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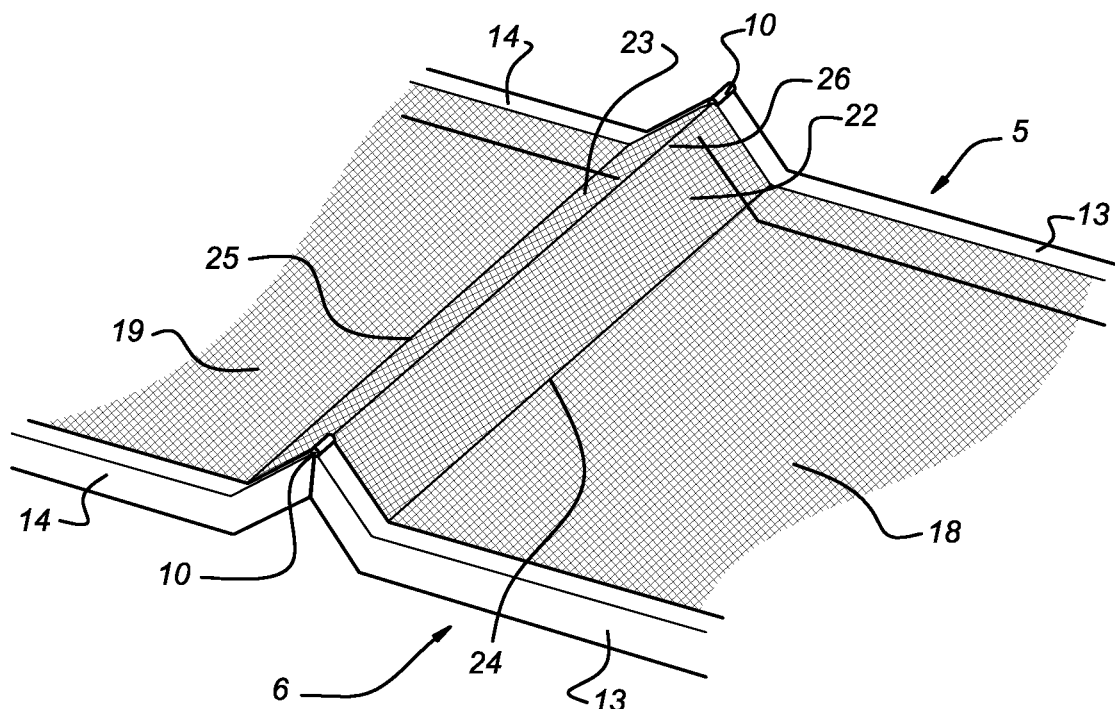
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(54) Frame for a lying or sitting furniture

(57) A frame (1) for a profiling adjustable bed furniture item comprises a framework (4) made up of parallel longitudinal members (5,6), cross-members (7,8) that connect the longitudinal members (5,6) to one another, which longitudinal members (5,6) each consist of at least two longitudinal member sections (13-16) which are con-

nected to one another by a hinge (10-12) at the ends thereof facing one another, which hinges have a common centre line, as well as support surface sections (18-21) stretched transversely between two opposing longitudinal member sections (13-16). The centre line of the hinges (10-12) is offset transversely with respect to the support surface sections (18-21).

Fig 6



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Description

[0001] The present invention relates to a frame for a profiling adjustable bed furniture item, comprising a framework made up of parallel longitudinal members, cross-members that connect the longitudinal members to one another, which longitudinal members each consist of at least two longitudinal member sections which are connected to one another by a hinge at the ends thereof facing one another, which hinges have a common centre line, as well as support surface sections made of interconnecting helical springs stretched transversely between two opposing longitudinal member sections.

[0002] Such a frame is generally known. The support surface, which usually extends continuously from the head end to the foot end, forms a sprung surface on which the bottom surface of the mattress is supported. This surface can be made, for example, of a robust material that is suitable for transmitting the forces from the mattress to the frame. The top surface of the mattress consists of a layer of relatively soft material, so that a person on the mattress can be comfortably supported.

