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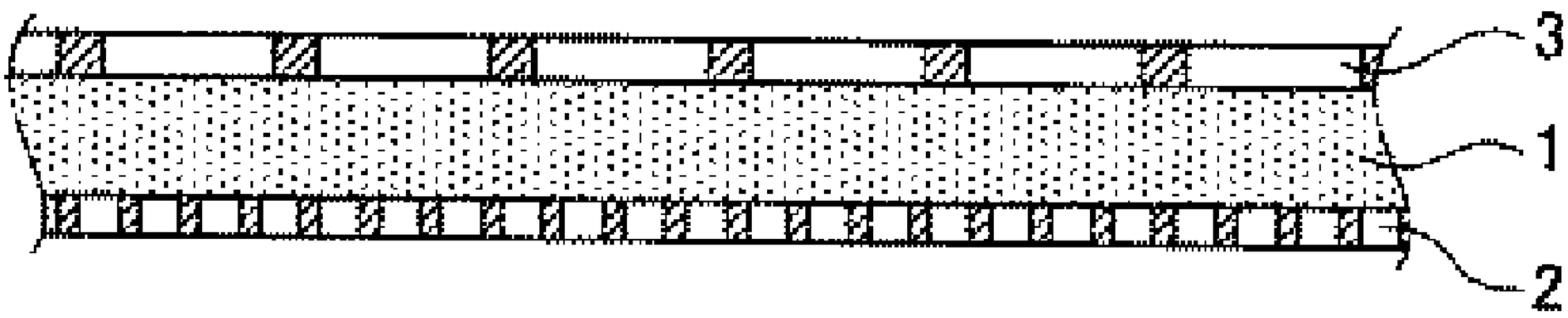
(54) Titre : MATIERE PERMEABLE A L'HUMIDITE POUR DES PERRUQUES ET PERRUQUE OU SOUS-COUCHE POUR PERRUQUE AYANT LA MATIERE PERMEABLE A L'HUMIDITE

(54) Title: MOISTURE-PERMEABLE MATERIAL FOR WIGS AND WIG OR UNDER CAP FOR WIG HAVING THE MOISTURE-PERMEABLE MATERIAL



(57) Abrégé/Abstract:
A moisture-permeable material for wigs which is excellent in moisture permeability, can prevent stuffiness during wearing a wig and can be easily attached. Namely, a moisture-permeable material for wigs having a three-layered structure comprising a porous polyurethane employed as the core material, a mesh layer made of a synthetic fiber or a natural fiber which is located in the side to be brought into contact with the head of the core material and a fiber layer made of a synthetic fiber or a natural fiber for planting artificial hair or natural hair which is laminated in the other side of the core material, wherein the three-layered structure has a moisture permeability (determined in accordance with JIS L-1099A) of 8000 g/m^2 24 hr or above, a tensile strength of 90 N/in. or above and a tear strength of 15 N or above.

ABSTRACT

The present invention is to provide a moisture-permeable material for wigs superior in moisture permeability, helping to suppress sweatiness when worn, and allowing easy attachment. A moisture-permeable material for wigs formed in a three-layer structure, including: a core material made of a porous polyurethane; a net layer provided on a side of the core material to be brought into contact with a head and formed of synthetic fibers or natural fibers; and a fiber layer which is laminated on the other side of the core material, which is formed of the synthetic fibers or the natural fibers, and in which artificial hairs or natural hairs are to be planted.

DESCRIPTION

MOISTURE-PERMEABLE MATERIAL FOR WIGS AND WIG OR UNDER CAP FOR WIG HAVING THE MOISTURE-PERMEABLE MATERIAL

TECHNICAL FIELD

[0001]

The present invention relates to a moisture-permeable material suitable for use in a wig endowed with both moisture permeability and durability. Further, the present invention relates to a wig or an under cap using the moisture-permeable material.

BACKGROUND ART

[0002]

A wig to be attached to a head is formed of a wig base serving as a base formed into a head configuration and human hairs or artificial hairs planted in the wig base; as a material of the wig base, there is generally used, for example, a non-porous thermoplastic resin film made of urethane elastomer or the like, which is called an artificial skin, or a net made of a mesh-like woven or knitted fabric formed of synthetic fibers or the like. In a case of a wig base formed of a non-porous thermoplastic resin film, it is possible to freely set the number of hairs to be planted and the distance between the planted hairs, so it is advantageously possible to create a wide variety of styles. On the other hand, there is a problem in that it is likely to involve discomforts, such as stickiness, sweatiness, and itch, which are attributable to sweating or the like due to its poor moisture permeability.

[0003]

In the case of a wig base made of a mesh-like woven or knitted fabric, it is possible to attain a marked improvement in terms of moisture permeability as compared with the non-porous thermoplastic resin film since such a woven or knitted fabric has a multitude of voids. On the other hand, there is a problem in that it only allows planting of hairs

exclusively on the synthetic fiber filaments forming the mesh-like woven or knitted fabric, and that there are limitations regarding the types of styles that can be created since the number of hairs that can be planted and the distance between the planted hairs are restricted by the mesh configuration. Thus, there has been a demand for a base material endowed with the advantages of both the thermoplastic resin film and the mesh.

[0004]

To realize such a material, Patent Document 1, for example, discloses a sheet formed as a polyurethane elastomer multi-layer structure made of a poly-α-amino acid derivative and a woven or knitted fabric, such as a nylon stocking, as a reinforcing material and having a water vapor permeability of 500 to 2,000 g/m^2·24hr. Further, Patent Document 2 discloses a wig base cloth made of a thin knitted cloth mainly formed of acrylic fibers and having a polyurethane resin layer on one side thereof and a polyamide resin layer on the other side thereof and having a water vapor permeability of 5,000 to 6,000 g/m^2·24hr. In order for a wig attached to a head to be worn comfortably without involving sweatiness in the head, the requisite water vapor permeability is 8,000 g/m^2·24hr or more by a testing method according to JIS L-1099A, which is satisfied by neither of Patent Documents 1 and 2. Generally speaking, the thinner the material, the higher the moisture permeability tends to become; on the other hand, that involves a reduction in strength; thus it is rather difficult to attain a satisfactory level in both strength and moisture permeability.

