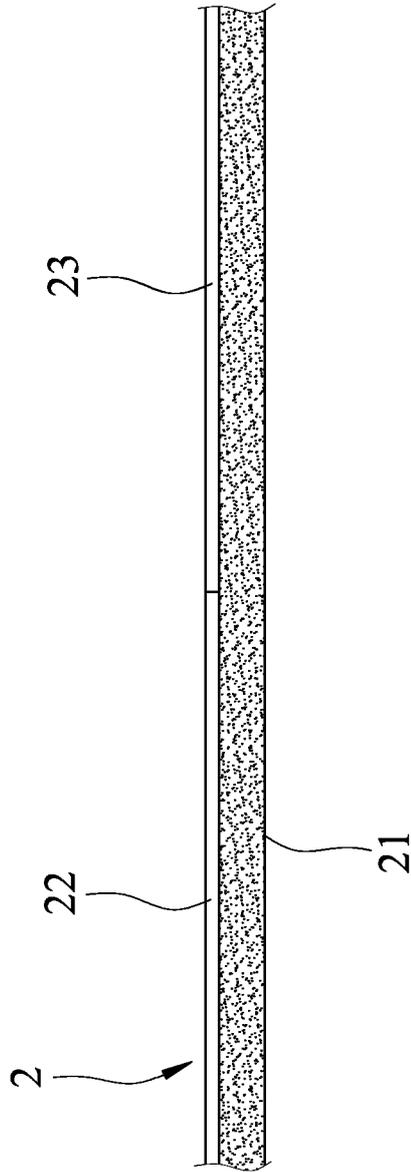


FIG.4

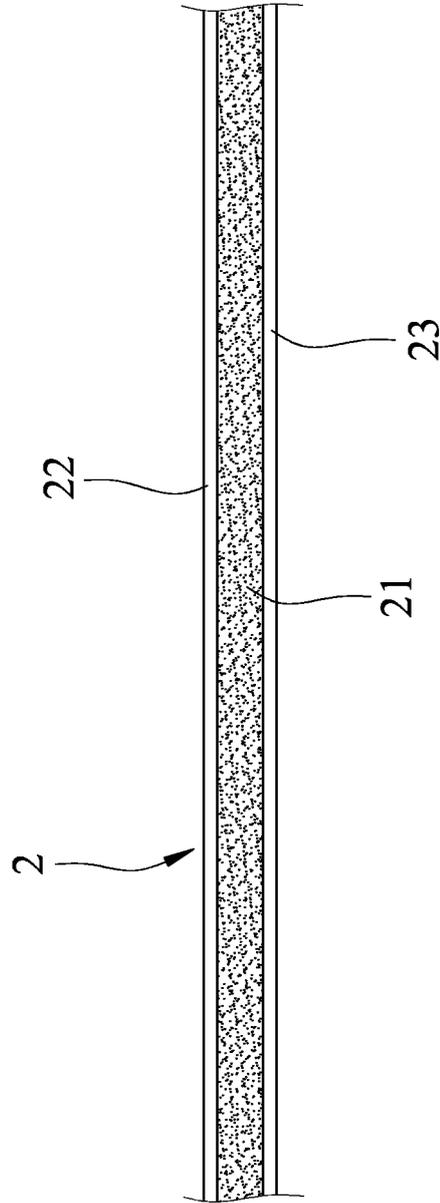


FIG.5

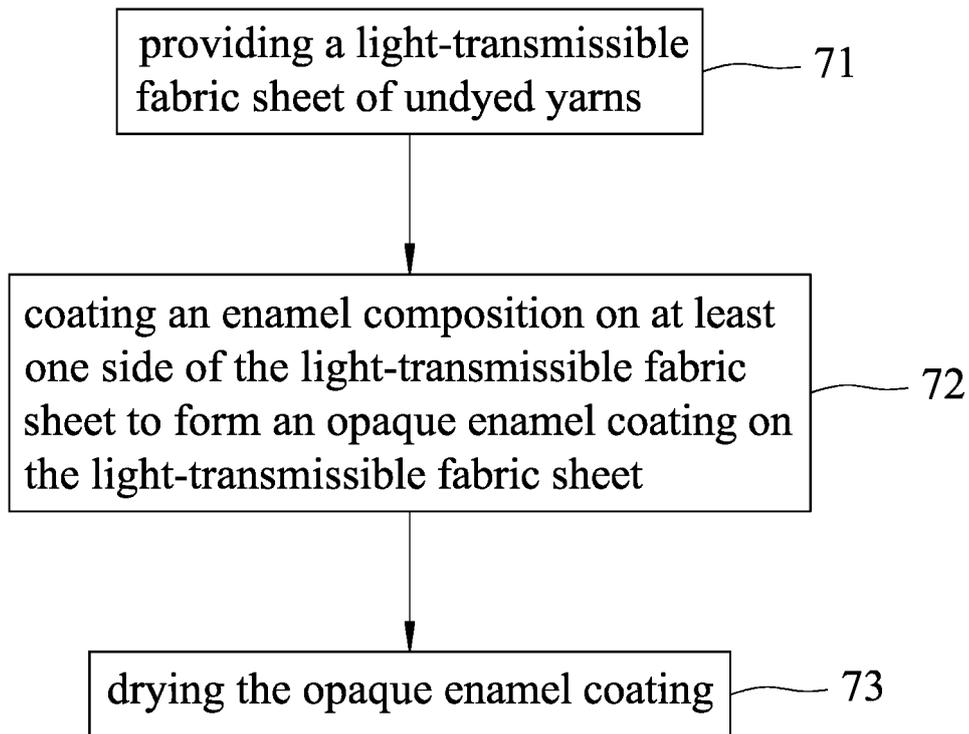


