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(54) **FURNITURE UNDERFRAME OF SITTING-LYING TYPE FURNITURE**

MÖBELUNTERGESTELL FÜR EIN MÖBELSTÜCK ZUM SITZEN ODER LIEGEN

SOUS-CHÂSSIS DE MEUBLE POUR MEUBLE DE TYPE ASSISE-COUCHAGE

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Description

Technical field

[0001] This invention belongs to the field of furniture technology and in particular, relates to a type of underframe of sitting/sleeping furniture.

Background of the invention

[0002] Underframe of sitting/sleeping furniture is used for sitting/sleeping type furniture, e.g. movable reclining chair and sofa in front of TV etc. Chair can be adjusted from sitting position to sleeping and back. On such furniture underframe, different design modes can be used to install corresponding sitting/sleeping furniture, since such underframe features a supporting frame, on which furniture parts such as rakers, footrest frame, seat frame, backrest, and arm rest can be installed. For sitting furniture, first use an adjusting/driving device to adjust such furniture parts, e.g. adjustment of footrest for outward swaying. This is related to adjustment of sitting type furniture using electric drive installed inside, or use of transfer of weight of the person sitting on such furniture. Such footrest frame can be completely deflected to so-called retracted position or a position of certain angle under the furniture. At a position already swayed outward, the footrest frame is in front of the sitting/sleeping furniture and basically on a straight line or curved line extending from the bearing surface. Besides, footrest frame can be equipped with a so-called footrest frame extension piece, which is pulled into the footrest frame at retracted position or extended from footrest frame at extracted position.

[0003] Underframe of sitting/sleeping furniture is known from German utility model 29600282UI. For sitting furniture described in this utility model, the seat frame is part of the parallel deflecting system and allows adjustment of the frame from sitting position to sleeping position. In this connection, upper longitudinal deflecting rod of the parallel deflecting system constitutes or bears the seat frame, with lower longitudinal deflecting rod fixed on the lower structure. The footrest frame includes two guide rails, relying on which the footrest frame can be connected to the seat frame in a turnover mode. On such sitting/sleeping furniture, footrest frame guide rails constitute transverse deflecting rods in front of the seat frame and these guide rails are also hinged with lower longitudinal deflecting rod fixed at the frame side. Movement of the seat frame from sitting position to sleeping position will cause the standstill footrest frame (at inner position) under the seat frame to sway outward. The footrest frame supports a footrest frame element at one side moving along the direction of guide rail longitudinal axis, to close the footrest frame. Due to movable and telescoping arrangement of guide rails, footrest frame related to footrest frame element stretching distance can have different lengths. At position of footrest frame swaying inward, footrest frame element is pulled inside, so that it can sway inward under the seat frame. If the footrest frame is already in the sleeping position (swayed outward), the footrest frame element can be pulled out to increase the length of the footrest frame.

[0004] Another type of underframe of sitting/sleeping furniture is known from patent EP2356922A1 . In this underframe, rotating motion of footrest frame is linked to motion of seat frame via a buffer unit, and status of the footrest frame at retracted position is maintained using a supporting/retaining spring. Since the design of longitudinal deflecting rod and vertical lever and the matching between longitudinal deflecting rod/ vertical lever and seat frame have no sufficiently stable terminal position, from the point of view of kinematic configuration of sitting position or sleeping position, such additional buffer unit and supporting/retaining spring are very necessary for construction of the parallel deflecting system of the underframe of sitting/sleeping furniture. Change of dead weight on seat frame and footrest frame by the person sitting or sleeping on the furniture may cause the following consequence: loading or unloading in the scope of footrest frame will cause unintended movement of the seat frame.

Summary of the invention

[0005] Based on aforesaid prior arts, this invention proceeds to design a type of underframe of sitting/sleeping furniture, aimed to ensure motion characteristics (prevent unintended movement) of the underframe due to change of dead weight on seat frame and footrest frame by the person sitting/sleeping on the furniture.

[0006] To realize this purpose, the technical scheme of this invention is described as follows: A type of underframe of sitting/sleeping furniture, comprising a supporting frame and a seat frame with backrest, wherein said seat frame is installed on said supporting frame in a movable manner via a quasi-parallel deflecting system; said quasi-parallel deflecting system consists of a supporting frame, a seat frame, a first rocker, and a second rocker, so that seat frame can move between two terminal positions: sitting position and sleeping position. Among them, first rocker is hinged with supporting frame to form rear pivot, and second rocker is hinged with supporting frame to form front pivot. Positions of said rear pivot and front pivot are such that with seat frame at sleeping position, resultant gravity of the person is applied on seat frame at a point behind rear pivot and front pivot along the direction of the backrest, and with seat frame at sitting position, resultant gravity of the person is applied on seat frame at a point in front of the rear pivot. Two limit stops are fixed on said supporting frame, to limit amplitude of movement of said quasi-parallel deflecting system between the two terminal positions, wherein said supporting frame includes two longitudinal deflecting rods fixed on the supporting frame, said limit stops are fixed on said longitudinal deflecting rods, one end of said longitudinal deflecting rods is hinged with the second rocker to form

the front pivot and the second rocker is then hinged with a front transverse stay tube of the seat frame, and the other end of said longitudinal deflecting rods is hinged with the first rocker to form the rear pivot, with the first rocker directly hinged with a rear transverse stay tube of the seat frame or via an intermediate connecting rod.

[0007] With the underframe moving between sitting position and sleeping position, rear pivot near backrest and front pivot near chair end are designed and arranged on the supporting frame for the quasi-parallel deflecting system of the seat frame, so that at sleeping position, resultant gravity of the person is applied on backrest of seat frame behind the pivots, and with seat frame at sitting position, resultant gravity of the person is applied on seat frame at a point in front of the rear pivot. At sleeping position, rockers of the quasi-parallel deflecting system constantly turn rearward along backrest side, so that hinges on these rockers with the seat frame are behind rear pivot of the seat frame, thereby occupying a stable terminal position. This position limiting can be achieved by a corresponding limit stop fixed on the supporting frame. When adjusted to the setting position, it is necessary to adjust the seat frame to a position past the top dead center of the quasi-parallel deflecting system, and at this position, the resultant gravity of the person sitting on the furniture will be applied at a point in front of the rear pivot on the seat frame, thereby between the rear pivot and the front pivot on the seat frame. Accordingly, a similar limit stop is required here to realize the final position defined for the sitting position and with mechanic stability. It is thereby ensured that theses two final positions do not require additional fixing or force, such as spring tightening device or similar, to reliably maintain fixed posture of the seat frame at these positions. In this way, slight (or more precisely involuntary) transfer of weight of the person sitting or sleeping on the furniture will not cause moving of the seat frame to an unwanted position. In particular, even if additional support is provided for feet, since the footrest frame can be folded, and this footrest frame is linked to motion of the seat frame using a familiar mode, only slight loading will be applied on the seat frame via the footrest frame. This may cause unwanted movement of the seat frame. The design of this invention can ensure prevention of this situation, without affecting intended adjustment of the seat frame.