[0003] The head end and/or foot end of the furniture item can be folded up to enable the person to adopt a sitting position. This involves bending the mattress at the location of the hinge line. As a result of the fact that the bottom surface of the mattress is relatively firm and the top surface is relatively soft, the relatively soft top surface is bunched together when this bending takes place. This causes a thick fold which is uncomfortable for the person on the mattress.

[0004] It has already been proposed, in order to overcome this problem, to forcibly stretch the bottom surface of the mattress when folding the head end up, as disclosed in NL-C 1013960. However, this causes sliding movements of the bottom surface of the mattress, which can result in wear.

[0005] The aim of the invention is therefore to provide a frame wherein these problems do not occur or occur to a far lesser extent. This aim is achieved in that the centre line of the hinges is offset transversely with respect to the support surfaces.

[0006] The head end or the foot end of the frame can now hinge about a centre line which is higher than the support surface of the frame. This means that the hinging movement takes place closer to the top surface of the mattress, with the consequence that this surface is not, or is hardly any longer, bunched together and the comfort is maintained even in the folded position.

[0007] The invention can be used in particular in an embodiment wherein the support surface sections form part of a continuous support surface, which support surface is offset at the location of the hinges, such that the centre line of the hinges essentially coincides with a hinge line in the support surface. It has been found that it is possible for a continuous support surface to extend from the longitudinal member sections to the hinge line positioned at a higher level without problems. The support

surface comprising interconnecting helical springs is simply bent round and largely retains its sprung supporting function in so doing. When the head end or the foot end is adjusted, the support surface can bend with it, so that the appropriate support for the mattress is always ensured, even at the level of the hinge centre line.

[0008] The support surface extends continuously between the two cross-members that are located at the longitudinal extremities of the framework. This means that the entire support surface, including at the location of the hinging frame sections, offers essentially the same sprung support without any relatively hard portions. In particular, this can relate to a support surface made of interconnecting helical springs, which springs can follow the transition between the support surface sections properly without problems, even when these are adjusted.

[0009] In this context, the support surface has two connecting sections sloping towards one another, which at one edge continue into a support surface section in each case and, at the other edge, continue into one another at the location of the hinge line. These connecting sections form a fairly acute angle with one another when the head end and/or foot end are folded down. The helical spring(s) located at the top of the connecting sections can then be pressed downwardly with relative ease: after all in this position these are given little support by the adjacent springs. The beneficial outcome of this is that in this position the connecting sections cannot be felt to an uncomfortable degree.

[0010] When, on the other hand, the head end/foot end is folded up, the angle enclosed by the connecting sections increases. Consequently they approach more closely a position in a common plane, as a result of which the springs provide more support to each other, and the support surface becomes firmer. The beneficial outcome of this is that a seated person who is exerting a concentrated load precisely at the location of these connecting sections is given better support.

[0011] The present invention further relates to a profiling adjustable bed furniture item with a frame as described above that comprises a framework made up of parallel longitudinal members, cross-members that connect the longitudinal members to one another, which longitudinal members each consist of at least two longitudinal member sections which are connected to one another by a hinge at the ends thereof facing one another, which hinges have a common centre line, and support surface sections made of interconnecting helical springs stretched transversely between two opposing longitudinal member sections, as well as a mattress with a bottom surface that is supported on the support surface sections of the frame.

[0012] According to the invention provision is made that the centre line of the hinges is offset transversely in the direction of the mattress with respect to the support surface sections, and that the bottom surface of the mattress has a recess extending transversely opposite the offset centre line of each hinge.

[0013] According to a preferred embodiment, the support surface sections form part of a continuous support surface, which support surface is offset at the location of the hinges, such that the centre line of the hinges essentially coincides with a hinge line in the support surface, and each hinge line in the support surface is accommodated in a recess in the mattress.

[0014] The invention further relates to a mattress for a profiling adjustable bed furniture item as described above, wherein the bottom surface of the mattress has a recess extending transversely.

