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MATRATZE

MATELAS

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Description

[0001] This invention relates to a mattress.

[0002] It is well known that mattresses are manufactured with varying degrees of hardness. Generally, the mattresses are mainly manufactured to be soft, medium or hard. Typically, persons with back problems prefer hard mattresses.

[0003] A mattress with varying degrees of hardness is described in EP 1 903 917 B1. The mattress in plan view comprises an inner portion and an outer portion. The mattress is such that the inner portion is of a size for being slept on by at least one person, the outer portion extends at least partially around the inner portion, and the inner portion has a lower compression rate than the outer portion. The weight of the person on the inner portion is distributed over a greater area than would be the case if the inner portion had the same compression rate as the outer portion. The outer portion constrains the inner portion and controls lateral deformation of the inner portion caused by the weight of the person on the inner portion. The mattress has the effect of decreasing pressure on body areas where undue pressure can interfere with the normal flow of blood, nerve signals and responses. As well as aiding the functions of the nervous system of a person, the mattress is able to reduce pressure on the person's vascular system, and is especially able to aid in venous return. The mattress gives both comfort and increased health for a person in normal sleeping positions.

[0004] It is an aim of the present invention to improve on the mattress disclosed in the above mentioned patent.

[0005] Accordingly, the present invention is defined in claim 1 and provides a mattress which in plan view comprises an inner portion and an outer portion, the mattress being such that the inner portion is of a size for being slept on by at least one person, the outer portion extends at least partially around the inner portion, and the inner portion has a lower compression rate than the outer portion whereby the weight of the person on the inner portion is distributed over a greater area than would be the case if the inner portion had the same compression rate as the outer portion, and whereby the outer portion constrains the inner portion and controls lateral deformation of the inner portion caused by the weight of the person on the inner portion, and the mattress being characterised in that:

(i) the inner portion is in a shape which has a first part for receiving the head of a sleeping person, a second part for receiving the feet of the sleeping person, and a third part for receiving the buttocks of the sleeping person;

(ii) the first part and the second part are narrower than the third part;

(iii) the first part and the second part are sufficiently

wide that the first part is able to be for receiving the feet of the sleeping person and the second part is able to be for receiving the head of the sleeping person, whereby the mattress is able to be turned through 180° with its same side uppermost for facilitating uniform wear of the mattress and prolonged life of the mattress;

(iv) the inner portion comprises a plurality of apertures which define the shape of the inner portion; and

(v) the apertures extend completely through the mattress whereby the underside of mattress also has the inner portion, whereby the mattress is able to be turned over so that its underside becomes its topside and thereby becomes able to receive the sleeping person and thereby further facilitates the uniform wear of the mattress and the prolonged life of the mattress;

(vi) the first part and the second part are of the same shape; and

(vii) the inner portion is symmetrical about a longitudinal centre of the mattress, and also about a transverse centre of the mattress.

[0006] In addition to the apertures being able to relieve pressure on the body of the person using the apparatus, the apertures also provide the advantage of ventilation for the mattress. Ventilation is important for lowering the microclimate temperature of the surface of the mattress next to the person's body. This may cause the person to perspire less during use of the mattress. In addition, the ventilation helps to reduce the growth of bacteria and fungi that are often problems with known mattresses.

[0007] The construction of the mattress facilitates uniform wear of the mattress and the prolonged life of the mattress. The uniform wear facilitates not only the look of the mattress but also the comfort of the person using the mattress. The prolonging of the life of the mattress is an important commercial consideration for people purchasing the mattress.

[0008] The mattress may be one in which the inner portion includes a fourth part for receiving the shoulders of the sleeping person, the fourth part being positioned between the first part and the third part, and the fourth part being wider than the first part but narrower than the third part.

[0009] The mattress is preferably made of the same material. The mattress may be made of a single piece of material. Alternatively, the mattress may be one which is made of two sheets of material, and in which the two sheets are placed one on top of the other. The two sheets may then be fastened together, for example by welding. The welding may be ultrasonic welding or chemical welding. The two sheets may alternatively be fastened together by other fastening means such for example as an ad-

hesive or stitching.

[0010] When the mattress is made of two sheets of material placed one on top of the other, then the two sheets of material may be of different densities, with the upper sheet of material being harder or softer than the lower sheet of material.

[0011] The material may be a plastics material or a fibrous material. The plastics material will usually be a foam plastics material. A presently preferred foam plastics material is polyurethane foam.

[0012] The mattress may include a top covering layer, the top covering layer being such that it extends over the inner and outer portions. The top covering layer may be made of a foam material. The top covering layer may be made of other materials if desired, for example a cloth material.

