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

(11) EP 1 683 447 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
26.07.2006 Bulletin 2006/30

(51) Int Cl.:
A47C 27/14 *(2006.01)*

(21) Application number: **06075082.5**

(22) Date of filing: **12.01.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **21.01.2005 JP 2005013556**
26.07.2005 JP 2005216058

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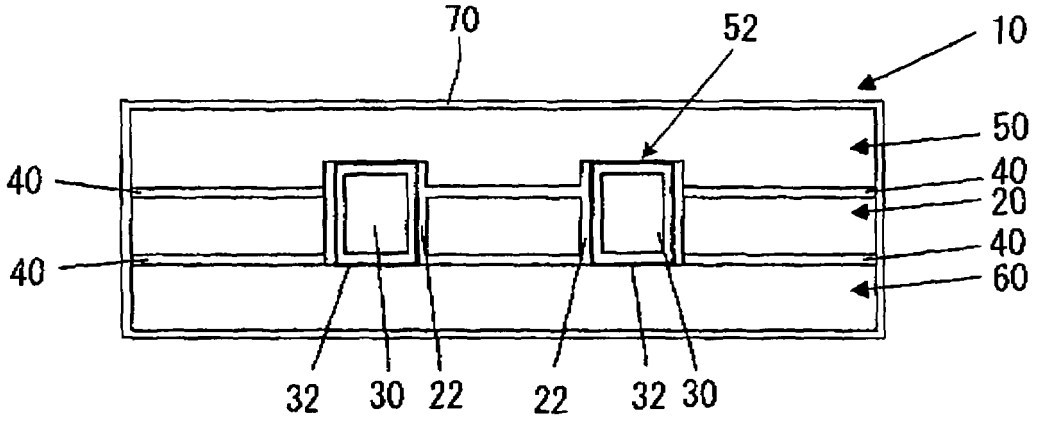
(54) Cushion body

(57) A cushion body (10, 210, 310,410,510) includes a main body (20, 220, 320,420,520) made of elastic foam and having at opposite sides thereof first and second surfaces between which a thickness is defined, the main body being formed with a plurality of holes (22, 222, 322,422,522) in a direction of the thickness, and a plurality of columnar elastic members (30, 230, 330,430,530) positioned in the plural holes, respectively, the plural columnar elastic members being different from the main body in elasticity. The cushion body further includes a first surface member (50,250, 350,450,550) made of elastic foam similar to the elastic foam of the main body, the first surface member being connected to or integral with the first surface of the main body, and a second surface member (60, 260, 360,460,560) made of elastic foam similar to the elastic foam of the main body, the second surface member being connected to or integral with the second surface of the main body.

FIG. 1



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Description

FIELD OF THE INVENTION

[0001] This invention relates to a cushion body.

BACKGROUND

[0002] A known bedding (e.g. a pillow, a mattress) is disclosed in JP2003-339484A, which adopts a cushion body as a base which is made of an elastic body such as a polyurethane resin, or the like. The disclosed cushion body includes a main body made of elastic foam, plural holes penetrating through in a thickness direction of the main body, and plural columnar elastic members having different degree of hardness from the main body. The cushion body is formed by locating each columnar elastic member in each hole. Further, the cushion body is covered with a cover cloth and configures the bedding (e.g. the pillow, the mattress). The bedding (e.g. the pillow, the mattress), which is configured as described above has locally different degree of hardness and thus offers a user a comfort and a massage effect.

[0003] However, the bedding using the cushion body as the base may occasionally be inconvenient in practical use. More particularly, because each columnar elastic member is simply located in each hole penetrating through in the thickness direction of the main body, the columnar elastic member may occasionally slip out from the holes. For example, because the pillow is frequently turned from one face to another, a possibility of the slip of the columnar elastic member from the hole may be increased.

[0004] A need thus exists for a cushion body, the columnar elastic member of which is not easily slipped out from the hole penetrating through in the thickness direction of the main body.