[0015] Reference is made to the state of the art as disclosed in German Utility Model 20 210 510. This describes a frame for a bed, where the support surface sections are bordered by upright partitions extending transversely. These partitions, which are connected to one another in a hinged manner, do not form a continuation of the support surface sections. Consequently, they do not provide a smooth transition between these support surface sections, which detracts from the comfort.

[0016] The invention will now be discussed in greater detail below on the basis of an illustrative embodiment shown in the figures.

Figure 1 shows a side view of a bed with a frame according to the invention in a flat position.

Figure 2 shows the bed with the frame folded up to some extent.

Figure 3 shows the frame in a position in which it has been folded up further.

Figure 4 shows the frame in a completely folded up position.

Figure 5 shows a plan view of the frame.

Figure 6 shows a partial perspective view of the frame.

[0017] The bed shown in Figures 1 - 4 comprises a frame indicated in its entirety by 1, on which a mattress 2 is located. A cover layer 3 is also located on the mattress 2.

[0018] The frame 1 comprises, as illustrated in Figure 5, a framework 4 made of longitudinal members 5, 6 which are connected at the head end by a cross-member 7 and at the foot end by a cross-member 8. The framework 4 is in turn supported on a substrate by means of a base indicated in its entirety by 9.

[0019] The longitudinal members 5, 6 are each divided by three hinges 10, 11, 12 into four longitudinal member sections 13, 14, 15, 16. The hinges 10 of the longitudinal members 5, 6 have a common centre line, as do the hinges 11 and the hinges 12.

[0020] A support surface indicated in its entirety by 17 consisting of interconnecting helical springs known per se is stretched transversely between the longitudinal members 5, 6. This support surface 17 extends continuously from the cross-member 8 to the cross-member 7.

[0021] As can be seen in Figures 1-4 and in Figure 6, the centre line of the hinges 10 is positioned in an offset

manner. The same applies to the centre line of the hinges 11 and the hinges 12. Since the construction at the hinges 11 and the hinges 12 is identical to the construction at the hinges 10, only the latter will be described.

[0022] The support surface section 18 is stretched between the longitudinal member sections 13, and the support surface section 19 between the longitudinal member sections 14. Corresponding support surface sections 20 and 21, respectively, are stretched between the longitudinal member sections 15 and 16, respectively. Because the centre line of the hinges 10 is offset, the support surface 17 cannot continue directly from the support surface section 18 to the support surface section 19. Instead, the support surface 17 is diverted upwards from the attachment to the longitudinal member sections 13 and 14, respectively, to a position level with the hinge centre line of the hinges 10. This means that the support surface 17 also has two connecting sections 22, 23 sloping towards one another, which at one edge 24 or 25, respectively, continue into a respective support surface section 18, 19 and, at the opposite edge 26, continue into one another. This edge 26 coincides approximately with the centre line of the hinges 10.

[0023] As shown in Figures 1-4, the bottom surface 30 of the mattress 2 has recesses 27, 28, 29, into which, in each case, the connecting sections 22, 23 of the support surface 17 sloping towards one another extend, specifically at the hinges 10, the hinges 11 and the hinges 12. As is apparent from Figures 1-4, the top surface 31 of the mattress 2 is consequently compressed less or almost not at all when the bed is folded up. The hinge centre lines of the hinges 10, the hinges 11 and the hinges 12 are so high, in other words are such a short distance from this top surface 31, that almost only bending and not bunching occurs there. The bottom surface 30 can, as it were, become longer because of the high position of the said hinge centre lines.

[0024] The frame according to the invention can be used in combination with any type of mattress. Thus the mattress can have the usual constant thickness instead of a varying thickness in the longitudinal direction. Furthermore, the mattress can have pocket springs, different rows of pocket springs being located on both sides of the connecting sections sloping towards one another.

[0025] The support surface can consist, in the conventional manner, of interconnecting helical springs, as explained above. However, the invention also covers other mattress bases, for example in the form of a thin flexible material such as a fabric cloth.

