Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2390315 C 2009/07/07

(11)(21) 2 390 315

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 2002/06/11

(41) Mise à la disp. pub./Open to Public Insp.: 2003/09/20

(45) Date de délivrance/Issue Date: 2009/07/07

(30) Priorité/Priority: 2002/03/20 (JP2002-077784)

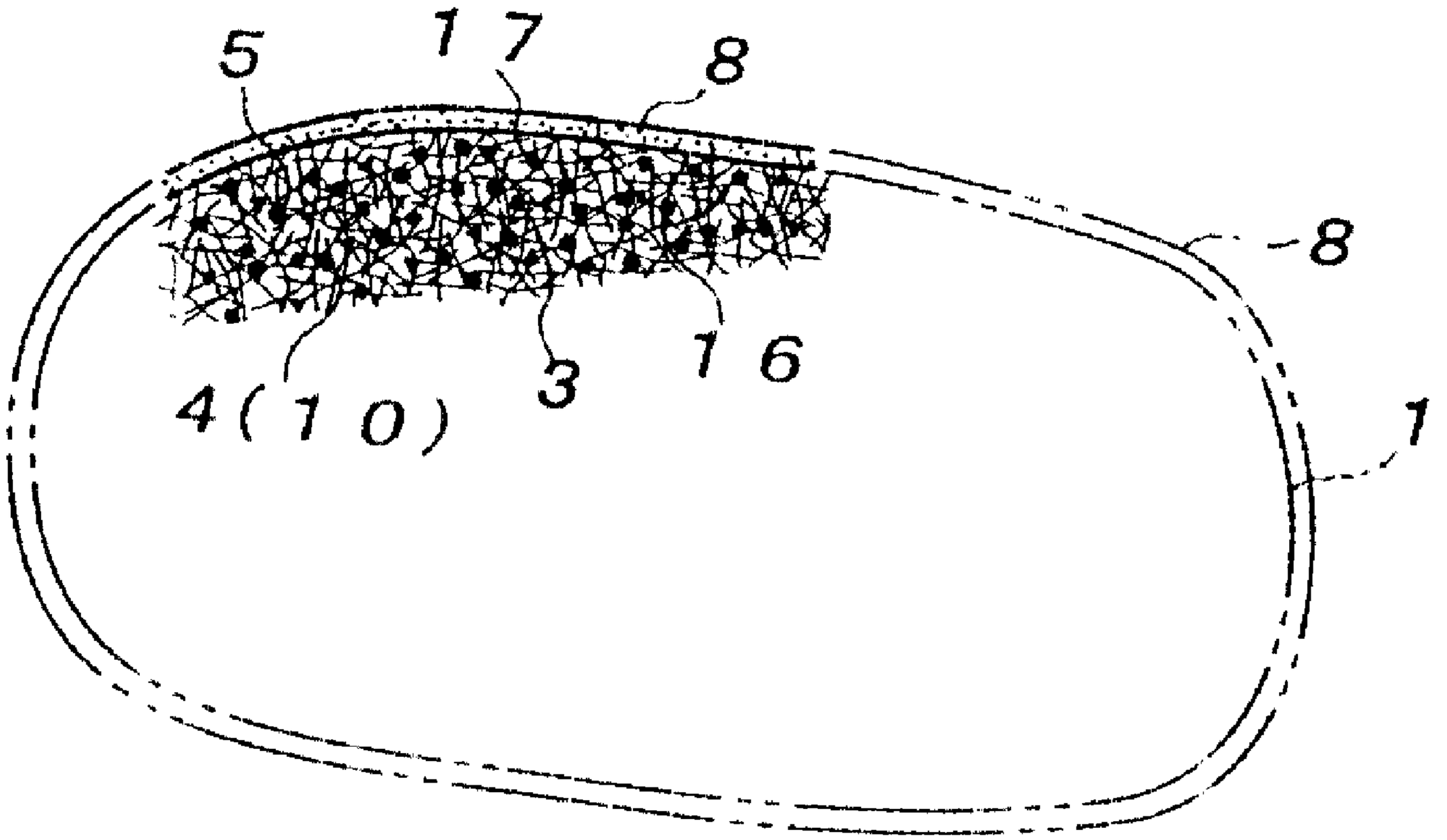
(51) Cl.Int./Int.Cl. *A01K 1/015* (2006.01)

(72) Inventeur/Inventor:
MOCHIZUKI, SHOTARO, JP

(73) Propriétaire/Owner:
PEPARLET CO., LTD., JP

(74) Agent: MACRAE & CO.

(54) Titre : MATERIAU DE TRAITEMENT DE L'URINE ANIMALE DE TYPE GRANULEUX
(54) Title: GRANULATED-TYPE DISCHARGED URINE PROCESSING MATERIAL FOR ANIMAL



(57) Abrégé/Abstract:
The invention is a granulated-type animal urine absorbent which enables discrimination between used and unused absorbent. The absorbent comprises a water absorbing granular body (1) which is dyed with a water soluble dye or a water absorbent granular body (1) which contains a powder (4) of a water soluble dye, a non-continuous water soluble adhesive layer (6) comprising a plurality of adhesive non-coated parts (6b) and a plurality of adhesive coated parts (6a) which is coated on the water absorbing granular body (1) and a water absorbent surface layer (2). Discharged urine of an animal permeates into the water absorbent

CA 2390315 C 2009/07/07

(11)(21) 2 390 315

(13) C

(57) Abrégé(suite)/Abstract(continued):
granular body (1) through the water absorbent surface layer and the non-continuous water soluble adhesive layer (6) and elutes the water soluble dye into the water absorbent surface layer (2). In this way, used absorbent is readily distinguishable from unused absorbent.

ABSTRACT

The invention is a granulated-type animal urine absorbent which enables discrimination between used and unused absorbent. The absorbent comprises a water absorbing granular body (1) which is dyed with a water soluble dye or a water absorbent granular body (1) which contains a powder (4) of a water soluble dye, a non-continuous water soluble adhesive layer (6) comprising a plurality of adhesive non-coated parts (6b) and a plurality of adhesive coated parts (6a) which is coated on the water absorbing granular body (1) and a water absorbent surface layer (2). Discharged urine of an animal permeates into the water absorbent granular body (1) through the water absorbent surface layer and the non-continuous water soluble adhesive layer (6) and elutes the water soluble dye into the water absorbent surface layer (2). In this way, used absorbent is readily distinguishable from unused absorbent.

GRANULATED-TYPE DISCHARGED URINE PROCESSING MATERIAL FOR ANIMAL

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a granulated-type discharged urine processing material for an animal, which is capable of absorbing the discharged urine of a pet animal such as a cat or like animal.

Related Art

In Japanese Patent No. 2,534,031, the applicant disclosed a granulated processing material which develops a colour when it absorbs discharged urine. This material comprises a water absorbent surface layer which covers a water absorbent granular core portion. When the material absorbs urine, a dye in the core portion permeates out into the surface layer, thereby distinguishing used material from unused material. The used material can then be selectively removed which will eliminate the odour and leave unused material for future use.

SUMMARY OF THE INVENTION

A first aspect of the present invention comprises a water absorbent granular body dyed with water soluble dyes or a water absorbent granular body containing powder of water soluble dyes, and a water absorbent surface layer covering a surface of the water absorbent granular body. The water absorbent surface layer and the water absorbent granular body are bonded to each other through a non-continuous water soluble adhesive layer formed of a plurality of adhesive non-coated parts and a plurality of adhesive coated parts which are coated on the surface of the water absorbent granular body. Discharged urine of an animal permeates into the water absorbent granular body through the water absorbent surface layer and the non-continuous water soluble adhesive layer, or by dissolving the adhesive coated parts. As a result, the water soluble dyes are eluted into the discharged urine so that the water absorbent surface layer is dyed through the non-continuous water soluble adhesive layer. In this way, the used portions and the non-used portions can be readily distinguished

The non-continuous water soluble adhesive layer is capable of locally removing only the

discharged urine absorbent processing material which is dyed by absorption of discharged urine, while maintaining the structure of the water absorbent granular body and the water absorbent surface layer.

A granulated-type discharged urine processing material for an animal according to a second aspect of the present invention is characterized in that the water absorbent granular body of the first aspect of the present invention is blended with powder of water non-soluble pigments instead of the powder of the water soluble dyes.

Discharged urine of an animal is permeated into the water absorbent granular body through the water absorbent surface layer and the non-continuous water soluble adhesive layer, or by dissolving the adhesive coated-parts so that color caused by the powder of the water non-soluble pigments can be seen through the water absorbent surface layer and the non-continuous water soluble adhesive layer. By this, the used portions and the non-used portions can be readily distinguished.

The non-continuous water soluble adhesive layer is capable of locally removing only the discharged urine absorbent processing material which has color which has been developed by absorption of discharged urine, while maintaining the structure of the water absorbent granular body and the water absorbent surface layer.

A third aspect of the present invention provides a granulated-type discharged urine processing material for an animal, characterized in that the water soluble adhesive layer of the first and second aspects of the present invention is dyed with water soluble dyes.

Discharged urine of the animal permeates into the water absorbent granular body through the water absorbent surface layer and the dyed water soluble adhesive layer. At that time, the water soluble dyes in the dyed water soluble adhesive layer are eluted into the discharged urine, thereby dyeing the water absorbent surface layer. In this way, the used portions and the non-used portions can be readily distinguished.

The dyed water soluble adhesive layer is capable of locally removing only the discharged urine absorbent processing material which is dyed by absorption of discharged urine, while maintaining the structure of the water absorbent granular body and the water absorbent surface layer.

