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(54) **IMPROVEMENTS TO AN ARTICULATED FOLDING STRUCTURE FOR SOFA BED**

VERBESSERTE FALTSTRUKTUR FÜR EIN BETTSOFA

AMELORATIONS APPORTEES A UNE STRUCTURE PLIANTE ET ARTICULEE DE CANAPE-LIT

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Description

[0001] This invention deals with a sofa convertible into bed and more particularly the relative folding frame, with an articulated structure and synchronised movements.

[0002] As it is known, sofas convertible into beds contain into their structure a metallic frame which has an articulated folding structure, including a fixed frame for the support to which are connected some mobile frames consecutively hinged between themselves.

[0003] When they function as a sofa, the mobile frames are folded one on another and inserted inside of the support fixed frame; in order to form the bed, the mobile frames come out from the fixed frame by a rotary and translatory movement until they line up between themselves.

[0004] To the fixed frame is often associated a known type of elastic X-support structure, (hereafter referred to as "X-structure") which causes the coming out of the frames themselves in order to bring them in a raised and leading position in relation to it.

[0005] In the sofas having a folding and articulated structure, there are furthermore some devices permitting to synchronise between themselves the vertical translatory movement and the rotary one of the distension of the mobile frames in order to bring them with only one operation from the position of the sofa into the position of a bed and vice versa; furthermore, tricks are foreseen, which permit to obtain a stable sofa bed, either in bed position or in sofa position, without the use of any locking device.

[0006] In a particular embodiment, see European Patent 0628269, to the mobile frame 18, the outermost, that converges to the formation of the bed, another frame 23 is hinged to support the backrest of the sofa, that, when folded, acts as support legs of the extreme part of the bed when this is formed.

[0007] In other words this backrest does not represent a mobile auxiliary frame that acts as an extension of the bed, but has only the function to act as a support for the extension of the bed or as backrest of the sofa.

[0008] Moreover a rod 26, hinged to the first mobile frame 17 in point 26a and a smaller rod 27 hinged itself in point 27a to a plate connected to frame 18 and in point 27b to a second smaller rod 28 hinged in point 28b to frame 23, has the aim to create a mechanism of blockage that does not permit the extension of the bed if the rotation of frame 23 solid to the backrest 25 has not been executed; it has also the function to block it in a perpendicular position to frame 18 when this latter is completely extended in the bed position.

[0009] In another embodiment illustrated in the European Patent Application 0406044, a sofa bed is described including:

- a fixed frame for support 3;
- a main mobile frame 14 connected to the fixed frame 3 with a mechanism operated by springs 18

and 53, which lifts it from the bottom in an operative position over to the fixed frame 3;

- a first auxiliary mobile frame 23 hinged to the frame 14;
- a second auxiliary mobile frame 24 hinged to the first auxiliary mobile frame 23;
- an interconnecting lever 25 between the main frame 14 and a connecting rod 26, itself hinged to the frame 23 in correspondence of the articulated axis 27 and to a plate 29 fixed to supporting leg 30, in correspondence of the articulated axis 28 of the connecting rod itself;
- the plate 29 is hinged to the second mobile frame 24 so that it can be rotated with the supporting leg 30;
- a third auxiliary mobile frame 34 hinged to the frame 24 in correspondence of axis 34b and in correspondence of the axis 38 to a second supporting leg 39;
- a mechanism which should synchronise the movements of lifting and lowering of the mobile main frame 14 with the rotation made by the auxiliary mobile frames 23, 24 and 34 and with the connecting rod 33 hinged to the rod 36, hinged itself to the supporting legs 39 in the axis 38.

[0010] From said description, it is clear that the third auxiliary frame 34 has the only aim to lengthen the bed, not being able in any way to act as a backrest to the sofa; furthermore it must be pointed out that the figures that illustrate the above mentioned patent do not have some numerical references and it is very difficult to understand the function of the bedframe.

[0011] That said, we can note that the sofa beds usually sold, which use the above described techniques, show some disadvantages, like:

- a) Impossibility to obtain a bed with a sufficient length in order to permit to a person who is higher than the medium to have a comfortable rest, without increasing the depth (i.e. the length) of the seat of the sofa. The dimension of a normal sofa, whatever its design is, usually foresee a 90 cm depth, of which 55 cm are for the sitting and 35 cm for the back.
- b) Impossibility for the fixed frame to confer to the sofa an aesthetically pleasant line in order to hide the double function.

