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(12) # EUROPEAN PATENT APPLICATION

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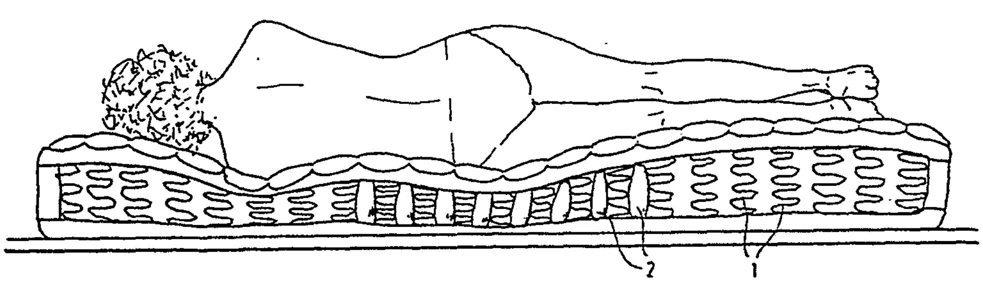
(54) **An inner-spring mattress having stabilizer beams.**

(57) An inner-spring mattress whose hollow inner space located between outer layers is set with metal coil springs (1) arranged in a regular rectangular pattern and standing freely in said hollow inner space of the mattress, in particular of the hourglass type. Stabilizer beams (2) in the form of elongated sections of foam plastic are disposed in the transverse direction and with a loose fit in the spaces between pairs of adjacent rows of springs (1).

FIG.1



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Croydon Printing Company Ltd.

An inner-spring mattress having stabilizer beams.

This invention relates to an inner-spring mattress whose hollow inner space located between outer layers is set with metal coil springs arranged in a regular rectangular pattern and standing freely in said hollow space of the mattress, in particular of the hourglass type.

Since the inner springs in such a mattress are compressible independently from each other to a high degree, the mattress can adapt itself within broad limits to the body shape of a person lying on the mattress. This comparatively independent compressibility of the springs, however, has the adverse side-effect that the springs under a load, can move sideways. This floating effect in the transverse direction is experienced as unpleasant and it is an object of the present invention to provide an inner spring mattress which eliminates this drawback in a simple manner, in terms of production engineering, and which is hence inexpensive.

To this effect, according to the present invention, stabilizer beams in the form of elongated sections of foam plastic are disposed in the transverse direction and with a loose fit in the spaces between pairs of adjacent rows of springs.

The stabilizer beams in the mattress according to the present invention allow an independent spring compression but check lateral spring movement in the transverse direction so that the user lies on the mattress more quietly.

By varying the cross-sectional profile of the stabilizer beams in relation to the profile of the hollow space between two rows of springs and/or by varying the foam plastic, it is possible to locally influence the spring characteristic in a less expensive manner than by using different, e.g. heavier and lighter springs in one mattress.

For instance, in a mattress having inner springs of the hourglass type, i.e. coil springs having a larger diameter at the ends than in the central portion, it is possible for each stabilizer beam to have a cross-sectional profile with a rectangular central portion and trapezoidal end portions.

Such stabilizer beams conform in shape to the adjoining springs and when the springs are vertically loaded, provide for a progressive resistance, so that both the lighter and the heavier person sleeping on the mattress experience the correct counterpressure.

In another embodiment of the mattress, the stabilizer beams have a substantially rectangular cross section with a constriction in the central portion. Stabilizer beams thus formed have hardly any influence during the first phase of spring compression, e.g. the first two centimeters, and only then begin to have a progressive effect. They are chosen in those cases when only a slight hardening of the mattress portions concerned is desired, so in general with a mattress for persons light in weight.

As already mentioned, the choice of different types of foam allows to influence the rigidity of the springs of the mattress locally, so that the mattress can be made harder locally. For instance, a choice can be made from harder and less hard polyether foams. Nevertheless, it should always be ensured that the stabilizer beams are less stiff than the springs and are flexible, as otherwise the extent to which a spring can be compressed independently of adjoining springs becomes too slight.