[0013] The mattress may be a single mattress for one sleeping person, or it may be a double mattress for two sleeping persons. The mattress may be made in various sizes to suit large or small beds.

[0014] Embodiments of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a top view of a single mattress and shows a person on the mattress;

Figure 2 is a perspective view of the apparatus shown in Figure 1;

Figure 3 is a perspective view of a double mattress;

Figure 4 is a plan view of the apertures shown in the mattress of Figure 3;

Figure 5 is a longitudinal section through the mattress shown in Figure 1; and

Figure 6 is a transverse section through the mattress as shown in Figure 1.

[0015] Referring to the drawings, there is shown a mattress 2 which in open plan comprises an inner portion 4 and an outer portion 6. The mattress 2 is such that the inner portion 4 is of a size for being slept on by a person 8. The outer portion 6 extends at least partially around the inner portion 4. The inner portion 4 has a lower compression rate than the outer portion 6, whereby the weight of the person 8 on the inner portion 4 is distributed over a greater area than would be the case if the inner portion 4 had the same compression rate as the outer portion 6. The outer portion 6 constrains the inner portion 4 and controls lateral deformation of the inner portion 4 caused by the weight of the person 8 on the inner portion 4.

[0016] The inner portion 4 is of a shape which has a first part 10 for receiving the head 12 of the person 8 when sleeping, a second part 14 for receiving the feet 16 of the person 8, and a third part 18 for receiving the buttocks of the person 8.

[0017] The first part 10 and the second part 14 are narrower than the third part 18.

[0018] The first part 10 and the second part 14 are sufficiently wide that the first part 10 is able to be for

receiving the feet of the sleeping person 8, and the second part is able to be for receiving the head of the sleeping person 8. This enables the mattress 2 to be turned through 180° with its same side uppermost. This in turn facilitates uniform wear of the mattress 2 and also prolonged life of the mattress 2.

[0019] The inner portion 4 comprises a plurality of apertures 22 which define the shape of the inner portion 4.

[0020] The apertures 22 extend completely through the mattress 2 whereby the underside of the mattress 2 also has the inner portion 4. This means that the mattress 2 is able to be turned over so that the underside of the mattress 2 becomes the top side of the mattress 2. Thus the underside in becoming the topside of the mattress 2 also becomes available for receiving the sleeping person 8. This further facilitates the uniform wear of the mattress 2 and the prolonging of the life of the mattress 2.

[0021] As can be seen from Figures 1 and 2, the mattress 2 is such that the first part 10 and the second part 14 are of the same shape.

[0022] The inner portion 4 includes a fourth part 24 for receiving the shoulders 26 of the sleeping person 4. The fourth part 24 is positioned between the first part 10 and the third part 18. The fourth part 24 is wider than the first part 10, but is narrower than the third part 18.

[0023] The mattress 2 is such that the inner portion 4 is symmetrical about a longitudinal centre of the mattress 2, and also about a transverse centre of the mattress 2.

[0024] The mattress 2 is made of the same material. The mattress 2 may be made of one single piece of the material. Alternatively, the mattress 2 may be made of two sheets of the material, in which case the two sheets are placed one on top of the other and are then fastened together.

[0025] The mattress 2 is made of a plastics material in the form of a polyurethane foam. Other materials may be employed including non-foam plastics materials and also fibrous materials.

[0026] Figures 3 and 4 show a mattress 32 which is a double mattress, rather than a single mattress 2 as shown in Figures 1 and 2. Similar parts in the mattress 32 as in the mattress 2 have been given the same reference numerals for ease of comparison and understanding. It will thus be seen that the mattress 32 is basically the same as the mattress 2 except that the mattress 32 has two of the inner portions 4.

[0027] Figures 4 and 5 show how the apertures 22 extend completely through the mattress 2. The apertures 22 similarly extend completely through the two inner portions 4 in the double mattress 32 as shown in Figures 3 and 4.

[0028] The mattresses 2, 32 are advantageous in that the apertures 22 provide a dual function of pressure relieving and ventilation. Ventilation is important to lower the microclimate temperature between the surface of the mattress next to the person's body and the person's body itself. This may facilitate a more comfortable sleep for the person 8, for example by reducing perspiration by

