



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 697 184 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.02.1996 Bulletin 1996/08

(51) Int. Cl.⁶: **A47C 23/06**, A47C 31/12

(21) Application number: **94870137.0**

(22) Date of filing: **18.08.1994**

(84) Designated Contracting States:
AT CH DE DK ES FR GB GR IE IT LI NL PT SE

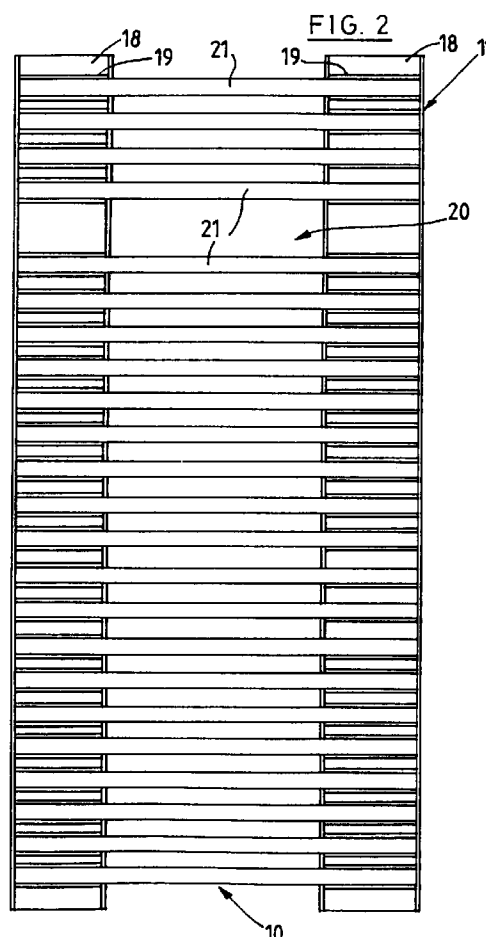
(72) Inventor: **Boeve, Michel**
B-2900 Schoten (BE)

(71) Applicant: **Boeve, Michel**
B-2900 Schoten (BE)

(74) Representative: **Vanderperre, Robert**
B-1040 Bruxelles (BE)

(54) **Body support arrangement and bed incorporating same**

(57) A body support arrangement comprising a sleeping surface lying on at least one water filled tube (14, 15) extending along the longitudinal sides of the frame. The sleeping surface (10) is arranged to provide a free space (20) therein at a selected distance from the longitudinal ends of the arrangement such that when a person is lying on the sleeping surface, said free space allows the shoulder girdle of the user's body to sink down.



EP 0 697 184 A1

Description

A known conventional bed comprises a body support surface made of flexible slats that extend transversely of the longitudinal direction of the bed and that rest on fixed supports at their both ends. The insufficient flexibility of the materials currently used in making the slats (e.g. wood or polyester) results in the conventional slat support arrangements being unable to perfectly conform to the contour of a lying body.

Increased pressure places are thus created under the pelvis and the shoulder regions. Furthermore, the shoulders are unable to sink down sufficiently in relation to the mean width of the shoulder girdle. As a result all parts of the body can not be supported evenly and adequately.

There is also known a water mattress providing a body support surface that is able to gently suit the contour of a user's body and that provides a soft support. The water mattress has the disadvantage that the support surface sinks down deeper where the body is weighing more, i.e. in the pelvis region, and sinks down much less where the body is weighing less, i.e. in the shoulder region. Because the shoulder region is much wider than the pelvis region, the spine of the body lying on one side is hanging obliquely in a hollow extending between said two regions. When the body lies on the back, the pelvis also sinks down deeper with the result that the back is hanging like as in a hammock.

The object of the present invention is to provide a resilient body support arrangement which ensures that when a body is lying on the side the spine extends perfectly aligned and when the body is lying on the back, all parts thereof are evenly supported whereby the body is assuming a natural posture.

To achieve said object, the present invention provides a body support arrangement as defined in the appended claims.