SUMMARY OF THE INVENTION

[0005] According to an aspect of the present invention, a cushion body includes a main body made of elastic foam and having at opposite sides thereof first and second surfaces between which a thickness is defined, the main body being formed with a plurality of holes in a direction of the thickness, and a plurality of columnar elastic members positioned in the plural holes, respectively, the plural columnar elastic members being different from the main body in elasticity. The cushion body further includes a first surface member made of elastic foam similar to the elastic foam of the main body, the first surface member being connected to the first surface of the main body, and a second surface member made of elastic foam similar to the elastic foam of the main body, the second surface member being connected to the second surface of the main body.

[0006] According to a further aspect of the present invention, a cushion body includes a main body made of elastic foam and having at opposite sides thereof first and second surfaces between which a thickness is defined, and a plurality of columnar elastic members buried in the main body, the plural columnar elastic members being different from the main body in elasticity. The cushion body further includes a first surface member made of elastic foam similar to the elastic foam of the main body, the first surface member being integrally formed with the first surface of the main body, and a second surface member made of elastic foam similar to the elastic foam of the main body, the second surface member being integrally formed with the second surface of the main body.

[0007] According to the present invention, because the movement of the columnar elastic member in the axis direction (an up-and-down direction) is restrained by the first surface member and the second surface member, the columnar elastic member positioned in the hole formed on the main body does not slip out from the hole.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The foregoing and additional features and characteristics of the present invention will become more apparent from the following detailed description considered with reference to the accompanying drawings, wherein:

[0009] Fig. 1 is a view illustrating an inner structure of a part of a cushion body according to a first embodiment of the present invention.

[0010] Fig. 2 is a view illustrating an inner structure of a part of a cushion body according to a second embodiment of the present invention.

[0011] Fig. 3 is a view illustrating an inner structure of a part of a cushion body according to a third embodiment of the present invention.

[0012] Fig. 4 is a view illustrating an inner structure of a part of a cushion body according to a fourth embodiment of the present invention.

[0013] Fig. 5 is a view illustrating an inner structure of a part of a cushion body according to a fifth embodiment of the present invention.

[0014] Fig. 6 is a graph illustrating load - deflection characteristics of a columnar elastic member per se.

DETAILED DESCRIPTION

[0015] Embodiments of the present invention will be explained hereinbelow with reference to the attached drawings.

[0016] A first embodiment of the present invention is illustrated in Fig. 1. A cushion body 10 includes a main body 20, plural holes 22, and plural columnar elastic members 30. The columnar elastic member 30 includes a polygonal columnar shape, a cylindrical shape, or the like. The main body 20 is made of elastic foam such as polyurethane foam, or the like, and formed with the holes 22 in a thickness direction thereof, and each columnar elastic member 30 is inserted into and positioned in each

hole 22 respectively. The columnar elastic member 30 is made of a different material from the main body 20 and has a different elasticity (hardness) from the main body 20. Further, the columnar elastic member 30 is enclosed in a bag 32 made of a thin film material. In a condition where the columnar elastic member 30 is deformed (contraction/expansion) upwards and downwards, the thin film of the bag 32 reduces a noise caused by sliding between the columnar elastic member 30 and an inner circumferential surface of the hole 22. Because the bag 32 is made of the thin film material, the bag 32 can be deformed in response to a deformation of the columnar elastic member 30 without harming characteristics of the columnar elastic member 30.

[0017] The main body 20 is connected with, at a first surface, a first surface member 50 made of a similar material to the main body 20 by means of an adhesive 40, and at a second surface, a second surface member 60 made of the similar material to the main body 20 by means of the adhesive 40.