Swiss patent 635,502 describes an inner-spring mattress wherein metal hourglass springs arranged in a rectangular pattern are each enclosed on all sides by parts of undulatory beams of foam material extending throughout the entire hollow inner space of the mattress, said beams being fixedly connected, through gluing, to the outer layers of the mattress. The undulatory foam beams are not comparable to the stabilizer beams according to the present invention, because they always extend the entire length and width of the mattress and closely envelop the coil springs, so that either the rigidity of the undulatory beams is sufficient to prevent the springs from becoming laterally bowed, in which case they influence the spring characteristic of the entire spring range, or the rigidity of the undulatory beams is so minimal that, at least in the first phase of the compression, they do not exert any influence thereon, but then are also unsuitable for influencing the undesirable lateral floating effect.

The stabilizer beams according to the present invention can be introduced locally, in the most loaded areas of the mattress, from aside, and with a loose fit, between two transverse rows of springs. In the first phase of the compression, they have no effect whatever and only in advanced phases of the compression do they influence the spring characteristic. Moreover, they prevent the springs from becoming laterally bowed.

Some embodiments of stabilizer beams and a mattress provided therewith according to the present invention will now be described, by way of example, with reference to the accompanying drawings. In said drawings:

Fig. 1 is a cross-sectional view of a mattress in loaded condition;

Fig. 2 is a cross section of a stabilizer beam; and

Fig. 3 is a cross section of a variant embodiment of the stabilizer beam.

Fig. 1 shows a mattress having inner springs 1 arranged in a regular rectangular pattern, which may have any conventional shape, for example, an hourglass shape. The cross-sectional view of the mattress shows stabilizer beams 2, which in the central portion of the mattress have been pushed in the transverse direction in between transverse rows of springs 1. In places where the mattress is most loaded, the spring effect is influenced by the stabilizer beams, and that in two ways. In the first place, the stabilizer beams prevent spring movements in the transverse direction, i.e. perpendicular to the plane of drawing. Furthermore, they provide for a progressive increase in the resistance of the spring to compression, in other words, for an increase in counterpressure.

Figs. 2 and 3 show two embodiments of cross-sectional profiles of stabilizer beams of e.g. polyether foam. The rectangular profile with central constriction 3 according to Fig. 2 gives a lighter stabilization and spring rigidity than the profile of Fig. 3, having a rectangular central portion 4 and trapezoidal end portions 5.

CLAIMS

1. An inner-spring mattress whose hollow inner space located between outer layers is set with metal coil springs (1) arranged in a regular rectangular pattern and standing freely in said hollow inner space of the mattress, in particular of the hourglass type, characterized in that stabilizer beams (2) in the form of elongated sections of foam plastic are disposed in the transverse direction and with a loose fit in the spaces between pairs of adjacent rows of springs (1).

2. A mattress according to claim 1, having inner springs (1) of the hourglass type, characterized in that each stabilizer beam (2) has a cross-sectional profile having a rectangular central portion (4) with trapezoidal end portions (5).

3. A mattress according to claim 1, characterized in that each stabilizer beam (2) has a substantially rectangular cross-sectional profile with a constriction (3) in the central portion.

4. A mattress according to any one of the preceding claims, characterized in that the stabilizer beams (2) are less stiff than the springs (1).

