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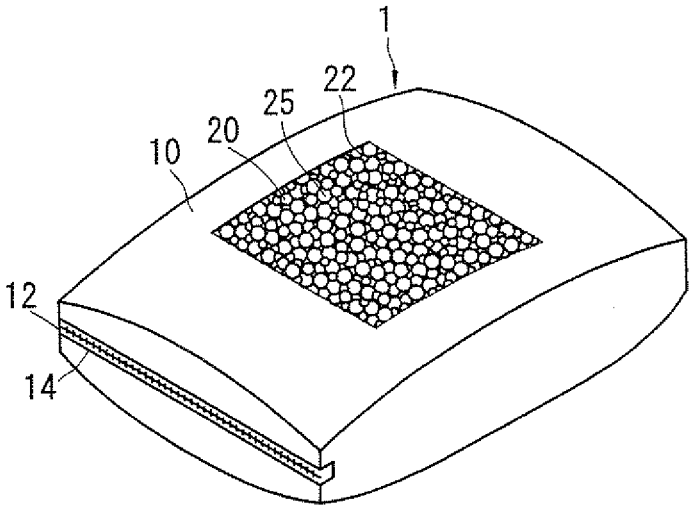
(54) **Pillow**

(57) A pillow (1) comprising a bag (10) and a large number of chips (22) in the bag (10), wherein multiple chips are connected together to form a chip assembly by means of a linear member (28) comprising a thread or a string having a rubber-like elasticity passed through a through-hole provided in the chips, and multiple chip assemblies (25) are stuffed in the bag (10).

FIG. 1



EP 1 882 430 A1

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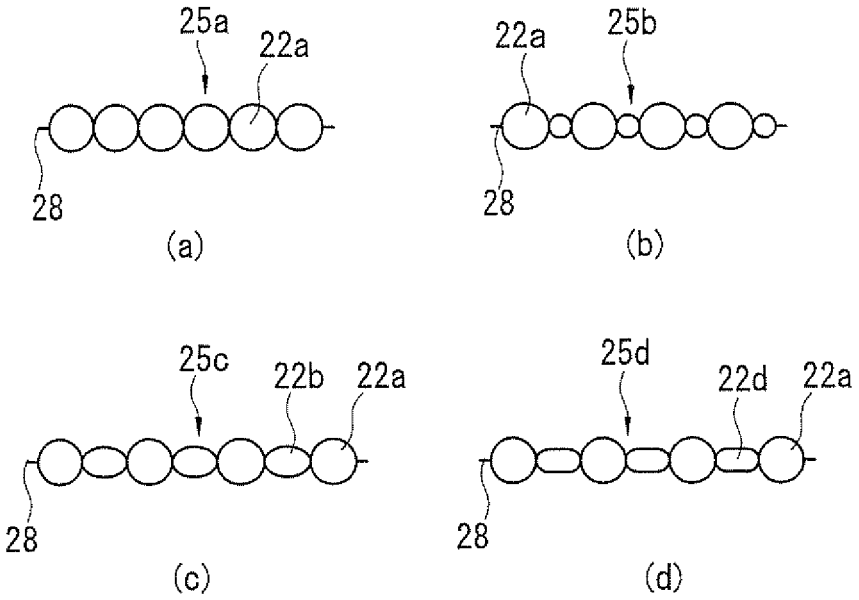
FIG. 3



Description

[0001] The present invention relates to pillows that bring a pleasant sleep.

[0002] Pillows are one of the important bedclothes. In order to obtain good sleep, the shape of pillows is a particularly important factor. Pillows are used by children to aged people, men and women, healthy and sick persons, and many others and the shape of pillows suited for individual users varies greatly from person to person. The shape of pillows depends on the size of the head and neck of users, position of the sleeping posture of users, position of the head with respect to the pillow, and other factors. The posture of sleepers and the position of the head change with tossing and turning.

Accordingly, the shape of pillows is required to have variability to change their shape according to the condition of users, ease of forming into the desired shape, and the capability of preserving the formed shape without collapsing.