[0005]

In the case of a wig, there is generally adopted a method according to which artificial hairs or natural hairs are bound to the wig base serving as a foundation by catching and inserting the hairs by the hook portion of a crochet needle with a sharp forward end, and the base material is required to have a strength which is high enough not to involve breakage during an operation of planting artificial hairs or natural hairs. However, the above-mentioned patent documents, etc. make no specific disclosure about the strength of the material. Further, unlike a wig for hiding thinning hair, a fashion wig involves the following problem: since it is attached to a head of a wearer having his own hair, it is necessary to collectively accommodate his own hair in the wig, so in particular, when

his own hair is rather long, after the attachment of the wig, the head portion is partially bulged or, conversely, recessed. To avoid this, Patent Document 3 discloses an under net to be fitted onto the head before the attachment of the wig. The base net is required to have a lightweight feel and a moisture permeability high enough not to involve sweatiness when worn. However, the patent document makes no specific disclosure regarding the moisture permeability of the under net and the sweatiness of the head when it is worn.

Patent Document 1: Japanese Patent Application Laid-open No. S58-201644, page 1

Patent Document 2: Japanese Patent Application Laid-open No. S61-289105, page 1

Patent Document 3: Japanese Utility Model Registration No. 3112042, page 1

DISCLOSURE OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0006]

It is an object of the present invention to solve the problems in the wigs as disclosed in the above-mentioned patent documents, etc., and to provide a wig which can be easily attached and which is endowed with a superior moisture permeability.

MEANS FOR SOLVING THE PROBLEMS

[0007]

In order to achieve the above-mentioned object, the present invention provides (1) a moisture-permeable material for wigs, comprising a three-layer structure comprising a core layer; a mesh layer provided on one side of the core layer; and a fiber layer laminated on the other side of the core layer, wherein the core layer comprises porous polyurethane, the mesh layer comprises at least one of synthetic fibers and natural fibers, and the fiber layer comprises at least one of synthetic fibers and natural fibers, wherein the three-layer structure has a water vapor permeability of 8,000 $g/m^2 \cdot 24hr$ or more by a testing method according to JIS L-1099 A, a tensile strength of 90 N/inch or more, and a

tear strength of 15 N or more.

[0008]

Further, the present invention provides (2) the material according to (1), wherein the mesh layer comprises polyester fibers and the fiber layer comprises nylon fibers in a net.

[0009]

Further, the present invention provides (3) the material according to (1) or (2), wherein the material is used as a part of a wig base shaped like a head.

[0010]

Further, the present invention provides (4) an under cap being worn under wigs, comprising the material according to (1).

[0011]

Further, the present invention provides (5) a wig comprising a main member of a wig base and the material according to (1), wherein the material is disposed in one body with the main member by at least one of sewing and bonding each other.

[0012]

Further, the present invention provides (6) an under cap being worn under wigs, comprising the material according to (1), wherein the material is shaped like a head by at least one of forming and connecting one or more sheets of the material.

EFFECTS OF THE INVENTION

[0013]

The moisture-permeable material for wigs according to the present invention, in which one side of a porous polyurethane sheet is covered with a mesh of polyester or the like, is quite superior in moisture permeability. A net member on the other side thereof where hair planting is to be effected is formed of nylon fibers, which leads to a superior durability and a superior smoothness. Thus, it is possible to provide a moisture-permeable material for wigs which, while being of a three-layer structure, is superior in moisture permeability.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

[Fig. 1] Fig. 1 shows a sectional view illustrating a moisture-permeable material for wigs according to the present invention.

[Fig. 2] Fig. 2 shows a perspective view, partly in section, of a wig base produced by using the moisture-permeable material for wigs of the present invention.

[Fig. 3] Fig. 3 shows explanatory views of an under net produced by using the moisture-permeable material for wigs of the present invention.

[Fig. 4] Fig. 4 shows schematic views of an embodiment of a partial wig using the moisture-permeable material for wigs of the present invention, of which part (a) is a plan view and part (b) is a sectional view taken along the line A-A of part (a).

DESCRIPTION OF REFERENCE NUMERALS

[0015]

1	porous polyurethane layer
2	polyester mesh
3	fiber layer
4	edge portion
5	net
6	top
7	hair
20	wig base
21	net-like member
211	artificial skin

BEST MODE FOR CARRYING OUT THE INVENTION

[0016]

The porous polyurethane to be used in the moisture-permeable material for wigs of the present invention is generally produced by a dry method or a wet method. In the wet method, a water-miscible organic solvent solution of a polyurethane resin is applied to a release member, which is then immersed in water to solidify the polyurethane resin. As

the dry method, there are available a method in which a blowing agent and a filler are used, and a method in which the production is effected by preparing a water-type emulsion of a polyurethane resin and by utilizing a difference in boiling point between water and solvent. However, there are no particular limitations regarding the production method; it is also possible to adopt a method in which the production is effected by mixing hollow resin particles, or a method as disclosed in JP 2004-315817 A. A thickness of the material preferably ranges from 0.005 to 0.01 mm. Its water vapor permeability is preferably 10,000 g/m^2·24hr or more by a testing method according to JIS L-1099A.

[0017]

As the porous polyurethane to be used in the moisture-permeable material for wigs of the present invention, it is possible to employ a sheet-like material obtained by adding inorganic whiskers to a resin composition made mainly of a polyurethane resin. The resin composition made mainly of a polyurethane resin contains 50 to 100 wt% of polyurethane resin; it is also possible to mix the polyurethane resin with some other resin. It is possible to produce a sheet-like material by adjusting the polyurethane resin concentration to 15 to 40 wt% by using a polar organic solvent. It is necessary for the adhesive resin for bonding together the porous polyurethane layer and the fiber structure to be capable of maintaining the requisite bonding strength for a long period of time under a humidity of 50% or more; it is possible to use a resin called hot melt, such as an ethylene vinylene acetate type resin, a synthetic rubber type resin, or a humidity setting polyurethane. It is desirable for this adhesive resin to be applied not to the entire surface of the porous polyurethane sheet but in a dotted or a biased fashion. It is undesirable to apply the adhesive resin to the entire surface of the sheet since that leads to a deterioration in the moisture permeation performance of the porous polyurethane. Further, an application of the adhesive resin to the entire surface is undesirable since that leads to perforation of both the fiber structure and the porous polyurethane sheet at the time of hair planting. The application amount is preferably 10 to 100 g/m^2. When the application amount is less than 10 g/m^2, the material cannot withstand a long-term use, and may be peeled off; when the application amount is 100 g/m^2 or more, the

flexibility of the material is impaired, and its weight increases, which makes the material rather unsuitable for use in a wig or the like.