A fourth aspect of the present invention provides a granulated-type discharged urine processing material for an animal characterized in that the water soluble adhesive layer contains

therein powder of water non-soluble pigments instead of the powder of the water soluble pigments of the third aspect of the present invention.

Discharged urine of the animal permeates into the water absorbent granular body through the water absorbent surface layer and the dyed water soluble adhesive layer. At that time, color of the powder of the water non-soluble pigments in the dyed water soluble adhesive layer can be seen through the water absorbent surface layer. In this way, the used portions and the non-used portions can be readily distinguished.

The dyed water soluble adhesive layer is capable of locally removing only the discharged urine absorbent processing material which has color which has been developed by absorption of discharged urine, while maintaining the structure of the water absorbent granular body and the water absorbent surface layer.

A granulated-type discharged urine processing material for an animal according to a fifth aspect of the present invention employs a construction in which the water absorbent surface layer of the first through fourth aspects of the present invention contains therein powder of dyes.

Discharged urine of the animal permeates into the water absorbent granular body through the water absorbent surface layer and the water soluble adhesive layer. At that time, the powder of the dyes in the water absorbent surface layer is eluted into the discharged urine, thereby dyeing the water absorbent surface layer. In this way, the used portions and the non-used portions can be readily distinguished.

A sixth aspect of the present invention provides a granulated-type discharged urine processing material for an animal characterized in that the water soluble adhesive layer contains therein powder of water non-soluble pigments instead of the powder of the water soluble dyes of the fifth aspect of the present invention.

Discharged urine of the animal permeates into the water absorbent granular body through adhesive non-coated parts of the water absorbent surface layer and the non-continuous water soluble adhesive layer or by dissolving the adhesive coated parts. At that time, the powder of the water non-soluble pigments develops color in the water absorbent surface layer. In this way, the used portions and the non-used portions can be readily distinguished.

A granulated-type discharged urine processing material for an animal according to a seventh

aspect of the present invention employs a construction which is characterized in that the water soluble granular body contains therein powder of water soluble dyes. Discharged urine of the animal is permeated into the water absorbent granular body, so that the powder of the water soluble dyes is dissolved in the discharged urine, thereby dyeing the water absorbent granular body. In this way, the used portions and the non-used portions can be readily distinguished.

An eighth aspect of the present invention provides a granulated-type discharged urine processing material for an animal characterized in that the water absorbent granular body contains therein powder of water non-soluble pigments instead of the powder of the water soluble dyes of the seventh aspect of the present invention.

By virtue of this construction, when the discharged urine of the animal permeates into the water absorbent granular body, the powder of the water non-soluble pigments develops color in the water absorbent granular body. In this way, the used portions and the non-used portions can be readily distinguished.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view showing a granulated-type discharged urine processing material for an animal in which a water absorbent granular body is colored with water soluble dyes or water non-soluble pigments, and FIGS. 1(A), 1(B) and 1(C) are diagrams showing manufacturing processes thereof;

FIG. 2 is a side view showing the granulated-type discharged urine processing material for an animal, in which the water soluble dyes or water non-soluble pigments of FIG. 1 are coated on a surface of the water absorbent granular body;

FIG. 3 is a sectional view showing a granulated-type discharged urine processing material for an animal in which a colored water soluble adhesive layer is formed on a surface of a water absorbent granular body, and is a sectional view showing a granulated-type discharged urine processing material for an animal in which a water absorbent granular body is colored with water soluble dyes or water non-soluble pigments, and FIGS. 3(A), 3(B) and 3(C) are diagrams showing manufacturing processes thereof;

FIG. 4 is a sectional view showing the granulated-type discharged urine processing material

for an animal, in which a water absorbent surface layer covering a surface of a water absorbent granular body contains therein powder of water soluble dyes or powder of water non-soluble pigments, FIGS. 4(A), 4(B) and 4(C) are diagrams showing manufacturing processes thereof;

FIG. 5 is a sectional view exemplifying a method for sprinklingly attaching a water absorbent surface layer to a surface of a water absorbent granular body through a water soluble adhesive agent;

FIG. 6 is a sectional view showing examples in which a granulated type discharged urine processing material for an animal, which is formed by tablet making, contains therein powder of water soluble dyes or powder of water non-soluble pigments, and FIG. 6(A) shows a granulated discharged urine processing material which is formed in a projectingly curved configuration and FIG. 6(B) shows a granulated discharged urine processing material which is formed in a concavely curved configuration;

FIG. 7 is a sectional view showing a tablet making machine for a granulated-type discharged urine processing material; and

FIG. 8 is a plan view for explaining a case wherein a large number of the discharge urine processing material is laid and urine is discharged there.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Embodiments of the present invention will now be described with reference to FIGS. 1 to 8.

The discharged urine processing material for an animal shown in FIGS. 1, 3 and 4 chiefly comprises a water absorbent granular body 1 having a particle size ranging from 1 mm to 20 mm and it has a water absorbent surface layer 2 which thinly covers a surface of the water absorbent granular body 1.

Referring to the granulated-type discharged urine processing material, the water absorbent granular body 1 is dyed with water soluble dyes. As shown in FIG. 1(A), the water absorbent granular body 1 contains therein powder 4 of water soluble dyes. Also, as shown in the same Figure, the water absorbent granular body 1 contains therein powder 10 of water non-soluble pigments. The resultant is covered with the water absorbent surface layer 2.

As shown in FIGS. 1(C), 3 and 4, the water absorbent surface layer 2 and the water absorbent granular body 1 are bonded to each other through a non-continuous water soluble adhesive layer 6

formed of a plurality of adhesive coated parts 6a and adhesive non-coated parts 6b which are coated on the surface of the granular body 1. The adhesive agent used here is a water soluble adhesive agent as represented by polyvinyl alcohol (PVA).

By spraying an appropriate amount of adhesive agent on the water absorbent granular body 1, the adhesive agent is unevenly adhered to the surface of the water absorbent granular body 1, thereby forming the adhesive coated parts 6a and the adhesive non-coated parts 6b.

The water absorbent granular body 1 shown in FIGS. 1, 3 and 4 is chiefly composed of a vegetable fiber or vegetable powder (vegetable fiber such as virgin pulp of wood, recycled pulp from used paper, bamboo pulp or the like, or vegetable powder thereof) 3 and contains therein an inorganic filler 17 such as calcium carbonate, talc or the like to add an appropriate degree of weight so that scattering is prevented.

Also, the granular body 1 contains therein powder 5 of an adhesive agent such as starch and/or carboxyl methyl cellulose (CMC) together with the inorganic filler 17. The granular body 1 further contains therein powder 16 of a water absorbent polymer as represented by sodium poly acrylate, so that the granular body 1 can have rich water absorbing and retaining properties.

Likewise, the water absorbent surface layer 2 shown in FIGS. 1, 3 and 4 is chiefly composed of a vegetable fiber or vegetable powder (vegetable fiber such as virgin pulp of wood, recycled pulp from used paper, bamboo pulp or the like, or vegetable powder thereof) 3.

The vegetable fiber as represented by pulp used herein has a fiber length ranging from about 0.1 mm to about 15 mm.

Also, the water absorbent surface layer 2 contains therein powder 3 of an adhesive agent such as starch and/or carboxyl methyl cellulose (CMC). The granular body 1 further contains therein powder 16 of a water absorbent polymer as represented by sodium poly acrylate which has rich water absorbing and retaining properties.

The water absorbent polymer is excellent in water absorbing and retaining properties and is swollen, when water is absorbed therein, so that it captures the discharged urine correctly. On the other hand, the adhesive agent 5 used herein is a water reacting adhesive agent which is swollen to exhibit adhesive properties when moisture (discharged urine) is absorbed therein. Receiving the discharged urine, the granular bodies 1 are adhered to each other due to their adhesive properties and

form a small clump 7 as shown in FIG. 8.

The mixing ratio of the vegetable fiber or vegetable powder 3 as represented by pulp, the powder 5 of adhesive agent composed of starch and/or carboxyl methyl cellulose (CMC), the powder 17 of the inorganic filler and the powder 16 of water absorbent polymer, which form the water absorbent granular body 1 shown in FIGS. 1, 3, 4 and 6, is as follows:

vegetable fiber or vegetable powder	:	50 to 97%
powder of adhesive agent	:	1 to 30%
powder of inorganic filler	:	1 to 40%
powder of water absorbent polymer	:	1 to 30%

The water absorbent granular body 1 shown in FIGS. 1, 3 and 4 is obtained by admixing the vegetable fiber or vegetable powder, the powder 5 of adhesive agent, the powder 16 of water absorbent polymer, and the powder 17 of the inorganic filler, then adding thereto an appropriate amount of the powder 4 of water soluble dyes or powder 10 of water non-soluble pigments and adding water thereto for kneading. The product is put into a granulating machine for compression molding.

Depending on the amount of added water, the powder 4 of the water soluble dyes is dissolved in water and dyes the granular body 1. Otherwise, by reducing the amount of added water, the powder 4 of the water soluble dyes remains in the form of powder. Also, the adhesive agent 4 such as starch, carboxyl methyl cellulose (CMC) or the like and the powder 16 of the water absorbent polymer are partly reacted by the addition of water and kneading, thereby remaining in the form of powder.

Likewise, the powder 10 of the water non-soluble pigments remains in the form of powder within the water absorbent granular body 1.