Claims

1. Frame (1) for a profiling adjustable bed furniture item, comprising a framework (4) made up of parallel longitudinal members (5, 6), cross-members (7, 8) that connect the longitudinal members (5, 6) to one another, which longitudinal members (5, 6) each con-

sist of at least two longitudinal member sections (13-16) which are connected to one another by a hinge (10-12) at the ends thereof facing one another, which hinges (10-12) have a common centre line, as well as support surface sections (18-21) stretched transversely between two opposing longitudinal member sections (13-16), **characterised in that** the centre line of the hinges (10-12) is offset transversely with respect to the support surface sections (18-21).

2. Frame according to Claim 1, wherein the support surface sections (18-21) form part of a continuous support surface (17), which support surface (17) is offset at the location of the hinges (10-12), such that the centre line of the hinges (10-12) essentially coincides with a hinge line (26) in the support surface (17).

3. Frame according to Claim 2, wherein the support surface (17) extends continuously between two cross-members (7, 8) that are located at the longitudinal extremities of the framework (4).

4. Frame according to Claim 2 or 3, wherein the support surface (17) has two connecting sections (22, 23) sloping towards one another, which at one edge (23, 24) continue into a support surface section (18, 19) in each case and, at the other edge (26), continue into one another at the location of the hinge line.

5. Frame according to Claim 4, wherein the hinges (10-12) have a hinge pin.

6. Frame according to one of the preceding claims, wherein the support surface (17) comprises inter-connecting helical springs.

7. Frame according to one of the preceding claims, wherein at least two pairs of hinges (10-12) are provided which are located some distance from one another in the longitudinal direction, and the longitudinal members each comprise at least three longitudinal member sections (13-16) which are connected to one another by means of the hinges (10-12).

8. Profiling adjustable bed furniture item with a frame (1) according to one of the preceding claims that comprises a framework (4) made up of parallel longitudinal members (5, 6), cross-members (7, 8) that connect the longitudinal members (5, 6) to one another, which longitudinal members (5, 6) each consist of at least two longitudinal member sections (13-16) which are connected to one another by a hinge (10-12) at the ends thereof facing one another, which hinges (10-12) have a common centre line, and support surface sections (18-21) stretched transversely between two opposing longitudinal member sections (13-16), as well as a mattress (2)

with a bottom surface (30) that is supported on the support surface sections (18-21) of the frame (1), **characterised in that** the centre line of the hinges (10-12) is offset transversely in the direction of the mattress (2) with respect to the support surface sections (18-21), and **in that** the bottom surface (30) of the mattress has a recess extending transversely (32) opposite the offset centre line of each hinge (10-12).

9. Furniture item according to Claim 8, wherein the support surface sections (18-21) form part of a continuous support surface (17), which support surface (17) is offset at the location of the hinges (10-12), such that the centre line of the hinges (10-12) essentially coincides with a hinge line (26) of the support surface (17), and each hinge line (26) in the support surface (17) is accommodated in a recess (32) in the mattress (2).

10. Furniture item according to Claim 9, wherein the support surface (17) has two connecting sections (22, 23) sloping towards one another, which at one edge (23, 24) continue into a support surface section (18-21) in each case and, at the other edge (26), continue into one another at the location of the hinge line, and the connecting sections (22, 23) are each accommodated in a recess (32) in the bottom surface (30) of the mattress (2).

11. Mattress (2) for a profiling adjustable bed according to one of Claims 7 - 10, wherein the bottom surface (30) of the mattress has at least one recess extending transversely (32).

