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(54) **Articulated bed with lifting mechanism**

Gelenkbett mit Hebemechanismus

Lit articulé à mécanisme de levage

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(56) References cited:
EP-A- 1 374 741 US-A1- 2008 041 680

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Description

[0001] The invention relates to an articulated bed with a lifting mechanism .

[0002] Articulated beds are known with lifting mechanisms allowing to raise and maintain the bedspring (or slats) of the bed (i.e. the so-called bed-plane) at a certain height above the ground, allowing for a housewife to redo the bed comfortably without bending and to have access to the space below the bedspring.

[0003] The applicant in the past has patented a mechanism, placed in two identical specimens on two opposite sides of the bed frame/chassis fixed to the ground, constituted by a first and a second lifting arm mounted substantially parallel to each other and hinged to the frame and to the bed-plane to form an articulated parallelogram. One of the two arms is constructed extensible, i.e. through two segments mounted telescopically into one another. This allows, once the bed-plane is raised, to tilt the bed-plane with respect to a horizontal plane, so that the tidy-up of the bed results facilitated. To oppose the weight of the bed-plane-bed and to servo the lifting thereof, elastic means are arranged in thrust (usually springs) on the two segments. A gas-spring is placed between the other arm, the inextensible one, and the chassis, again with the function to servo the lifting of the bed-plane. Generally, the extendable arm consists of rectangular cross-section sleeves, and the elastic means are placed beside them, outside. The thrust of the elastic means tends to distort the extendable arm, increasing the friction of its telescopic segments and requiring greater force for lifting the bed-plane. Also, a torsion bar must be used under the bed-plane to compensate for the thrust of the elastic means, with an increase of weight and costs.

[0004] Known lifting mechanisms comprise the one in EP 1 374 741, which describes a container bed with means for moving a mattress frame connected to a container body. On each side wall of the container body there is a side bar pivoted to the side wall. On the side bar several arms are arranged to pivotably support the mattress frame.

[0005] The invention thus solves the problem of simplifying the structure of the mechanism, at the same time improving it and eliminating some disadvantages.

[0006] These problems are solved by an articulated bed with a lifting mechanism for the bedspring or the bed-plane as claimed in claim 1.

[0007] In this way the thrust of the elastic means is directed and discharges along the direction of movement of the telescopic segments, and does not induce any lateral effort tending to bend them one on the other. This results in an improved mutual sliding of the telescopic segments because the friction is lower, and in the possibility of eliminating the torsion bar. A preferred construction provides that said segments have circular cross-section, circumstance which allows to improve the sliding thereof and avoids oscillations thereof since the mechanical plays are reduced. Very easily for said segments

metal sleeves may be used. Preferably, said elastic means comprise a gas-spring, very easily available and reliable object. Preferably the gas spring has its body mounted inside a segment and its stem connected in thrusting action to the other segment, i.e. the stem is mounted in thrust internally one of the segments. Further advantages can be obtained when one uses an element mounted between the two segments adapted to decrease the mutual coefficient of friction, e.g. a ring, a seal or a collar, preferably formed by a material with low friction coefficient, e.g. Teflon®, applied coaxially above and/or inside the edge of the segment which contains the other.

[0008] The advantages of the invention will be better clarified by the following description of a preferred embodiment, illustrated in the attached drawing showing a liftable bed-plane with a mechanism according to the invention, in which

Fig 1 shows a side view of the mechanism according to the invention in a closed position;

Fig 2 shows a side view of the mechanism in fig. 1 in a lifted position;

Fig. 3 shows a side view of the mechanism in fig. 1 in the lifted position and with the bed-plane inclined ;
Fig 4 shows an exploded assonometric view of the mechanism in fig. 1.

[0009] The mechanism (or articulation) of the invention is mounted on a frame/chassis 10 fixed to the ground, which under resting conditions (bed-plane not raised) serves as a support to a bed-plane or support for a bedspring 20. The chassis 10 acts as a base for the bed (Fig. 1). With a known maneuver, the bed-plane 20 can be lifted with respect to the chassis 10 (fig. 2) and, when lifted, it can be tilted with respect to a horizontal plane (Fig. 3). The movements permitted to the bed-plane 20 are essentially known (see also arrows in Fig. 1-3).

[0010] The mechanism allowing the movement of the bed-plane 20 is mounted in two identical specimens on two sides of the bed, and comprises two rigid arms 30, 40, each pivoted rotatably both to the frame 10 and to the bed-plane 20 by pins, indicated generically with 12. The arm 30 is one-piece, while the arm 40 has a telescopic extendable structure and **IS FORMED BY** two cylindrical, tubular segments or hollow sleeves 42, 44. The segment 44 therefore can slide inside the segment 42. The arms 30, 40 are mounted substantially parallel to each other to form an articulated parallelogram with which to raise and support the bed-plane 10.