[0008] Special advantages of this invention: During adjustment between the sitting position and the sleeping position, the seat frame of this underframe is maintained at an unstable equilibrium state. At this time, the resultant gravity of a person sitting or sleeping on the furniture just passes rear pivot of seat frame, and this point is the top dead center of the quasi-parallel deflecting system about seat frame rear pivot, so that the seat frame will normally not stay at such unstable equilibrium state, either adjusted toward terminal point of the sleeping position or toward that of the sitting position, finally achieving mechanic stability. Another advantage: If the sitting position and the sleeping position constitute stable terminal position of adjustment and movement of seat frame respectively, the positions relative to the seat frame quasi-parallel deflecting system are limited by limit stops fixed on supporting frame respectively, for example, these limit stops are provided on longitudinal deflecting rod of similar fixed on the supporting frame, so that in virtue of interaction with rockers, only some specified largest hunting angles of rockers can be realized.

[0009] Further improvement by this invention: Front transverse stay tube and rear transverse stay tube of the seat frame are hinged and fixed via rocker to the support of the longitudinal deflecting rods constituting quasi-parallel deflecting system. As part of the quasi-parallel deflecting system, the seat frame is supported over its whole length and at its terminal positions, and especially favorable introduction of force/supporting function for the seat frame can be obtained. Members installed on the supporting frame and rear pivot formed are located in the area under transverse stay tube at the side of seat frame backrest. Accordingly, due to relatively long longitudinal deflecting rod and corresponding distribution of weight (dead weight of the sitting/sleeping furniture and weight of the user) on the seat frame and backrest, the most favorable level transmission ratio is achieved. In this way, level transmission ratio between front pivot and rear pivot of the seat frame is improved, so that it is not necessary to use other aux. device (e.g. spring) to maintain mechanic safety and stability of seat frame at two terminal positions corresponding to sitting position and sleeping position.

[0010] The underframe of sitting/sleeping furniture of this invention can be switched between its sitting position and sleeping position solely by transfer of the weight of the person on such furniture, or by additional driving mechanism (preferably electric or hydraulic driving mechanism). Besides, manual adjustment using electric device or elastic support that adopts inflated spring.

[0011] For comfort of the sitting/sleeping person, the front pivot of seat frame is arranged higher than the rear pivot of the seat frame. At sitting position, some seat frame surface for sitting can be adjusted slightly rearward (inclining) along the direction of backrest. Also, according to length of rockers and geometric shape of the quasi-parallel deflecting system, reverse inclination of sleeping position can be increased so that the sleeping position is more comfortable.

[0012] Further improvement by this invention: A footrest with footrest frame is configured on the seat frame using known mode. This footrest frame can rotate about a turning shaft basically parallel to the front transverse stay tube of the seat frame, and the relatively distance between this footrest frame and the seat frame can be adjusted using joggers. When these joggers and the quasi-parallel deflecting system take this footrest to the closed position, the seat frame will be in the sitting status, and when they take this footrest to the open position, the seat frame will be in the sleeping status. The footrest frame is connected to the quasi-parallel deflecting sys-

tem via the joggers, which are used to deflect the footrest from retracted position (with seat frame at sitting position) to the swayed-out (with seat frame at sleeping position). Inside the footrest frame, a telescoping extension piece is provided and can extend parallel to and along the footrest frame with the footrest at open status. The joggers will only drive this extension piece for extending operation during the process of swaying of footrest frame from inside to outside and with distance between end of this frame and the ground exceeding a minimum value. If the lower end of the footrest frame has not reached the lowest point, extending of the extension piece will impede outward swaying of the footrest frame, and reduce structural height of the supporting frame.

[0013] For this reason, in the further scheme, the extending driving device for the footrest frame extension piece is a bent lever driving device. When the footrest is swayed outward by a very small angle, the bent lever driving device will drive the extension piece for very small linear extending operation. When the footrest frame performs relatively large outward sway, the bent lever driving device will drive the whole footrest for relatively large extending operation of the extension piece. When the lowest point of the footrest frame exceeds the lowest point of the rotating motion step by step, by corresponding design of the bent lever driving device, the footrest frame extension piece will start to move accordingly. Later, through such bent lever driving device, sufficient adjusting length of footrest frame extension piece can be ensured for the designed lever length and rotating point, so that the footrest frame can extend far in front of the seat frame, providing comfortable support for feet/legs of user almost over its full length. Besides, through linear guide rails, in particular roller guide rails, outward extending of footrest frame extension piece can be guided. Through coordinated transfer of force on underframe of sitting/sleeping furniture, commonly used expensive ball guide rails can be replaced by low cost roller guide rails. On the underframe of this invention, footrest frame can be moved without providing buffer unit or supporting/retaining spring.

Description of drawing figures

[0014]

Fig. 1 is an amplified illustration of members of the underframe of sitting/sleeping furniture of this invention, with the underframe at sleeping position and showing seat frame of drastically inclined backrest and totally turned over/extended footrest.

Fig.2 to Fig.6 illustrate the underframe of this invention during adjustment from the sleeping position shown in Fig. 1 to the sitting position, in the form of staged plans, as well as views of the underframe in different directions.

Fig.7 is an amplified illustration of the footrest frame shown in Fig.5 at its swaying position at some time; at this time, the footrest frame passes the lowest point.

[0015] In these figures: 1-underframe of sitting/sleeping furniture; 2-supporting frame; 3-seat frame; 4-footrest; 5-footrest frame; 6-footrest frame extension piece; 7-longitudinal deflecting rods fixed on the supporting frame; 8-inclined strut; 9-rear pivot of seat frame at backrest side; 10-flange; 11-mounting plate; 12-vertical pipe; 13-supporting frame bearing fork; 14-rocker; 15-rocker; 16-limit stop; 17-mattress support spring; 18-flange used for motor adjustment; 19-seat frame hinge connecting flange; 20-turning shaft of hinged connection of footrest frame; 21-footrest adjusting lever; 22-footrest frame extension piece adjusting lever; 23-footrest fame extension piece support; 24-roller; 25-guiding section steel; 26-seat frame front transverse stay tube; 27-seat frame rear transverse stay tube; 28-lever of bent lever driving device; 29-lever of bent lever driving device; 30-lever of bent lever driving device; 31-limit stop; 32-intermediate connecting rod; 33-front pivot of seat frame at footrest side; 34-spring; 35-turning shaft; 36-pure rotating track of footrest; 37-superposed track of footrest

Preferred embodiment

[0016] The following provides further detailed description in combination with the drawing figures and a preferred embodiment.

[0017] The underframe of sitting/sleeping furniture of this invention shown in the figures is a structure without mattress and outer cover, so as to allow better understanding of its members and functions. Basic design and functions are already known from prior art so that only necessary description of special performance, structure necessary for such performance, and its functions is provided here for the members used and the matching between its geometry and functions. For other aspects, refer to known underframe 1 of prior art. The underframe 1 of this invention is such that this underframe along with supporting frame 2 can be adapted to different rakers, e. g. those comprising mounting plate 11 and vertical pipe 12. Also, a seat frame 3 is provided and can hold and/or control backrest and footrest 4 (not shown) that can be installed on flange 10. The same reference symbols have been provided for same or similar parts with same or similar functions. The concept "front" refers to front of underframe 1 of sitting/sleeping furniture in the scope of footrest 4, and the concept of "rear" refers to rear of underframe 1 of sitting/sleeping furniture in the area of backrest (not shown), which can be movable or fixed on corresponding flange 10 with respect to seat frame 3.