Fig 1

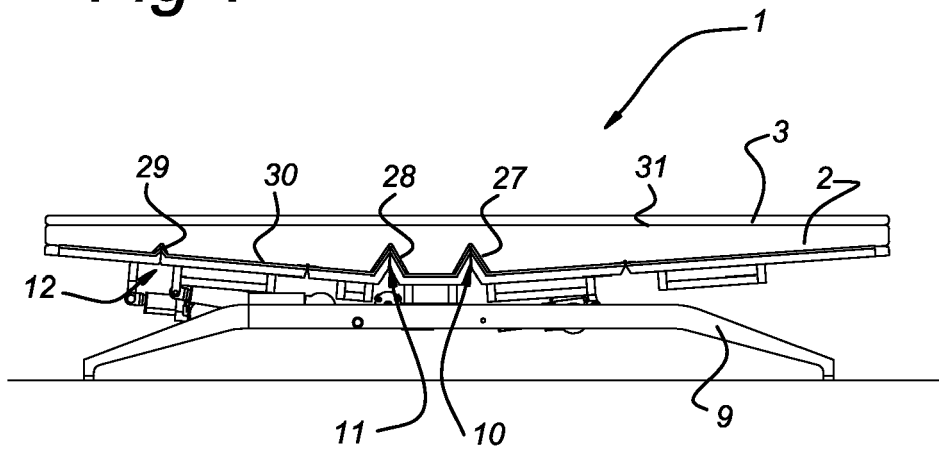


Fig 2

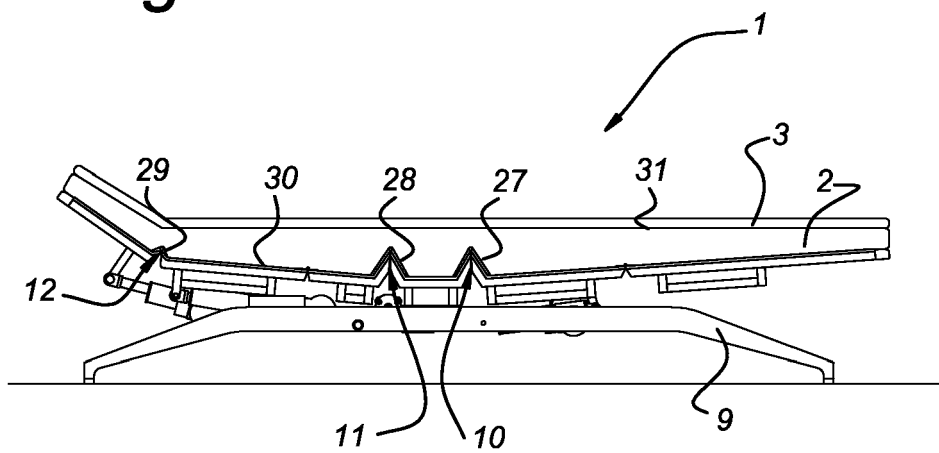


Fig 3

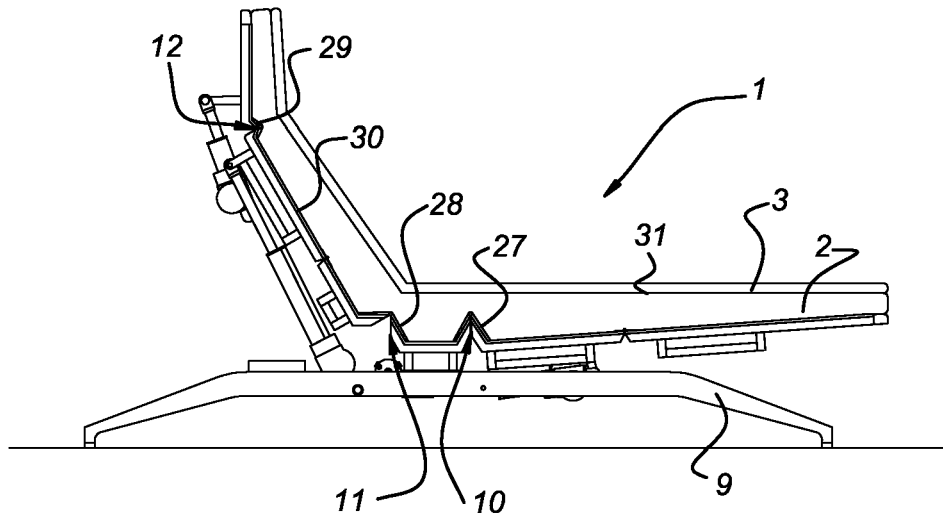