[0011] As it is evident from the figure, to cushion the two segments 42, 44 a gas spring 50 (see fig. 4 where it is shown schematically dashed) is housed inside the segment 44, with its stem 46 (see Figure 3) internally connected with, and in thrust on, the segment 42. Since, then, the thrust of the spring 50 occurs axially with respect to the segments 42, 44 and not sideways, they do not undergo any deformation or lateral bending (the twisting

torque is eliminated), and the stability and ease of relative sliding results improved. The gas spring 50, or any equivalent means, may be placed inside one of the segments 42, 44 and/or in both, depending on its size and/or characteristics desired for the mechanism.

[0012] Although in the figures there is shown a known torsion bar 60, adapted to connect and stabilize the two mechanisms of the bed, in practice it has proved unnecessary. Thanks to the circular section of the segments 42, 44, their sliding shows improved since there are not sliding edges mechanical efforts can concentrate on. To further improve the such sliding, it is preferred to mount at the mouth of the segment 42 a collar 62 (see fig. 4), e.g. made of Teflon®, in order to maintain coaxial and with a certain mutual play (inside the segment 42) - as well as to better drive - the two segments 42, 44, avoiding unwanted rubbing.

[0013] A gas spring 70, hinged through pins 12 to the frame 10 and to the arm 30, completes the mechanism. Its function is to servo the lifting of the bed-plane 10 and to balance the weight thereof.

Claims

1. Articulated bed having
a chassis (10) laid on the ground,
a bedspring or a bed-plane (20),
a lifting mechanism for the bedspring or the bed-plane,
wherein the lifting mechanism comprises a first and a second lifting arm (30, 40) mounted substantially parallel to each other and hinged to the chassis and the bedspring or bed-plane to form an articulated parallelogram, one of the two arms being extendable through two segments (42, 44) mounted telescopically ONE IN THE OTHER, and elastic means thrusting between the two segments and arranged inside one or both of said segments (42, 44),
characterized in that said elastic means (50) are provided to oppose the weight of the bedspring or bed-plane and to servo their lifting.
2. Bed according to claim 1, wherein said segments (42, 44) have circular cross-section.
3. Bed according to claim 2, wherein said segments (42, 44) consist of metal sleeves.
4. Bed according to any of the preceding claims, wherein said elastic means comprise a gas spring (50).
5. Bed according to claim 4, wherein the gas spring (50) has its body mounted inside a segment (44) and its stem (46) connected in thrusting action to the other segment (42).

6. Bed according to any of the preceding claims, comprising an element (62) mounted between the two segments (42, 44) adapted to decrease the mutual coefficient of friction.

7. Bed according to claim 6, wherein the element mounted between the two segments is a ring, a seal or a collar (62) applied coaxially above and/or inside the edge of the segment (44) which contains the other (42).

8. Bed according to claim 7, wherein said ring, gasket or collar is formed by a material with low friction coefficient, e.g. Teflon®.

Patentansprüche

1. Gelenkbett, das
ein auf dem Boden stehendes Gestell (10),
einen Lattenrost oder eine Bettfläche (20)
und einen Mechanismus für das Anheben des Lattenrostes oder der Bettfläche (20) aufweist,
wobei der Hebemechanismus einen ersten und einen zweiten Hebearm (30, 40) umfasst, die im Wesentlichen parallel zueinander montiert und mit Scharnieren am Gestell sowie an der Bettfläche oder an dem Lattenrost befestigt sind. Um ein Gelenkparallelogramm zu bilden, ist einer der beiden Arme mit Hilfe von zwei wie ein Teleskop ineinander montierten Teilen (42, 44) sowie
von elastischen Schubmitteln zwischen den beiden Teilen, die sich in einem oder in beiden der besagten Teile (42, 44) befinden, ausziehbar,
dadurch gekennzeichnet, dass die besagten elastischen Mittel dazu dienen dem Gewicht der Bettfläche entgegenzuwirken und deren Anheben ermöglichen.
2. Bett nach Anspruch 1, **dadurch gekennzeichnet, dass** die besagten Teile (42, 44) ein rundes Profil aufweisen.
3. Bett nach Anspruch 2, **dadurch gekennzeichnet, dass** die besagten Teile (42, 44) aus Metallmanschetten bestehen.
4. Bett nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die elastischen Mittel eine Gasfeder (50) umfassen.
5. Bett nach Anspruch 4, **dadurch gekennzeichnet, dass** der Körper der Gasfeder (50) in einem Teil (44) montiert und der Schaft (46) unter Schub mit dem anderen Teil (42) verbunden ist.
6. Bett nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** es ein zwischen den beiden

Teilen (42, 44) montiertes Element (62) umfasst, das dazu dient, den gegenseitigen Reibungskoeffizienten zu vermindern.