[0012] In particular the European Patent 0628269 presents the following drawbacks:

- a) Necessity to rotate the back of the sofa before transforming the sofa into a bed, i.e. the necessity of a double operation.
- b) Location of the stuffing of the back, when the sofa bed is in bed position, nearly in direct contact with the ground, in non-optimal hygienic conditions.
- c) Danger of crushing the fingers between the syn-

chronisation lever and the mobile frame, either during the formation of the bed or during the formation of the sofa: such a danger has to be considered because it can happen during any operation of the sofa bed.

[0013] On the other hand the above mentioned patent illustrates an articulated structure of a sofa bed that is in practice unrealizable for the following reasons:

a) the rod 21 associated to the movement of the X-structure should have the aim to rotate the main mobile frame 17 around the hinge 16 when the extremity of lever 4 of the X-structure slides into slot 8 integral to frame 3, in order to form the bed (see Fig. 1); but in Fig. 2, it can be noticed that frame 17 does not rotate during the lifting of X-mechanism 4, remaining in the same position that it had in the sofa configuration and therefore not permitting the bed formation.

That the above mentioned drawback is real and not due to an error in the drawings, is confirmed by the fact that the rotation of frame 17 and rod 20 are hindered by level 21, by the fact that the distance between pin 19 and pin 20b should increase in order to describe two different arches of circle, while the distance between said pins cannot change, being them inserted in the same rigid metallic frame 18. In other words, frame 17 and rod 20 cannot rotate, as the distance between points of hinges 19 and 20b is invariable.

According to Article 138 B of EPC, the European Patent 0628269 is void, because it does not show the invention in an appropriate way, so that an expert in the art can realize it; the sofa according to the invention cannot in fact be transformed into a bed.

b) The small feet 24 at the extremity of frame 23 must be rotated to rest on the frame 18 when the sofa is made, and on the floor when the backrest acts as a support to the extremity of the bed (Fig. 1 and 3); in the description it is not indicated the type of device that allows the rotation.

[0014] Also European Patent Application 0406044 presents the following drawbacks:

a) An extremely complicated construction of the emission mechanism of the auxiliary frames: the mentioned frames come out completely overhanging respect to the frame of the sofa and they require the presence of another couple of intermediate supporting legs.

b) the length of the seat and the thickness of the backrest of the sofa must enable the inserting of the whole folding frame of the bed, which is made up by three auxiliary frames, inside the container at the base of the sofa; that requires inevitably greater di-

mensions both of the seat and of the backrest, with obvious effects on the ergonomy and look of the sofa.

5 **[0015]** Main aim of the invention is to eliminate all said disadvantages of sofa beds having an articulated and folding structure, providing a sofa bed with a reduced encumbrance as a sofa, but enabling to form a bed of a greater length.

10 **[0016]** For this aim, this invention solves the problem of getting a bed suitable also to people higher than the medium, without increasing the encumbrance of the fixed frame for the support and in order to hide, with a pleasant look, the double function sofa/bed.

15 **[0017]** At the same time, the invention solves the problem of furnishing a mechanism able to synchronise contemporarily, and without adding any operations to the movements that the framework has to do to become a bed, without any danger of finger crushing during the transformation.

20 **[0018]** The invention is described here below in a preferred embodiment and is illustrated with the figures of the four sheets here enclosed, which show respectively:

25 fig. 1, a side view of the articulated frame in a sofa function;
fig. 2, a side view of the frame during the first phase of the transformation into bed;
fig. 3, a side view of the frame in an intermediary position of opening;
30 fig. 4, a side view of the frame in a successive phase transformation;
fig. 5, a view of the frame when changed in a bed;
fig. 6, the blocking device of the auxiliary mobile frame in the releasing phase;
35 fig. 7, a detail of the blocking device in the hooking position.

[0019] As we can note in the figures, the sofa bed is made of a fixed frame 1 with rectangular plan, in which is inserted all the framework constituting the bed, including the mattress and a known type of X-structure, already used in the construction of the sofa beds, which supports a mobile frame 2.