[0018]

The mesh-like net layer stacked on the porous polyurethane sheet used in the moisture-permeable material for wigs of the present invention is used on the side to be brought into contact with the head. It is only necessary for the layer to be capable of suppressing stickiness and sweatiness in the scalp, and it is desirable for the layer to be one exhibiting a pleasantly cool appearance. For example, it is possible to use a synthetic fiber, such as polyester or nylon, a natural fiber, such as cotton or silk, a regenerated fiber, such as rayon or cupra, and a semi-synthetic resin, such as triacetate or diacetate. A net layer formed of polyester or nylon fibers is preferable since it is lightweight, has durability, and withstands washing or the like.

[0019]

The polyester mesh used in the present invention is one formed of polyethylene terephthalate fibers, and preferably has a roughness of 180 to 500 mesh; it is desirable for the mesh to be one making the wig difficult to recognize as such from a distance. For example, the polyester mesh knitted fabric preferably has a weight of 60 to 70 g/m^2 and a thickness of 0.20 to 0.30 mm. The thread forming this polyester mesh may be a twisted yarn obtained by twisting polyester thread with some other synthetic fiber thread. The reason for setting its weight to the range of 60 to 70 g/m^2 is as follows. That is, if its weight is less than 60 g/m^2, the base formed into the head configuration is rounded due to the weight of the hair material and deformed, and there is a fear of the finely curved head configuration being impaired; if the weight is more than 70 g/m^2, the weight of the polyester mesh is rather large, and there is a fear of a wig base peripheral edge portion being turned up. Further, the weight of the wig base itself is rather large, which imposes a burden on the wearer when it is attached. If the thickness is less than 0.20 mm, there is no gap between the wig attached and the head, and the head is brought into contact with the porous polyurethane, resulting in a reduction in moisture permeability. If the thickness is larger than 0.30 mm, the wig as a whole is rather thick, and a step is generated between the wig peripheral edge portion and the head when the

wig is attached; thus, the wig looks as if raised, so there is a fear of the wig having a rather poor appearance.

[0020]

The fiber layer stacked on the other side of the porous polyurethane layer has artificial hairs or natural hairs planted in the surface thereof; it is desirable for the fiber layer to be a mesh facilitating the hair planting; while there are no particular limitations regarding the fiber to be used, a nylon fiber is preferably used. In particular, nylon 6, 6 fiber is preferable. Generally speaking, a nylon fiber lacks firmness, and is not easily curled; if curled, it can be easily corrected, which means any deformation of the wig base formed into the head configuration can be corrected; thus, it is preferably used as a wig base material. Regarding the net configuration adopted, a honeycomb-like one is preferable; its size differs depending on the amount of the wearer's own hair. For example, in the case of a person having a relatively small amount of his own hair, the length of one side is 1 to 2 mm, and where there exists no hair of his own, the length is of one side less than 1 mm. The knitted fabric has a weight of 20 to 30 g/m^2 and a thickness of 0.20 to 0.35 mm. When the weight is less than 20 g/m^2, the hair material cannot be bound to a sufficient degree to the fiber layer at the time of hair planting, resulting in a reduction in binding strength. Further, during the hair planting operation, the crochet needle is allowed to pierce not only the fiber layer but also the porous polyurethane layer under the fiber layer, perforating the porous polyurethane layer. If the weight is more than 30 g/m^2, the weight of the wig as a whole increases; in particular, in a high-humidity environment, the fiber layer absorbs moisture to become still heavier. The reason for setting the thickness to the range of 0.20 to 0.35 mm is as follows: the wig thickness range in which, when the wig is attached, no step is generated between the wig peripheral edge portion and the head and in which the wig does not look as if raised is 0.45 to 0.70 mm; in the moisture-permeable material of a three-layer structure of the present invention, the thickness of the porous polyurethane layer ranges from 0.005 to 0.01 mm, and the thickness of the polyester fiber layer of the net layer ranges from 0.20 to 0.30 mm; the requisite thickness of the fiber layer providing a natural appearance of the portion where the hair material is fixed when the hair material is planted in the fiber

layer is more than 0.20; however, taking into consideration the thickness of the wig as a whole, it is desirable for the thickness of the nylon fibers in the fiber layer to be 0.20 to 0.35 mm.

[0021]

It is also possible to use, as the nylon net member, a material in which a first plane made of a vertical thread group in which a plurality of nylon filaments are vertically arranged and a second plane made of a horizontal thread group in which a plurality of nylon filaments are arranged in a direction orthogonal to the vertical thread group, are superimposed one upon the other, with fusion-bonding being effected at intersections of the filaments. When planting a hair material made of artificial hairs or natural hairs in the wig base, a crochet needle with a sharp forward end pierces through the wig base, and the hair material is caught and inserted by the crochet needle to be thereby bound to the wig base. When piercing the wig base with the crochet needle and catching the hair material, the crochet needle is pulled with a great strength. Thus, if the fiber layer in which the hair material is to be planted is not elastic to a certain degree, the wig base suffers breakage or is undulated after the hair planting to deform its configuration, which is adapted to the head shape; in view of this, it is desirable to adopt nylon 6,6, which has elasticity.

[0022]

A single or a plurality of sheets of the moisture-permeable material for wigs thus constructed are fixed to a male mold formed of plaster or the like, and a resin is applied thereto for molding, or are joined together by sewing or bonding to be formed into the head configuration, whereby it is possible to obtain a wig base or a wig base cap. This moisture-permeable material for wigs can be used at least as a part of a wig base or an under cap.

[0023]

The water vapor permeability of conventional moisture-permeable materials for wigs is 8,000 $g/m^2 \cdot 24hr$ or less by a testing method according to JIS L-1099 A, so there is a fear of the material generating sweatiness when it is worn on the head for a long period of time, which is not desirable. It is desirable for a moisture-permeable material for wigs

to have a tensile strength of 90 N/inch or more and a tear strength of 15 N or more. If the tensile strength is less than 90 N/inch and the tear strength is less than 15 N, there is a fear of involving damage during the manufacturing process. Further, the material cannot withstand the operation of attaching and detaching it to and from the head, which is to be repeated several times, and there is a fear of cracks being generated. When attaching a wig, the wig is placed in position longitudinally and laterally with respect to the head, and is then fixed to the head by a means, such as adhesive or pinching of hairs by a pin; when, at this time, the wig is fixed in a predetermined position while being pulled, the wig can be fittingly attached to the head. If the tensile strength of the material forming the wig base is less than 90 N/inch, the wig base suffers breakage or is reduced in durability, becoming incapable of withstanding repeated use. If the tear strength thereof is less than 15N, the material is perforated when the wig base is pierced with the crochet needle for planting the hair material, making it impossible to bind the hair material to the base; even if the binding is possible, a binding force is rather weak, so the hair material comes off upon brushing for style setting, which means the material cannot withstand normal use.