Providing a body support arrangement that is resting on water filled tubes ensures that the body support surface gently conform to any waving of the user's body lying on it, whereby the pressure is evenly distributed over the entire length of the body. Thus, the body lying on the body support surface assumes an ideal and natural posture just as it is when the user is in standing position. Further, the open space provided in the shoulder region allows the shoulder girdle to sink deep enough in relation to the pelvis region whereby the spine of the body is allowed to extend perfectly aligned when the body lies on the side while the pit of the lower back is perfectly in contact with and supported by the support surface when the body lies on the back.

The invention will be described in more detail hereinafter with reference to the accompanying drawings. In the drawings :

Fig. 1 shows a cross-sectional view of a bed incorporating a body support arrangement according to the invention;

Fig. 2 is a top view of the body support arrangement shown in Fig. 1;

Fig. 3 is a side view of the bed of Fig. 1;

Fig. 4 illustrates the posture of a person lying on a body support arrangement in accordance with the invention;

Figs. 5 and 6 illustrate the posture of a person lying on the side on a conventional slat support surface and a water mattress, respectively;

Fig. 7 illustrates the posture of a person lying on the back on a body support arrangement according to the invention;

Figs. 8 and 9 illustrate the posture of a person lying on the back on a conventional slat support surface and a water mattress, respectively;

Fig. 10 is a cross-section of a bed equipped with a body support surface consisting of foam layer;

Fig. 11 is a top view of the bed of Fig. 10;

Fig. 12 is a side view of the bed of Fig. 10.

Referring to Figs. 1 and 2, there are shown a frame 11 with two cup shaped supports 12 and 13 provided along both sides thereof. In each of said supports there is accommodated a water filled tube 14, resp. 15. In an exemplary embodiment, each cup shaped support consists of a plate 16 extending lengthwise under a side of the frame and a channel block 17 made of plastic foam attached to it. A resilient layer 18 lies on each water filled tube, e.g. a ribbed polyether foam layer of about 6.5 cm thick. The parallel ribs 19 of the two layers 18 are arranged in alignment.

A series of transversely extending slats 21 form a flexible sleeping surface 10. The end portions of each slat rest on aligned ribs 19. The slats 21 may be fixed to the resilient layers or the water filled tubes by suitable attachment ribbons.

Owing to their being lying on the water filled tubes, the flexible slats are able to gently conform to any waving of a lying body and at the same time an evenly distributed pressure is achieved all along the length of the body. As a result, the lying body assumes an ideal and natural posture.

At a chosen distance from one longitudinal end of the frame 11, in the region where the shoulder of a body is expected to lie, the sleeping surface 10 is interrupted whereby a free space 20 is provided, e.g. a free space commensurate to the space needed for placement of three slats. In an exemplary embodiment (Fig. 3), no slats are provided in the space 20 and the polyether foam layer 18 is interrupted there. However, slats may be provided in the space 20 by laying them on a thinner foam layer.

Advantageously, one or more ribs are removably arranged on one end or on both ends of said free space, e.g. ribs 19a and 19b shown in Fig. 3. This feature allows the lengthwise extent of the free space to be adjusted so as to suit to the place where the shoulder of a lying body is expected to come.

By virtue of the invention the shoulder region which weighs less and is wider than the pelvis region, is allowed to sink down deeper than the pelvis region. Thereby the spine of a body lying on the side is able to extend perfectly aligned as illustrated in Fig. 4. The posture shown in Fig. 4 is to be compared with the postures illustrated in Figs. 5 and 6 which show the postures assumed by a body lying on a conventional slat bed and a water mattress respectively.

When a body is lying on the back, the shoulder girdle is also allowed to sink down deep enough such that the body back is evenly supported over its entire length as illustrated in Fig. 7. By comparison, Figs. 8 and 9 illustrate the postures of a body lying on the back on a conventional slat bed and a water mattress respectively.

A second exemplary embodiment of the body support arrangement according to the invention is shown in Figs. 10-12. In these drawings like reference numerals are used to designate similar members as in Figs. 1-3. The arrangement in this example comprises a foam layer 18 lying on a flexible water filled container 14. The latter is accommodated in a cup shaped support. A free space 20 is provided in the region where the shoulder of a lying body is expected to come. For instance, the foam layer 18 can be interrupted by removing one or several removable members 19 provided there such that the free space can be adjusted to exactly accommodate the shoulder of the person who is expected to lie thereon.