45 **[0020]** To the mobile frame 2 is hinged a first auxiliary mobile frame 3 having a U-shaped section, to which is hinged a second auxiliary mobile frame 4 connected in turn to a third auxiliary mobile frame 5, which, when they are laying, are forming the horizontal framework supporting the bed mattress.

50 **[0021]** The third auxiliary mobile frame 5 is integral with legs 6 and orthogonal to them, which support the extremity of the bed not supported by the X-structure 18.

[0022] The X-structure, lifting it, causes the coming out of mobile frame 2 when, to form the bed, the first auxiliary mobile frame 3 is made to rotate.

55 **[0023]** This is due to the fact that the extremities of each of the two rods 7 and 8 which form the double X-

structure supporting the mobile frame slide each one in an eyelet integral respectively 9 to the fixed frame and 10 to the mobile frame 2 by special little wheels 11, when by levers 12 and 13 reciprocally hinged with pin 14 and rotating around a pin 25 applied on of the horizontal bar of the first mobile frame 2, are subject to a traction from a lever 16 hinged in turn with pin 17 to the first auxiliary mobile frame 3 and the rod 22.

[0024] The rotation of the first auxiliary mobile frame 3 is caused by the second auxiliary mobile frame 4 hinged in 19 to the first mobile frame 3; the rotation of frame 4 is caused in turn by the third mobile frame 5, by the compound lever 24 and 22 hinged with pin 17 at the first auxiliary frame 3 and at lever 16 which transmits its movement to little wheel 11 running in eyelet 10.

[0025] Rods 24, 22, 16, 13 and 12 constitute the compound lever which synchronise the movements of the frames constituting the bed.

[0026] The interconnection rod 20 transmits the movement of the auxiliary frame 4 to the first mobile frame 2 and vice-versa; the little arm of lever 20 keeps in fact the second mobile frame 4 from rotating around the extremity 19 of the first mobile frame without transmitting movement to the first mobile frame 2

[0027] The extremity of lever 24 is welded to the third auxiliary mobile frame 5; the supporting leg 6 orthogonally welded to mobile frame 5 itself.

[0028] During the formation of the bed, the first auxiliary mobile frame 3 acts as an interconnection element between the second auxiliary 4 and the principal mobile frame 2.

[0029] The second auxiliary mobile frame 4 is blocked to the fixed support frame 1 by the blocking device illustrated in details in fig. 6 and 7.

[0030] Said device is constituted by a hook 33 hinged in point 40 and reactioned by a spring 35. The hook is driven by the little lever 36 connected to a flexible tie-rod 37, provided at its extremity with a pommel 38.

[0031] The tie-rod 37 runs through the hole of a L-shaped plate 42 which blocks it when the hook is in closing position.

[0032] The lever 22 which causes the blocking of the second auxiliary mobile frame 4 is provided with a pin 32 which goes to thread itself into the fork 34 when the second mobile frame 4 is folded to form the sofa: by the hook 33, the pin 32 remains blocked into the fork 34.

Claims

1. "Articulated folding structure for sofa bed", the articulated structure including:

- a fixed frame for the support (1);
- a main mobile frame (2) connected to the fixed frame (1) by an elastic X-support structure (18) operated by springs (27) which lift it in a vertical direction, from the bottom to an operative posi-

tion upwards the fixed frame itself;

- a first auxiliary mobile frame (3) connected to the main mobile frame (2) in correspondence with an axis of hinging (15);
- a second auxiliary mobile frame (4) connected to said first auxiliary mobile frame (3) in correspondence with a second axis of hinging (19);
- an interconnection lever (20) between the main mobile frame (2) and the second auxiliary mobile frame (4) permitting the rotation of the auxiliary mobile frames (3) and (4) in order to line them consecutively between themselves and to the main mobile frame (2),

characterised in that they include a third auxiliary frame (5) integral with two supporting legs (6) orthogonal to it, hinged to the second auxiliary frame (4) in correspondence with an axis of hinging (21) and a mechanism which synchronise the contemporaneous movement of vertical lifting and lowering of the main mobile frame (2) with the rotations made by said auxiliary mobile frames (3), (4) and (5); the auxiliary mobile frame (5) acting as a support for the stuffing of the back of the sofa and at the same time causing the lengthening of the longitudinal structure of the bed;