EXAMPLES

[0024]

In the following, examples of the moisture-permeable material for wigs of the present invention will be described. The present invention, however, is not restricted to the following examples. The measurement evaluation was conducted by the following test methods.

[0025]

(Laminate Strength)

The measurement was performed according to JIS L-1089, using the unit of N/inch.

(Tensile Strength)

The measurement was performed according to JIS L-1018 A, using the unit of N/inch.

(Tear Strength)

The measurement was performed according to JIS L-1096 (Single tongue method), using

the unit of N.

(Water Vapor Permeability)

The measurement was performed according to JIS L-1099 A, using the unit of $g/m^2 \cdot 24hr$.

(Condition of the Wig after the Planting of the Hair Material)

The condition of the wig after the planting of the hair material was evaluated through visual inspection.

Excellent: No breakage or holes are to be observed, and the binding force for the hair material after the hair planting is satisfactory.

Good: Some breakage and holes are to be observed.

Poor: Considerable breakage and holes are to be observed, and the binding force after the hair planting is weak.

Bad: Overall breakage is to be observed, and the requisite amount of hair material cannot be planted.

(Condition of the Head with the Wig on)

The head condition with the wig on was evaluated.

Excellent: No sweatiness is involved, and the head does not sweat and is in a comfortable state.

Good: While the head does not sweat, sweatiness is involved.

Poor: Sweatiness is involved, and the head sweats and is itchy.

Bad: The head sweats profusely, and the entire head is itchy, with sweat being accumulated on the back side of the wig base.

[0026]

(Example 1)

As shown in Fig. 1, a hot-melt type urethane resin (manufactured by Mitsui Takeda Chemicals Inc.; product No. Takemelt MA3229K) was applied in a dotted fashion in an amount of 15 g/m^2 to a surface of a porous polyurethane layer 1 prepared by the dry method, and a polyester mesh 2 (texture: tricot; blending ratio: polyester 100%; threading: 84T/36f; course: 44/inch; wale: 28/inch) was laminated thereon. On the other hand, a net fiber layer 3 (texture: tricot; blending ratio: nylon 100%; threading: 66 nylon, 22T/7f; course: 42/inch; wale: 28/inch) was bonded to a back surface of the

porous polyurethane layer 1 by using a hot-melt type urethane resin (manufactured by Mitsui Takeda Chemicals Inc.; product No. Takemelt MA3229K) to prepare a moisture-permeable material for wigs as shown in Fig. 1. Further, a hair material was planted therein to prepare a wig. Table 1 shows physical properties and performance of the wig.

[0027]

[Table 1]

		Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4	Comparative Example 5
Peel Strength	Vertical	1.91	1.93	1.93	1.81	1.83	1.93	1.91	1.90	1.90	1.91	-
	Horizontal	1.93	1.94	1.95	1.83	1.84	1.93	1.93	1.92	1.92	1.93	-
Tensile Strength	Vertical	180	181.1	180.8	185.3	186.0	181.2	180	80	158.7	161.5	205.4
	Horizontal	135	135.9	136.0	147.1	149.2	136.0	135	55	112.5	116.0	204.0
Tear Strength	Vertical	30	30.6	30.9	31.7	32.6	30.7	30	16	18.6	19.2	34.8
	Horizontal	26	27.0	26.7	26.6	27.8	27.1	26	14	13.4	15.8	35.2
Water Vapor Permeability		14810	10549	12081	12006	10952	10293	7000	10251	12763	11629	9196
Wig Condition after Hair Planting		Excellent	Excellent	Excellent	-	-	Excellent	Excellent	Poor	Bad	Good	
Head Condition with the Wig Worn		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Poor	Excellent	Good	Bad	Bad

[0028]

(Example 2)

A resin solution obtained by dissolving a urethane elastomer of a thermoplastic resin (manufactured by Nippon Polyurethane Industry Co., Ltd.; product name code: E-985) in an organic solvent (8:2 mixture liquid of dimethyl formamide and methylethyl ketone) was applied to a male plaster mold of a head configuration, and was dried to be formed into the head configuration, thus preparing an artificial skin type wig base having a thickness of 0.2 mm.

[0029]

Next, the moisture-permeable material for wigs of Example 1 was fixed to the male plaster mold by a staple by using a gun tacker such that the net layer is on the lower side, and a 30% water-soluble resin solution of polyvinyl alcohol (manufactured by Kuraray Co., Ltd.; product name: Kranol) was applied thereto, and was then dried at 100°C for six hours to be formed into the head configuration.

[0030]

Subsequently, a moisture-permeable material for wigs formed into the head configuration was aligned with and superimposed on a wig artificial skin formed into the head configuration such that the net layer, which is to be brought into contact with the head, is on the lower side. Then, the periphery of the portion of the wig base which was to be formed of the moisture-permeable material was bonded for integration by sewing in a width of 2 cm. Finally, of the integrated wig base, the unnecessary portion of the moisture-permeable material for wigs was cut off to complete the wig base. In planting hairs in the wig base, a crochet needle pierces through the wig base, and artificial hairs or natural hairs are caught and inserted by the crochet needle for binding. In planting hairs in the moisture-permeable material portion, exclusively the fiber layer formed of nylon fibers was scooped up by the crochet needle. Table 1 shows physical properties and performance of the wig of Example 2.