In the alternative, the granular body 1 is formed without admixing the powder 4 of the water soluble dyes or the powder 10 of the water non-soluble pigments, and then, a dissolving liquid of the water soluble dyes or dispersing liquid of the water non-soluble pigments is sprayed to the surface of the water absorbent granular body 1 so that the granular body 1 is colored. By doing so, as shown

in FIG. 2, the dyes dissolving liquid or the pigments dispersing liquid form a colored layer 8 on a surface layer portion of the water absorbent granular body 1.

After the water absorbent granular body 1 shown in FIGS. 1, 3 and 4 is dried, or is in a wetting state, a water soluble adhesive agent as represented by the above-mentioned poly vinyl alcohol, is sprayed on the surface of the granular body 1, thereby forming the non-continuous water soluble adhesive layer 6 composed of the adhesive coated parts 6a and the adhesive non-coated parts 6b.

Then, as shown in FIGS. 1, 3 and 4, a mixing material composed of the vegetable fiber or vegetable powder 3, the powder 5 of the adhesive agent such as starch and/or carboxyl methyl cellulose (CMC), and the powder 16 of the water absorbent polymer in the mixing ratio listed hereunder is sprinkled in a dried state, thereby forming the water absorbent surface layer 2 covering the granular body 1.

vegetable fiber or vegetable powder	:	40 to 98 %
powder of adhesive agent	:	1 to 40 %
powder of water absorbent polymer	:	1 to 40%

The water absorbent surface layer 2 and the water absorbent granular body 1 are firmly bonded to each other through the non-continuous water soluble adhesive layer 6 and prevent peel-off of the component of the water absorbent surface layer 2, thereby maintaining the attachment of the surface layer.

The water absorbent granular body 1 shown in FIGS. 1, 3, 4 and 6 is formed by compressing and granulating and therefore, the vegetable fiber or vegetable powder 3 is high in density and the water absorbent granular body 1 is denser than the water absorbent surface layer 2. On the other hand, the water absorbent surface layer 2 is formed by sprinkling in a dried and non-compressed state, and therefore, the vegetable fiber or vegetable powder 3 is low in density and the water absorbent surface layer 2 is less dense than the water absorbent granular body 1. Accordingly, the water absorbent surface layer 2 rapidly absorbs the discharged urine and permeates the discharged urine into the water absorbent granular body 1.

An example of a means for forming the water absorbent surface layer 2, is shown in FIG. 5. The component material of the water absorbent surface layer 2 is charged into a rotary drum 9 in its dried state. The water absorbent granular body 1 and the component of the non-continuous water soluble adhesive layer 6 are further charged therein. And then, while rotating the water absorbent granular body 1 on an inner surface of the rotary drum 9, the component materials 3, 5 and 16 of the water absorbent surface layer 2 are sprinklingly attached to the surface of the granular body 1.

The discharged urine of an animal rapidly permeates into the water absorbent granular body 1 through the water absorbent surface layer 2 and the adhesive non-coated parts 6b of the non-continuous water soluble adhesive layer 6. Also, the discharged urine gradually permeates into the water absorbent granular body while dissolving the adhesive coated parts 6a of the non-continuous water soluble adhesive layer 6. At that time, the water soluble dyes, which are dissolved within the water absorbent granular body 1, or the powder 4 of the water soluble dyes which are contained in the water absorbent granular body 1 without being dissolved, are eluted into the permeated discharged urine to dye the water absorbent surface layer 2 through the non-continuous water soluble adhesive layer 6.

In the case where the water absorbent granular body 1 contains therein the powder 10 of the water non-soluble pigments, the color caused by the powder 10 of the water non-soluble pigments due to permeation of urine, can be seen through the water absorbent surface layer 2.

In this way, the used portion (portion where urine is discharged) and the non-used portion (portion where urine is not yet discharged) can be readily distinguished.

The discharged urine processing material shown in FIG. 3 includes the water absorbent granular body 1 and the water absorbent surface layer 2 shown in FIG. 1. The water absorbent surface layer 2 and the water absorbent granular body 1 are bonded to each other through the non-continuous water soluble adhesive layer 6.

By spraying an excessive amount of adhesive agent to the water absorbent granular body 1, the adhesive agent is adhered to the surface of the water absorbent granular body 1, thereby forming the adhesive coated parts 6a and the adhesive non-coated parts 6b. In the alternative, the surface of the water absorbent granular body 1 is covered with the continuous water soluble adhesive layer having no adhesive coated parts 6b.

By using, as the water soluble adhesive agent, an adhesive agent which is dyed with water soluble dyes and spraying the same on the surface of the water absorbent granular body 1, the dyed water soluble adhesive layer 6 can be formed on the surface of the water soluble granular body 1. The water absorbent granular body 1 is dyed with the dyed water soluble adhesive layer 6 and this dyeing is concealed by the water absorbent surface layer 2.

By spraying a dispersed liquid mixed with the powder 10 of the water non-soluble pigments in the water soluble adhesive agent on the surface of the water absorbent granular body 1, the colored water soluble adhesive layer 6 is formed on the surface of the water absorbent granular body 1 and the color is concealed by the water absorbent surface layer 2.

The discharged urine of an animal rapidly permeates into the water absorbent granular body 1 through the water absorbent surface layer 2 and the adhesive non-coated parts 6b of the non-continuous water soluble adhesive layer 6. Also, the discharge urine gradually permeates into the water absorbent granular body 1 while dissolving the adhesive coated parts 6a. The water soluble dyes within the adhesive layer 6 are eluted into the permeated discharged urine to dye the water absorbent surface layer 2.

By permeation of the discharged urine, the color of the powder 10 of the water non-soluble pigments in the adhesive layer 6 can be seen through the water absorbent surface layer 2.

In this way, the used portion (portion where urine is discharged) and the non-used portion (portion where urine is not yet discharged) can be readily distinguished.

The discharged urine processing material for an animal shown in FIG. 4 includes, as in the case with FIGS. 1 and 3, the water absorbent granular body1, the water absorbent surface layer 2 and the non-continuous water soluble adhesive layer 6 for bonding the granular body 1 and the surface layer 2 together.

The granulated-type discharged urine processing material for an animal has the powder 4 of the water soluble dyes contained in a dried state in the water absorbent surface layer 2 covering the water absorbent granular body 1. Also, it has the powder 10 of the water non-soluble pigments contained in a dried state in the water absorbent surface layer 2.

The discharged urine of an animal rapidly permeates in the water absorbent granular body 1 through the water absorbent surface layer 2 and the water soluble adhesive layer 6. In this way,

the powder 4 of the water soluble dyes in the water absorbent surface layer 2 is eluted into the discharged urine to dye the water absorbent surface layer 2.

By permeation of the urine, the powder 10 of the water non-soluble pigments in the water absorbent surface layer 2 is significantly color developed.

In this way, the used-portion (portion where urine is discharged) and the non-used portion (portion where urine is not yet discharged) can be readily distinguished.

The discharged urine processing material for an animal shown in FIGS. 6 and 7 comprises a water absorbent granular body 1 having a predetermined shape formed by a tablet making process from a particle of size preferably ranging from 2 mm to 20 mm. On the other hand, the discharged urine processing material for an animal shown in FIGS. 1, 3 and 4 has uneven particle shapes.

The powder 4 of water soluble dyes is contained in the water absorbent granular body 1 shown in FIGS. 6 and 7. Also, the powder 10 of water non-soluble pigments is contained in the water absorbent granular body 1.

After the vegetable fiber or vegetable powder 3, the powder 5 of adhesive agent, the powder 16 of the water absorbent polymer, or the powder 10 of water non-soluble pigments is kneaded in a non-hydrolytic state, the product is processed in a tablet-making machine so that the water absorbent granular body 1 having a predetermined shape shown in FIGS. 6 and 7 is formed by compression molding.

Also, the vegetable fiber or vegetable powder 3 and the powder 4 of water soluble dyes or powder 10 of water non-soluble pigments are admixed and kneaded in a non-hydrolytic state and made into tablets. Those powders 3, 4 alone or together with the powder 10 are selectively admixed with the powder 5 of the adhesive agent, the powder 16 of the water absorbent polymer and the powder 17 of the inorganic filler and made into tablets.

The method for tablet making the water absorbent granular body 1 into a predetermined shape is disclosed in Japanese patent No. 2833697 owned by the present applicant.

The water absorbent granular body 1 is a tablet made into a shape in which the front and back surfaces exhibit a convexly curved configuration as shown in FIG. 6(A) or into a shape in which the front and back surfaces exhibit a concavely curved configuration as shown in FIG. 6(B).

As shown in FIG. 7, the tablet-making machine used herein includes an upper mold

14 and a lower mold 15. Component matter of the water absorbent granular body 1 is charged between the upper mold 14 and the lower mold 15 and compression molded. By compression molding, the water absorbent granular body 1 has a predetermined shape.

The urine of an animal rapidly permeates into the water absorbent granular body 1 having such a predetermined shape, and the powder 4 of the water soluble dyes in the granular body 1 is eluted into the permeated discharged urine, thereby dyeing the water absorbent granular body 1.

By permeation of the urine, the powder 10 of the water non-soluble pigments in the water absorbent surface layer 2 is significantly color developed.

In this way, the used-portion (portion where urine is discharged) and the non-used portion (portion where urine is not yet discharged) can be readily distinguished.