7. Bett nach Anspruch 6, **dadurch gekennzeichnet, dass** das zwischen den beiden Teilen montierte Element ein Ring, eine Dichtung oder eine kleine Schelle (62) ist, das koaxial auf dem und/oder im Rand des Teiles (44), welches das andere Teil (42) enthält, angebracht ist. 5
8. Bett nach Anspruch 7, **dadurch gekennzeichnet, dass** der besagte Ring oder die Dichtung beziehungsweise die kleine Schelle aus einem Material mit niedrigerem Reibungskoeffizienten wie z. B. Teflon® besteht. 10 15

Revendications

1. Un lit articulé ayant
un cadre (10) posé sur le sol,
un sommier ou un plan de lit (20),
un mécanisme de levage pour le sommier ou le plan de lit (20), 20
où le mécanisme de levage comprend un premier et un deuxième bras de levage (30, 40) montés ensemble, fondamentalement parallèles et articulés au cadre et au plan de lit ou au sommier pour former un parallélogramme articulé, un des deux bras pouvant s'allonger à l'aide de deux segments (42, 44) montés télescopiquement l'un dans l'autre, et de pièces élastiques en poussée entre les deux segments et disposées dans un ou dans les deux segments (42, 44), 25
caractérisé en ce que les dites pièces élastiques servent à contrecarrer le poids du plan de lit et à asservir son levage. 30 35
2. Un lit selon la revendication 1, où les dits segments (42, 44) ont une section circulaire. 40
3. Un lit selon la revendication 2, dans laquelle les dits segments (42, 44) sont constitués de manchons métalliques. 45
4. Un lit selon l'une des revendications précédentes, où les dites pièces élastiques comprennent un ressort à gaz (50). 50
5. Un lit selon la revendication 4, où le corps du ressort à gaz (50) est monté dans un segment (44), et la tige (46) reliée en poussée à l'autre segment (42). 55
6. Un lit selon l'une des revendications précédentes, comprenant un élément (62) monté entre les deux segments (42, 44) permettant de diminuer le coefficient de frottement mutuel.

7. Un lit selon la revendication 6, où l'élément monté entre les deux segments est une bague, un joint ou un collier (62) appliqué(e) de manière coaxiale sur et/ou dans le bord du dit segment (44) qui contient l'autre (42).
8. Un lit selon la revendication 7, où la dite bague ou joint ou collier est formé(e) de matériau à bas coefficient de frottement, par exemple le Teflon®.