[0031]

(Example 3)

A so-called net obtained by plain-weaving polyester monofilaments having a thickness

of 0.10 mm in 60 meshes/inch was stretched over a male plaster mold of a head configuration so as not to involve wrinkles or sagging, and was fixed by a staple by using a gun tacker; then, a solution obtained by diluting a two-liquid type urethane thermoplastic resin (ADAPT E-No. 2 manufactured by Nissin Resin Co., Ltd.) in an organic solvent (8:2 mixture liquid of dimethyl formamide and methylethyl ketone) was applied to the net, and was heated at 100°C for ten hours to prepare a net formed into the head configuration. The moisture-permeable material for wigs of Example 1 was formed in the same manner as in the case of the artificial skin of Example 2. After that, the net formed into the head configuration was placed in position longitudinally and laterally and then superimposed on the moisture-permeable material for wigs, formed into the head configuration. After that, as in the case of the artificial skin, the surplus portion of the moisture-permeable material for wigs was cut off to complete a wig base. The planting of hairs in the wig base was conducted in the same manner as in Example 2. Table 1 shows physical properties and performance of the wig of Example 3.

[0032]

(Example 4)

As shown in Fig. 3(a), a rubber material was woven mechanically in a cord-like fashion into a lower end edge portion 4 to form it as an expandable portion of a band-like configuration, and a polyester mesh was laminated on a surface of a porous polyurethane layer so as to be continuous with the edge portion 4; a net fiber layer formed of nylon fibers was bonded to the other side to form a bag-like object which is formed of a moisture-permeable material 5 of a three-layer structure and whose substantially semispherical expansion was closed at a top 6 thereof, the object as a whole being woven so as to be expandable, to thereby obtain an under net to be fitted onto the head. Table 1 shows physical properties and performance of this under net.

[0033]

(Example 5)

A moisture-permeable material for wigs as prepared in Example 1 was stretched over and fixed to a plaster male mold of a head configuration such that a polyester mesh side was on a lower side, and then a 10% water-soluble resin solution was applied thereto;

then, heat treatment was performed at 100°C for six hours to form the material into a head configuration, thus preparing an under net. Table 1 shows physical properties and performance of this under net.

[0034]

(Example 6)

As shown in Fig. 4, a net-like member 21 was formed in a donut-like form, the net-like member 21 being obtained by bonding a net fiber layer made of nylon fibers to a surface of a polyurethane layer formed by laminating a porous polyurethane to a surface of a polyester mesh as the moisture-permeable material of the present invention constituting a part of a partial wig, and the net-like member 21 was arranged in a peripheral edge portion of an artificial skin type wig base 20 of a head configuration prepared in the same manner as in Example 2 to thereby prepare a wig base. Artificial hairs were planted in this artificial skin portion and the surface of the net fiber layer of nylon fibers of the net-like member 21 to form a partial wig. Table 1 shows physical properties and performance of the wig of Example 6.

[0035]

(Comparative Example 1)

A wig base was prepared in the same manner as in Example 2 by using a moisture-permeable material of a three-layer structure similar to that of the present invention having a tensile strength and a tear strength that are approximately the same as those of Example 1 and exhibiting a water vapor permeability of 7,000 $g/m^2 \cdot 24hr$ by a testing method according to JIS L-1099 A. Further, a hair material was planted in this under net to prepare a wig. Table 1 shows physical properties and performance of the wig of Comparative Example 1.

[0036]

(Comparative Example 2)

A wig base was prepared in the same manner as in Example 2 by using a moisture-permeable material of a three-layer structure similar to that of the present invention having a moisture permeability that is approximately the same as that of Example 1 and exhibiting a tensile strength of 80 N/inch in the vertical direction and 55

N/inch in the horizontal direction and a tear strength of 16 N in the vertical direction and 14 N in the horizontal direction. Further, a hair material was planted in this wig base to prepare a wig. Table 1 shows physical properties and performance of the wig of Comparative Example 2.

[0037]

(Comparative Example 3)

A wig base was prepared in the same manner as in Example 2 by using a moisture-permeable material of a two-layer structure obtained by laminating a polyester mesh layer on a porous urethane which was the same as that of the present invention to prepare the wig base. Further, hair material was planted in this wig base to prepare a wig. Table 1 shows physical properties and performance of the wig of Comparative Example 3.

[0038]

(Comparative Example 4)

A wig base was prepared in the same manner as in Example 2 by using a moisture-permeable material of a two-layer structure obtained by laminating a nylon fiber layer on a porous urethane which was the same as that of the present invention to prepare the wig base. Further, a hair material was planted in this wig base to prepare a wig. Table 1 shows physical properties and performance of the wig of Comparative Example 4.

[0039]

(Comparative Example 5)

A net of 55 meshes/inch formed of a polyester filament having a diameter of 0.12 mm was fixed to a male mold of a head configuration by a staple by using a gun tacker, and a solution obtained by diluting a two-liquid type urethane thermoplastic resin (ADAPT E-No. 2, manufactured by Nissin Resin Co., Ltd.) in an organic solvent was applied to the net, and heat treatment was conducted at 100°C for ten hours to prepare an under cap. Table 1 shows physical properties and performance of the under cap of Comparative Example 5.

[0040]

Table 1 shows the evaluation results of the conditions of the wigs prepared according to Examples and Comparative Examples 1 through 4 after the planting of the hair material in the wig bases and the corresponding head conditions with the wigs on.

[0041]

While Comparative Example 1 involved no problem in terms of hair planting strength, it caused the head to become sweaty in a short time after the attachment of the wig, resulting in an itchy head. In Comparative Example 2, breakage was to be observed in the portions where hair planting was conducted, and the wig was rather poor in appearance; however, no sweatiness was involved with the wig on, thus proving the wig satisfactory in terms of moisture permeability. In Comparative Example 3, there was provided no fiber layer, in which a hair material is to be planted, and the hair planting was effected in the porous urethane layer and the polyester mesh layer under it, which means the hair material could not be bound to the porous urethane layer, having holes formed therein. On the other hand, the hair material was bound to the polyester mesh layer by winding the hair material around the polyester mesh, so, with the wig on, the hair material was held in contact with the head, thereby causing a pain. In Comparative Example 4, there was provided a fiber layer, in which the hair material was to be planted, so hair planting was possible; on the other hand, the strength of the wig base itself was rather low, so the base would suffer breakage; further, since the binding strength of the hair material was low, the hair material was subject to detachment in normal use. Further, since there was provided no polyester mesh layer, with the wig on, the head was brought into direct and intimate contact with the porous polyurethane layer, so sweatiness occurred and sweat was accumulated between the head and the porous polyurethane layer, resulting in discomfort.