FIG.6

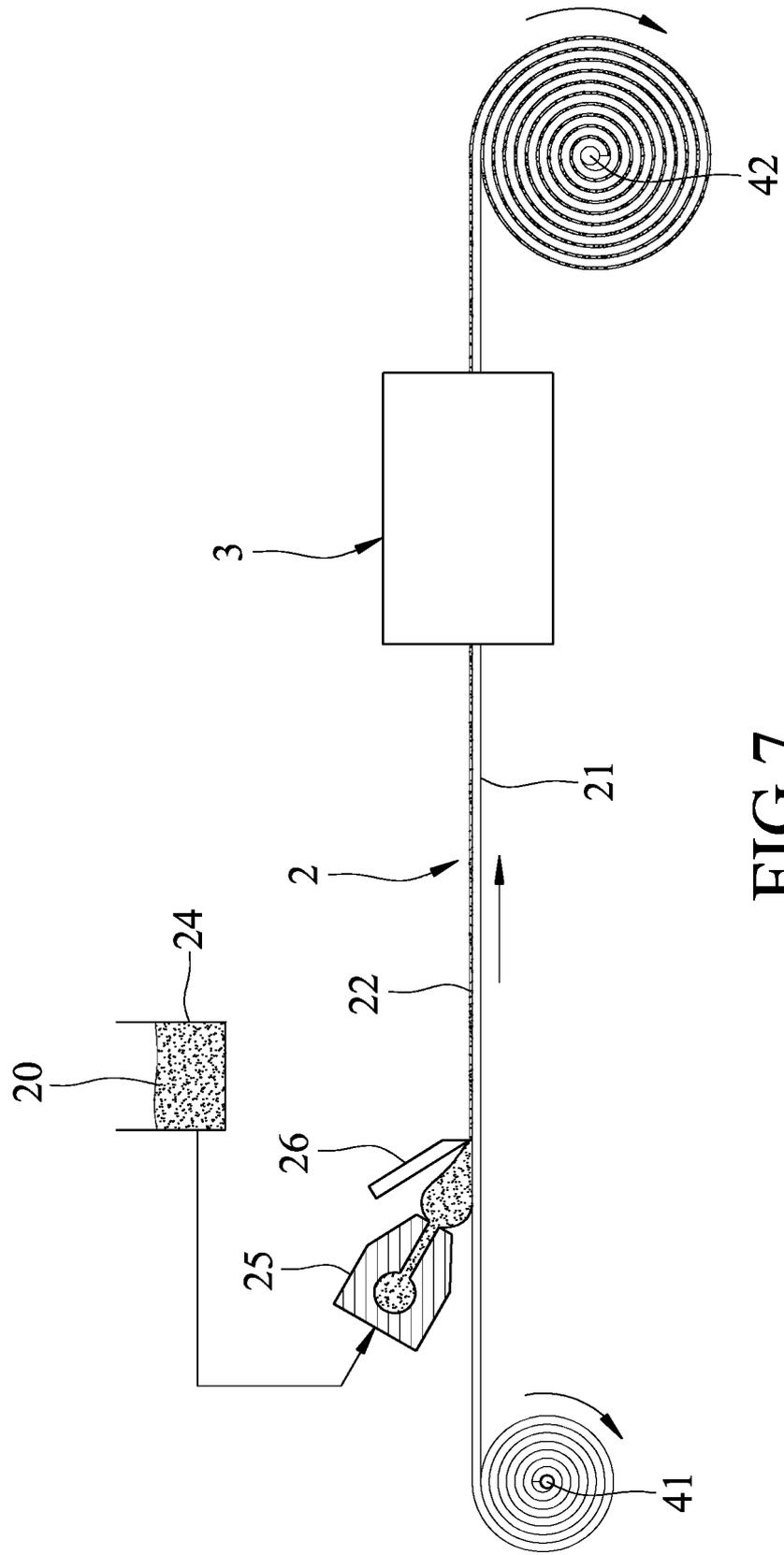


FIG.7

REFERENCES CITED IN THE DESCRIPTION

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