2. Articulated folding structure as claimed in claim 1, **characterised in that** the mechanism which synchronise contemporaneously the movement of lifting and lowering of the main mobile frame and auxiliary mobile frames includes a first lever (12) hinged, with hinge (30)), on the extremity of one of the two bars of the X-structure to make it run by a little wheel (11) in an eyelet (10) parallel to and integral with the axis of the main mobile frame (2), a second lever (13) hinged in correspondence with an axis of intermediate hinging (25) to the main mobile frame (2) and the first extremity, at the first lever (12) in correspondence with an axis of hinging (14) and, at the second extremity, in correspondence with an axis of hinging (26), with a third lever (16) hinged contemporaneously in correspondence with an axis of main hinging (17) to the first auxiliary frame (3) and to a lever (22) connected to the other extremity, to a lever (24) integral with a third auxiliary mobile frame (5) by a pin (23), the shiftings of the lever (12) to cause the running of the extremity of the bar (8) of the X-structure in the groove (10) being caused by the lever (13) and the lever (16) from the rotation of the first mobile frame (3) in turn caused by the second auxiliary frame (4) and by the third auxiliary frame (5) by the lever (22) which synchronises the movement of said third frame (5) itself.

3. Articulated folding structure as claimed in claim 3, **characterised in that** the opposed extremity of the other bar (7) which constitutes the X-structure (18)

runs by a little wheel (11) in an eyelet (9) integral with the fixed frame for the support (1).

4. Articulated folding structure as claimed in claims 3 and 4, **characterised in that** the eyelets in which run the extremities of the bars (7) and (8) of the X-structure run, are adjacent to the first auxiliary frame (3), and **in that** the lever (12) which causes the opening of the X-structure (18) in order to lift the main mobile frame (2) is subject to an axial compression from the mechanism constituted by the lever (13) and the lever (16) hinged to the first auxiliary mobile frame (3) 5
5. Articulated folding structure as claimed in claims 3 and 4, **characterised in that** the lining up of the axis of the frame (5) with the axis of the frame (4) and the frame (3) is realised by the lever (22) when the frame (3) rotates to be lined up with the main mobile frame (2). 10
6. Articulated folding structure as claimed in claim 1, **characterised in that** the mattress is supported contemporaneously by the main frame (2) and by the auxiliary frames (3), (4) and (5), i.e. is folded in three parts respectively along the first main mobile frame (2), the mobile frame (4) and the mobile frame (5). 15
7. Articulated folding structure as claimed in the former claims, **characterised in that** the blocking of the folding framework to define the sofa position is carried out by means of a blocking device formed by a hook (33) hinged in point (40) to the fixed frame 1 and reactioned by a spring (35) driven by a little lever (36) connected to a flexible tie-rod (37), provided at its extremity with a pommel (38), the flexible tie-rod (37) sliding through the hole of a L-shaped plate (42) which blocks it when the hook is in a closing position, the lever (22) of the articulated structure which causes the blocking of the second auxiliary mobile frame (4) being provided with a pin (32) which goes to thread itself into the fork (34) remaining blocked when said second mobile frame (4) is folded to form the sofa. 20

Patentansprüche

1. "Gelenk-Faltstruktur für Bettsofa", die Gelenkstruktur, bestehend aus: 25
 - einem tragenden Festrahmen (1)
 - einem mobilen Hauptrahmen (2), der mit dem tragenden Festrahmen (1) durch eine bewegliche Kreuz-Konstruktion (18) verbunden ist, die sie mit Hilfe von Federn (27) in vertikaler Richtung von der Grundposition bis

zu einer bestimmten Höhe oberhalb des Festrahmens selbst bewegt;