[0042]

When worn for a long period of time, the under cap of Comparative Example 5 involved an increase in the temperature of the head, causing sweatiness. Further, when the wig was attached with the cap being in advance on the head, the under cap did not fit the wig, so the wig was rather unstable, and looked as if raised.

INDUSTRIAL APPLICABILITY

[0043]

As described above, the moisture-permeable material for wigs of the present invention can be prepared in various configurations. Apart from the above, it allows the following uses. For example, it is possible to stretch strip-like members of synthetic resin or the like in all directions and to bond together the intersections of those by sewing or adhesive, thereby preparing a cap of a head configuration. Next, weaves are prepared by sewing together artificial hairs or natural hairs with sewing thread by using a sewing machine or the like; it is possible to sew the weaves to the strip-like members constituting the cap formed into the head configuration to thereby attach the hairs to the cap; bonding the moisture-permeable material for wigs to predetermined positions of the cap by sewing or adhesive.

[0044]

In the moisture-permeable material for wigs of the present invention, it is possible to color the porous polyurethane layer and the nylon fiber layer by mixing a coloring agent or the like into them.

CLAIMS

1. A moisture-permeable material for wigs, comprising a three-layer structure comprising:

a core layer;

a mesh layer provided on one side of the core layer; and

a fiber layer laminated on the other side of the core layer,

wherein the core layer comprises porous polyurethane, the mesh layer comprises at least one of synthetic fibers and natural fibers, and the fiber layer comprises at least one of synthetic fibers and natural fibers,

wherein the three-layer structure has a water vapor permeability of 8,000 $g/m^2 \cdot 24hr$ or more by a testing method according to JIS L-1099 A, a tensile strength of 90 N/inch or more, and a tear strength of 15 N or more.

2. The material according to Claim 1, wherein the mesh layer comprises polyester fibers, and the fiber layer comprises nylon fibers in a net.

3. The material according to Claim 1 or 2, wherein the material is used as a part of a wig base shaped like a head.

4. An under cap being worn under wigs, comprising the material according to Claim 1.

5. A wig comprising:

a main member of a wig base; and

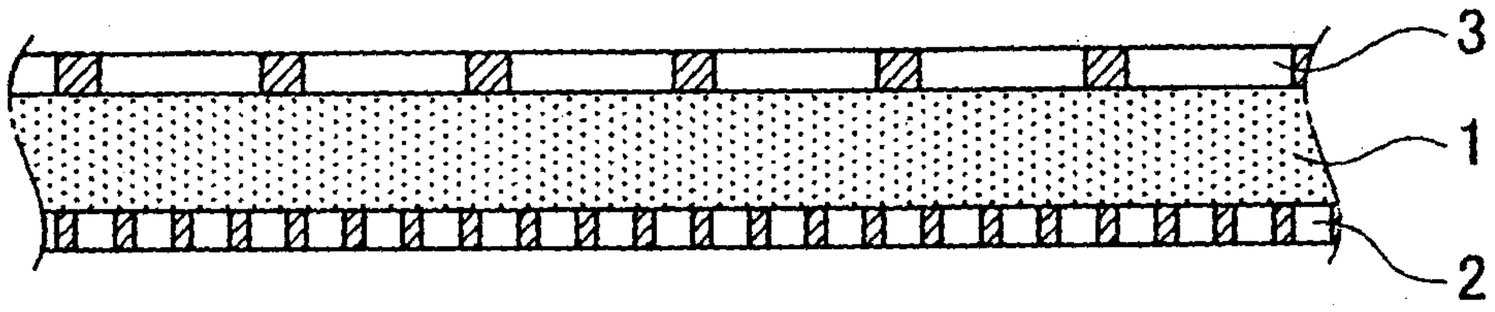
the material according to Claim 1,

wherein the material is disposed in one body with the main member by at least one of sewing and bonding each other.

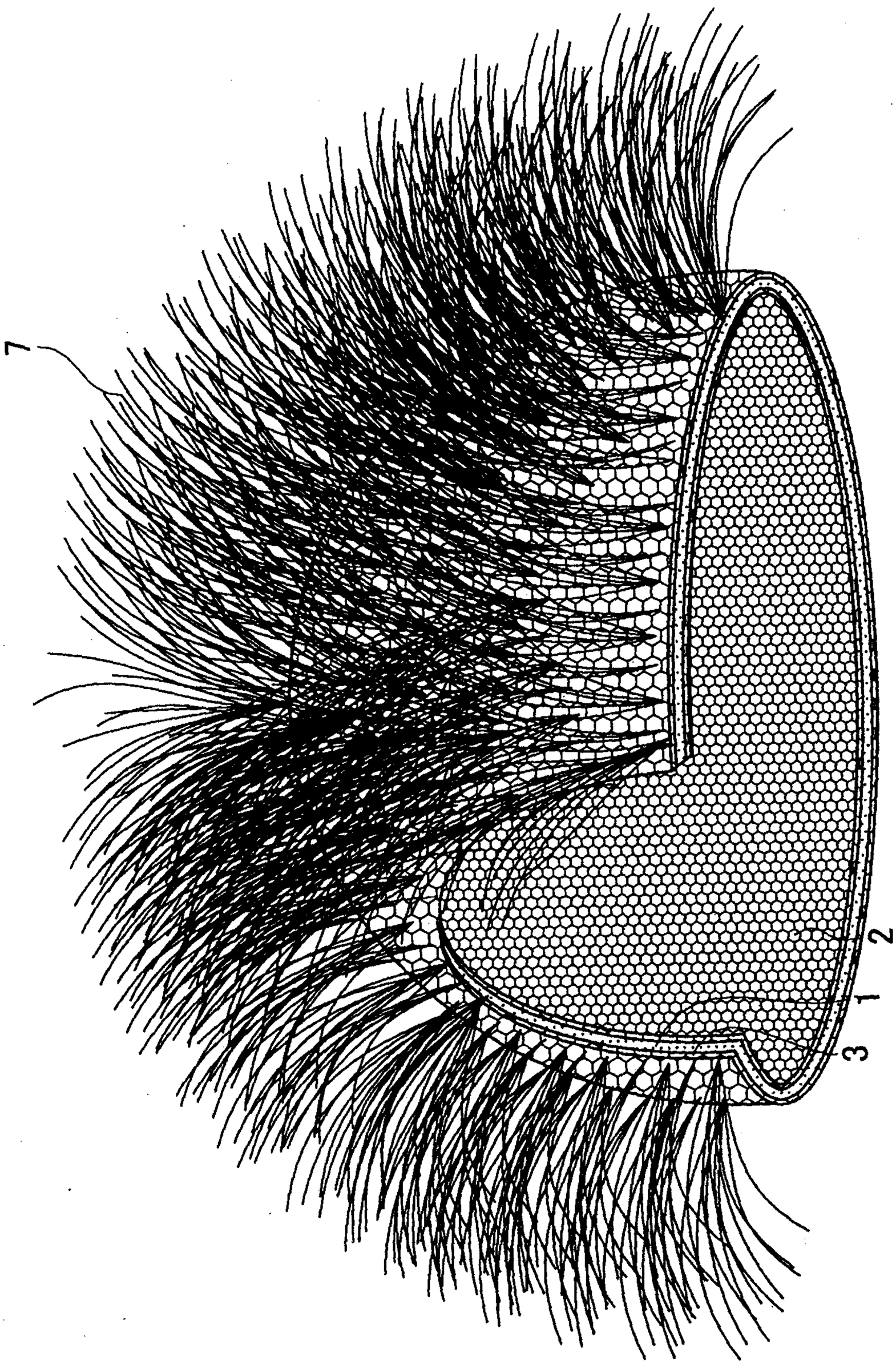
6. An under cap being worn under wigs, comprising the material according to Claim 1, wherein the material is shaped like a head by at least one of forming and connecting one or more sheet(s) of the material.