[0003] In order to obtain a pleasant sleep, various contrivances have been made as to the shape of pillows, fillers to be stuffed, etc. For examples, a pillow stuffed with many wooden balls produce a chiropractic effect (refer, for example, to Japanese Unexamined Patent Publication No. 2001-145549, paragraph [0002] and Figure 12). Each wooden ball is provided with a through-hall to improve the flow of air and prevent the accumulation of heat inside the pillow. Because, however, wooden balls are not bound but allowed to move freely, the pillow is ready to sag and lose its shape.

[0004] Another pillow has moniliform wooden balls joined together by a string passed through the through-holes provided therein that are spirally arranged from the center of the top surface of the cushion material so as to cover the top surface of the pillow (see claim 1 in page 2 and Figure 4 of said publication). Because the wooden balls are spirally arranged only in the middle part of the top surface of the cushion material, this pillow provides a chiropractic effect at low cost. Because, however, the wooden balls are confined to the middle part of the top surface of the cushion material, the shape of the pillow is governed by the shape of the cushion material. Therefore, this pillow lacks diverse formability and ease of forming.

[0005] Another pillow comprises a headrest substantially in the middle part thereof and side edge parts. This pillow adjusts the height and hardness of the head rest by allowing the filler in the side edge parts to move thereto (refer, for example, to Japanese Unexamined Patent Publication No. 2002-65432, page 2, claim 1 and Figure 1). Because of the capability to adjust to the height and hardness suited to each user, this pillow provides a pleasant sleep (paragraph [0016] and Figure 2 of said publication). However, this pillow lacks diverse formability because the pillow height is adjusted by moving the filler in the side edge parts to the headrest. Besides, the hardness of the pillow changes with the height because the pillow becomes hard when the height increases. Therefore, this pillow cannot provide softness irrespective of the shape and height thereof.

[0006] As described above, the conventional pillows have not sufficiently satisfied users' needs for the diversity and preservability of shape and the ease of forming. Also, the conventional pillows have not provided the desired softness irrespective of the shape and height thereof.

[0007] The object of the present invention is to provide a pillow having shape diversity, ease of forming, shape preservability and flexibility. This object can be achieved by the features specified in the claims.

[0008] To furnish a solution to the above-described problem, a pillow comprising a bag and a large number of chips in the bag, wherein multiple chips are connected together to form a chip assembly by means of a linear member comprising a thread or a string having a rubber-like elasticity passed through a through-hole provided in the chips, and multiple chip assembly are stuffed in the bag.

[0009] In a pillow of the present invention, a chip assembly comprises multiple chips that are connected together by means of a linear member having a rubber-like elasticity. Rubber-like elasticity is an elasticity exhibited by rubber and other similar substances. The substances having a rubber-like elasticity undergo substantially great alteration of shape under small stresses and quickly and substantially resume original shape. Accordingly, the user can easily adjust and change the shape of the pillow as he or she chooses by using hands or moving the head because the chip assemblies stretch, contract, bend or move. Even when the shape has changed, the pillow is impervious to losing its shape because the chips are connected together by the linear member. The user can always feel a soft touch because the chip assemblies stretch, contract, bend and move, that is to say, because the chips are not fastened, as the position and direction in which the weight of the neck and head applies load.

The invention is described in detail in conjunction with the drawings, in which;

[0010]

Figure 1 is a perspective view of a pillow according to the present invention that shows the filler by removing a portion of the surface thereof,

Figure 2 shows examples of chips,

Figure 3 shows a portion of various chip assemblies,

Figure 4 is a front view showing an example of a looped chip assembly, and

Figure 5 is a perspective view showing an example of a formed pillow.

[0011] Figure 1 is a perspective view of the pillow according to the present invention, with the filler exposed by removing a portion of the surface. A pillow 1 comprises a bag 10, a filler 20 and a fastening means 14.