Claims

1. Body support arrangement comprising a frame having a longitudinal direction and support means for supporting a sleeping surface, wherein the support means for the sleeping surface (10) consists of at least one water filled tube (14, 15) that are provided on the longitudinal sides of the frame, characterized in that the sleeping surface (10) is provided with a free space (20) arranged therein at a selected distance from the longitudinal ends of the frame such that when a person is lying on the sleeping surface, said free space allows the shoulder girdle of the user's body to sink down.
2. Arrangement according to claim 1, wherein the sleeping surface (10) comprises slats (21), characterized in that at least one slat is removable whereby the location and/or width of said free space (20) can be adjusted.
3. Arrangement according to claim 1 or 2, characterized in that each water filled tube (14, 15) is accommodated in a cup shaped support (13).
4. Arrangement according to claim 1, 2 or 3, characterized in that a layer (18) of flexible material is interposed between each water filled tube (14, 15) and the ends of the flexible slats resting thereon.
5. Arrangement according to claim 1, characterized in that the sleeping surface (10) consists of a flexible foam layer (18) including at least one removable member (19) whereby the location and/or width of said free space (20) can be adjusted.
6. Bed comprising a body support arrangement according to either of the preceding claims.

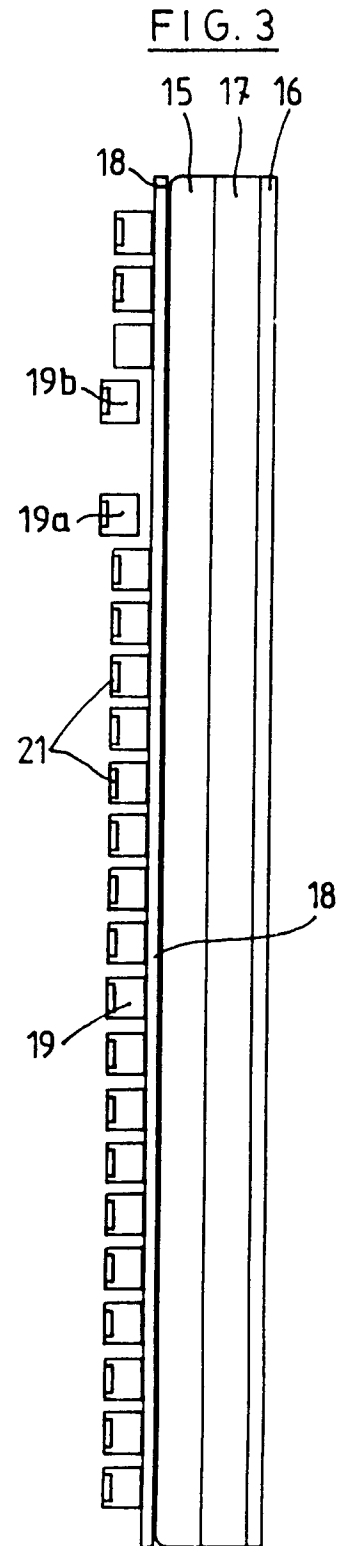
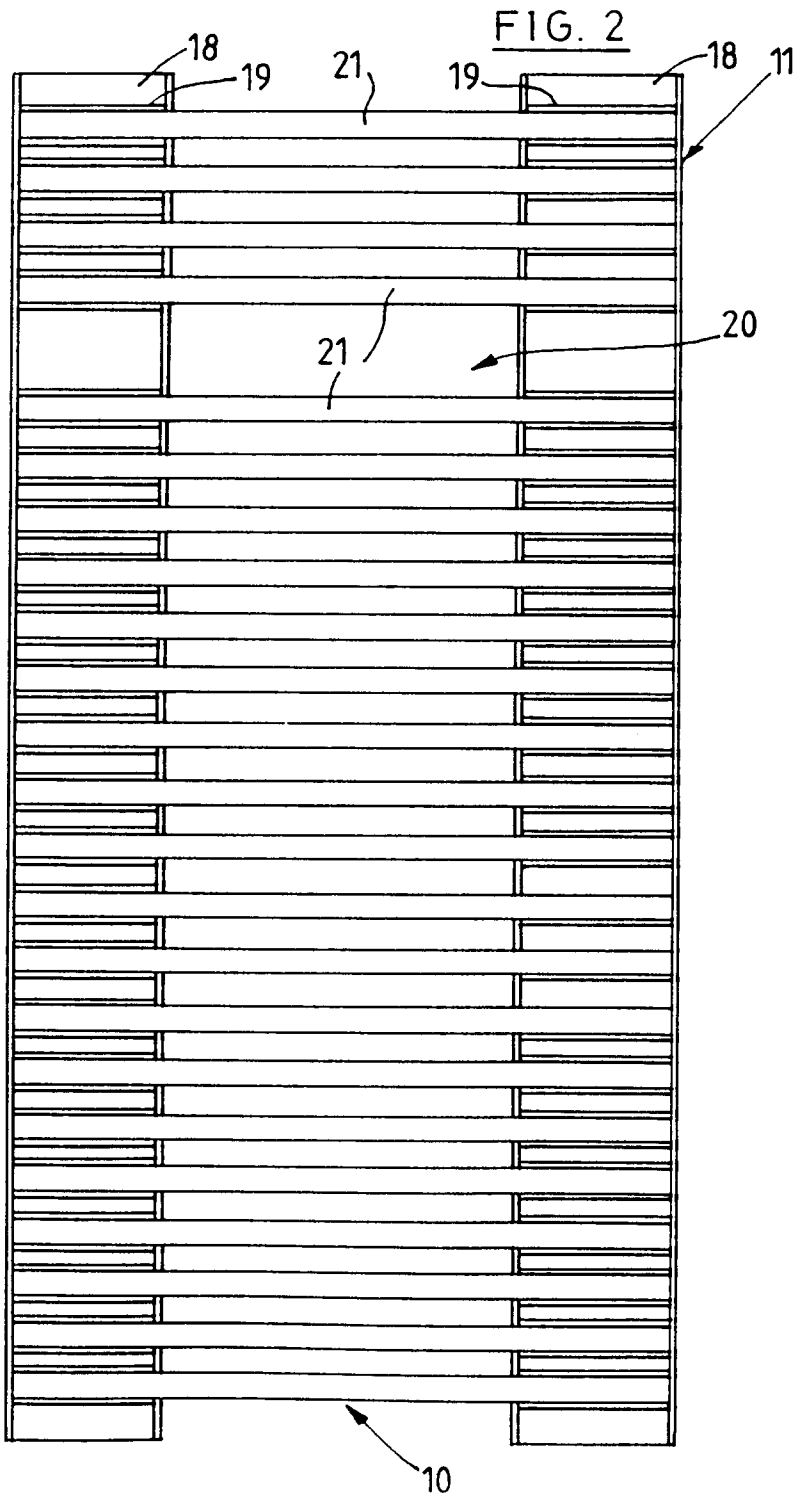
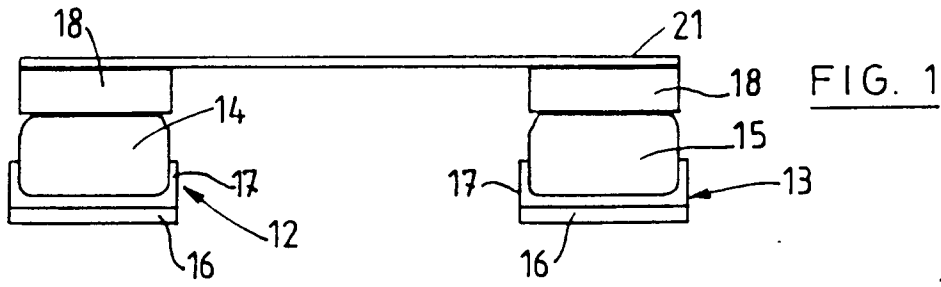