DRAWINGS

[Fig. 1]

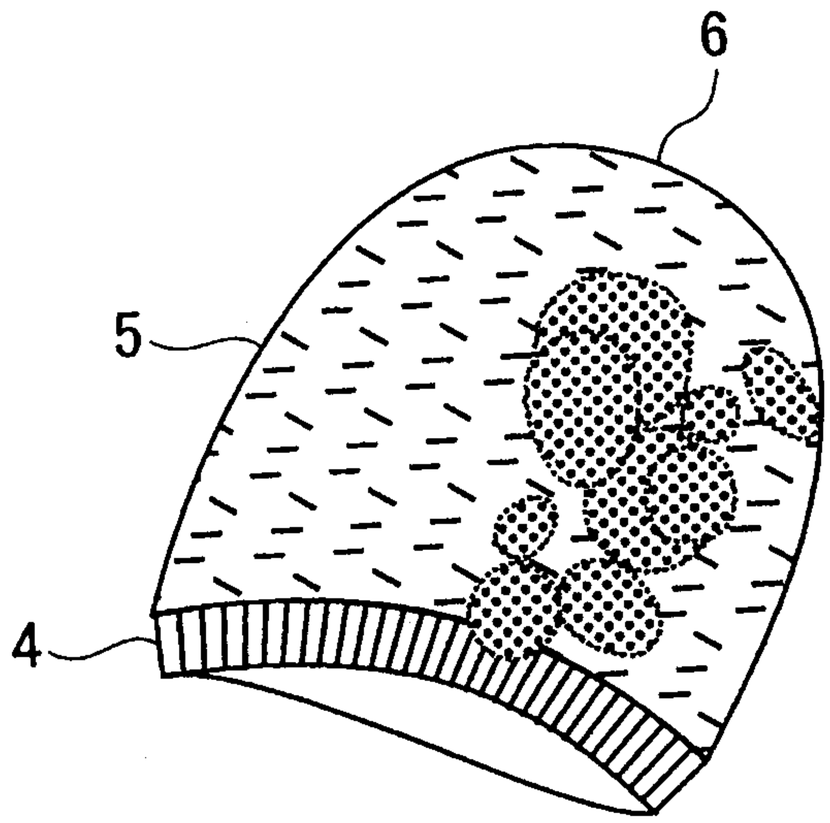


[Fig. 2]



[Fig. 3]

(a)