the person 8. The ventilation is also important in that a circulation of air reduces bacteria and fungal growth, which growth is often a problem with known mattress, especially those of foam constructions. The production of the mattress from the single material enables the pattern of apertures to rely on surface tension of the untouched foam, with the untouched foam acting as a ring around the inner portion 4. The apertures 22 are such that they are in a pattern which enables the mattress 2, 22 to be turned through 180° with its same side uppermost. This facilitates uniform wear of the mattress 2, 22 and prolonging of the life of the mattress 2, 22. In addition, the mattress 2, 22 is able to be turned completely over so that its underside becomes its topside. This further facilitates the uniform wear of the mattress 2, 22 and the prolonging of the life of the mattress 2, 22. The pressure relieving effect of the mattress 2, 22 is via the local change in stiffness between the inner and outer portions 4, 6 respectively. Different deflections are obtainable for each part of the body of the person 8. Thus, for example, with the buttocks weighing more than the person's ankles, then the inner portion 4 will deflect more over the area of the buttocks 20 than over the ankles and feet 16. Overall, the mattresses 2, 22 provide a homogenous pressure pattern, with the person 8 being able to lie in a natural shape and not be forced into unnatural shapes due to mattress material which is too hard or too soft.

[0029] It is to be appreciated that the embodiments of the invention described above with reference to the accompanying drawings have been given by way of example only and that modifications may be effected within the limitations of the claims. Thus, for example the mattresses 2, 32 may be such that they are provided with a top covering layer (not shown). The top covering layer maybe such that it extends over the inner and outer portions 4, 6. The top covering layer may be made of a foam material or any other suitable material. Individual components shown in the drawings are not limited to use in their drawings and they may be used in other drawings and in all aspects of the invention which is defined in the claims.

Claims

1. A mattress (2) which in plan view comprises an inner portion (4) and an outer portion, (6) the mattress being such that the inner portion is of a size for being slept on by at least one person, the outer portion extends at least partially around the inner portion, and the inner portion has a lower compression rate than the outer portion whereby the weight of the person on the inner portion is distributed over a greater area than would be the case if the inner portion had the same compression rate as the outer portion, and whereby the outer portion constrains the inner portion and controls lateral deformation of the inner portion caused by the weight of the person on the inner

portion, and the mattress being **characterised in that:**

- (i) the inner portion is in a shape which has a first part (10) for receiving the head of a sleeping person, a second part (14) for receiving the feet of the sleeping person, and a third part (18) for receiving the buttocks of the sleeping person;
- (ii) the first part and the second part are narrower than the third part;
- (iii) the first part and the second part are sufficiently wide that the first part is able to be for receiving the feet of the sleeping person and the second part is able to be for receiving the head of the sleeping person, whereby the mattress is able to be turned through 180° with its same side uppermost for facilitating uniform wear of the mattress and prolonged life of the mattress;
- (iv) the inner portion comprises a plurality of apertures (22) which define the shape of the inner portion;
- (v) the apertures extend completely through the mattress whereby the underside of mattress also has the inner portion, whereby the mattress is able to be turned over so that its underside becomes its topside and thereby becomes able to receive the sleeping person and thereby further facilitates the uniform wear of the mattress and the prolonged life of the mattress;
- (vi) the first part and the second part are of the same shape; and
- (vii) the inner portion is symmetrical about a longitudinal centre of the mattress, and also about a transverse centre of the mattress.

2. A mattress according to claim 1 in which the inner portion includes a fourth part for receiving the shoulders of the sleeping person, the fourth part being positioned between the first part and the third part, and the fourth part being wider than the first part but narrower than the third part.
3. A mattress according to claim 1 or claim 2 and which is made of the same material.
4. A mattress according to any one of the preceding claims in which the mattress is made of one single piece of material.
5. A mattress according to any one of claims 1 - 3 in which the mattress is made of two sheets of material, and in which the two sheets are placed one on top of the other.
6. A mattress according to claim 5 in which the two sheets are fastened together.
7. A mattress according to claim 6 in which the two

sheets are fastened together by welding.

8. A mattress according to any one of claims 3 - 7 in which the material is a plastics material or a fibrous material. 5
9. A mattress according to claim 8 in which the plastics material is a foam plastics material. 10
10. A mattress according to claim 9 in which the foam plastics material is polyurethane foam. 15
11. A mattress according to any one of the preceding claims and including a top covering layer, the top covering layer being such that it extends over the inner and outer portions. 20
12. A mattress according to claim 11 in which the top covering layer is made of a foam material. 25
13. A mattress according to any one of the preceding claims and which is a single mattress for one sleeping person, or a double mattress for two sleeping persons.