[0018] Underframe 1 of sitting/sleeping furniture is supported on the rakers via mounting plates 11 and vertical pipes 12 on the base. At upper part of vertical pipe, a supporting frame bearing fork 13 is provided. The two

tubular longitudinal deflecting rods 7 on two forks 13 extend forward along the direction of footrest 4. Above longitudinal deflecting rods 7 arranged at the two sides and fixed on supporting frame 2, it can be seen from a complete tube frame structure that seat frame 3 is basically a rectangle. The two longitudinal stay tubes of seat frame 3 are roughly parallel with longitudinal deflecting rods 7, and seat frame 3 is connected to transverse stay tubes 26 and 27 at its two terminals. Seat frame 3 adopts mattress support springs 17 to constitute a pedestal, which constitutes the mattress (not shown) of the sitting/sleeping furniture along with underframe 1. Below the layer of seat frame 3, a tubular zigzag inclined strut 8 can be identified from center area of rear transverse stay tube 27 to center area of front transverse stay tube 26. This inclined strut 8 consolidates seat frame 3 and allows arrangement of two flanges 18, which can be used for electric adjustment (not shown) of the seat frame 3.

[0019] Seat frame 3, two longitudinal deflecting rods 7, rockers 14 and 15, and intermediate connecting rod 32 constitute a quasi-parallel deflecting system. Through this system, seat frame 3 can be adjusted from the sleeping position shown in Fig. 1 (amplified) to the sitting position shown in Fig.6. For this purpose, longitudinal deflecting rods 7 can be inclined forward and extended upward, and seat frame 3 along with backrest (not shown) can be easily inclined rearward according to ergonomics and lengths of rockers 14 and 15, while increasing inclination of seat frame 3 at sleeping position (Fig.1) relative to that at sitting position.

[0020] The concept of quasi-parallel deflecting system indicates a modified deflecting system as compared with purely parallel deflecting system. In this system, not only lengths of rockers 14 and 15 can be changed, but also their geometric shape and bending. However, in principle, basic geometric shape of quasi-parallel deflecting system remains unchanged.

[0021] In this design, relative to the two longitudinal deflecting rods 7, arrangement of seat frame 3 can be adjusted using backrest side hinged rear pivot 9 and footrest side hinged front pivot 33. Inside hinged pivots 9 and 33, rockers 14 and 15 can be installed in a rotating manner, with the other end of these rockers directly hinged to seat frame 3 or via intermediate connecting rod 32. Seat frame can rotate around (and extend from) hinged pivots 9 and 33, and during this movement, due to lever lengths of rockers 14 and 15, and level transmission ratio, inclination of seat frame 3 changes from sitting position to sleeping position (i.e. increases). Adjusting movement of seat frame 3 toward the sleeping position is limited by a front limit stop 16, which blocks movement of rocker 15 to the right side as shown in Fig.1. Conversely, adjusting movement of seat frame 3 toward the sitting position is limited by a backrest side limit stop 31, which blocks movement of rocker 14 to the left side. Therefore, these limit stops 16 and 31 define permitted scope of rotation of seat frame 3 between the sitting position and the sleeping position.

[0022] Regarding the very favorable design of underframe 1 of sitting/sleeping furniture of this invention, only these descriptions are provided. Due to geometrical structure of members of this quasi-parallel deflecting system, seat frame 3 can maintain its sleeping position or sitting position stable and unchanged without using aux. means to control positions of pivots 9 and 33. Therefore, at sleeping position, resultant gravity of the person sleeping on the furniture is applied along the direction of backrest at a point on seat frame 3 behind pivots 9 and 33. Conversely, at sitting position, resultant gravity of the person sitting on the furniture is applied on seat frame 3 at a point in front of backrest side pivot 9. As shown in the figure, at the sleeping position, rockers 14 and 15 of the quasi-parallel deflecting system always turn rearward at backrest side, so that the hinges of seat frame 3 with rockers 14 and 15 are behind backrest side pivot 9 on seat frame 3, thereby occupying a stable terminal position; in this regard, a corresponding limit stop 16 limits its position. When adjusted to the sitting position, it is necessary to adjust seat frame 3 to a position past top dead center of the quasi-parallel deflecting system, and at this position, resultant gravity of the person sitting on the furniture is applied on seat frame 3 at a point in front of backrest side pivot 9, hence acting between pivots 9 and 33 on seat frame 3. In this regard, a corresponding limit stop 31 is adopted to define the sitting position and the terminal position of mechanic stability. Therefore, it shall be ensured that no additional fixing or force (e.g. spring) is required at these two terminal positions to maintain seat frame 3 at these positions. In this way, slight (or more precisely involuntary) transfer of weight of the person sitting or sleeping on the furniture will not cause moving of the seat frame 3 to an unwanted position. In particular, even if additional support is provided for feet, on a footrest 4 that can be folded, since this footrest is linked to motion of the seat frame 3 using a familiar mode, only slight loading will be applied on the seat frame 3 via the footrest 4. This may cause unwanted movement of the seat frame 3. The design of this invention can ensure prevention of this situation, without affecting intended adjustment of the seat frame 3.

[0023] Seat frame 3 is moved from sleeping position shown in Fig.1 and meeting Fig.2 to the sitting position shown in Fig.6. This process is clearly identified and understood by looking at Fig.2 to Fig.6. Therefore, these figures are not studied in details here.

[0024] On underframe 1 of sitting/sleeping furniture, levers 21 and 22 are configured to force transfer of movement of seat frame 3 to the footrest 4. Lever 21 and lever 22 each has a horizontal or nearly horizontal turning shaft (20 and 35), and one end of these levers is connected to the quasi-parallel deflecting system in motion, either directly or via one or more actuators. Lever 21 is responsible to deflect footrest frame 5 around turning shaft 20, which is fixed on seat frame 3 via flange 19. Looking at Fig.2 to Fig.5, footrest frame 5 moves from sitting position (Fig.6) to sleeping position (Fig.2), extending out from

under seat frame 3, with its extended position roughly horizontal with pedestal. In the reverse process, footrest 5 turns totally inside under seat frame 3.

[0025] Superposed on rotating motion of footrest frame 5, an extension piece 6 arranged inside footrest frame 5 can be pulled out linearly relative to footrest frame 5, thus extending footrest 4 compared with the length of inward turnover. To this end, a number of rollers 24 are arranged at outer side of footrest frame 5, and on these rollers, type C guiding section steel 25 can be guided and adjusted. Linear adjustment and moving of footrest frame extension piece 6 is driven by a bent lever type driving device, which comprises individual levers 28, 29, and 30. When lever 22 is used to move seat frame 3, the driving operation adopts a basically familiar mode. For this purpose, lever 22 and lever 29 driven by bent lever are connected together via hinged turning shaft 35 using a matching mode not shown. In this way, to adjust seat frame 3 from sitting position (Fig.6) to sleeping position (Fig.2), you only need to just the seat frame 3; this can both sway footrest frame 5 outward and linearly extend extension piece 6 from the footrest frame.