[0018] As illustrated in Fig. 1, a lower end portion of the columnar elastic member 30 is not connected with but contacted on the second surface member 60, and an upper end portion of the columnar elastic member 30 is fitted into and fixed at a recessed portion 52 formed on a reverse side of the first surface member 50. Because of a concave-convex engagement of the columnar elastic member 30 and the first surface member 50, the upper end portion of the columnar elastic member 30 is fixed. Therefore, the degradation of the columnar elastic member 30 can be reduced even when an up-and-down deformation (contraction/expansion) of the columnar elastic member 30 is repeated. Further, both of the first surface member 50 and the second surface member 60 can be used by a user.

[0019] A second embodiment of the present invention is illustrated in Fig. 2. A cushion body 210 includes a main body 220, plural holes 222, and plural columnar elastic members 230. The same structure as described in the aforementioned embodiment is not repeatedly explained. As illustrated in Fig. 2, a height of the columnar elastic member 230 is substantially equal to a length of the hole 222 in an axis direction.

[0020] A third embodiment of the present invention is illustrated in Fig. 3. A cushion body 310 includes a main body 320, plural holes 322, and plural columnar elastic members 330. The same structure as described in the aforementioned embodiments is not repeatedly explained. As illustrated in Fig. 3, a height of the columnar elastic member 330 is shorter than a length of the hole 322 in the axis direction.

[0021] According to the first to the third embodiments of the present invention, the main body made of the elastic foam is connected with, at the first surface (the second surface), the first surface member (the second surface member) made of the similar material as the main body by means of the adhesive. Therefore, there is variety of options for selecting the adhesive relative to a condition where the main body is connected with the first surface member (the second surface member) made of a different material from the main body.

[0022] A fourth embodiment of the present invention is illustrated in Fig. 4. A cushion body 410 includes a main body 420, plural holes 422, and plural columnar elastic members 430. The same structure as described in the aforementioned embodiments is not repeatedly explained. As illustrated in Fig. 4, the cushion body 410 includes the main body 420 made of the elastic foam, which is integrally formed with a first surface member 450 and a second surface member 460 in a forming mold. According to the fourth embodiment of the present invention, because the main body 420, which configures the cushion body 410, is formed integrally with the first surface member 450 and the second surface member 460, the adhesive is not used for connecting the main body 420 with the first and second surface members 450 and 460. Further, each columnar elastic member 430 enclosed in a thin film bag 432 is buried in the main body 420.

[0023] A fifth embodiment of the present invention is illustrated in Fig. 5. A cushion body 510 includes a main body 520, plural holes 522, and plural columnar elastic members 530. The same structure as described in the aforementioned embodiments is not repeatedly explained. As illustrated in Fig. 5, because elastic foam of the columnar elastic member 530 contains oil 531, the main body 520 made of elastic foam is not connected with each columnar elastic member 530 by means of the adhesive or the like, or an adhesive force between the main body 520 and the columnar elastic member 530 is small, each columnar elastic member 530 is readily separated from the main body 520. Therefore, disposability and recycling efficiency can be improved.

[0024] Further, because the elastic foam of the columnar elastic member 530 contains liquid lubricant such as the oil 531, or the like, the columnar elastic member 530 can smoothly be deformed in response to a load. Accordingly, the cushion body 510 deforms, without difficulty, in response to a turn or a physical movement of the user, and the user can obtain comfortable sense of use.

[0025] According to the embodiments of the present invention, by appropriately varying the hardness (elasticity), a degree of density, or other attributes (physical characteristics) of the elastic foam of the main body, the characteristics of the cushion body can be adjusted. As illustrated in Fig. 6, within a range from 0 to 1 0N/314cm^2, a deflection of the columnar elastic member because of the load is less than or equal to 15mm.

[0026] Further, as long as the hardness (physical characteristics) of the elastic foam is less than or equal to 10N/314cm^2 measured by a hardness test (25% hardness ILD: Indentation Load Deflection) wherein each test piece was compressed to 25 percent, the elastic foam can be used as the cushion body for the pillow or the mattress without harming physical characteristics of the columnar elastic member. The aforementioned hardness

is measured using the method of JIS (Japanese Industrial Standard) 6400.