FIG. 4

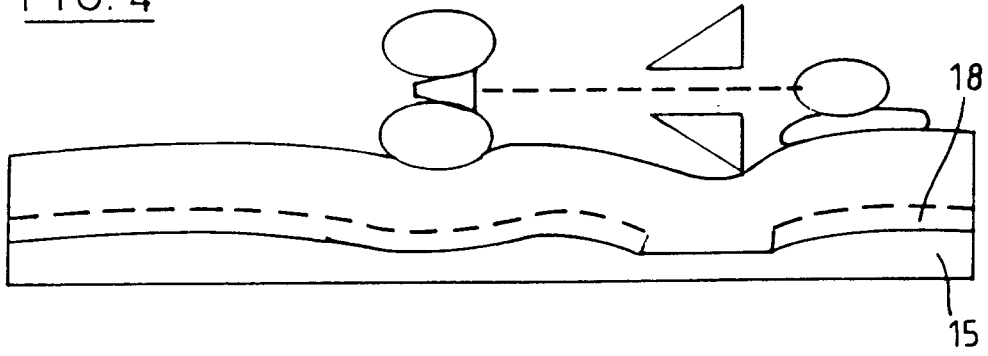


FIG. 5

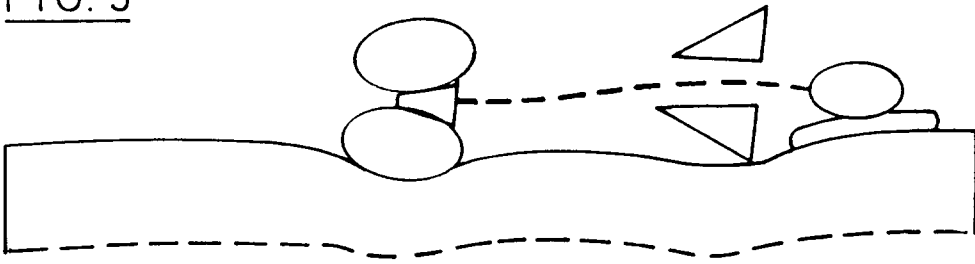


FIG. 6

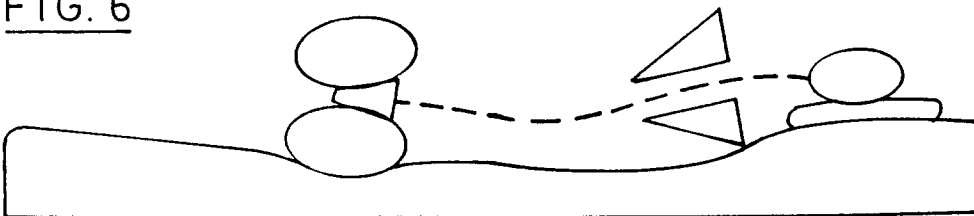


FIG. 7

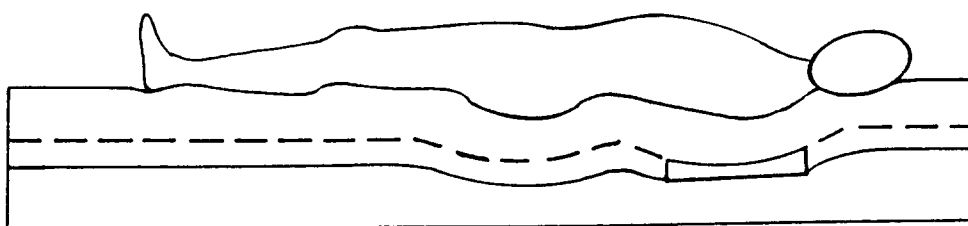


FIG. 8



FIG. 9





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 87 0137

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION
A	WO-A-94 01024 (BAUMGARTNER) * page 3, line 18 - page 4, line 6; claims 1,4,6; figures 1-4 * ---	1-3,5,6	A47C23/06 A47C31/12
A	EP-A-0 378 469 (VIEUX CHENE EXPANSION SARL) * column 3, line 13 - column 4, line 55; figure 1 * ---	1-3,5,6	
A	WO-A-92 08398 (LEGGET & PLATT) * claim 1; figures 1,2,4,10 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. CL-6)
			A47C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 January 1995	Examiner Mysliwetz, W
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.92 (P04C01)