[0026] Fig.7 illustrates another characteristic (amplified): Due to adoption of driving by bent lever and its geometric dimensions and the position of gyration point of such drive, only when footrest frame 5 reaches or passes the deepest point of track involving the underframe during the change from sitting position to sleeping position, can linear movement of footrest frame extension piece 6 from inside footrest frame 5 start. If linear movement of footrest frame extension piece 6 has started earlier, it will be necessary to increase clearance off ground of the underframe 1 of sitting/sleeping furniture, so that the end of footrest frame extension piece 6 will not hit pedestal during outward swaying and extending. This may cause uncomfortable seated position or necessary limiting of footrest frame extension piece 6. Accordingly, compared with the length that can be reached, the whole footrest 4 needs to be shortened, so does supporting surface for legs. With driving by bent lever, under such situation, simple adjustment of kinetic performance of footrest frame extension piece 6 is permitted, as kinetic characteristics of driving using bent lever can be designed accordingly. When exceeding the range of small amount of linear movement as driven by bent lever, linear movement of the footrest frame extension piece 6 for a sufficient travel will be permitted.

Claims

1. A type of underframe (1) of sitting/sleeping furniture, comprising a supporting frame (2) and a seat frame (3) with backrest, wherein said seat frame (3) is installed on said supporting frame (2) in a movable manner via a quasi-parallel deflecting system; said quasi-parallel deflecting system consists of the supporting frame (2), the seat frame (3), a first rocker (14), and a second rocker (15), so that seat frame (3) can move between two terminal positions: sitting position and sleeping position, wherein the first rocker (14) is hinged with the supporting frame (2) to form a rear pivot (9), and the second rocker (15) is hinged with the supporting frame (2) to form a front pivot (33), wherein positions of said rear pivot (9) and front pivot (33) are such that with the seat frame (3) at sleeping position, resultant gravity of a person is applied on the seat frame (3) at a point behind the rear pivot (9) and the front pivot (33) along the direction of the backrest, and with the seat frame (3) at sitting position, resultant gravity of the person is applied on the seat frame (3) at a point in front of the rear pivot (9), wherein two limit stops (16, 31) are fixed on said supporting frame (2), to limit amplitude of movement of said quasi-parallel deflecting system between the two terminal positions, **characterized in that** said supporting frame (2) includes two longitudinal deflecting rods (7) fixed on the supporting frame (2), said limit stops (16, 31) are fixed on said longitudinal deflecting rods (7), one end of said longitudinal deflecting rods (7) is hinged with the second rocker (15) to form the front pivot (33) and the second rocker (15) is then hinged with a front transverse stay tube (26) of the seat frame (3), and the other end of said longitudinal deflecting rods (7) is hinged with the first rocker (14) to form the rear pivot (9), with the first rocker (14) directly hinged with a rear transverse stay tube (27) of the seat frame (3) or via an intermediate connecting rod (32).

2. The underframe of sitting/sleeping furniture according to claim 1, wherein a conversion of said seat frame (3) between the sitting position and the sleeping position is realized by a transfer of weight of the person or an electric/hydraulic driving mechanism or a manual adjustment.

3. The underframe of sitting/sleeping furniture according to claim 1, wherein said front pivot (33) of said seat frame (3) is higher than said rear pivot (9) above ground.

4. The underframe of sitting/sleeping furniture according to any of claim 1 to claim 3, wherein said seat frame (3) is configured with a footrest (4) complete with a footrest frame (5); said footrest frame (5) can sway around the seat frame (3) via a turning shaft (20); said turning shaft (20) is fixed on the front transverse stay tube (26) of the seat frame (3) in parallel via a flange (19); said footrest frame (5) is connected to the quasi-parallel deflecting system via a jogger (21), to deflect the footrest (4) from the inward swaying position with the seat frame (3) at the sitting position to the outward swaying position with the seat frame (3) at the sleeping position; said footrest frame (5) includes a telescoping extension piece (6) and

said jogger (21) will only drive said extension piece (6) for extending operation during swaying of the footrest frame (5) from inside to outside and with a distance of an end of this frame above ground exceeding a minimum.

5. The underframe of sitting/sleeping furniture according to claim 4, wherein there are a total of two said joggers, directly hinged with the quasi-parallel deflecting system or via an actuator.

6. The underframe of sitting/sleeping furniture according to claim 4, wherein telescoping of said extension piece (6) is driven by a bent lever comprising three interlocking bars (28, 29, 30) and outward extending of said extension piece (6) is guided by a roller guide rail.

Patentansprüche

1. Variante eines Untergestells (1) eines Möbelstücks zum Sitzen oder Schlafen, umfassend einen Stützrahmen (2) und einen Sitzrahmen (3) mit Rückenlehne, wobei der Sitzrahmen (3) über ein quasiparalleles Auslenksystem auf bewegbare Weise an dem Stützrahmen (2) befestigt ist, wobei das quasiparallele Auslenksystem aus dem Stützrahmen (2), dem Sitzrahmen (3), einer ersten Schwinge (14) und einer zweiten Schwinge (15) besteht, so dass sich der Sitzrahmen (3) zwischen zwei Endstellungen, d. h. einer Sitzstellung und einer Schlafstellung, bewegen kann, wobei die erste Schwinge (14) gelenkig an dem Stützrahmen (2) angebracht ist, um einen hinteren Drehpunkt (9) zu bilden, und die zweite Schwinge (15) gelenkig an dem Stützrahmen (2) angebracht ist, um einen vorderen Drehpunkt (33) zu bilden, wobei die Stellungen des hinteren Drehpunkts (9) und des vorderen Drehpunkts (33) derart sind, dass, wenn sich der Sitzrahmen (3) in der Schlafstellung befindet, die resultierende Schwerkraft einer Person an einem Punkt hinter dem hinteren Drehpunkt (9) und dem vorderen Drehpunkt (33) in der Richtung der Rückenlehne auf den Sitzrahmen (3) ausgeübt wird und dass, wenn sich der Sitzrahmen (3) in der Sitzstellung befindet, die resultierende Schwerkraft der Person an einem Punkt vor dem hinteren Drehpunkt (9) auf den Sitzrahmen (3) ausgeübt wird, wobei zwei Endanschläge (16, 31) an dem Stützrahmen (2) befestigt sind, um die Amplitude der Bewegung des quasiparallelen Auslenksystems zwischen den beiden Endstellungen zu begrenzen, **dadurch gekennzeichnet, dass** der Stützrahmen (2) zwei in Längsrichtung verlaufende Auslenkstangen (7), die an dem Stützrahmen (2) befestigt sind, umfasst, wobei die Endanschläge (16, 31) an den in Längsrichtung verlaufenden Auslenkstangen (7) befestigt sind, wobei ein Ende der in Längsrichtung verlaufenden Auslenkstangen (7) gelenkig an der zweiten Schwinge (15) angebracht ist, um den vorderen Drehpunkt (33) zu bilden, und die zweite Schwinge (15) dann gelenkig an einem vorderen quer verlaufenden Abstandsrohr (26) des Sitzrahmens (3) angebracht ist, und wobei das andere Ende der in Längsrichtung verlaufenden Auslenkstangen (7) gelenkig an der ersten Schwinge (14) angebracht ist, um den hinteren Drehpunkt (9) zu bilden, wobei die erste Schwinge (14) entweder direkt oder über eine zwischengeschaltete Verbindungsstange (32) gelenkig an einem hinteren quer verlaufenden Abstandsrohr (27) des Sitzrahmens (3) angebracht ist.