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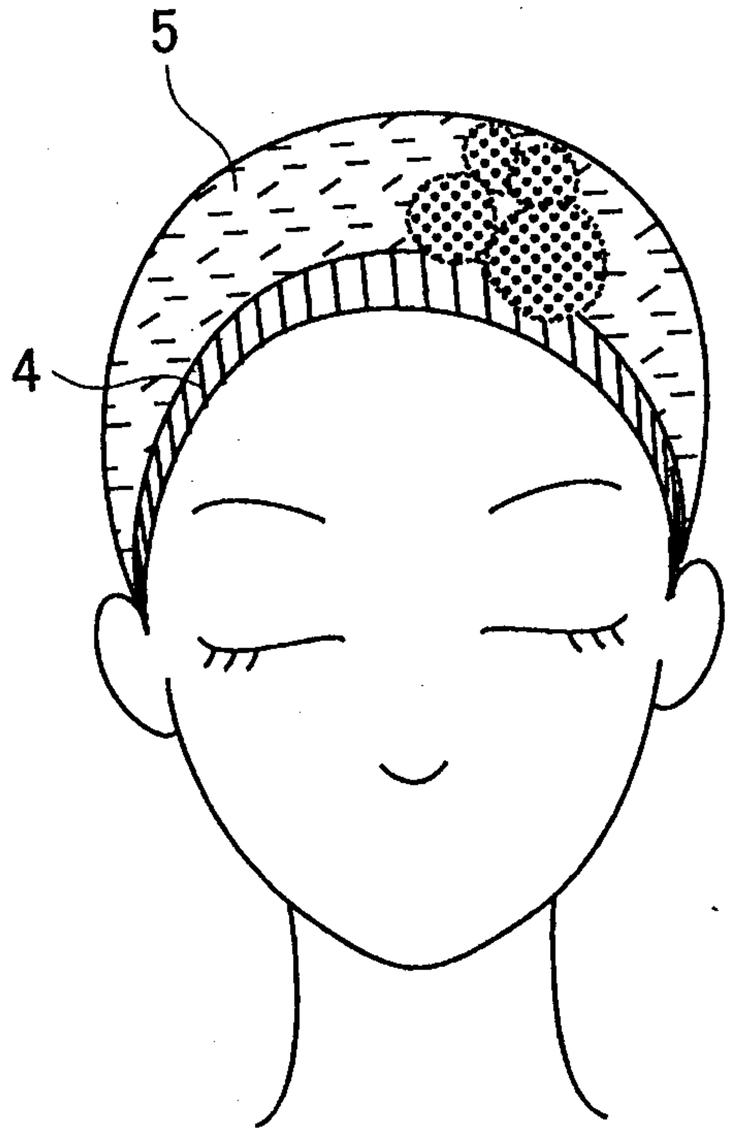
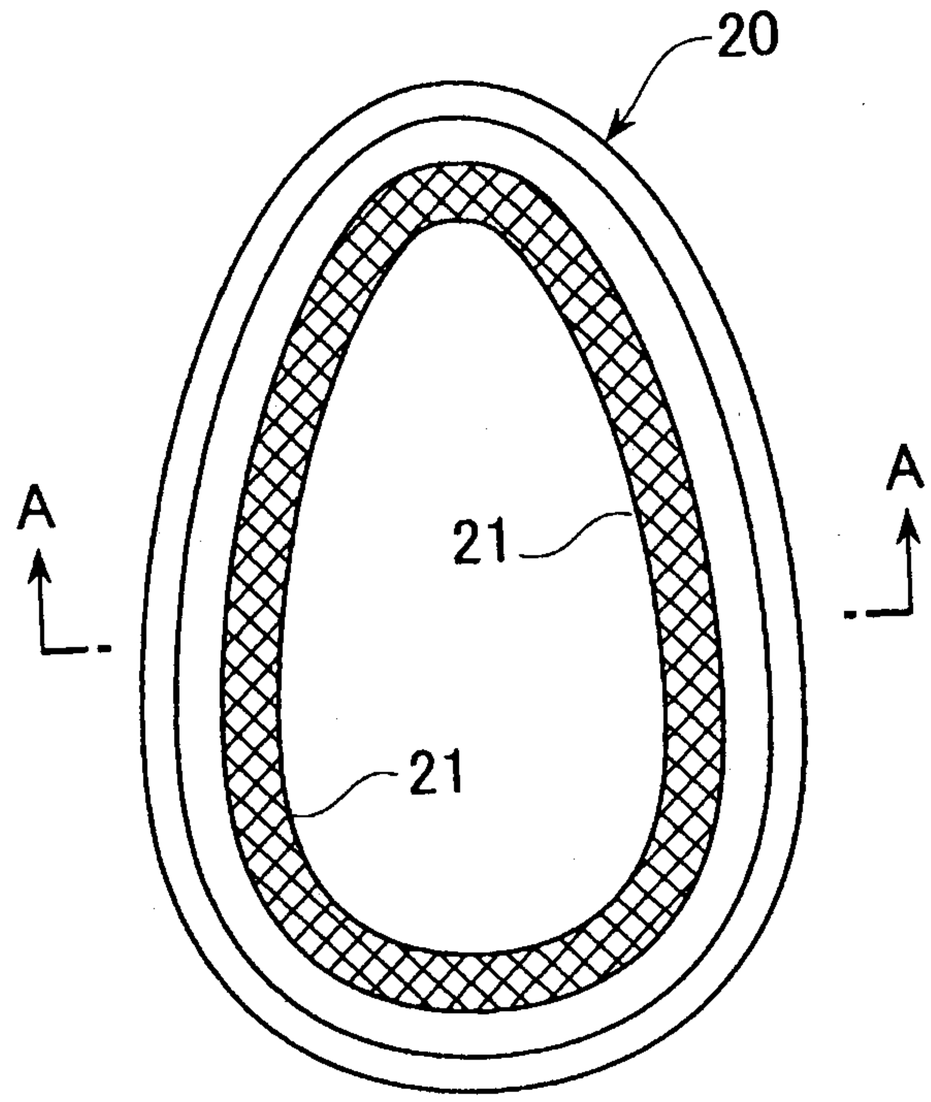


[Fig. 4]

(a)



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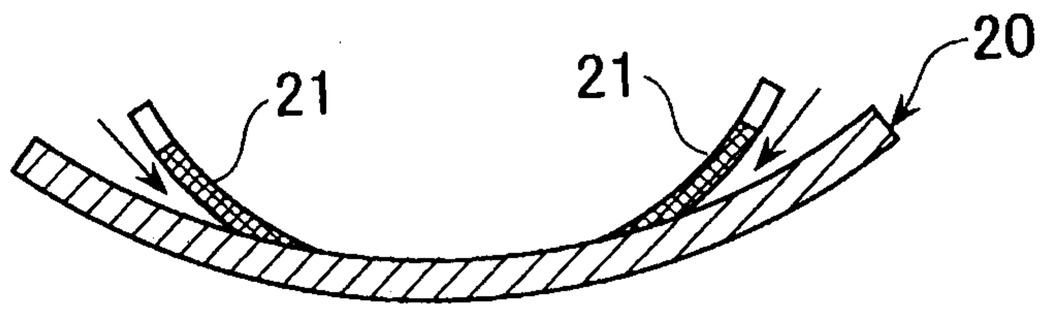

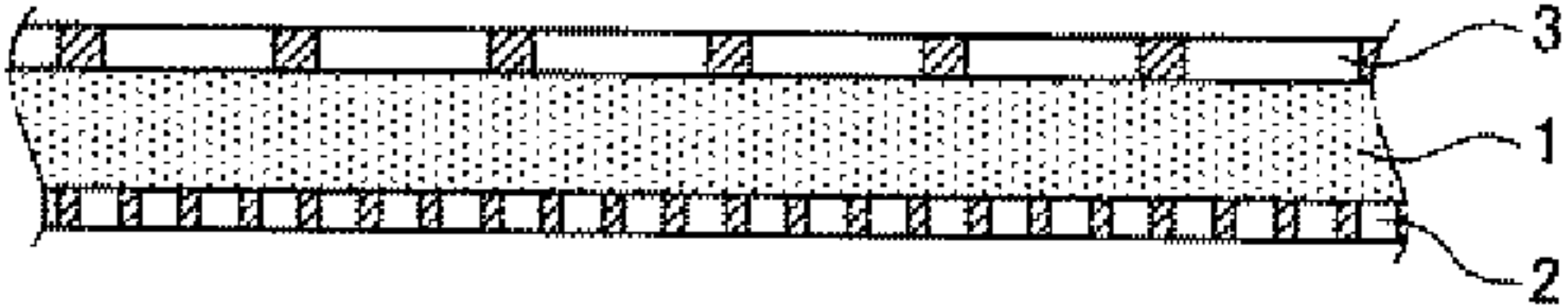
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1
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