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(54) **Mattress for massage beds**

(57) The invention relates to a massage mattress (13) comprising a plurality of modular portions (15) independent of each other in motion. The modular portions (15) are disposed parallelly of each other and consecutively in side by side relationship along the longitudinal extension of the mattress itself. Such a mattress (13) is used on a massage bed (1) comprising one series

of support elements (6) placed between a base framework (2) of the bed (1) and the mattress. Each support element (6) supports the respective modular portion (15) of the mattress submitting the modular portion (15) to the action of at least one fluid-operated actuator (10) present between the base framework (2) and the respective support element (6).

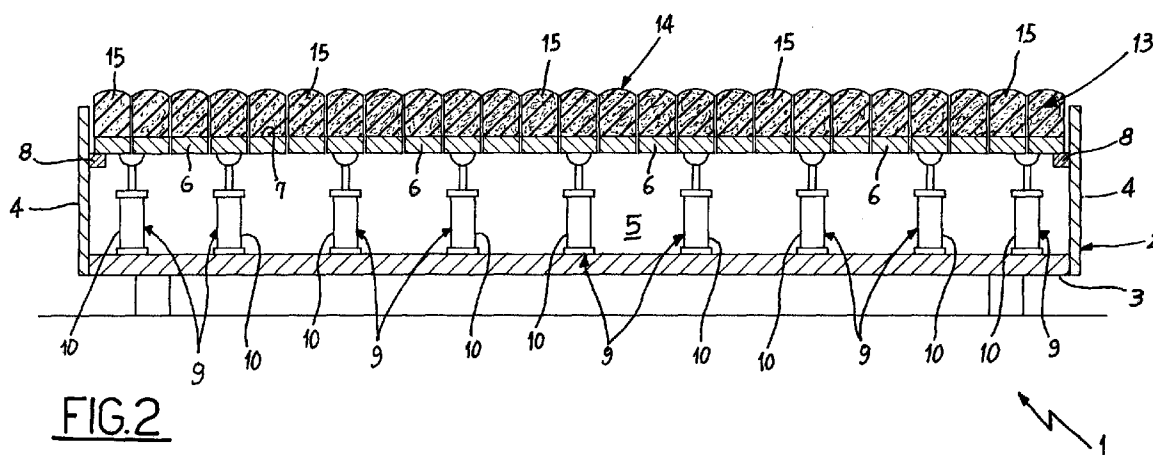


FIG. 2

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Description

[0001] The present invention relates to a mattress in particular for massage beds comprising: at least one resiliently yielding body having a user-supporting surface at the top thereof.

[0002] It is also an object of the invention a massage bed provided with the above mattress, said bed comprising: at least one base framework, a plurality of transverse support elements extending transversely of a longitudinal extension direction of the bed and disposed consecutively in side by side relationship to define a rest surface; actuating means operatively interposed between the framework and the rest surface for transmitting alternate vertical movements to said transverse support elements.

[0003] Usually, massage beds are comprised of a base framework with which support elements are connected which define a rest surface on which a mattress is disposed. Also associated with the base framework is actuating means acting on the support elements for transmitting a massage action, through the mattress, to the body of a user laid down on the mattress itself. For instance, in US Patent 4469093, the actuating means comprises a motor and transmission gears connecting the motor to the support elements placed some distance from each other. The support elements, operated with a reciprocating motion in a vertical direction, act on the user's body through the mattress which has a planar and continuous extension and is of a sufficient consistency to support the user's weight at the portions included between each support element and the adjacent support element or an adjacent fixed portion of the framework.

[0004] Another type of massage bed is described in US Patent 4999861. In this case, the bed is substantially similar to that described in the preceding patent but the massage action carried out by the support elements takes place following a curved line of action generating, during operation of the actuating means, one or more pressure waves acting on the user's body, along the longitudinal extension of the mattress itself. In fact, the support elements consist of strips disposed close to each other to form a rest surface, each strip being connected by a transmission rod to a respective cam fitted on a drive shaft.

[0005] Cam timing is such arranged that a reciprocating vertical motion is transmitted to the respective support elements, which motion is adapted to define, on the longitudinal extension of the rest surface, a wave-shaped profile that, following rotation of the drive shaft, longitudinally and repeatedly extends over the rest surface itself.