2. Untergestell eines Möbelstücks zum Sitzen oder Schlafen nach Anspruch 1, wobei ein Wechsel des Sitzrahmens (3) zwischen der Sitzstellung und der Schlafstellung durch die Verlagerung des Gewichts der Person oder einen elektrischen/hydraulischen Antriebsmechanismus oder eine manuelle Verstellung durchgeführt wird.

3. Untergestell eines Möbelstücks zum Sitzen oder Schlafen nach Anspruch 1, wobei der vordere Drehpunkt (33) des Sitzrahmens (3) höher über dem Boden gelegen ist als der hintere Drehpunkt (9).

4. Untergestell eines Möbelstücks zum Sitzen oder Schlafen nach einem der Ansprüche 1 bis 3, wobei der Sitzrahmen (3) mit einer Fußauflage (4), komplett mit einem Fußauflagenrahmen (5), ausgelegt ist, wobei der Fußauflagenrahmen (5) über eine Drehwelle (20) um den Sitzrahmen (3) verschwenkt werden kann, wobei die Drehwelle (20) über einen Flansch (19) parallel an dem vorderen quer verlaufenden Abstandsrohr (26) des Sitzrahmens (3) befestigt ist, wobei der Fußauflagenrahmen (5) über eine Tippvorrichtung (21) mit dem quasiparallelen Auslenksystem verbunden ist, um die Fußauflage (4) aus der nach innen gerichteten Schwenkstellung, in der sich der Sitzrahmen (3) in der Sitzstellung befindet, in die nach außen gerichtete Schwenkstellung, in der sich der Sitzrahmen (3) in der Schlafstellung befindet, auszulenken, wobei der Fußauflagenrahmen (5) ein teleskopisches Verlängerungsstück (6) umfasst und die Tippvorrichtung (21) das Verlängerungsstück (6) nur dann in den Verlängerungsmodus bringt, wenn der Fußauflagenrahmen (5) von innen nach außen verschwenkt wird und der Abstand eines Endes dieses Rahmens vom Boden einen Mindestwert überschreitet.

5. Untergestell eines Möbelstücks zum Sitzen oder Schlafen nach Anspruch 4, wobei insgesamt zwei Tippvorrichtungen vorhanden sind, die entweder direkt oder über einen Betätiger drehbar mit dem quasiparallelen Auslenksystem verbunden sind.

6. Untergestell eines Möbelstücks zum Sitzen oder Schlafen nach Anspruch 4, wobei das Teleskopieren des Verlängerungsstücks (6) durch einen gebogenen Hebel, der drei Verriegelungsstangen (28, 29, 30) umfasst, bewirkt wird und die nach außen gerichtete Verlängerung des Verlängerungsstücks (6) durch eine Rollenführungsschiene geführt ist.

Revendications

1. Type de châssis (1) de mobilier d'assise/de couchage, comprenant une structure de support (2) et une structure de siège (3) comportant un dossier, ladite structure de siège (3) étant installée sur ladite structure de support (2) de manière déplaçable par le biais d'un système de fléchissement quasi-parallèle ; ledit système de fléchissement quasi-parallèle étant constitué de la structure de support (2), de la structure de siège (3), d'un premier bras oscillant (14) et d'un second bras oscillant (15), de telle sorte que la structure de siège (3) puisse se déplacer entre deux positions terminales : une position d'assise et une position de couchage, le premier bras oscillant (14) étant relié de manière articulée à la structure de support (2) de façon à former un mécanisme de pivotement arrière (9), et le second bras oscillant (15) étant relié de manière articulée à la structure de support (2) de façon à former un mécanisme de pivotement avant (33), les positions desdits mécanisme de pivotement arrière (9) et mécanisme de pivotement avant (33) étant telles que, lorsque la structure de siège (3) se trouve dans la position de couchage, la pesanteur d'une personne en résultant est appliquée à la structure de siège (3) au niveau d'un point situé derrière le mécanisme de pivotement arrière (9) et le mécanisme de pivotement avant (33) le long de la direction du dossier et, lorsque la structure de siège (3) se trouve dans la position d'assise, la pesanteur d'une personne en résultant est appliquée à la structure de siège (3) au niveau d'un point situé devant le mécanisme de pivotement arrière (9), deux butées de limitation (16, 31) étant fixées sur ladite structure de support (2), afin de limiter l'amplitude du mouvement dudit système de fléchissement quasi-parallèle entre les deux positions terminales, **caractérisé en ce que** ladite structure de support (2) comprend deux tiges de fléchissement longitudinales (7) fixées sur la structure de support (2), lesdites butées de limitation (16, 31) étant fixées sur lesdites tiges de fléchissement longitudinales (7), une extrémité desdites tiges de fléchissement longitudinales (7) étant reliée de manière articulée au second bras oscillant (15) de façon à former le mécanisme de pivotement avant (33) et le second bras oscillant (15) étant relié de manière articulée à un tube formant entretoise transversale avant (26) de la structure de siège (3), et l'autre extrémité desdites tiges de fléchissement longitudinales (7) étant reliée de manière articulée au premier bras oscillant (14) de façon à former le mécanisme de pivotement arrière (9), le premier bras oscillant (14) étant relié de manière articulée à un tube formant entretoise transversale arrière (27) de la structure de siège (3) soit directement soit par le biais d'une tige de raccordement intermédiaire (32).

2. Châssis de mobilier d'assise/de couchage selon la revendication 1, dans lequel une conversion de ladite structure de siège (3) entre la position d'assise et la position de couchage est réalisée par le biais d'un transfert du poids de la personne ou d'un mécanisme d'entraînement électrique/hydraulique ou d'un réglage manuel.