Fig 4

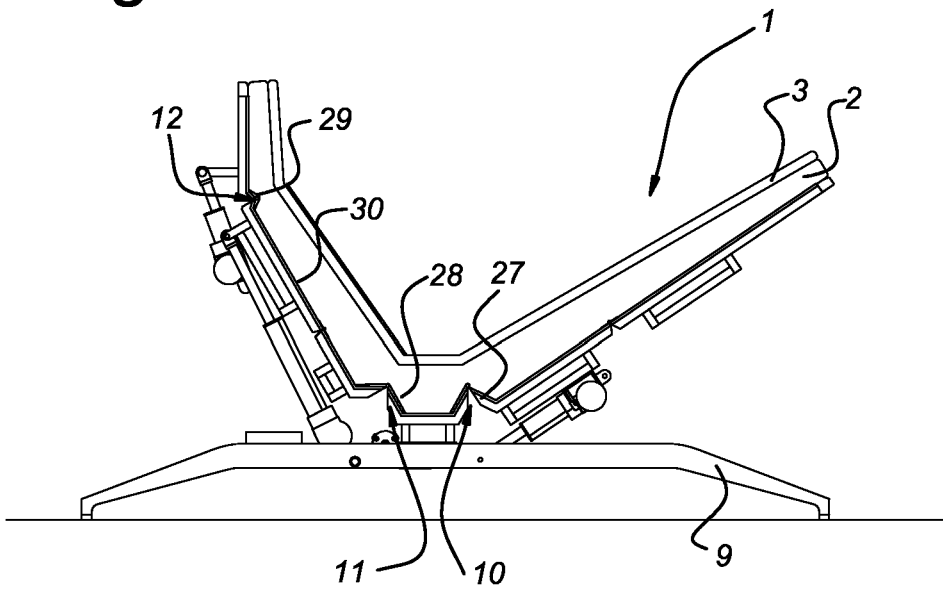


Fig 5

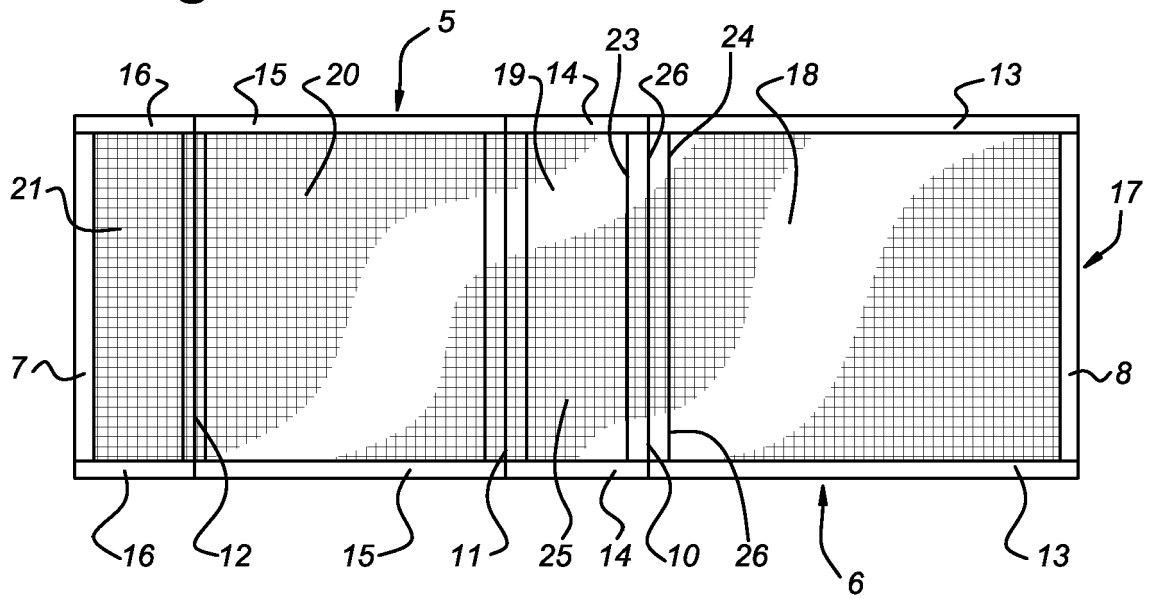


Fig 6