What is claimed is:

1. A granulated-type discharged urine processing material for animals comprising:

a water absorbent granular body dyed with water soluble dyes or a water absorbent granular body containing powder of water soluble dyes;

a non-continuous water soluble adhesive layer formed of a plurality of adhesive non-coated parts and a plurality of adhesive coated parts which is coated on said water absorbent granular body; and

a water absorbent surface layer bonded to a surface of said water absorbent granular body through said non-continuous water soluble adhesive layer;

wherein discharged urine of an animal can permeate into said water absorbent granular body through said water absorbent surface layer and said non-continuous water soluble adhesive layer, whereby said water soluble dyes are eluted into the discharged urine so that said water absorbent surface layer is dyed.

2. A granulated-type discharged urine processing material for animals comprising:

a water absorbent granular body formed by blending powder of water non-soluble pigments;

a non-continuous water soluble adhesive layer formed of a plurality of adhesive non-coated parts and a plurality of adhesive coated parts which is coated on said water absorbent granular body; and

a water absorbent surface layer bonded to a surface of said water absorbent granular body through said non-continuous water soluble adhesive layer;

wherein discharged urine of an animal can permeate into said water absorbent granular body through said water absorbent surface layer and said non-continuous water soluble adhesive layer, whereby said water non-soluble pigments are eluted into the discharged urine so that color caused by the powder of said water non-soluble pigments can be seen through said water absorbent surface layer.

3. A granulated-type discharged urine processing material for an animal comprising:

a water absorbent granular body;

a dyed water soluble adhesive layer formed by coating a water soluble adhesive, which adhesive layer is-dyed with a water soluble dye, on a surface of said water absorbent granular

body; and

a water absorbent surface layer bonded to the surface of said water absorbent granular body through said dyed water soluble adhesive layer;

wherein discharged urine of the animal can permeate into said water absorbent granular body through said water absorbent surface layer and said dyed water soluble adhesive layer so that said water soluble dyes are eluted into the discharged urine, thereby dyeing said water absorbent surface layer.

4. A granulated-type discharged urine processing material for animals comprising:

a water absorbent granular body;

a colored water soluble adhesive layer formed by coating a water soluble adhesive agent, which is blended with powder of water non-soluble pigments and colored, on a surface of said water absorbent granular body; and

a water absorbent surface layer bonded to the surface of said water absorbent granular body through said colored water soluble adhesive layer;

wherein discharged urine of an animal can permeate into said water absorbent granular body through said water absorbent surface layer and said colored water soluble adhesive layer so that color caused by the powder of said water non-soluble pigments of said colored water soluble adhesive layer can be seen through said water absorbent surface layer.

5. A granulated-type discharged urine processing material for animals comprising:

a water absorbent granular body;

water soluble adhesive layer coated on a surface of said water absorbent granular body; and

a water absorbent surface layer bonded to the surface of said water absorbent granular body through said water soluble adhesive layer, said water absorbent surface layer containing therein powder of water soluble dyes;

wherein discharged urine of an animal can permeate into said water absorbent granular body through said water absorbent surface layer and said water soluble adhesive layer so that the powder of said water soluble dyes is eluted into the discharged urine, thereby dyeing said water absorbent surface layer.

6. A granulated-type discharged urine processing material for animals comprising:

a water absorbent granular body;

a water soluble adhesive layer coated on a surface of said water absorbent granular body; and

a water absorbent surface layer bonded to the surface of said water absorbent granular body through said water soluble adhesive layer, said water absorbent surface layer containing therein powder of water non-soluble pigments;

wherein discharged urine of an animal can permeate into said water absorbent granular body through said water absorbent surface layer and said water soluble adhesive layer so that the powder of said water non-soluble pigments develops color in said water absorbent surface layer.

7. A granulated-type discharged urine processing material for animals comprising a water absorbent granular body containing powder of water soluble dyes, wherein said water absorbent granular body is chiefly composed of a vegetable fiber or vegetable powder to provide water permeability, wherein discharged urine of an animal can permeate into said water absorbent granular body so that the powder of said water soluble dyes is eluted into the discharged urine, thereby dyeing said water absorbent granular body.

8. The granulated-type discharged urine processing material according to claim 7, wherein the water absorbent granular body contains an inorganic filler for adding weight and a water absorbent polymer for providing water retentivity.

9. A granulated-type discharged urine processing material for animals comprising a water absorbent granular body containing powder of water non-soluble pigments, wherein said water absorbent annular body is chiefly composed of a vegetable fiber or vegetable powder to provide water permeability, wherein discharged urine of an animal can permeate into said water absorbent granular body so that the powder of said water non-soluble pigments develops color in said water absorbent granular body.

10. The granulated-type discharged urine processing material according to claim 9, wherein the water absorbent granular body contains an inorganic filler for adding weight and a water absorbent polymer for providing water retentivity.