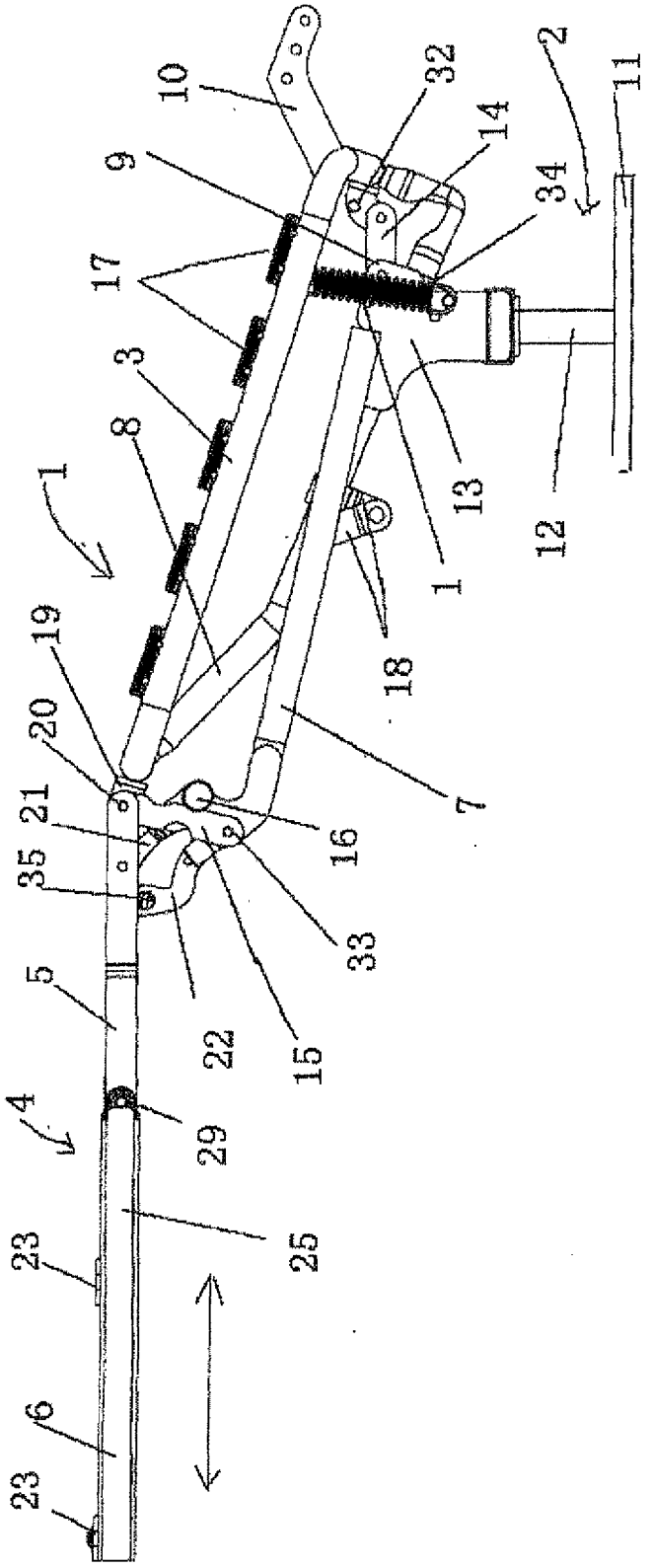
3. Châssis de mobilier d'assise/de couchage selon la revendication 1, dans lequel ledit mécanisme de pivotement avant (33) de ladite structure de siège (3) est situé plus haut au-dessus du sol que ledit mécanisme de pivotement arrière (9).

4. Châssis de mobilier d'assise/de couchage selon l'une quelconque des revendications 1 à 3, dans lequel ladite structure de siège (3) est configurée de façon à comporter un repose-pieds (4) incluant une structure de repose-pieds (5) ; ladite structure de repose-pieds (5) peut pivoter autour de la structure de siège (3) par le biais d'un axe de rotation (20) ; ledit axe de rotation (20) est fixé sur le tube formant entretoise transversale avant (26) de la structure de siège (3) de manière parallèle par le biais d'une patte (19) ; ladite structure de repose-pieds (5) est raccordée au système de fléchissement quasi-parallèle par le biais d'un impulseur (21), afin de fléchir le repose-pieds (4) de la position de pivotement vers l'intérieur, dans laquelle la structure de siège (3) se trouve dans la position d'assise, à la position de pivotement vers l'extérieur, dans laquelle la structure de siège (3) se trouve dans la position de couchage ; ladite structure de repose-pieds (5) comprend une pièce de déploiement télescopique (6) et ledit impulseur (21) n'entraînera ladite pièce de déploiement (6) pour une opération de déploiement que lors du pivotement de la structure de repose-pieds (5) de l'intérieur vers l'extérieur et lorsqu'une distance entre une extrémité de cette structure et le sol est supérieure à une valeur minimale.

5. Châssis de mobilier d'assise/de couchage selon la revendication 4, dans lequel il est prévu un nombre total de deux desdits impulseurs, ceux-ci étant reliés de manière articulée au système de fléchissement quasi-parallèle soit directement soit par le biais d'un dispositif d'actionnement.

6. Châssis de mobilier d'assise/de couchage selon la

revendication 4, dans lequel le déplacement télescopique de ladite pièce de déploiement (6) est entraîné par un levier coudé comprenant trois barres reliées en chaîne (28, 29, 30) et le déploiement vers l'extérieur de ladite pièce de déploiement (6) est guidé par un rail de guidage de galets.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11
9
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12
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Fig. 1

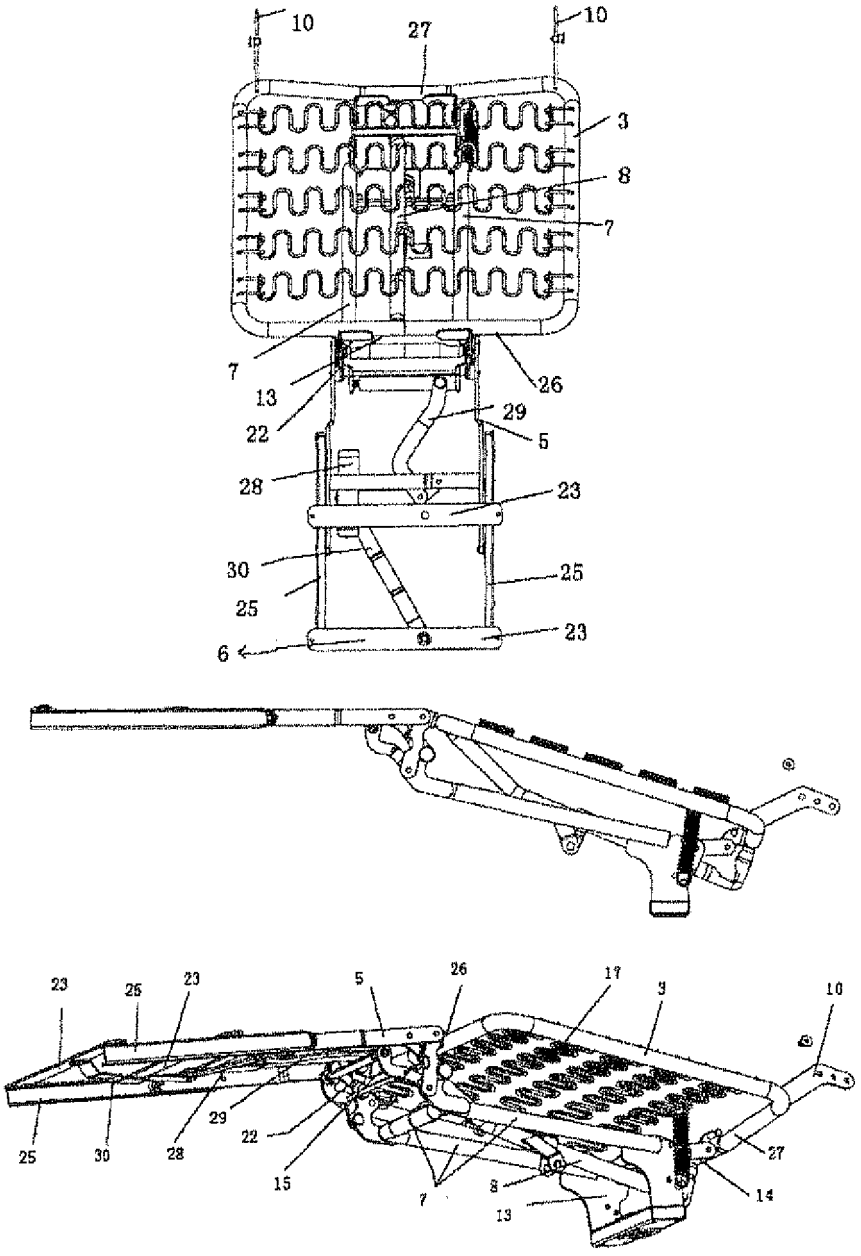
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Fig. 2