[0006] The foregoing being stated, it is to point out that present massage beds substantially employ the same mattresses as used in common sleeping beds.

[0007] However, mattresses currently in use do not allow localized massages to be carried out. This is due to the fact that, when the support element acts on the mat-

tress to impress a given pressure to the user, the mattress bends forming a curve of wide radius, thereby greatly reducing efficiency of each support element.

[0008] A second problem that can be found in known massage beds is given by the impossibility of, or at all events the great difficulty in, modifying the massage typology depending on the user's anatomy and/or requirements. In fact, once the sequence of action of the support elements has been set, by conveniently arranging the different transmission gears during the bed mounting, this sequence of action cannot be changed except through long and difficult interventions by a person skilled in the art.

[0009] It is an object of the present invention to solve all problems encountered in the known art by providing a mattress for massage beds enabling the action of the support elements to be transmitted in a localized manner to the user, as well as a massage bed comprising actuating means to be easily adjusted and planned depending on requirements.

[0010] The above and still further objects that will become more apparent in the progress of the present description are substantially achieved by a mattress for beds characterized in that said resiliently yielding body comprises a plurality of modular portions disposed transversely of a longitudinal extension of the mattress itself and following each other in side by side relationship to define said user-supporting surface, said modular portions being movable independently of each other in at least one vertical direction.

[0011] It is a further object of the invention to provide a massage bed characterized in that it further comprises at least one mattress according to claim 1, in engagement on the rest surface.

[0012] Further features and advantages will be best understood from the detailed description of a preferred non exclusive embodiment of a mattress for massage beds and a massage bed, in accordance with the present invention. This description will be taken hereinafter with reference to the accompanying drawings, given by way of nonlimiting example, in which:

- Fig. 1 is a plan view of a massage bed provided with a mattress in accordance with the invention;
- Fig. 2 is a longitudinal section of the massage bed, taken along line II-II in Fig. 1;
- Fig. 3 is a cross section of the massage bed, taken along line III-III in Fig. 1.

With reference to the drawings, a massage bed provided with a mattress in accordance with the present invention has been generally identified by reference numeral 1.

[0013] Said massage bed 1 comprises a framework 2 having a base surface 3 and side walls 4 extending vertically from the base surface 3 and defining a housing space 5. Connected to framework 2 are transverse support elements 6 extending transversely of a longitudinal

extension direction of bed 1 and disposed consecutively in side by side relationship to define a rest surface 7. Said transverse support elements 6 engage the base framework 2 by respective opposite ends 6a, bearing on support seats 8 formed in the inner surfaces of the side walls 4 of framework 2.

[0014] The massage bed 1 further comprises actuating means 9 operatively interposed between the framework 2 and the rest surface 7, to transmit vertical reciprocating movements to said transverse support elements 6. In more detail, said actuating means 9 comprises a plurality of fluid-operated actuators 10 received in the housing space 5 and directly in engagement with the base surface 3. Actuators 10 operate each on at least one respective transverse support element 6 and can be selectively activated by a programmable electronic control unit 11, operating on a distribution valve unit 10a for example, operatively interposed between the actuators themselves and a pump or another supply source 10b.

[0015] As shown in Fig. 1, the massage bed 1 preferably comprises at least two rows 12 of actuators 10 in parallel alignment with the longitudinal extension of the bed itself, each of said rows 12 being disposed adjacent to one of the ends 6a of the transverse support elements 6.

[0016] In engagement on the rest surface 7 is at least one mattress 13 essentially defined by a resiliently yielding body having a user-supporting surface 14 at the top thereof. In accordance with the present invention, mattress 13 comprises a plurality of modular portions 15 disposed transversely of the longitudinal extension of the mattress itself and following each other in side by side relationship to define said supporting surface 14.

[0017] Mattress 13 for example comprises a minimum number, greater than 10, of modular portions 15 which are preferentially equal to each other and have a transverse size smaller than 20 cm, as measured parallelly of the longitudinal extension of mattress 13.

[0018] Each modular portion 13, made of a foam material for example, optionally coated with a fabric, can advantageously have an upper surface 13a with a convex curvilinear profile enabling an efficient massage action to be carried out on the user's body while at the same time avoiding possible uncomfortableness connected with sharp-cornered profiles.