Fig. 1A

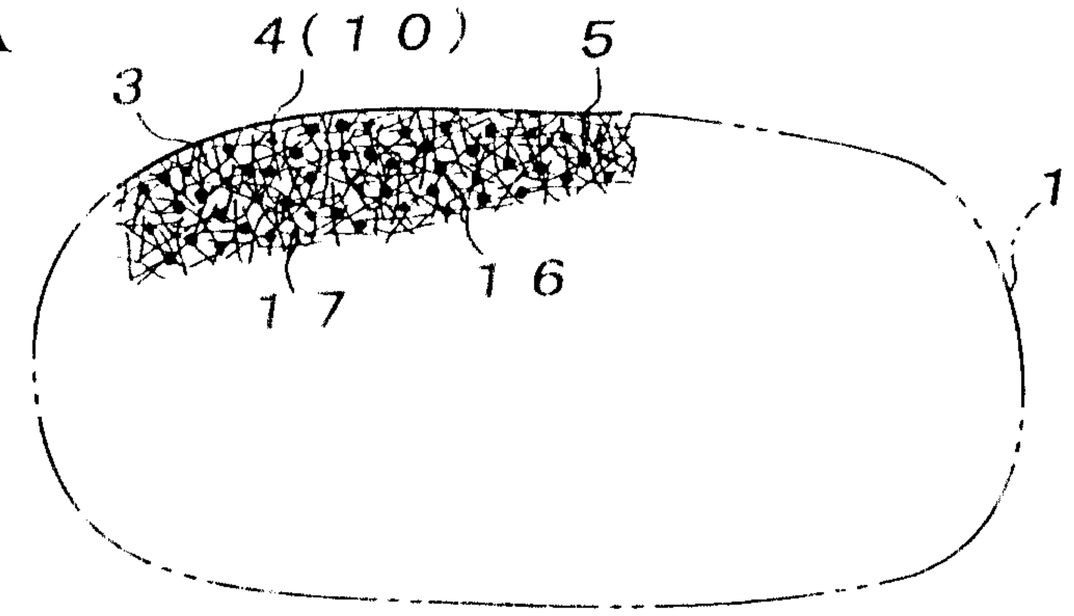


Fig. 1B

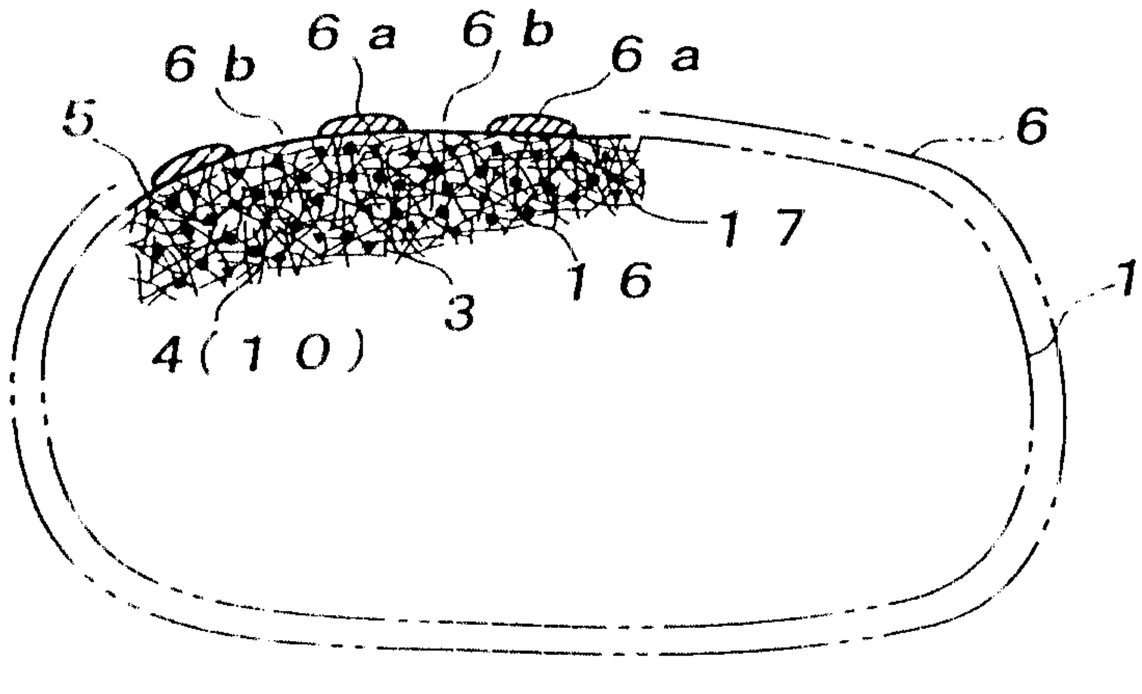


Fig. 1C

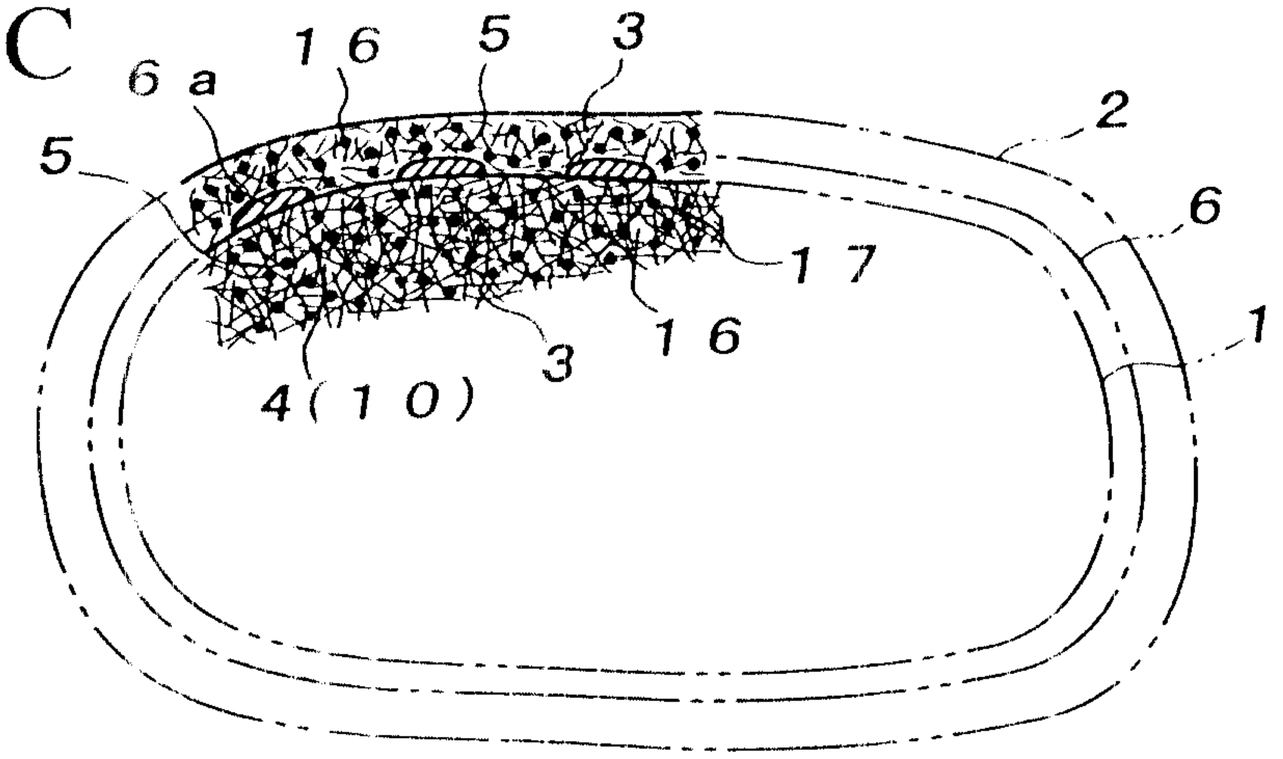


Fig.2

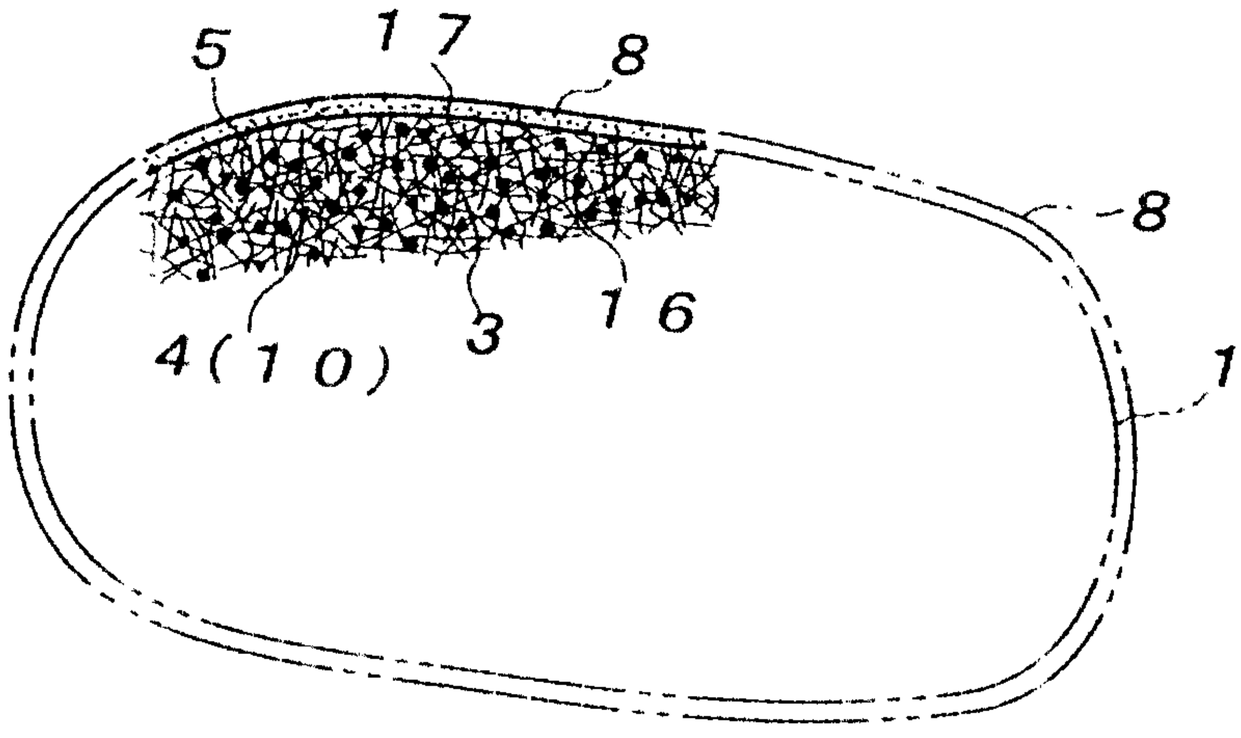