- einem ersten mobilen Hilfsrahmen (3), der mit dem mobilen Hauptrahmen (2) in Korrespondenz zu einer Drehachse (15) verbunden ist;
- einem zweiten mobilen Hilfsrahmen (4), der mit besagtem ersten mobilen Hilfsrahmen in Korrespondenz zu einer zweiten Drehachse (19) verbunden ist;
- einem Verbindungshebel (20) zwischen dem mobilen Hauptrahmen (2) und dem mobilen Hilfsrahmen (4), um die Rotation der mobilen Hilfsrahmen (3) und (4) der Reihenfolge nach untereinander und des mobilen Hauptrahmens (2) zu gestatten,

und **dadurch gekennzeichnet, dass** die Struktur einen dritten Hilfsrahmen (5) enthält, der mit zwei Stützbeinen (6) versehen ist, die orthogonal zu ihm stehen, drehbar zu dem zweiten Hilfsrahmen (4) in Korrespondenz zu einer Drehachse (21) und einem Mechanismus, der die gleichzeitige Bewegung des vertikalen Auf und Ab des mobilen Hauptrahmens (2) mit der Rotation besagter mobiler Hilfsrahmen (3), (4) und (5) synchronisiert, und dass der mobile Hilfsrahmen (5) gleichzeitig als Unterstützung für die Polsterung der Rückenlehne, wie auch zur Verlängerung des ausgezogenen Bettsofas dient;

2. Gelenk-Faltstruktur gemäß Anspruch 1), **dadurch gekennzeichnet, dass** der Mechanismus, der gleichzeitig die Auf- und Abbewegung des mobilen Hauptrahmens und der mobilen Hilfsrahmen synchronisiert, am Ende einer der beiden Leisten der Kreuz-Konstruktion mit einem ersten Hebel (12) versehen ist, drehbar durch einen Stift (30), um ihn mit Hilfe eines Rädchens (11) in einer Öse (10) an dem Festrahmen (1) und parallel zu den Achsen des mobilen Hauptrahmens (2) einem zweiten Hebel (13), drehbar in Korrespondenz zu einer Achse als Verbindungsgelenk (25) zu dem mobilen Hauptrahmen (2) und dem erst genannten Ende am ersten Hebel (12,) in Korrespondenz zu einer Hauptdrehachse (14) und, am zweiten Ende, in Korrespondenz zu einer Drehachse (26), mit einem dritten Hebel (16), drehbar gleichzeitig in Korrespondenz zu einer Hauptdrehachse (17) zu dem ersten Hilfsrahmen (3) und zu dem Hebel (22), verbunden mit dem anderen Ende, an einen Hebel (24), der mit einem Stift (23) am dritten mobilen Hilfsrahmen befestigt ist, den Verschiebungen des Hebels (12), die die Drehbewegung, der Leistenenden (8) der Kreuz-Konstruktion in der Öse (10), die durch den Hebel (13) und den Hebel (16) der Rotation des ersten mobilen Hilfsrahmens (3) ausgelöst werden, die durch den zweiten Hilfsrahmen (4) und den dritten Hilfsrahmen (5), durch den Hebel (22), der die Bewegungen des besagten dritten Rahmens (5)

synchronisiert, ausgelöst werden;