[0012] The bag 10 is made of cloth of cotton, silk, hemp and synthetic fibers and soft cotton yarns known as "garabo" is particularly suited. The bag 10 has an opening 12 that can be opened and closed. A slide fastener is attached to the opening 12 as a bag closing means 14. The bag closing means may be a touch-close fastener, a belt with a stopper, or a simple string. The pillow 1 having an openable opening 12 enables the user to increase, decrease or change the filler 20 according to the needs or wishes of the user. The opening 12 also makes it possible to take out the filler 20 for exposure to the sun and washing. Therefore, the pillow can remain sanitary and endure long use.

[0013] The filler 20 comprises chip assemblies 25, each of which comprising multiple chips 22 connected together. The chip 22 has the shape of the body of rotation. By shape, the chips 22 are classified, for example, into spherical chips 22a (Figure 2(a)), ellipsoidal chips 22b (Figure 2(b)), barrel-shaped chips 22c (Figure (c)), short-cylindrical chips 22d (Figure 2(d)), and spindle-shaped chips. Both ends of the short-cylindrical chips 22d are made hemispherical to increase the formability of the pillow. While the spherical chips 22a, ellipsoidal chips 22b and barrel-shaped chips 22c have a good formability, the short-cylindrical chips 22d have good shape preservability. While the diameter of the spherical chips 22a and barrel-shaped chips 22c is approximately 4 to 20 mm, the longer diameter of the ellipsoidal chips 22b is approximately 5 to 20 mm. The short-cylindrical chips 22d are approximately 5 to 10 mm in diameter and approximately 10 to 20 mm in length. All chips 22 have a through-hole 23 that passes through the center thereof and the diameter of the through-hole 23 varies between approximately 1 and 5 mm depending on the diameter of the chips 22. These chips may also have polyhedral shapes and equilateral dodecahedron or equilateral icosahedron whose shape is close to the shape of sphere is particularly preferable. These polyhedrons have good enough shape preservability to remain impervious to losing their shape.

[0014] The chips 22 are made of woods or synthetic resins. Woods include Japanese cypress, pine, Japanese cedar, maple, thujopsis dolabrata, poplar, magnolia and others. When the chips 22 are made of woods, the pillow gives forth a characteristic faint aroma peculiar to woods and provides a relaxation and stress-relieving effect. Synthetic resins include polyurethane, polypropylene, polyethylene, polystyrene and others. In order to ensure good formability of the pillow and reduce grating friction sound, it is preferable to make the surface of the chips 22 as smooth as possible.

[0015] The chip assembly 25 comprises said chips 22 and a linear member 28 consisting of a thread or a string that is passed through a through-hole 23 provided therein, with a stopper provided at each end thereof to prevent the slip-off of the linear member 28 from the chips 22. The linear member 28 consists of a thread or a string having a rubber-like elasticity. It is preferable that the linear member has an elongation of not less than 1 per cent. If elongation is less than 1 per cent, the chip assemblies cannot stretch, contract, bend or move with ease and, as a result of which, the pillow loses diverse formability, ease of forming and flexibility.

[0016] The linear member 28 is made of, for example, synthetic fibers, synthetic rubbers or natural rubbers. Synthetic fibers include polyurethane, polyamide and other synthetic fibers. Synthetic rubbers include polyurethane rubber, chloroprene rubber, nitrile rubber and other synthetic rubbers. It is preferable that the outer surface of said materials is covered with knitted threads. The covering decreases the elongation of the linear member but increases the strength thereof. In the case of polyurethane rubber cover with knitted threads, for example, the elongation of the linear member itself is 100 to 200 per cent. However, the elongation drops to approximately 1 to 5 per cent when the chip assemblies are caused to stretch, contract, bend or move by weight and motion of the neck and head and the force to adjust the shape of the pillow.