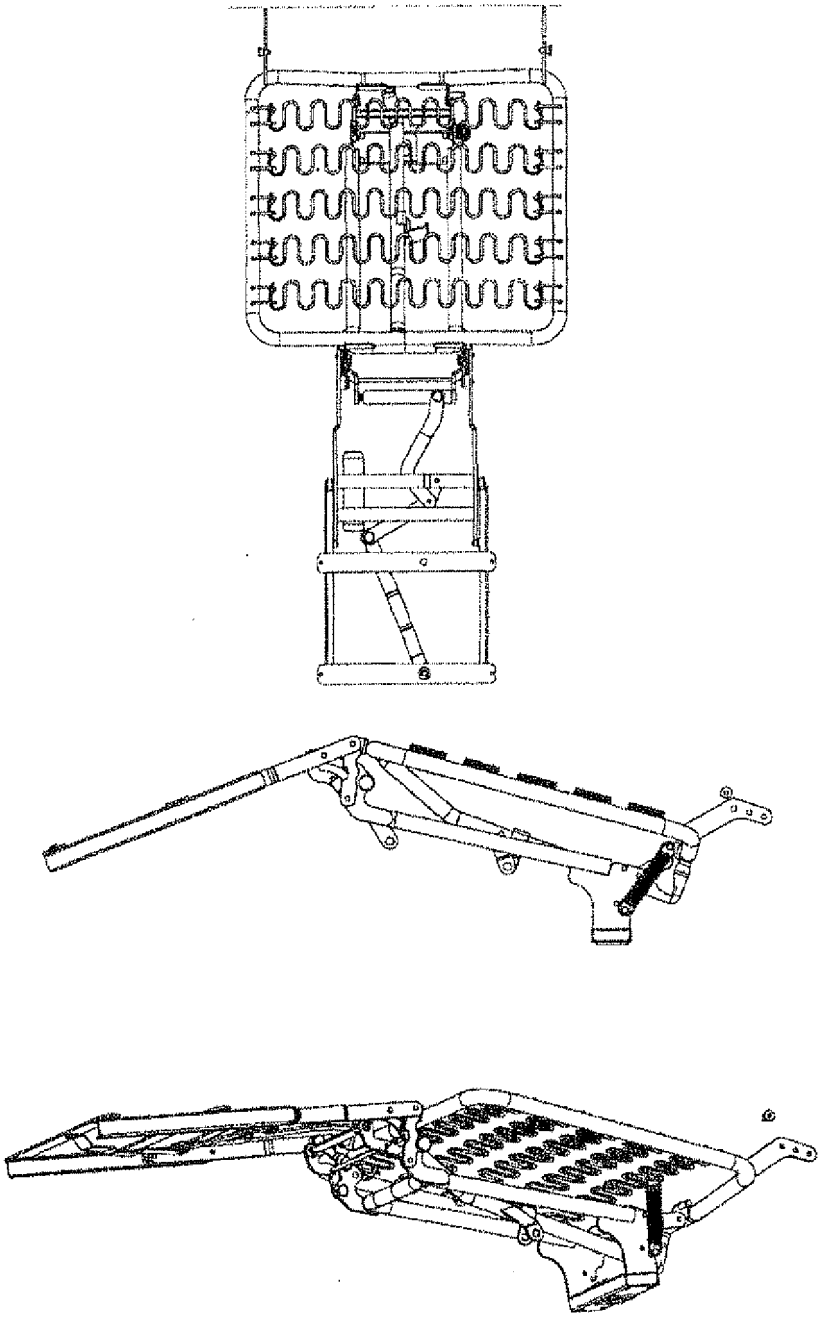
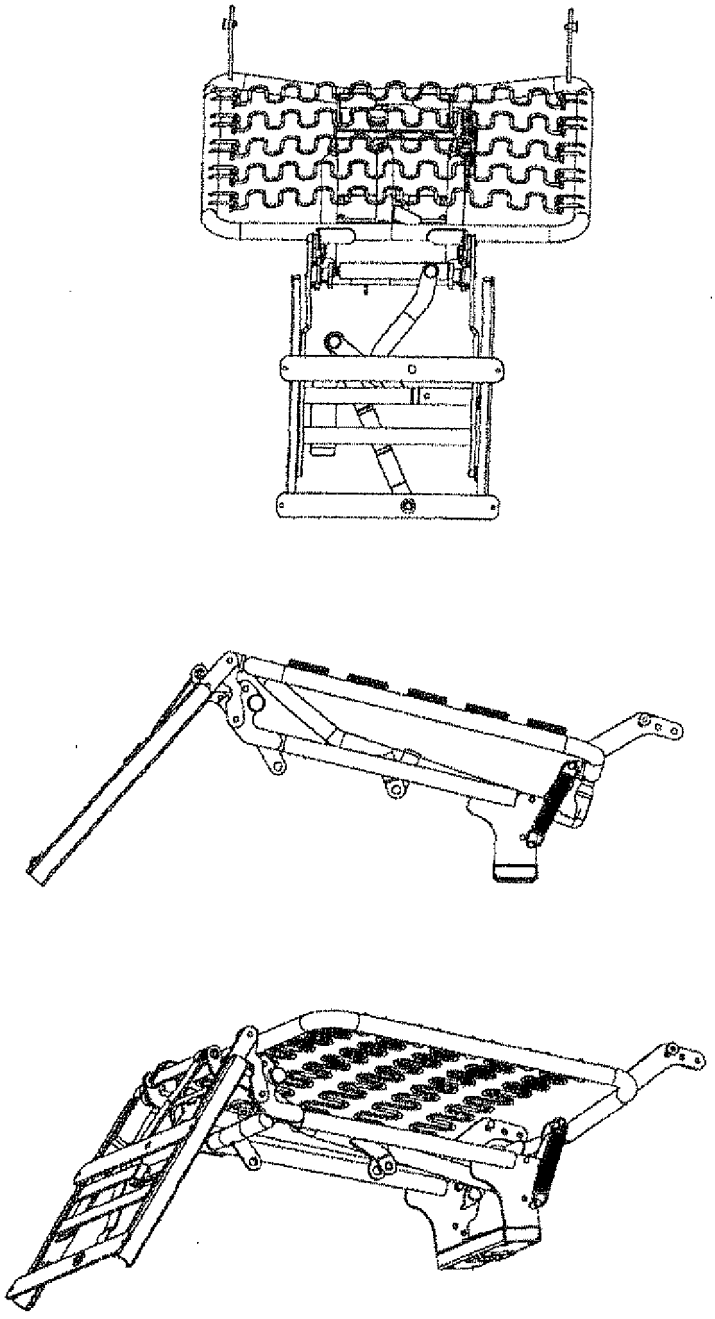