Patentansprüche

1. Matratze (2), welche in Draufsicht einen inneren Abschnitt (4) und einen äußeren Abschnitt (6) aufweist, wobei die Matratze derartig ist, dass der innere Abschnitt von einer Größe ist, dass mindestens eine Person darauf schlafen kann, der äußere Abschnitt sich zumindest teilweise um den inneren Abschnitt herum erstreckt und der innere Abschnitt eine geringere Kompressionsrate als der äußere Abschnitt aufweist, wobei das Gewicht der Person auf dem inneren Abschnitt über einen größeren Bereich verteilt wird, als es der Fall wäre, wenn der innere Abschnitt die gleiche Kompressionsrate wie der äußere Abschnitt hätte, und wobei der äußere Abschnitt den inneren Abschnitt beschränkt und seitliche Verformung des inneren Abschnitts, welche durch das Gewicht der Person auf dem inneren Abschnitt verursacht wird, steuert, und wobei die Matratze **dadurch gekennzeichnet ist, dass:**
 - (i) der innere Abschnitt in einer Form ist, welche einen ersten Teil (10) zur Aufnahme des Kopfes einer schlafenden Person, einen zweiten Teil (14) zur Aufnahme der Füße der schlafenden Person und einen dritten Teil (18) zur Aufnahme des Gesäßes der schlafenden Person aufweist; 50
 - (ii) der erste Teil und der zweite Teil schmaler als der dritte Teil sind;
 - (iii) der erste Teil und der zweite Teil ausreichend breit sind, dass der erste Teil in der Lage ist, die Füße der schlafenden Person aufzunehmen;

men, und der zweite Teil in der Lage ist, den Kopf der schlafenden Person aufzunehmen, wobei die Matratze in der Lage ist, um 180° gedreht zu werden mit ihrer gleichen obersten Seite, um gleichmäßige Abnutzung der Matratze und verlängerte Standzeit der Matratze zu erleichtern;

(iv) der innere Abschnitt eine Vielzahl von Öffnungen (22) aufweist, welche die Form des inneren Abschnitts definieren;

(v) die Öffnungen sich vollständig durch die Matratze erstrecken, wobei die Unterseite der Matratze auch den inneren Abschnitt aufweist, wobei die Matratze in der Lage ist, umgedreht zu werden, so dass ihre Unterseite ihre Oberseite wird und es ihr ermöglicht wird, die schlafende Person aufzunehmen und dadurch die gleichmäßige Abnutzung der Matratze und verlängerte Standzeit der Matratze weiter erleichtert;

(vi) der erste Teil und der zweite Teil von gleicher Form sind; und

(vii) der innere Abschnitt symmetrisch zu einer longitudinalen Achse der Matratze und auch zu einer Querachse der Matratze ist.

2. Matratze nach Anspruch 1, wobei der innere Abschnitt einen vierten Teil zur Aufnahme der Schultern der schlafenden Person umfasst, wobei der vierte Abschnitt zwischen dem ersten Teil und dem dritten Teil angeordnet ist und wobei der vierte Teil breiter als der erste Teil aber schmaler als der dritte Teil ist.
3. Matratze nach Anspruch 1 oder Anspruch 2 und welche aus dem gleichen Material hergestellt ist.
4. Matratze nach einem der vorhergehenden Ansprüche, wobei die Matratze aus einem einzigen Materialstück hergestellt ist.
5. Matratze nach einem der Ansprüche 1-3, wobei die Matratze aus zwei Materialplatten hergestellt ist und wobei die zwei Platten übereinander angeordnet sind.
6. Matratze nach Anspruch 5, wobei die zwei Platten miteinander verbunden sind.
7. Matratze nach Anspruch 6, wobei die zwei Platten durch Schweißen miteinander verbunden sind.
8. Matratze nach einem der Ansprüche 3-7, wobei das Material ein Kunststoffmaterial oder ein Fasermaterial ist.
9. Matratze nach Anspruch 8, wobei das Kunststoffmaterial ein Schaum-Kunststoffmaterial ist.
10. Matratze nach Anspruch 9, wobei das Schaum-

Kunststoffmaterial ein Polyurethanschaum ist.

11. Matratze nach einem der vorhergehenden Ansprüche und aufweisend eine obere Deckschicht, wobei die obere Deckschicht derartig ist, dass sie sich über den inneren und äußeren Abschnitt erstreckt. 5
12. Matratze nach Anspruch 11, wobei die obere Deckschicht aus einem Schaummaterial hergestellt ist. 10
13. Matratze nach einem der vorhergehenden Ansprüche, und welche eine einzige Matratze für eine schlafende Person oder eine Doppelmatratze für zwei schlafende Personen ist. 15