[0017] The diameter of the linear member 28 ranges between approximately 0.7 and 4 mm, depending on the diameter of the through-hole 23 in the chips to be connected together. The clearance between adjoining chips 22 connected by the linear member 28 and held under no load is approximately 0 to 0.5 mm. Except for 0, the clearance between adjoining chips is the average throughout the entire length of the chip assembly. When the clearance is 0, adjoining chips are in light contact with each other. If the clearance is too large, one linear member can possibly become intertwined with other linear members and the stretching, contraction, bending and movement of the chip assemblies can be prevented. When the clearance is 0, the length of the linear member and that of the chip assembly is substantially equal. Where there is a clearance, the linear member 28 is a little longer than the chip assembly 25 by the magnitude of clearance. The length of the chip assembly 25 is approximately 30 to 120 cm. The number of the chips to be connected together varies with the length of the chip assembly and the diameter or length of the chip.

[0018] The chip assembly 25 can be made of multiple chips 22 that are different from each other in at least one of shape and size. Figure 3 (a) shows an example in which spherical chips 22a of the same diameter are connected together. Figure 3(b) shows an example in which spherical chips 22a of different diameters are connected together. Figure 3(c) shows an example in which spherical chips 22a and ellipsoidal chips 22b are connected together. Figure 3 (d) shows an example in which spherical chips 22a and short-cylindrical chips 22d are connected together. While two types of chips 22 having different sizes or shapes are connected together, three or more types of chips may be connected together, as well.

[0019] Figure 4 shows an example of the chip assembly 26 in which spherical chips 22a of the same diameter are

connected into a loop. Figure shows a chip assembly in a suspended state that consists of the spherical chips 22a that are passed over a linear member 28 without leaving a clearance therebetween. In the suspended state, the linear member 28 stretches under the weight of the spherical chips 22a and emerges above the uppermost spherical chip 22a. In addition to the embodiment shown in Figure 4, chip assemblies 25 consisting of two or more types of chips 22 that are different from each other at least in shape or size may also be connected into a loop form. When connected into a loop form, the movement of the chips in the chip assembly becomes more readily restricted. Then, the chip assemblies in a loop form attain greater shape preservability than those in a string form. The length of the chip assemblies in a loop form (that is, the length of a loop formed by folding a straight string of chip assemblies) is, for example, 15 to 60 cm.

[0020] A pillow can be formed by randomly stuffing into a bag 10 multiple chip assemblies 25 having different lengths and comprising chips 22 of different shapes and diameters. For example, chip assemblies of one to five different lengths and chips of one to eight different diameters and one to three different shapes are randomly stuffed in the bag 10. This random stuffing facilitates the formability, ease of forming, shape preservability, hardness (or softness), sense of touch and breathability. The pillows according to the present invention are right for an extensive range of people irrespective of sex or age, from children to elderly and sick people. The pillow 1 shown in Figure 1 is an example in which multiple chip assemblies 25 of different lengths and comprising chips 22 of different diameters are randomly stuffed in a bag 10.

[0021] The quantity of the chip assemblies to be stuffed is determined by the height of the pillow suited to the user. The height of the pillow, which is approximately 3 to 8 cm, is increased by increasing the quantity of the filler. The filler is stuffed with some clearance because close packing impairs formability. The volume ratio (filling factor) of the chip assemblies 25 to the volume of the bag 10 is approximately 80 to 95 per cent.

[0022] Massage effect is strengthened by stuffing larger chip assemblies of 10 to 15 mm diameter. When a mixture of large-, medium-and small-diameter chip assemblies are randomly stuffed, proportions are arranged so that the large chip assemblies are present in larger quantities than the medium and smaller ones. When the pillow is used for a long time, the medium and small-diameter chips sometimes gradually sink and the chip assemblies form layers substantially in the order of the large, medium and small chips. In such a case, many large chips may sometimes impinge on the neck and head of the user and cause a pain. When, then, the pillow is turned upside down, the medium and small chips come to the upper side and the pillow gives a softer touch and alleviates the pain, though the massage effect drops somewhat.

[0023] The height of the pillow 1 described above can be raised by narrowing the width of the pillow by pressing the front and rear faces of the pillow longitudinally (along the nape) as well as both sides thereof. The height of the pillow 1 can be lowered by pressing downward. If the desired height cannot be obtained in one action, said action must be repeated several times.