3. Gelenk-Faltstruktur, gemäß Anspruch 1), **gekennzeichnet dadurch, dass** das gegenüberliegende Ende der anderen Leiste (7), die die Kreuz-Konstruktion (18) bilden, mit Hilfe eines kleinen Rädchens (11) in einer Öse (9) läuft, die am tragenden Festrahmen (1) befestigt ist; 5
4. Gelenk-Faltstruktur, gemäß den Ansprüchen 3) und 4), **gekennzeichnet dadurch, dass** die Ösen, in denen die Leistenenden (7) und (8) der Kreuz-Konstruktion laufen, am ersten Hilfsrahmen (3) anstoßen, und dass der Hebel (12), der das Öffnen der Kreuz-Konstruktion (18) im Verhältnis zu dem mobilen Hauptrahmen (2) erlaubt, durch dem Mechanismus, bestehend aus dem Hebel (13) und dem Hebel (16), drehbar zu dem ersten mobilen Hilfsrahmen (3), unter Achsdruck steht; 10 15 20
5. Gelenk-Faltstruktur, gemäß den Ansprüchen 3) und 4), **gekennzeichnet dadurch, dass** die Ausrichtung der Achse des Rahmens (5) mit der Achse des Rahmens (4) und der des Rahmens (3) durch den Hebel (22) ausgeführt wird, wenn der Rahmen (3) rotiert, um mit dem mobilen Hauptrahmen (3) ausgerichtet zu werden; 25
6. Gelenk-Faltstruktur, gemäß Anspruch 1), **gekennzeichnet dadurch, dass** die Matratze gleichzeitig auf dem Hauptrahmen (2) und auf den Hilfsrahmen (3), (4) und (5) aufliegt, also in drei Teile gefaltet wird, die jeweils so lang sind wie der mobile Hauptrahmen (2), bzw. der mobile Rahmen (4) und der mobile Rahmen (5); 30
7. Gelenk-Faltstruktur, gemäß den vorhergehenden Ansprüchen, **gekennzeichnet dadurch, dass** die Verriegelung des Klappgestells in die Sofaposition aus einer Blockvorrichtung aus einem Haken (33) besteht, der drehbar in Punkt (40) des Festrahmens (1) ist und, ausgelöst durch eine Feder (35), aktiviert von einem kleinen Hebel (36), der mit einem flexiblen Zug (37), der am Ende einen Knauf (38) hat, verbunden ist, und durch eine Öffnung eines L-förmigen Plättchens (42) läuft, das den Zug blockiert, wenn der Haken in der Schlussposition ist, dem Hebel (22) der Gelenkstruktur, der den zweiten mobilen Hilfsrahmen (4) blockiert, da er einen Stift (32) hat, der automatisch in die Gabelung (34) rutscht und dort blockiert bleibt, wenn besagter zweiter mobiler Rahmen (4) sich in der Sofaposition befindet. 35 40 45 50 55

Revendications

1. "Bâti articulé pliant pour canapés-lits", le bâti arti-

culé comprenant:

- un bâti fixe de support (1) ;
- un bâti mobile principal (2) relié au bâti fixe (1) par une structure à X (18) entraînée par ressorts (27) qui le soulève en direction verticale, à partir du fond jusqu'à une position opérante au-dessus du même bâti fixe ;
- un premier bâti mobile auxiliaire (3) relié au bâti mobile principal (2) à proximité d'un axe de charnière (19) ;
- un deuxième bâti mobile auxiliaire (4) relié au susdit premier bâti mobile auxiliaire (3) à proximité d'un deuxième axe de charnière (19) ;
- un levier d'interconnexion (20) entre le bâti mobile principal (2) et le deuxième bâti mobile auxiliaire (4) pour permettre aux bâti mobiles auxiliaires (3) et (4) de pivoter, en manière qu'ils s'alignent consécutivement entre eux et avec le bâti principal (2),

caractérisés en ce qu'ils comprennent un troisième bâti auxiliaire (5) solidaire de deux pieds de support (d'appui) (6), orthogonal à lui, pivotant au deuxième bâti auxiliaire (4) à proximité d'un axe de charnière (21), et un cinématisme pour synchroniser le mouvement simultané de soulèvement et abaissement vertical du bâti mobile principal (2) avec les rotations effectuées par les susdits bâti mobiles auxiliaires (3), (4) et (5), le bâti mobile auxiliaire (5) qui sert de support pour le rembourrage du dossier du divan et au même temps qui cause l'allongement de la structure longitudinale du lit.

2. Bâti articulé selon la revendication 1), **caractérisé en ce que** le cinématisme qui synchronise simultanément les mouvements de soulèvement et abaissement du bâti mobile principal et des bâti mobiles auxiliaires comporte un premier levier (12) pivotant, avec un pivot (30), à l'extrémité d'une des deux barres de la structure à X pour en causer le glissement au moyen d'un galet (11) dans une boutonnière (10) solidaire du bâti fixe (1) et parallèle à l'axe du bâti mobile principal (2), un deuxième levier (13) pivotant à proximité d'un axe de charnière intermédiaire (25) au bâti mobile principal (2) et la première extrémité, au premier levier (12) à proximité d'un axe de charnière (14) et, à la deuxième extrémité, à proximité d'un axe de charnière (26), avec un troisième levier (16) fixé simultanément à proximité d'un axe de charnière principal (17) au premier bâti auxiliaire (3) et à un levier (22) connecté à l'autre extrémité, à un levier (24) solidaire du troisième bâti mobile auxiliaire (5) par un pivot (23), les déplacements du levier (12) pour causer le glissement de l'extrémité de la barre (8) de la structure à X dans la boutonnière (10) étant effectués à travers le levier (13) et le levier (16) par la rotation du premier bâti

mobile (3) à son tour causée par le deuxième bâti auxiliaire (4) et par le troisième bâti auxiliaire (5) au moyen d'un levier (22) qui synchronise le mouvement du troisième bâti (5) susmentionné.