Revendications

1. Matelas (2) qui, vu en plan, comprend une partie intérieure (4) et une partie extérieure (6), le matelas étant tel que la partie intérieure a une taille qui permet à au moins une personne de dormir dessus, la partie extérieure s'étend au moins en partie autour de la partie intérieure, et la partie intérieure a un degré de compression inférieur à celui de la partie extérieure, le poids de la personne reposant sur la partie intérieure étant ainsi réparti sur une plus grande surface que ce serait le cas si la partie intérieure avait le même degré de compression que la partie extérieure, et la partie extérieure retient la partie intérieure et contrôle la déformation latérale de la partie intérieure causée par le poids de la personne reposant sur la partie intérieure, et le matelas étant **caractérisé en ce que** : 20
 - (i) la partie intérieure a une forme qui comporte une première partie (10) pour recevoir la tête d'une personne qui dort, une deuxième partie (14) pour recevoir les pieds de la personne qui dort, et une troisième partie (18) pour recevoir les fesses de la personne qui dort ;
 - (ii) la première partie et la deuxième partie sont plus étroites que la troisième partie ;
 - (iii) la première partie et la deuxième partie sont suffisamment larges pour que la première partie soit capable de recevoir les pieds de la personne qui dort et que la deuxième partie soit capable de recevoir la tête de la personne qui dort, le matelas étant ainsi capable d'être tourné sur 180 °, le même côté dudit matelas se trouvant sur le dessus, pour favoriser une usure uniforme du matelas et une plus grande longévité du matelas ;
 - (iv) la partie intérieure comprend une pluralité d'ouvertures (22) qui délimitent la forme de la partie intérieure ;
 - (v) les ouvertures s'étendent à travers tout le matelas, le dessous du matelas comportant ain-

si également la partie intérieure, le matelas étant ainsi capable d'être retourné de telle sorte que son dessous devienne son dessus et devienne ainsi capable de recevoir la personne qui dort, en favorisant ainsi encore plus une usure uniforme du matelas et une plus grande longévité du matelas ;

(vi) la première partie et la deuxième partie ont la même forme ; et

(vii) la partie intérieure est symétrique autour d'un centre longitudinal du matelas, et aussi autour d'un centre transversal du matelas.

2. Matelas selon la revendication 1, dans lequel la partie intérieure comprend une quatrième partie pour recevoir les épaules de la personne qui dort, la quatrième partie étant positionnée entre la première partie et la troisième partie, et la quatrième partie étant plus large que la première partie, mais plus étroite que la troisième partie. 25
3. Matelas selon la revendication 1 ou la revendication 2 et se composant du même matériau. 30
4. Matelas selon l'une quelconque des revendications précédentes, le matelas étant constitué d'un seul bloc de matériau. 35
5. Matelas selon l'une quelconque des revendications 1 à 3, le matelas étant constitué de deux feuilles de matériau, et les deux feuilles étant placées l'une sur l'autre. 40
6. Matelas selon la revendication 5, dans lequel les deux feuilles sont fixées l'une à l'autre. 45
7. Matelas selon la revendication 6, dans lequel les deux feuilles sont fixées l'une à l'autre par soudage. 50
8. Matelas selon l'une quelconque des revendications 3 à 7, dans lequel le matériau est une matière plastique ou un matériau fibreux. 55
9. Matelas selon la revendication 8, dans lequel la matière plastique est une matière plastique de type mousse.
10. Matelas selon la revendication 9, dans lequel la matière plastique de type mousse est une mousse de polyuréthane.
11. Matelas selon l'une quelconque des revendications précédentes et comprenant une couche de revêtement supérieure, la couche de revêtement supérieure étant telle qu'elle s'étend par-dessus les parties intérieure et extérieure.
12. Matelas selon la revendication 11, dans lequel la

couche de revêtement supérieure se compose d'un matériau de type mousse.

13. Matelas selon l'une quelconque des revendications précédentes, lequel est un matelas simple sur lequel une seule personne peut dormir, ou un matelas double sur lequel deux personnes peuvent dormir.