[0024] When the user wants to change the shape of the pillow by changing the height of the head support 4 and neck support 6(Figure 5) in a face-up position, the user moves the neck to right and left or around while placing the back part of the head on the center (both longitudinally and laterally). This motion changes the shape of the pillow by indenting the areas where the head and neck are in contact, thereby forming the head support 4 and neck support 6. The height of the head support 4 and neck support 6 can be adjusted by applying the same action as the one described earlier. In a horizontal position the height can be adjusted by forming the head support 4 and neck support 6 as described earlier.

[Example 1]

[0025] The bag was 33 cm long, 48 cm wide and 6 cm high. The linear member was a rubber string prepared by covering polyurethane rubber with polyester knitting yarn. The rubber string was 1.2 mm diameter and 60 cm long. The rubber string had an elongation of 100 per cent. The chips were made of cypress and had a diameter of 12 mm. Eighty pieces of chip assemblies were prepared by passing fifty-seven chips over each rubber string. The chip assemblies were mixed and stuffed in the bag, with a filling factor of 85 per cent.

[0026] The popularly used pillow stuffed with buckwheat shells was used as the criterion for judging the shape diversity, ease of forming, shape preservability and flexibility and the pillow of the present invention described above was compared with commercially available low-resilience urethane foam, feather and beads pillows. Table 1 shows the results of the comparison. The pillow of Example 1 proved to excel the buckwheat shell pillow and the other commercially available pillows in all respects.

[Table 1]

		Shape Diversity	Ease of Forming	Shape Preservability	Flexibility
Present Invention	Example 1	◎	◎	◎	◎
	Example 2	◎	◎	◎	◎
	Example 3	◎	◎	◎	◎
Commercially Available	Buckwheat shell pillow	Criterion	Criterion	Criterion	Criterion
	Low-resilience urethane foam pillow	○	△	○	△
	Feather pillow	○	○	×	○
	Beads pillow	○	○	×	○

Compared with "buckwheat shell pillow"

◎: Excellent ○: Better △: Similar ×: Worse

[Example 2]

[0027] The bag was the same one as that used in Example 1. The chips were made of cypress and spherical in shape, having seven different diameters between 4 and 15 mm. The linear members were rubber strings similar to those used in Example 1, having lengths of 30, 60 and 120 cm. The rubber strings had an elongation of 100 per cent. Chip assemblies were prepared by passing chips throughout the entire length of each rubber string. Twenty-one types of chip assemblies totaling 106 pieces were prepared by using chips of seven different diameters and rubber rings of three different lengths. Randomly mixed chip assemblies were stuffed in the bag with a filling factor of 85 per cent. Table 2 shows the combinations of the chips and rubber strings.

[Table 2]

Chip	Connector (Rubber String)	Chip Assembly					
		120 cm		60 cm		30 cm	
Diameter/ Face to Face Distance* (mm)	Diameter (mm)	Number of Chips	Number Used	Number of Chips	Number Used	Number of Chips	Number Used
15/14	1.5	83	2	42	4	21	4
13/12	1.5	105	3	52	4	26	6
12/11	1.2	113	3	57	4	29	6
10/9	1.2	129	4	65	6	33	8
8/7	1.0	177	4	89	6	45	8
6/5	1.0	272	4	136	6	68	8
4/3	0.8	412	4	206	6	103	8
*The "face to face distance" is the distance between the end faces of an opening.							

[0028] The pillow prepared as described above was compared with the conventional pillow stuffed with buckwheat shells in terms of the shape diversity, ease of forming, shape preservability and flexibility and the pillow of the present invention described above was compared with commercially available low-resilience urethane foam, feather and beads pillows. Table 1 shows the results of the comparison. The pillow of Example 2 proved to excel the buckwheat shell pillow and the other commercially available pillows in all respects.

[Example 3]

[0029] The bag and chip assemblies were the same as those used in Example 2. However, the chip assemblies were connected into a loop form and randomly stuffed in the bag. While the loops were 15, 30 and 60 cm in length, the filling factor was 85 per cent.