[0027] Besides the base of the bedding, the cushion body may be applied to any place to which a human body can be seated or leaned such as a seating portion of a sofa, a seating portion of a wheelchair, the pillow, or the like.

[0028] According to the embodiments of the present invention, although the columnar elastic member is movable upwards and downwards relative to the hole, an up-and-down movement is restrained by means of the first surface member and the second surface member. Accordingly, after the pillow or the mattress is manufactured by covering the cushion body with a cover 70, 270, 370, 470, 570, the columnar elastic member does not slip out from the hole even when the pillow or the mattress is turned from one face to another.

[0029] According to the embodiments of the present invention, by appropriately varying a hardness, a degree of density, or other attributes (physical characteristics) of the first surface member (the second surface member) to be connected with the first surface (the second surface) of the main body made of the elastic foam, characteristics of the cushion body can be adjusted.

[0030] According to the embodiments of the present invention, even in a condition where the material of the columnar elastic member contains the oil component, the thin film bag prevents the oil component from being transmitted to the main body. As long as a material of the thin film bag has a high degree of stretchability, a deformation level of the columnar elastic member may not be restrained.

[0031] According to the embodiments of the present invention, because the movement of the columnar elastic member in the axis direction (an up-and-down direction) is restrained by the first surface member and the second surface member, the columnar elastic member positioned in the hole formed on the main body does not slip out from the hole. A101.044

Claims

1. A cushion body (10, 210, 310,410,510) comprising:

a main body (20, 220, 320,420,520) made of elastic foam and having at opposite sides thereof first and second surfaces between which a thickness is defined, the main body being formed with a plurality of holes (22, 222, 322,422,522) in a direction of the thickness; and
a plurality of columnar elastic members (30, 230, 330,430,530) positioned in the plural holes, respectively, the plural columnar elastic members being different from the main
body in elasticity, **characterized in that** the cushion body further comprises:

a first surface member (50, 250, 350,450,550) made of elastic foam similar to the elastic foam of the main body, the first surface member being connected to or formed integrally with the first surface of the main body; and
a second surface member (60, 260, 360,460,560) made of elastic foam similar to the elastic foam of the main body, the second surface member being connected to or formed integrally with the second surface of the main body.

2. A cushion body according to claim 1, further comprising a cover member, the cover member covering the main body, the first surface member, and the second surface member to constitute a unit.

3. A cushion body according to claim 1 or 2, wherein at least one of the first surface member and the second surface member includes a different physical characteristic from the main body.

4. A cushion body according to any one of claims 1 to 3, wherein
the columnar elastic member fits into one of the first surface member and the second surface member.

5. A cushion body according to any one of claims 1 to 3, wherein
each columnar elastic member includes a cylindrical shape.

6. The cushion body according to any one of claims 1 to 5, wherein
each columnar elastic member is made of elastic foam containing oil component.