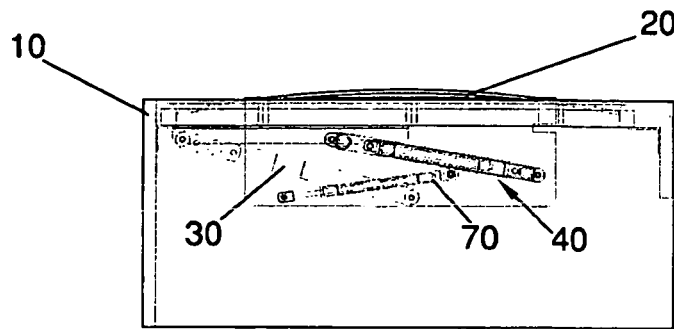


Fig. 1

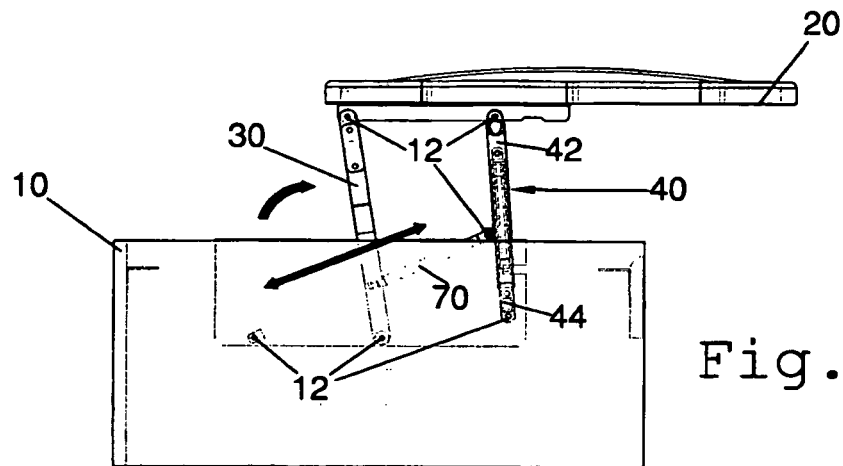


Fig. 2

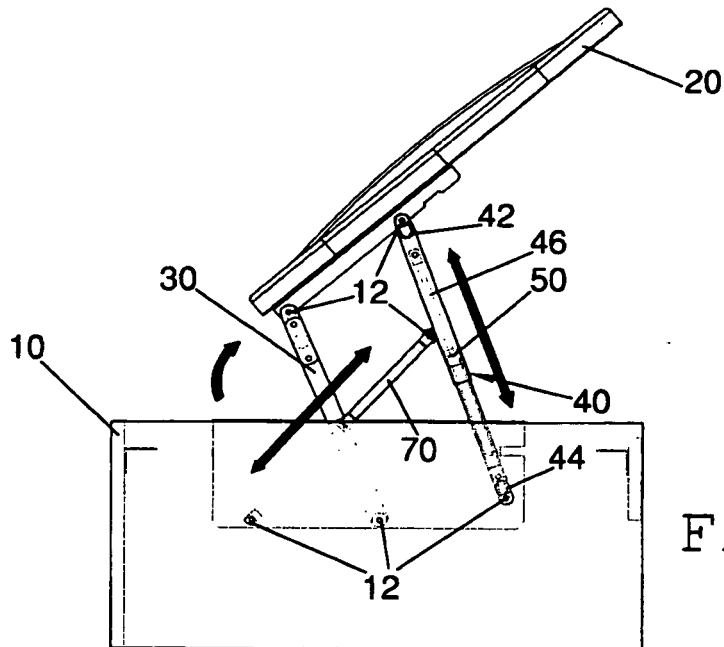


Fig. 3

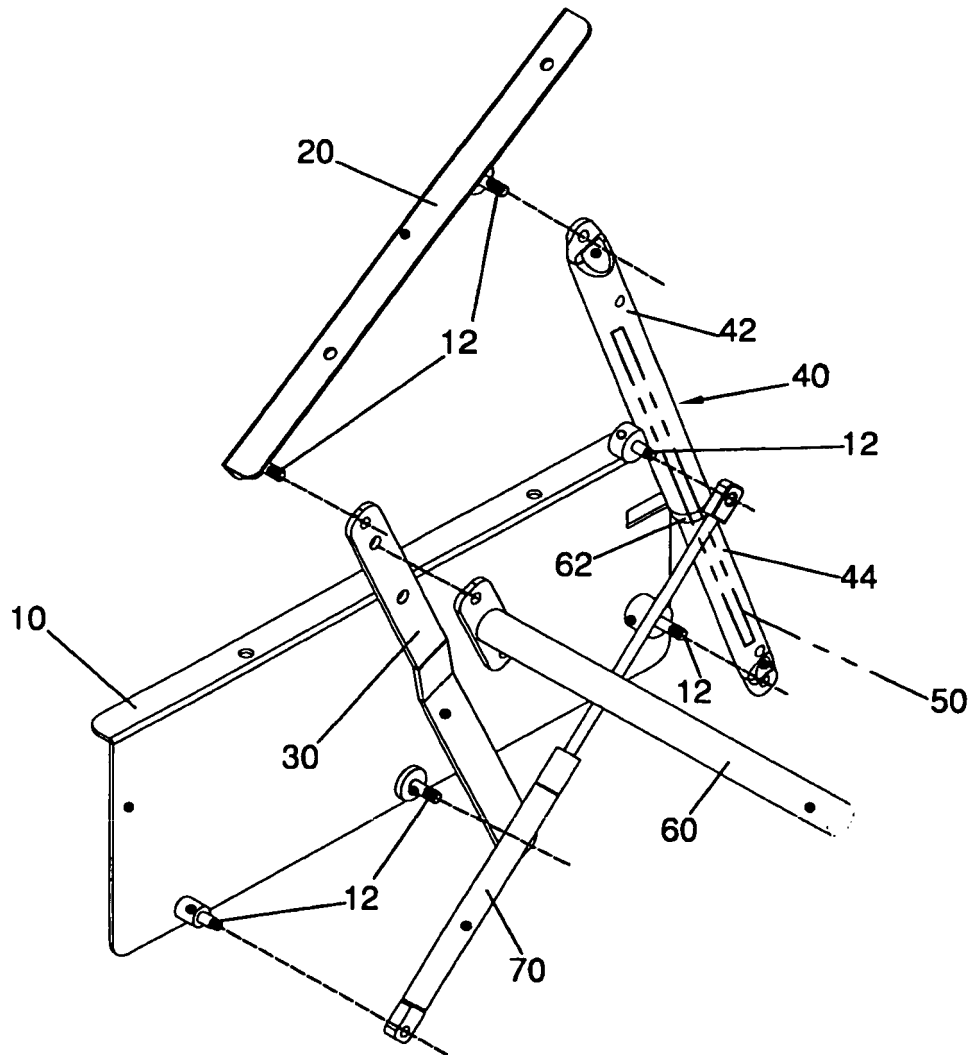


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1374741 A [0004]