[0030] The pillow prepared as described above was compared with the conventional pillow stuffed with buckwheat shells in terms of the shape diversity, ease of forming, shape preservability and flexibility and the pillow of the present invention described above was compared with commercially available low-resilience urethane foam, feather and beads pillows. Table 1 shows the results of the comparison. The pillow of Example 3 proved to excel the buckwheat shell pillow and the other commercially available pillows in all respects.

[0031] The present invention is not limited to the examples described above. For example, chip assemblies of wooden and synthetic resin chips may be stuffed together. Aromatic materials, such as lavender, rose and sagebrush, may be put in cloth bags and inserted among the stuffed chip assemblies. This provides an aromatherapy effect.

Claims

1. A pillow comprising a bag (10), and a large number of chips (22) stuffed in said bag (10), **characterized in that**, said multiple chips (22) are connected together to form a chip assembly (25) by means of a linear member (28) comprising a thread or a string having a rubber-like elasticity passed through a through-hole provided in said chips (22), and multiple chip assemblies (25) are stuffed in said bag (10).

2. A pillow according to claim 1, in which said linear member (28) has an elongation of not less than 1 per cent.

3. A pillow according to claim 1 or 2, in which at least one of the linear members (28) and chips (22) constituting said chip assemblies (25) have different lengths and different diameters and the chip assemblies (25) are randomly mixed and stuffed in said bag 10.

4. A pillow according to any of claim 1 to 3, in which said chip assemblies (25) are formed into a loop.

FIG. 1

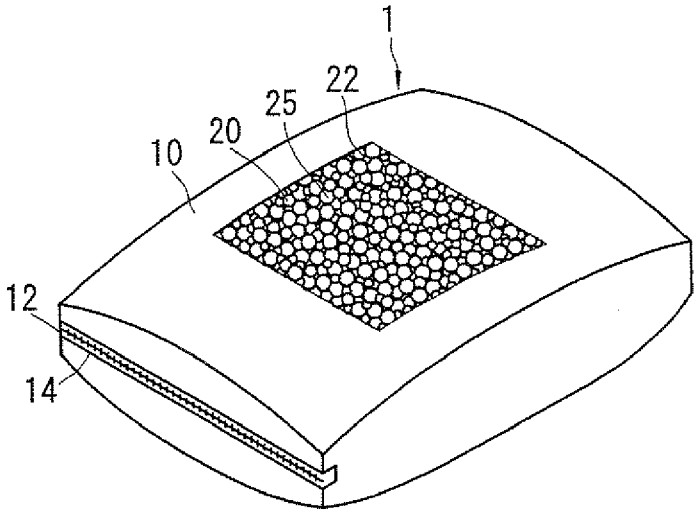
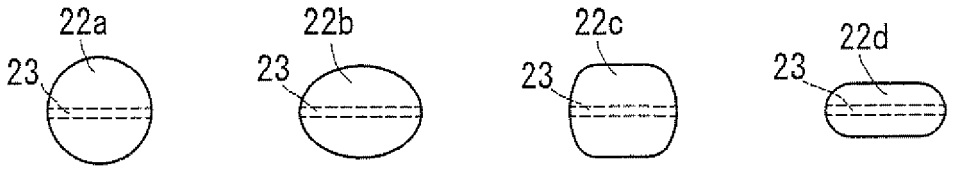


FIG. 2



(a) (b) (c) (d)