FIG. 1

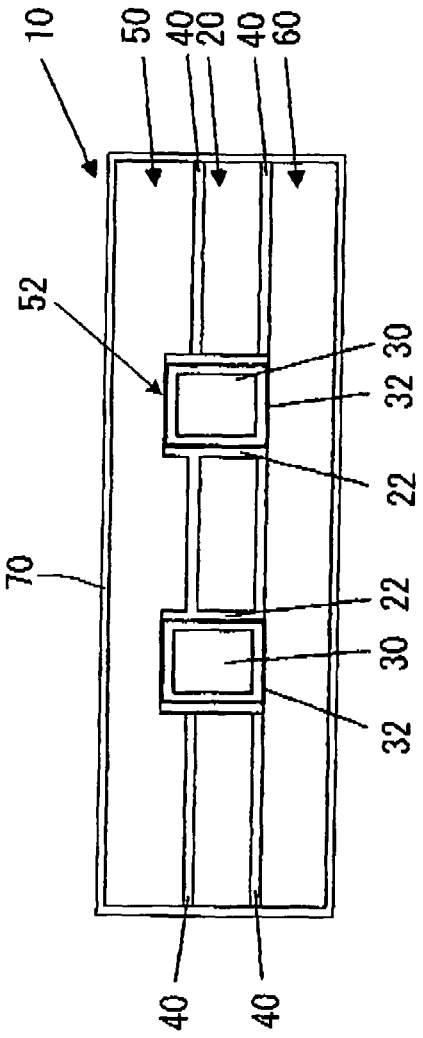


FIG. 2

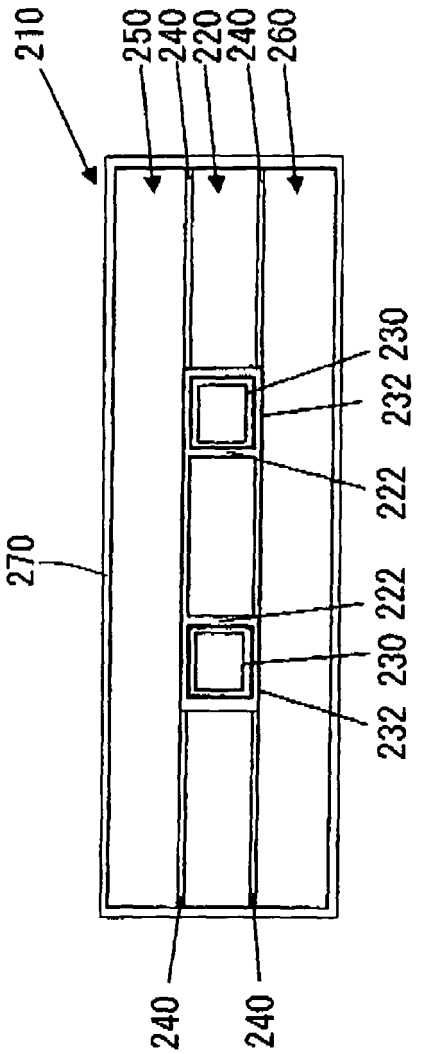


FIG. 3

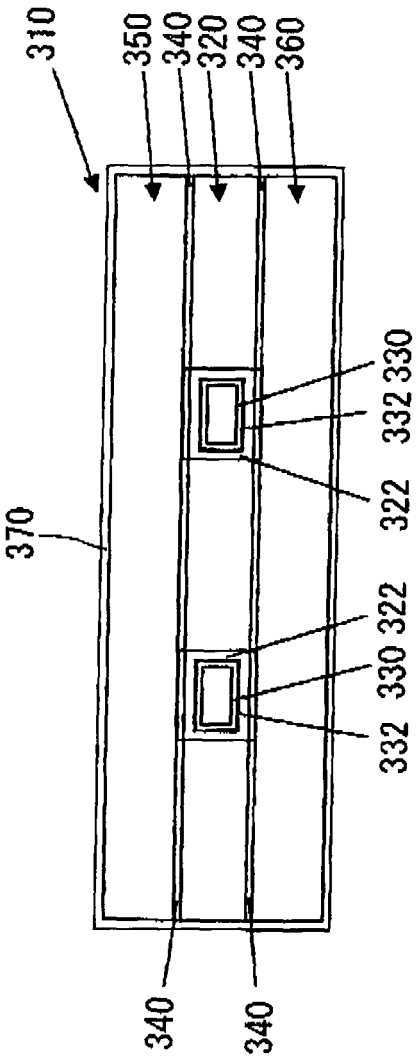


FIG. 4

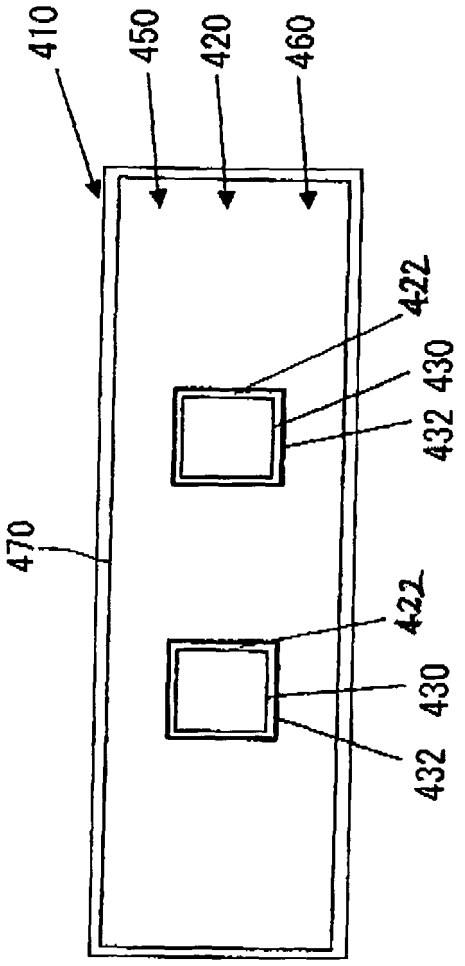


FIG. 5

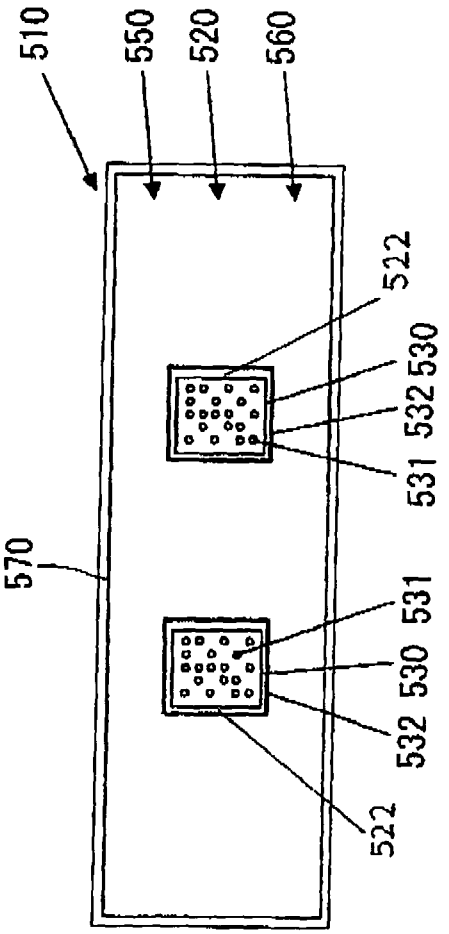
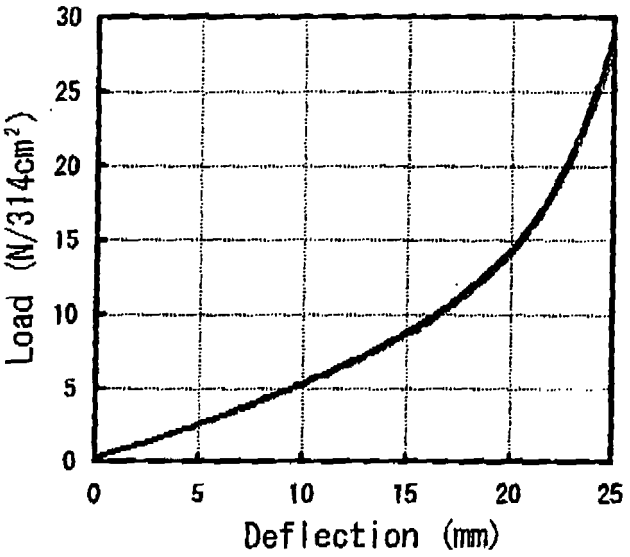


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 06 07 5082

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 May 2006	MacCormick, D

CATEGORY OF CITED DOCUMENTS

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