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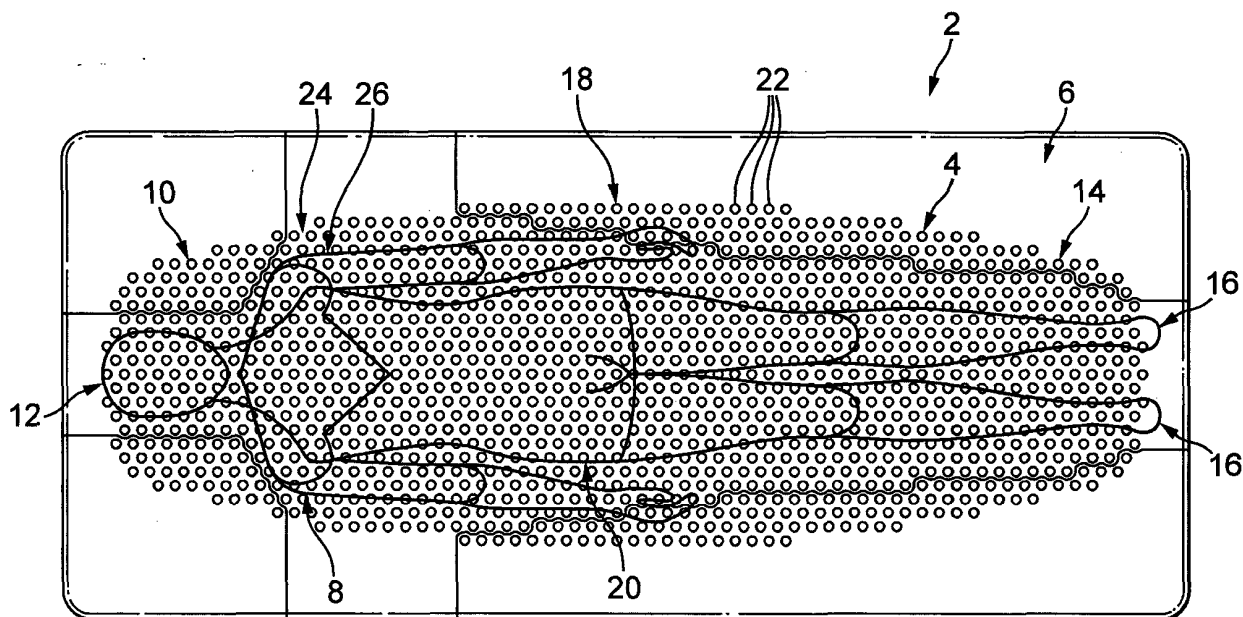