Fig.3A

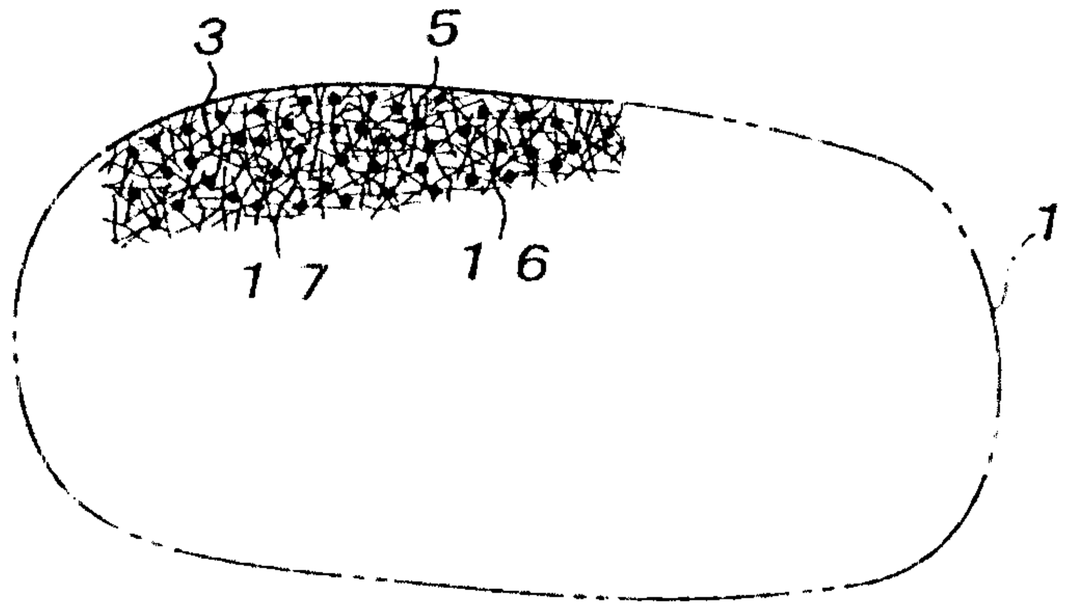


Fig.3B

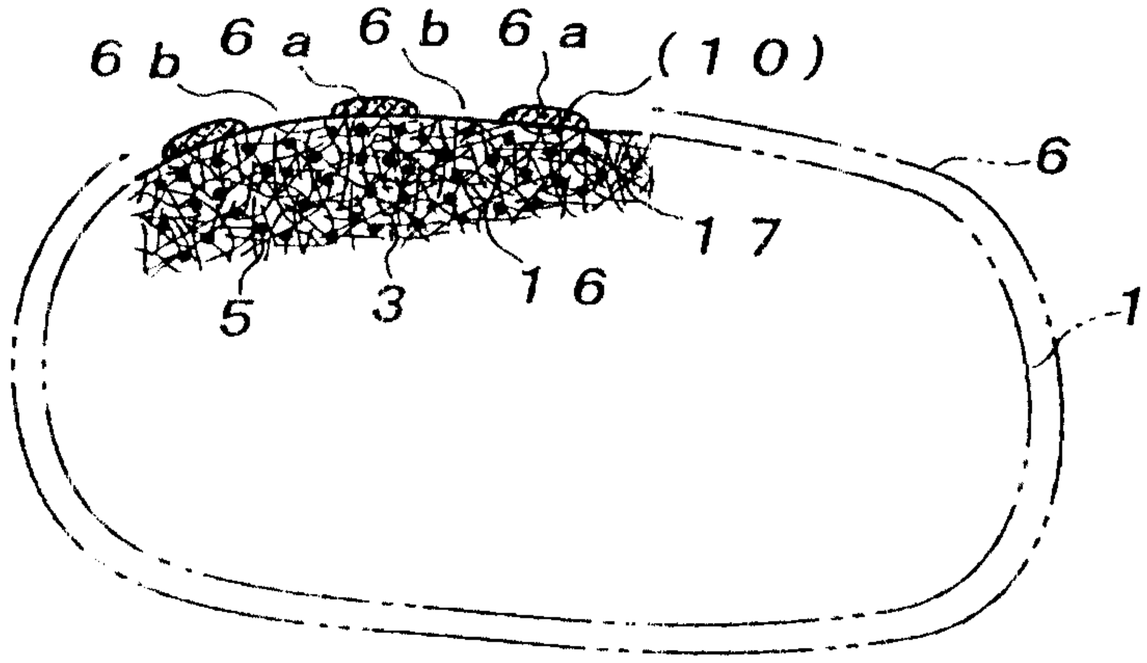


Fig.3C

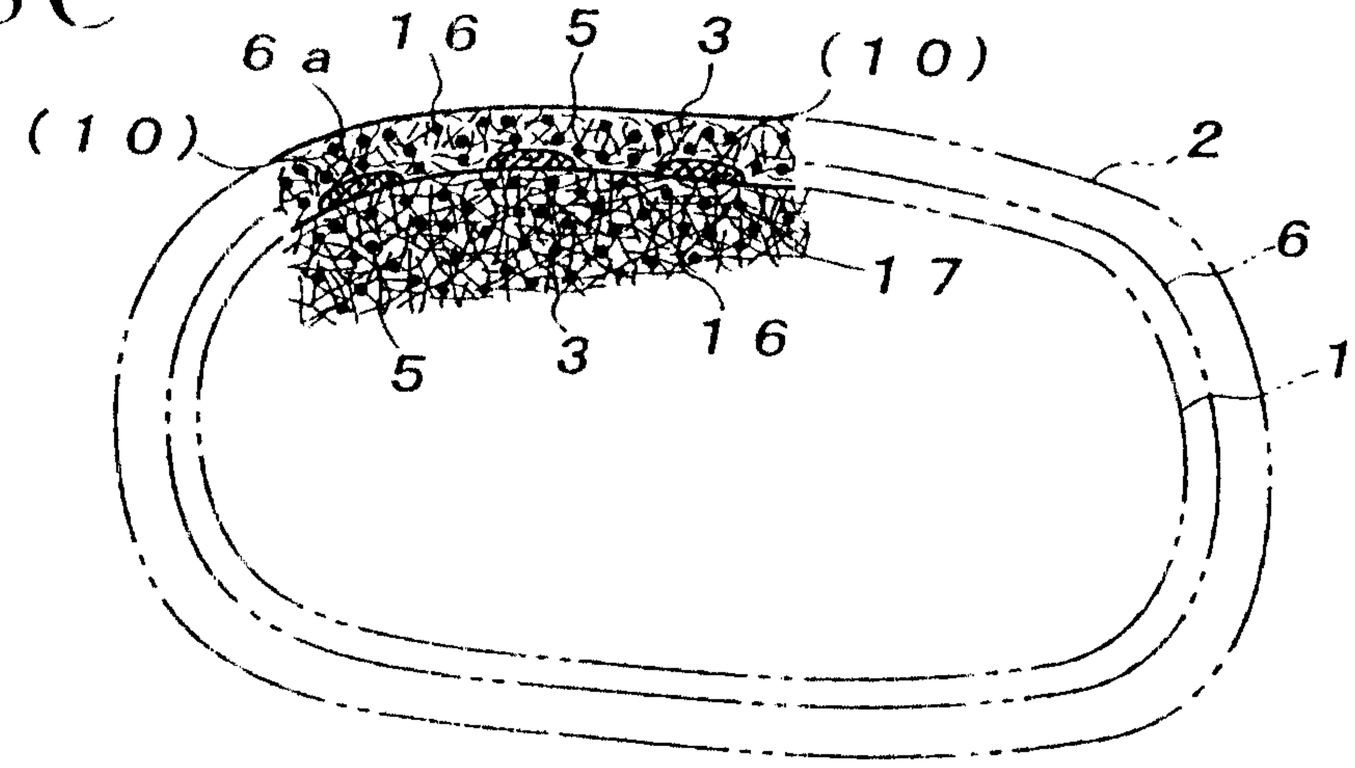


Fig.4A

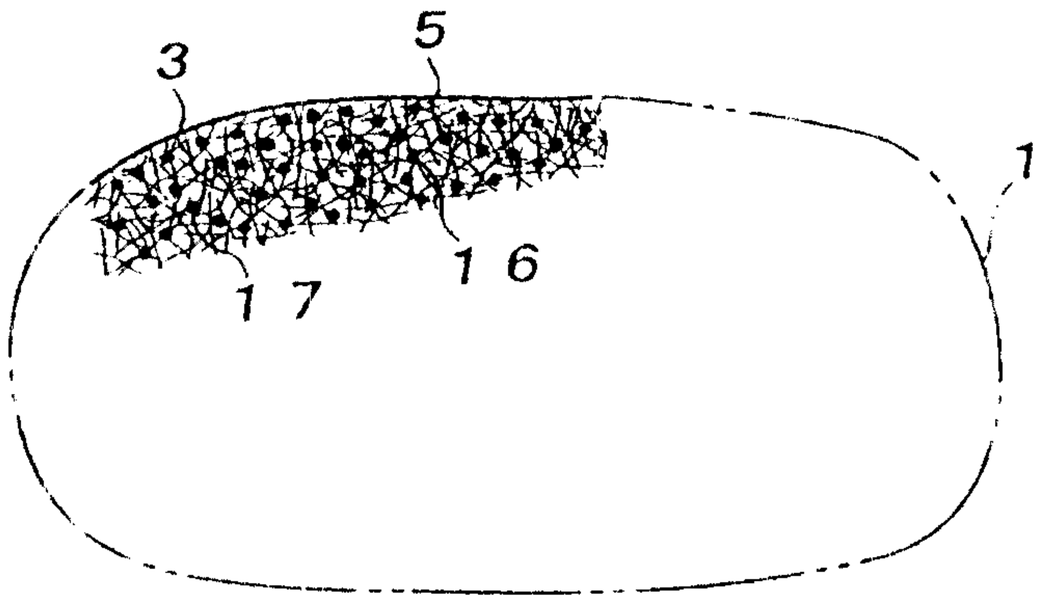