[0019] Corresponding to each modular portion 15 is at least one of the transverse support elements 6 extending along a lower surface of the modular portion itself, opposite to the supporting surface 14. It is also possible for each actuator 10 to engage two or more support elements 6, as shown by actuators 10 placed at the ends of bed 1 in Fig. 2. In addition, as viewed from Fig. 2, it is not required that one actuator 10 should correspond to each support element 6. In fact, in the mentioned figure, at least two support elements which are not submitted to the direct action of a respective actuator 10 are interposed between each actuator 10 and the adjacent

one.

[0020] When the programmable electronic control unit 11 is operated, each actuator 10 acts on the respective modular portion 15 through the respective support element 6, to transmit an appropriate alternate pressure action to the user's body when said user is laid down on the supporting surface 14.

[0021] Pump 10b carries sufficient air to each actuator 10 so that an efficient operation of said actuators is ensured through the distribution unit 10a and respective air ducts 10c connecting actuators 10 with said distributing unit 10a.

[0022] The invention fully solves all problems encountered in the known art. Since the mattress in reference is made up of different modular portions driven in motion independently of each other, it helps in improving the efficiency of the action carried out by the actuators. In fact, each modular portion directly transmits to the user's body the massage action carried out by the underlying actuator, without the efficiency of this action being reduced by effect of the bends to which the mattress is submitted, which on the contrary happens in the known art.

[0023] It is to consider that use of a plurality of actuators that can be managed by a programmable electronic control unit in accordance with the present invention enables the massage action to be established and adapted each time depending on the user's anatomic features and requirements.

[0024] It will be recognized that engagement of each modular portion by at least two actuators at the respective opposite ends enables the modular portion, by activation of an actuator alone, to be angularly oscillated around one of its ends, to carry out a localized massage action only on one hip of the user's body.

[0025] In addition, the massage bed in accordance with the present invention has the advantage that, by conveniently feeding the individual actuators upon command of the programmable electronic control unit, it can be used as a static rest surface that can vary in its rest profile depending on the user's anatomy and/or requirements.

Claims

1. A modular mattress in particular for massage beds comprising at least one resiliently yielding body having a user-supporting surface (14) at the top thereof, characterized in that said resiliently yielding body comprises a plurality of modular portions (15) disposed transversely of a longitudinal extension of the mattress (13) itself and following each other in side by side relationship to define said user-supporting surface (14), said modular portions (15) being movable independently of each other in at least one vertical direction.

2. A mattress as claimed in claim 1, characterized in that said modular portions (15) are equal to each other.
3. A mattress as claimed in claim 1, characterized in that it comprises a number of modular portions (15) greater than ten. 5
4. A mattress as claimed in claim 1, characterized in that each of said modular portions (15) has a transverse size smaller than 20 cm, as measured parallelly of the longitudinal extension of the mattress (13). 10
5. A mattress as claimed in claim 1, characterized in that each modular portion (15) can be associated with at least one transverse support element (6) extending along a lower surface of the modular portion itself, opposite to said supporting surface (14). 15
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6. A massage bed comprising:
- at least one base framework (2);
 - a plurality of transverse support elements (6) extending transversely of a longitudinal extension direction of the bed (1) and disposed consecutively in side by side relationship to define a rest surface (7); 25
 - actuating means (9) operatively interposed between the framework (2) and the rest surface (7) for transmitting alternate vertical movements to said transverse support elements (6); 30
- characterized in that it further comprises at least one mattress (13) according to claim 1, in engagement on the rest surface (7). 35
7. A bed as claimed in claim 6, characterized in that said transverse support elements (6) bear, by their respective opposite ends, on support seats (8) formed in the framework (2). 40
8. A bed as claimed in claim 6, characterized in that said actuating means (9) comprises a plurality of actuators (10) each operating on at least one respective support element (6) and adapted to be selectively activated by a programmable control unit (11). 45
9. A bed as claimed in claim 6, characterized in that said actuators (10) are fluid-operated actuators. 50
10. A bed as claimed in claim 8, characterized in that said fluid-operated actuators (10) are aligned in a direction parallel to the longitudinal extension of the mattress (1). 55
11. A bed as claimed in claim 10, characterized in that it comprises at least two rows (12) of actuators (10)

aligned parallelly of the longitudinal extension of the mattress (13), each of said rows (12) being disposed adjacent to one end of said transverse support elements (6).