FIG. 3

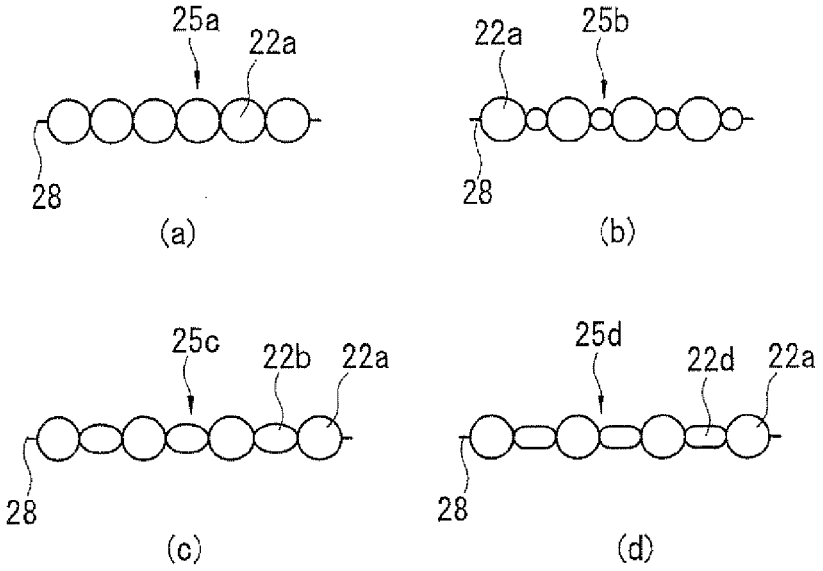


FIG. 4

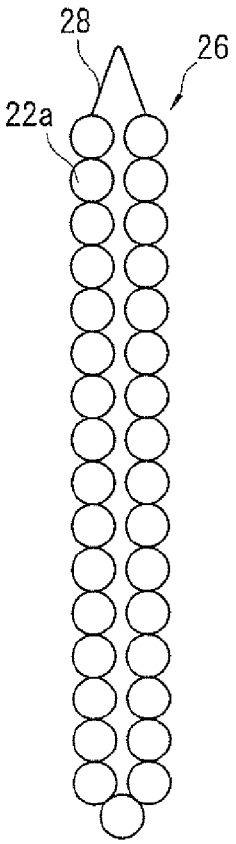
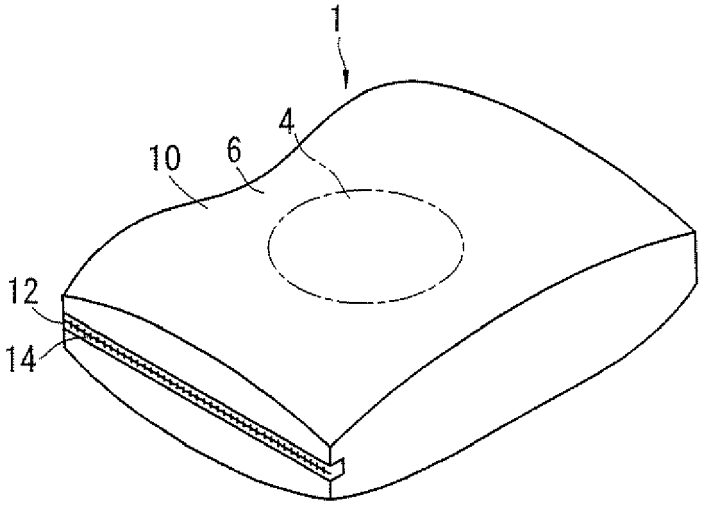


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 07 11 2967

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 945 591 A (INAGAKI JITSUO [JP]) 7 August 1990 (1990-08-07) * figures 3,4 * * column 2 * * column 4, line 63 - line 68 * -----	1-3	INV. A47G9/10 B68G1/00
A	EP 0 470 767 A (CHAU CHAN HOI [CN] CHAN HOI CHAU [CN]) 12 February 1992 (1992-02-12) * abstract; figure 2 * * column 2, line 29 - column 3, line 6 * * column 4, line 1 - line 8 * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)

A47G
A01K
A47C
A61H
B68G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	22 November 2007	van Overbeek, Kajsa

CATEGORY OF CITED DOCUMENTS

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22-11-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4945591 A	07-08-1990	NONE	
EP 0470767 A	12-02-1992	DE 9109270 U1	24-10-1991
		DE 69123002 D1	12-12-1996
		HK 13297 A	14-02-1997

EPO FORM P0459

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Patent documents cited in the description

- JP 2001145549 A **[0003]**
- JP 2002065432 A **[0005]**