Fig. 3



Fig, 4

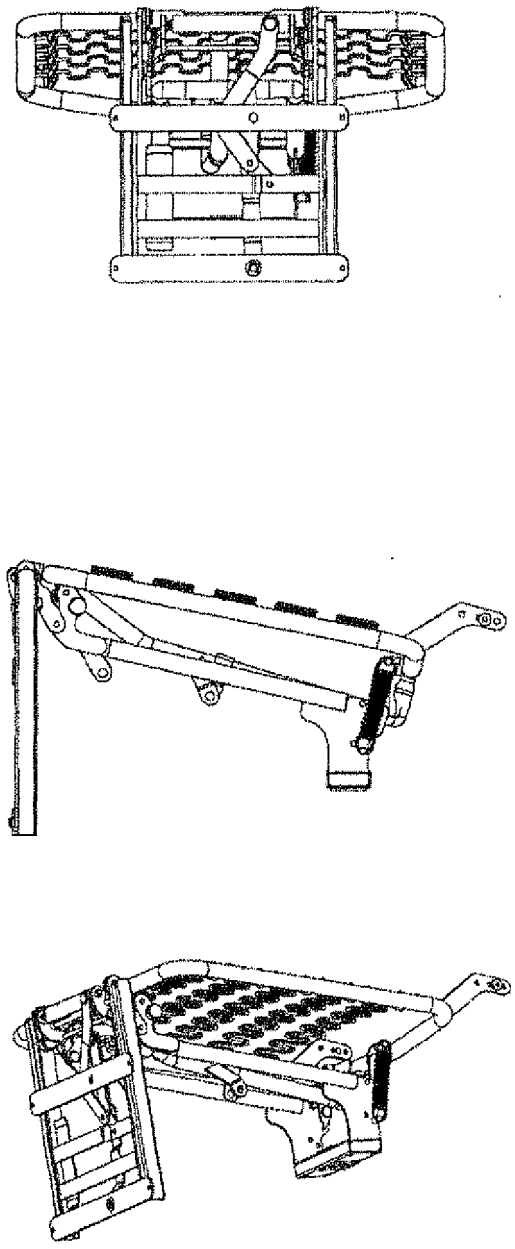


Fig. 5

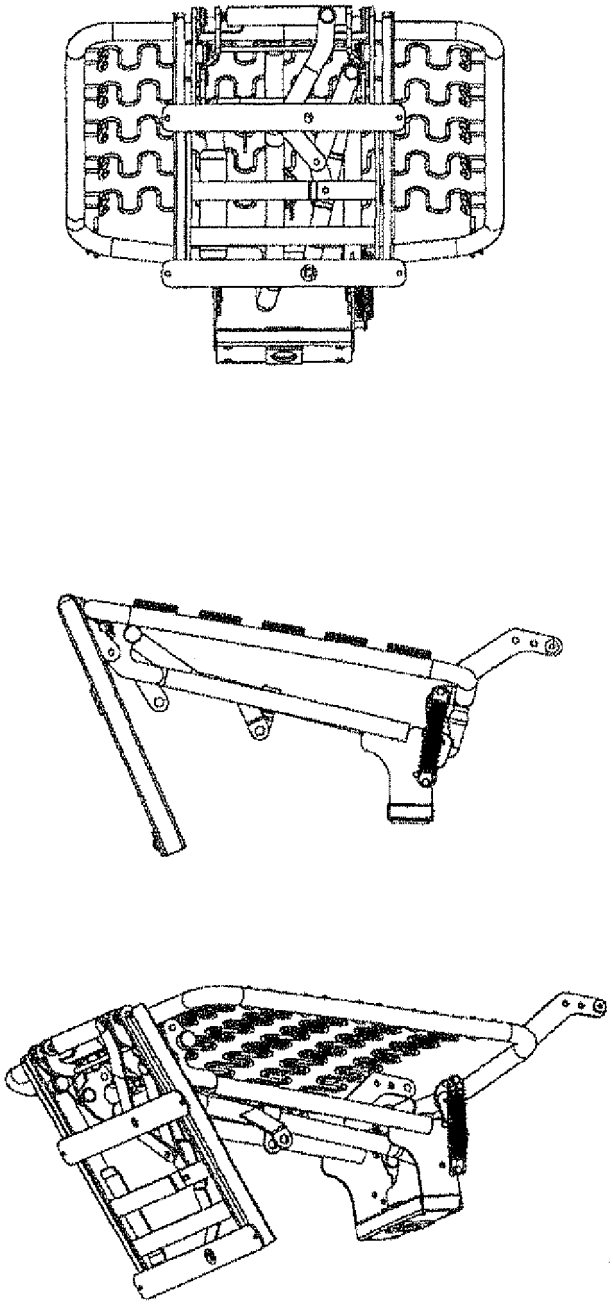


Fig. 6

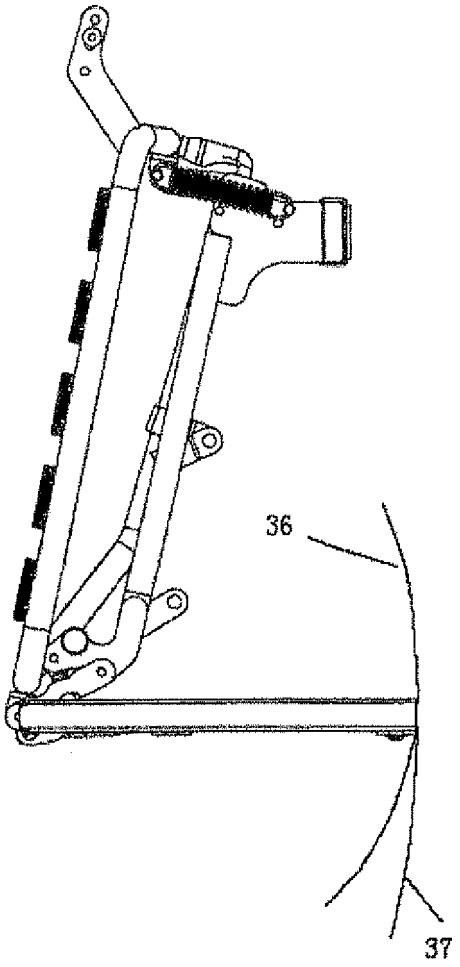


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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