Fig.4B

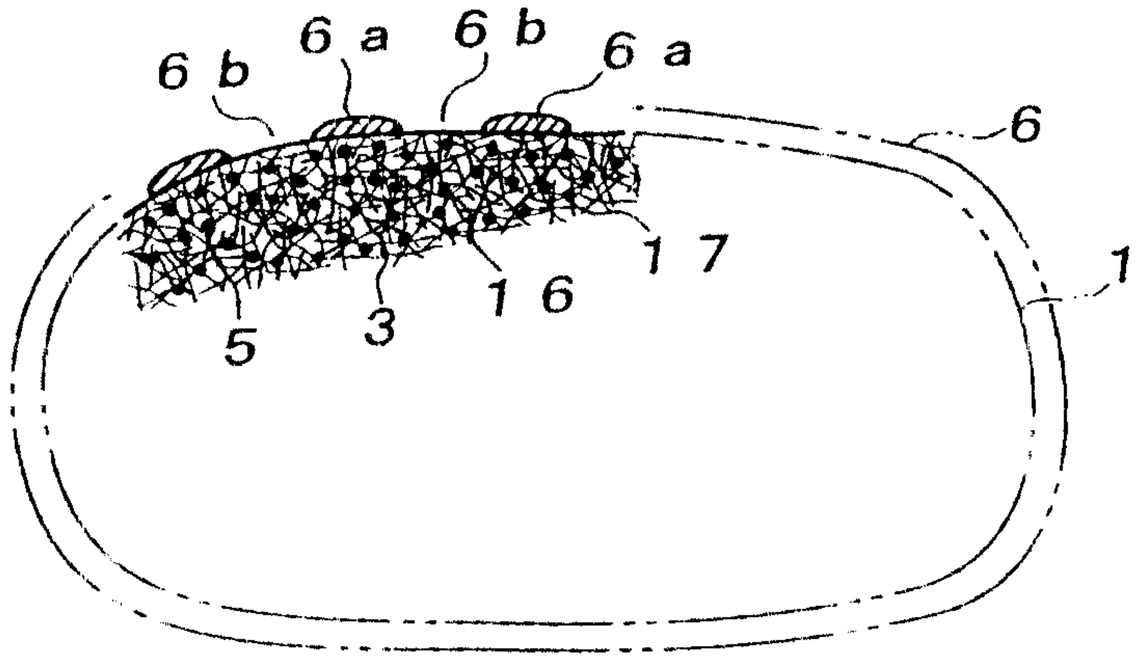


Fig.4C

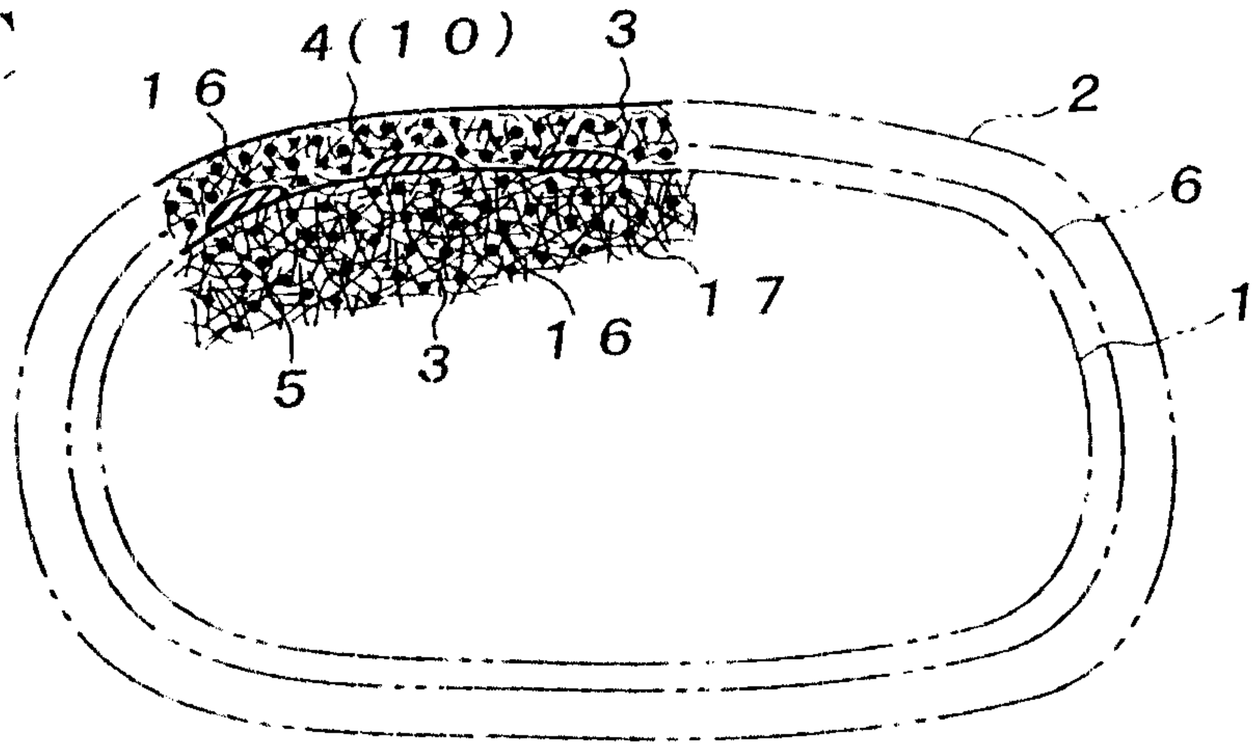


Fig.5

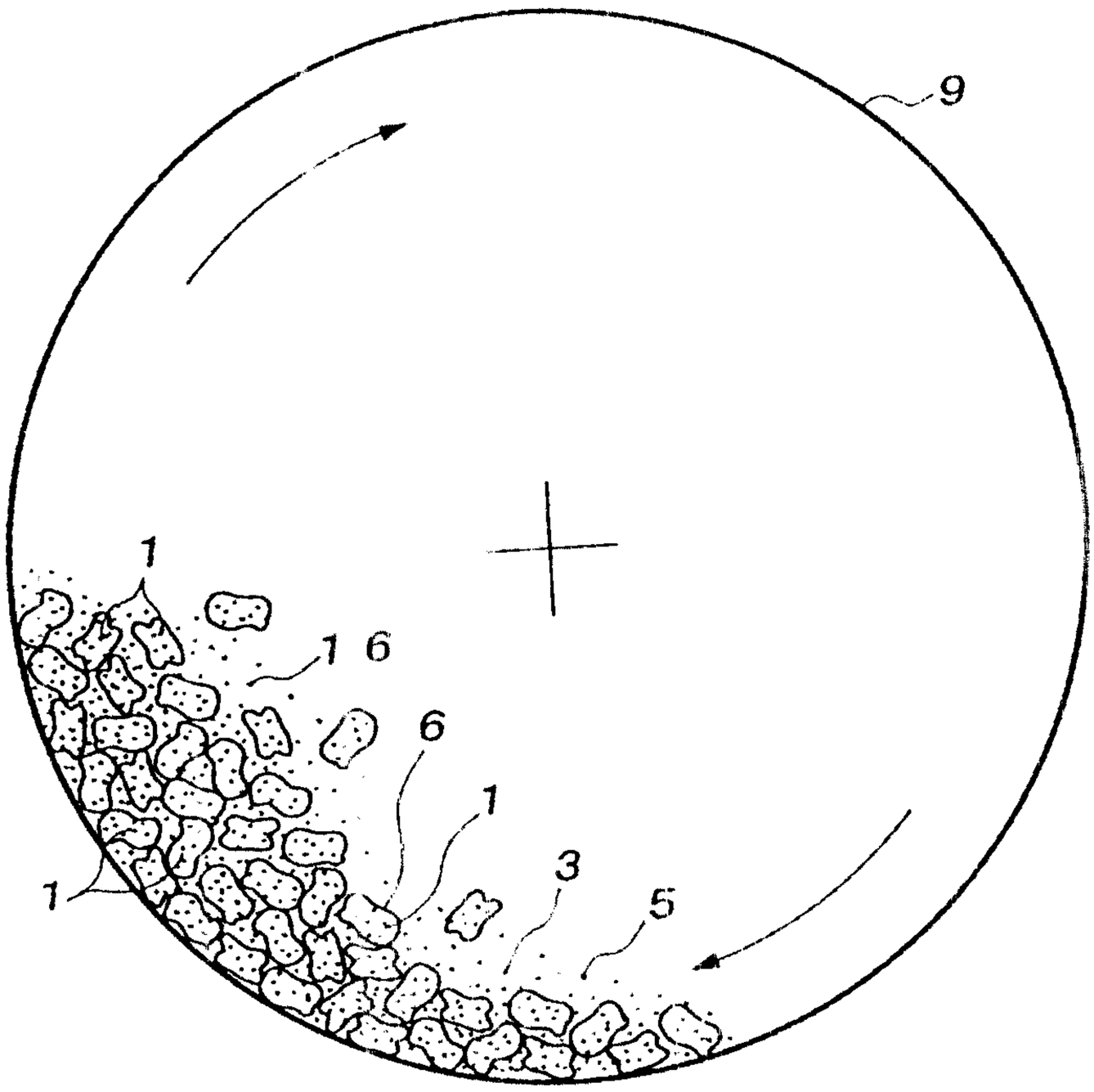


Fig.6A

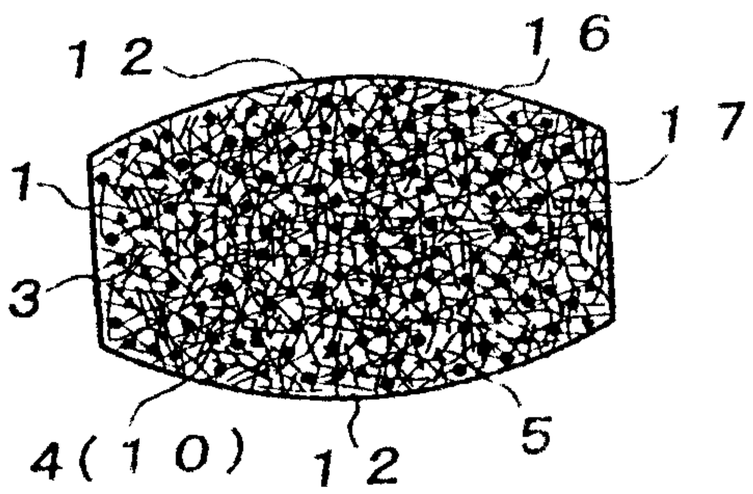


Fig.6B