FIG. 1

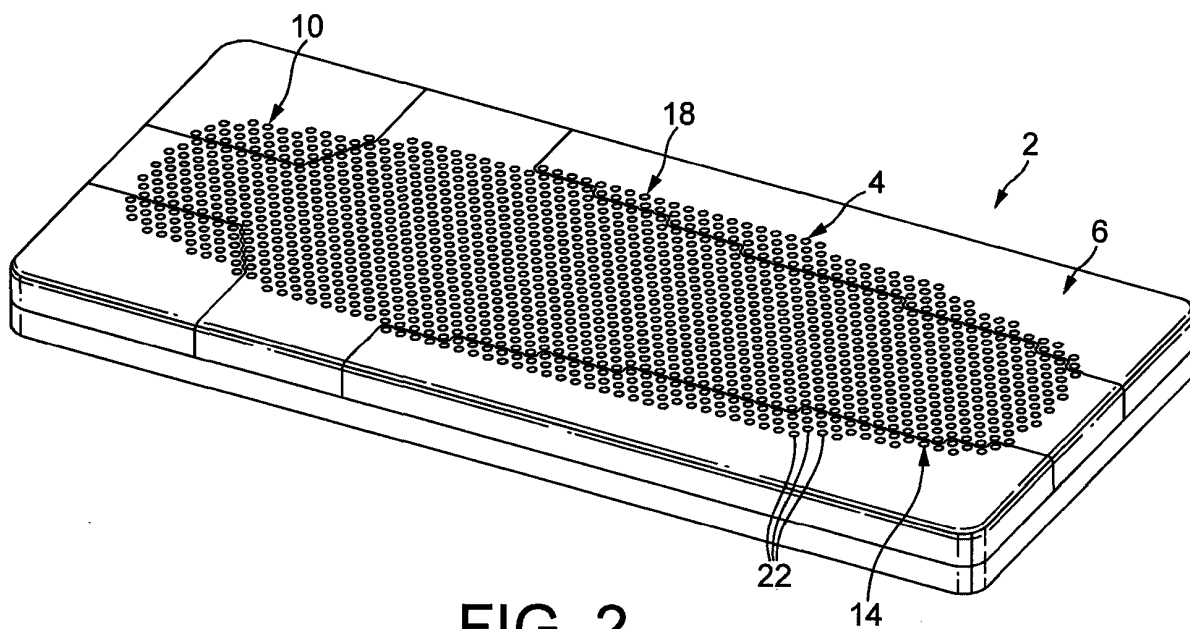


FIG. 2

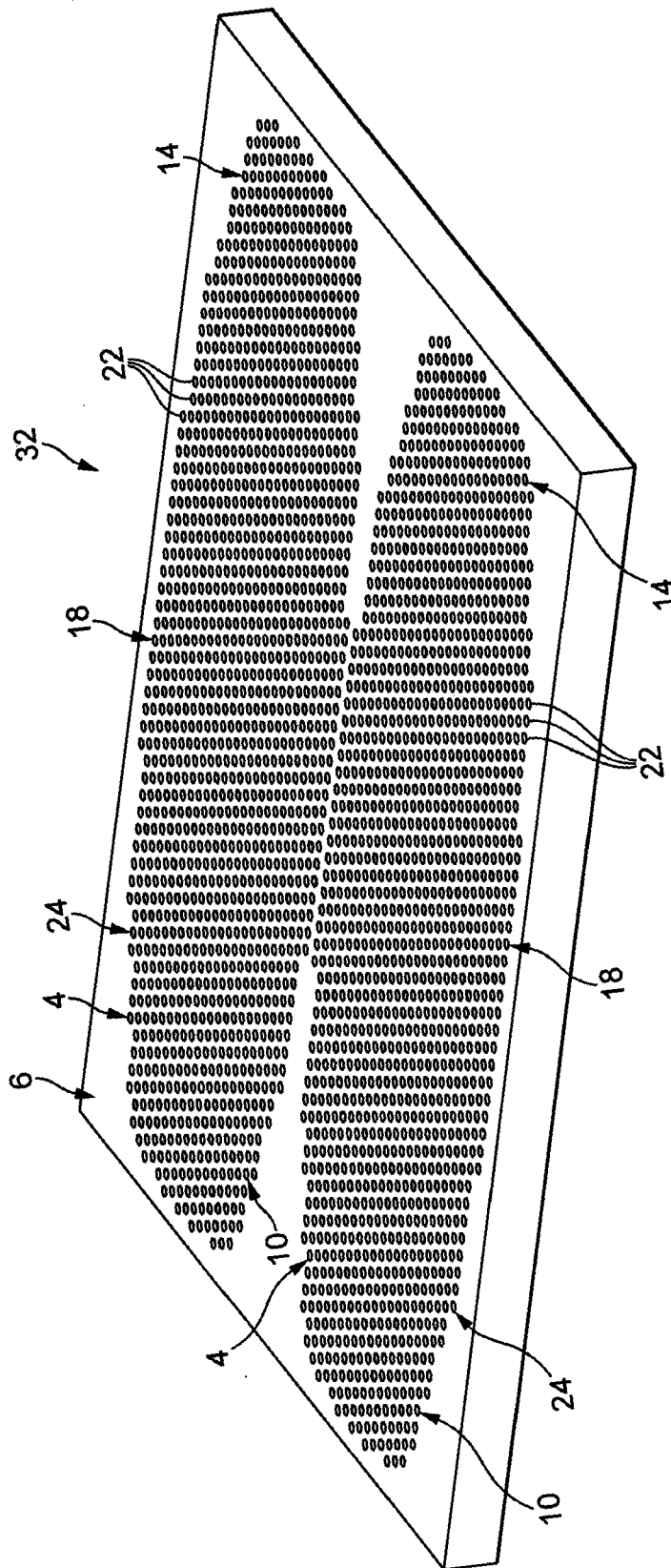


FIG. 3

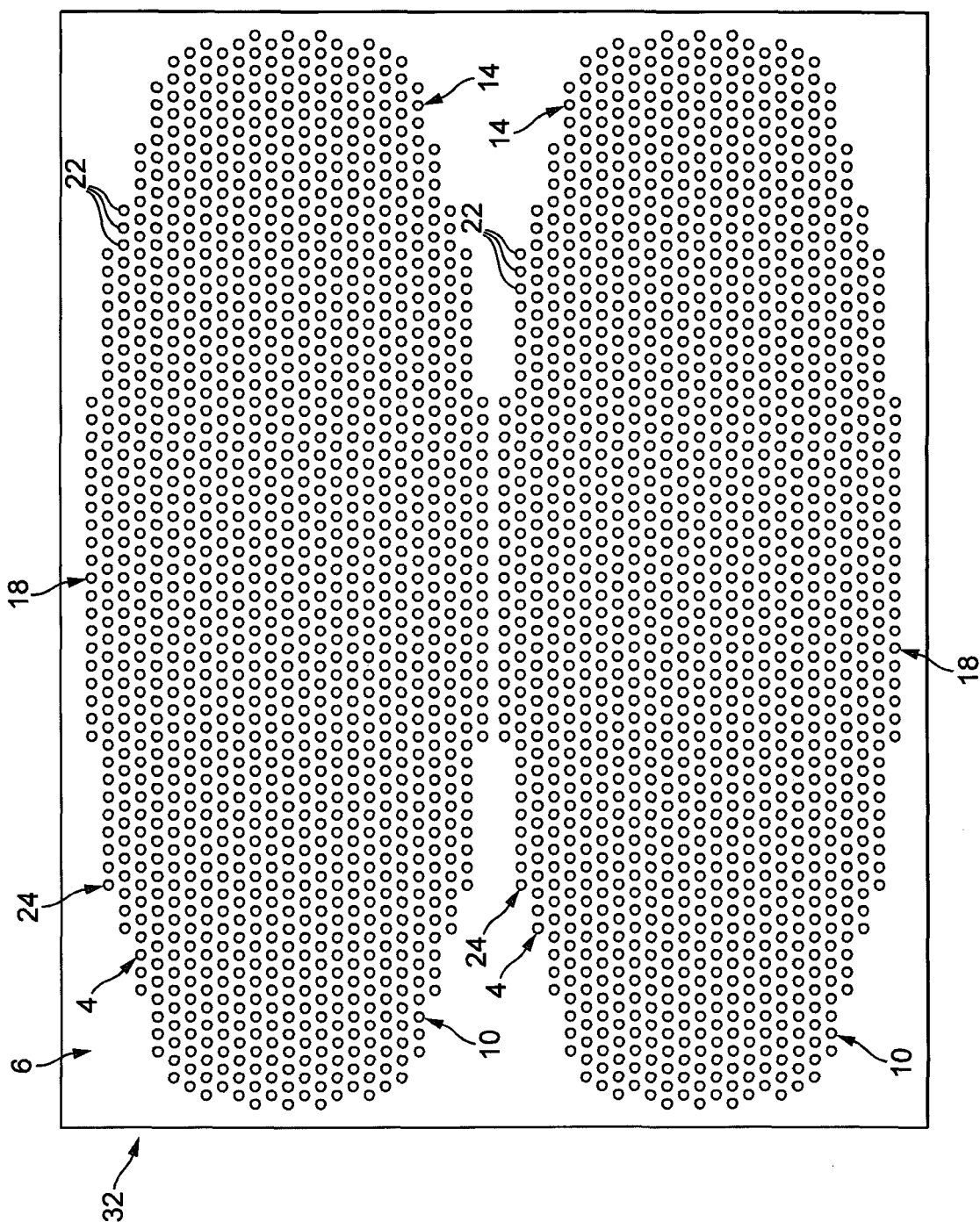


FIG. 4