5. A mattress according to claim 4, characterized in that the stabilizer beams (2) are flexible.

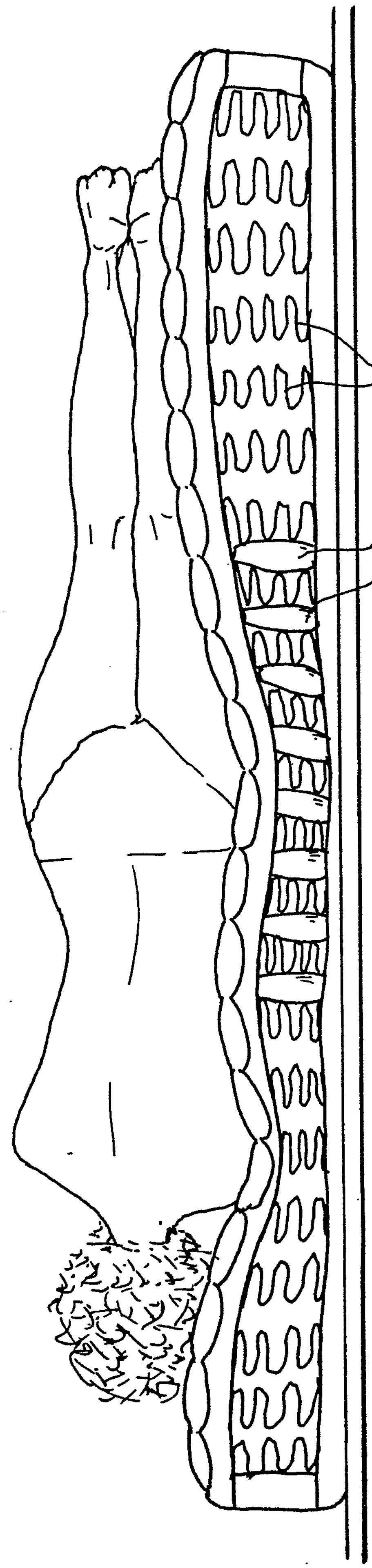

FIG.1

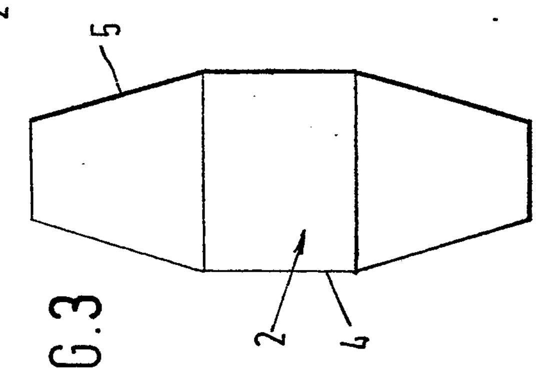

FIG.3

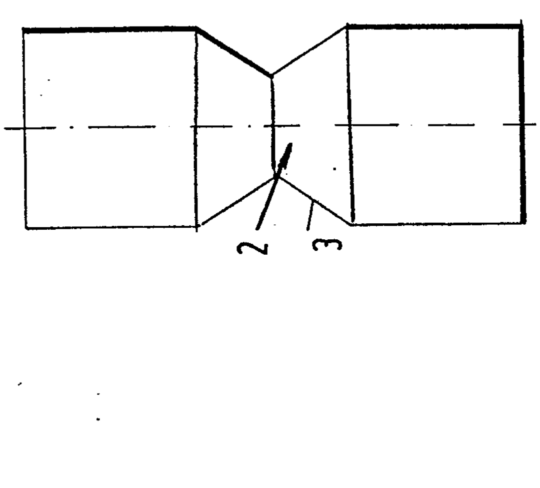

FIG.2

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 87 20 0774

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
D,Y	CH-A- 635 502 (HELBLING) * Page 2, column 2, lines 34-55; figures *	1	A 47 C 27/06 A 47 C 27/20
A		2,4,5	

Y	US-A-2 925 856 (GLEASON) * Column 2, line 60 - column 3, line 55; figures *	1	
A		2,4,5	

Y	DE-A-2 744 412 (DUNLOP) * Page 6, line 16 - page 7, line 5; figures 1,2 *	1	**TECHNICAL FIELDS SEARCHED (Int. Cl.4)**
A		2,4,5	A 47 C

A	US-A-2 826 769 (DREWS) * Column 2, lines 22-43; figure 3 *	2,4,5	

A	FR-A-1 593 548 (MATELAS MERINOS) * Page 5, lines 1-5; figure 4 *	3	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-07-1987	VANDEVONDELE J.P.H.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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