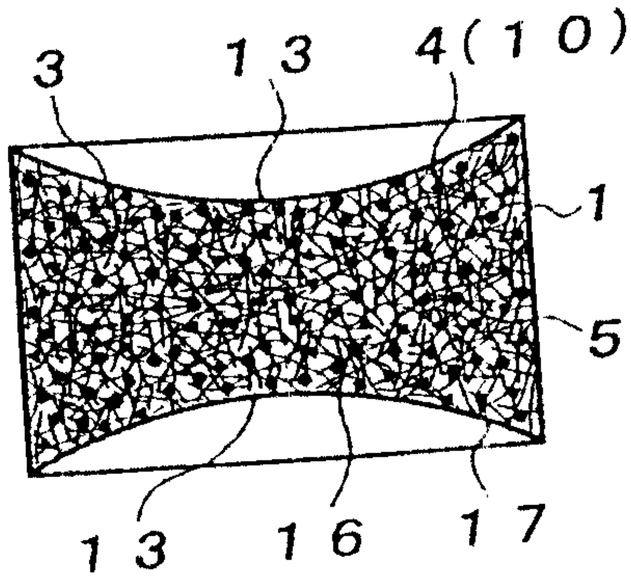


Fig.7

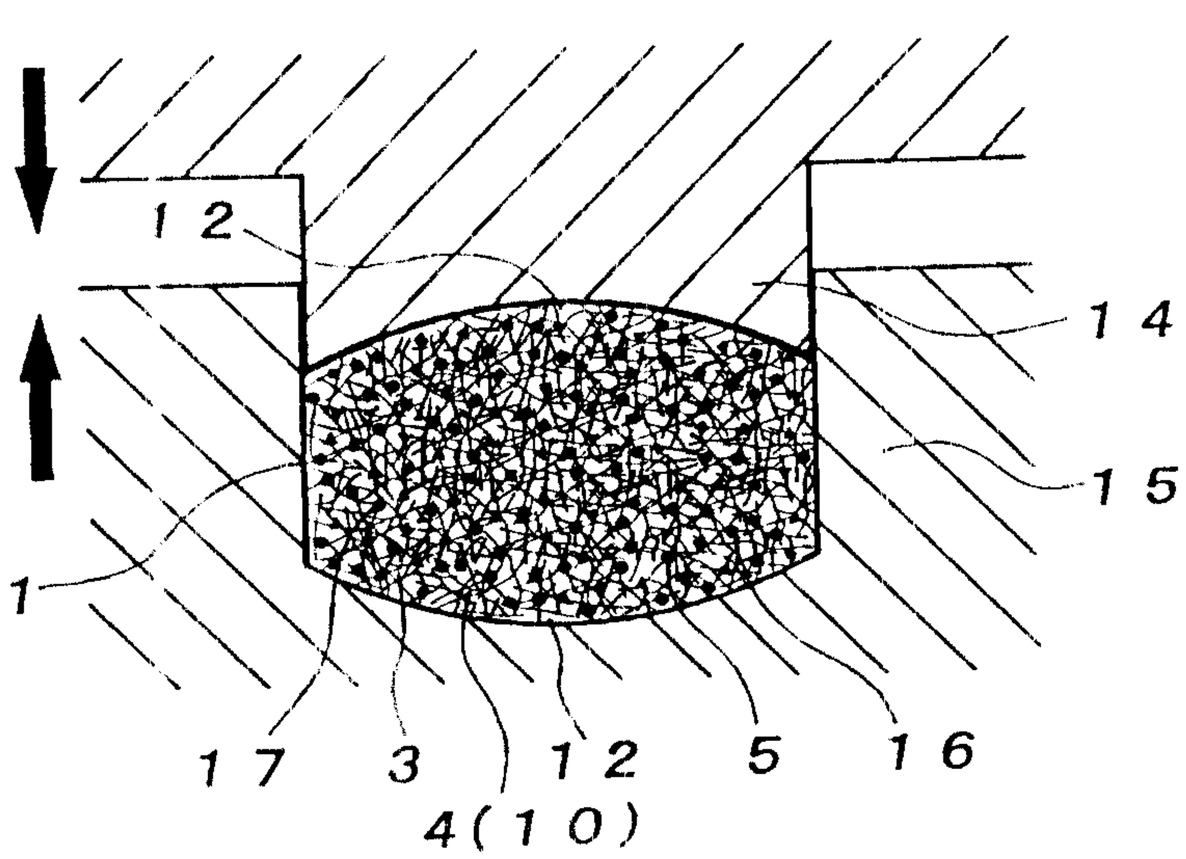
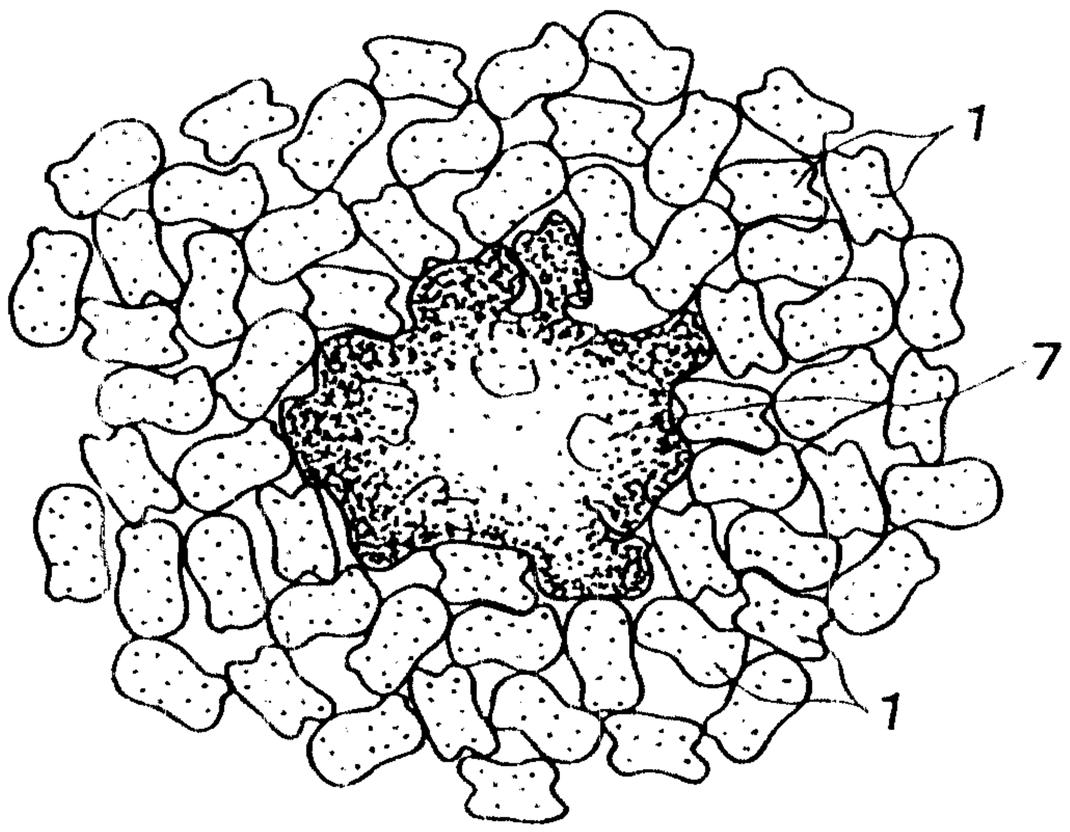
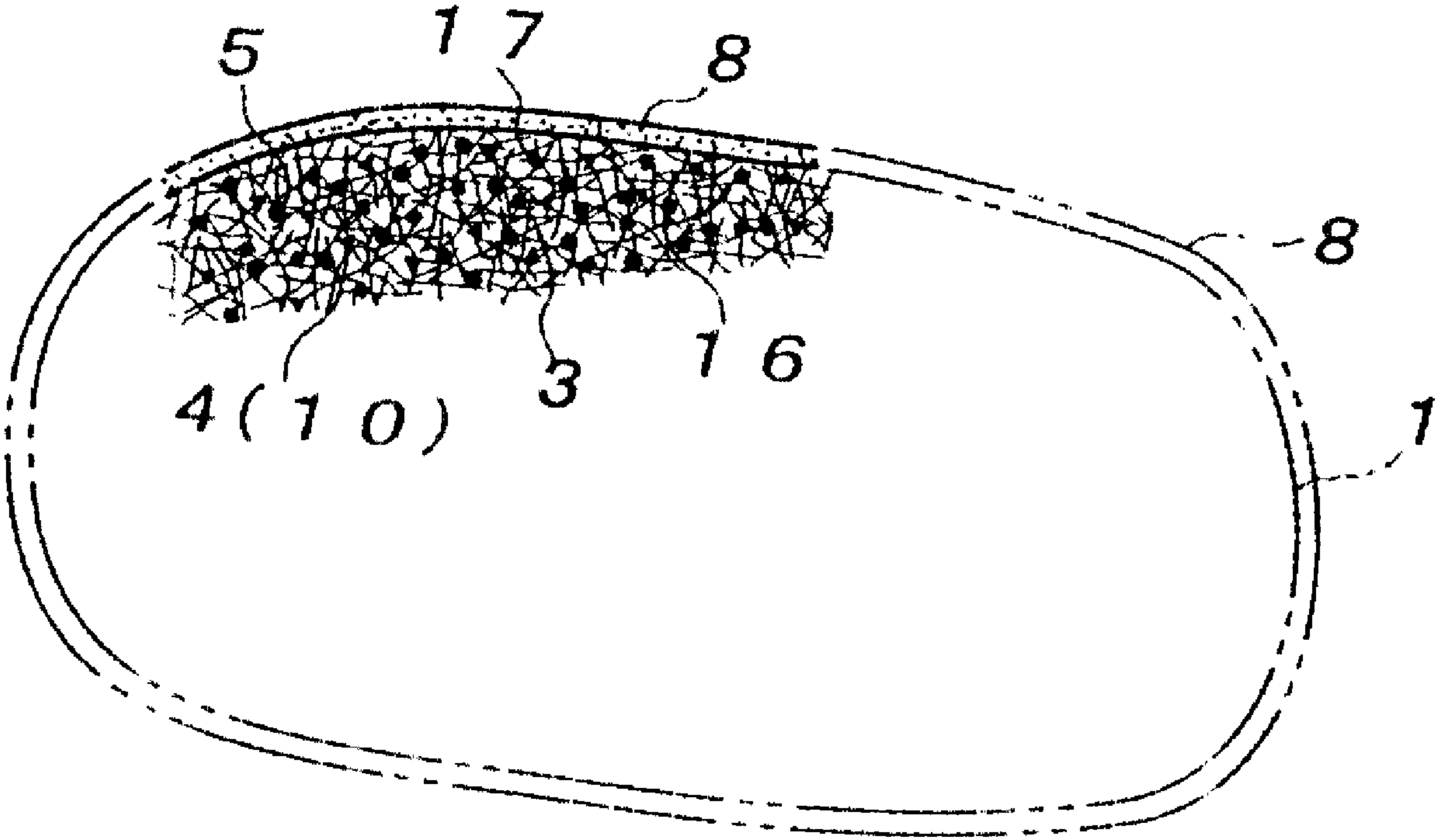


Fig.8




5
17
8
8
1
4(10)
3
16