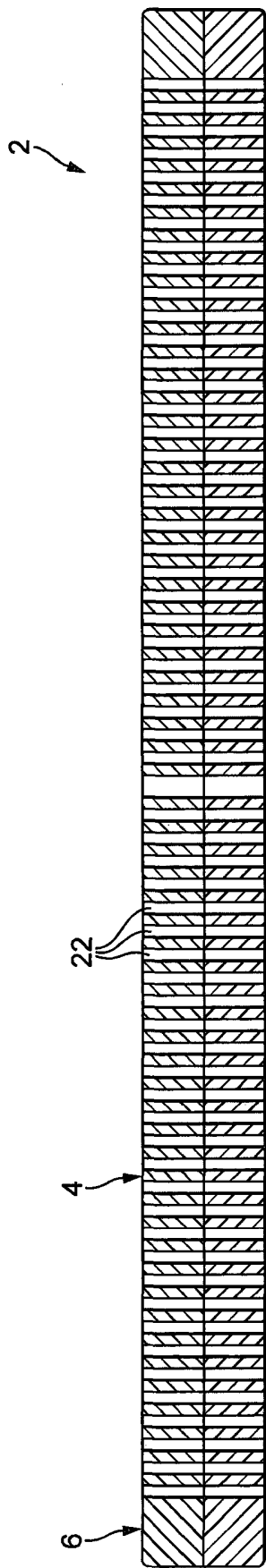


FIG. 5

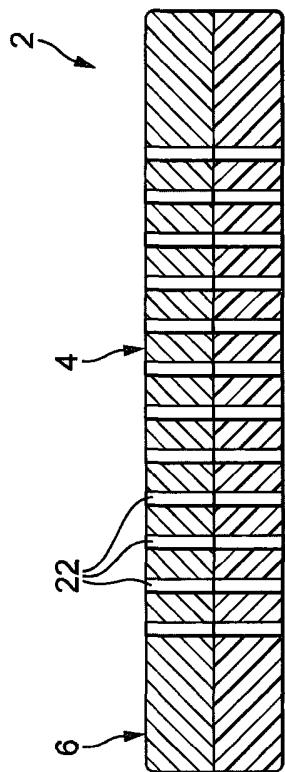


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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