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3. Bâti articulé selon la revendication 1), **caractérisé en ce que** l'extrémité opposée de l'autre barre (7) qui forme la structure à X (18) glisse au moyen d'un galet (11) dans une boutonnière (9) solidaire du bâti fixe de support (1). 10

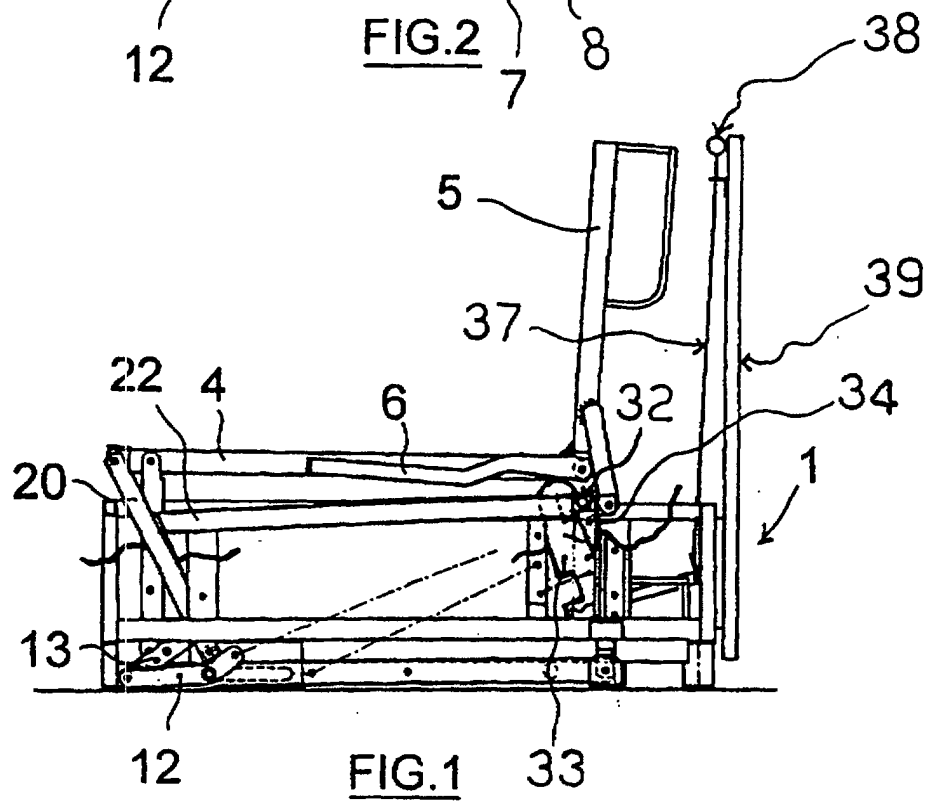
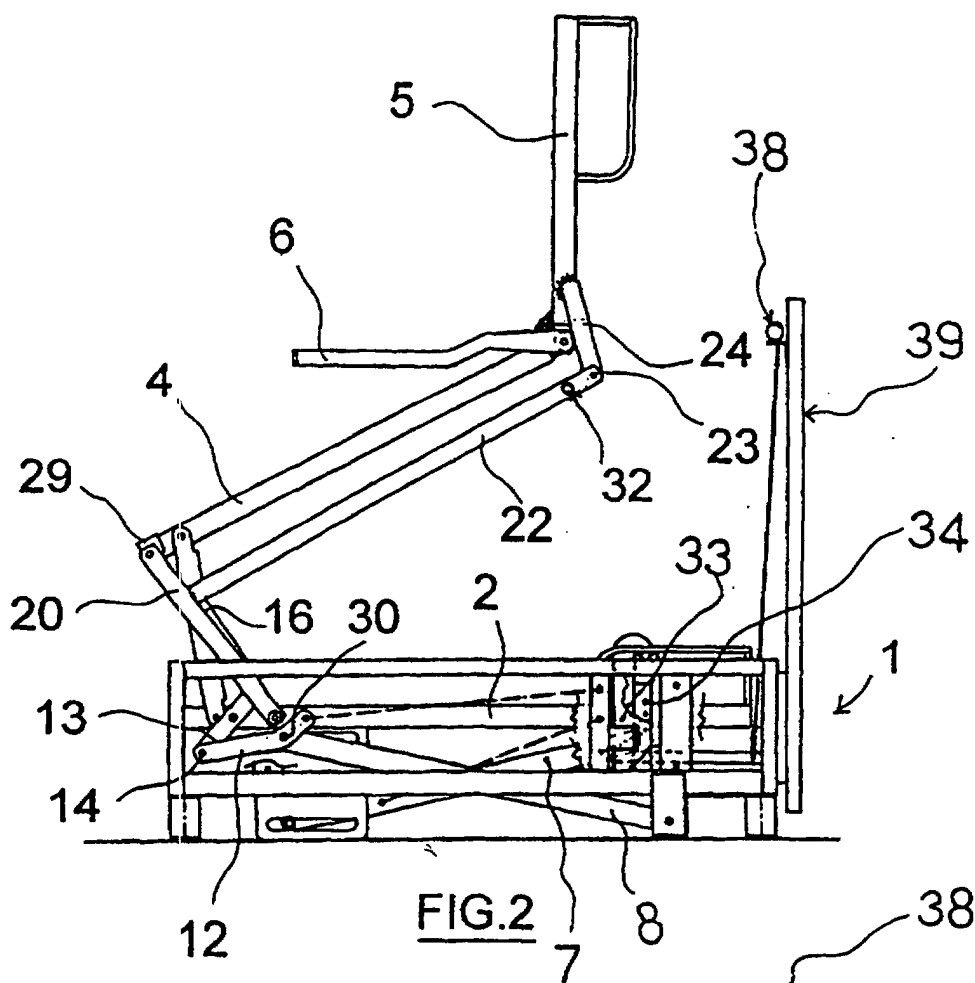
4. Bâti articulé selon les revendications 3) et 4), **caractérisé en ce que** les boutonnières dans les quelles glissent les extrémités des barres (7) et (8) de la structure à X sont adjacents au premier bâti auxiliaire (3) et **en ce que** le levier (12) qui cause l'ouverture de la structure à X (18) pour soulever le bâti mobile principal (2) est sujet à compression axiale par le cinématisme formé par le levier (13) et par le levier (16) entablé au premier bâti mobile auxiliaire (3). 15
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5. Bâti articulé selon les revendications 3) et 4), **caractérisé en ce que** l'alignement de l'axe du bâti (5) avec l'axe du bâti (4) et du bâti (3) est réalisé au moyen du levier (22) quand le bâti (3) pivote pour s'aligner avec le bâti mobile principal (2). 25

6. Bâti articulé selon la revendication 1), **caractérisé en ce que** le matelas s'appuie simultanément sur le bâti principal (2) et sur les bâtis auxiliaires (3), (4) et (5), c'est-à-dire il est replié en trois parties, respectivement le long du premier bâti mobile principal (2), du bâti mobile (4) et du bâti mobile (5). 30
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7. Bâti articulé selon les revendications précédentes, **caractérisé en ce que** le bloquage du bâti pliant pour définir la position de divan est réalisé au moyen d'un dispositif de bloc formé par un crochet (33) pivoté dans un point (40) du bâti fixe (1) et actionné par un ressort (35) à travers un petit levier (36) attaché à une tringle flexible (37), avec une poignée (38) à son extrémité, la tringle flexible (37) glissante à travers le trou d'une plaque pliée à L qui le ferme quand il est en position d'attelage, le levier (22) du bâti articulé qui cause le bloquage du deuxième bâti mobile auxiliaire (4) étant pourvu d'un pivot (32) qui va à se positionner dans la fourche (34), se bloquant quand le susdit deuxième bâti mobile auxiliaire (4) est replié pour former le divan. 40
45
50

55



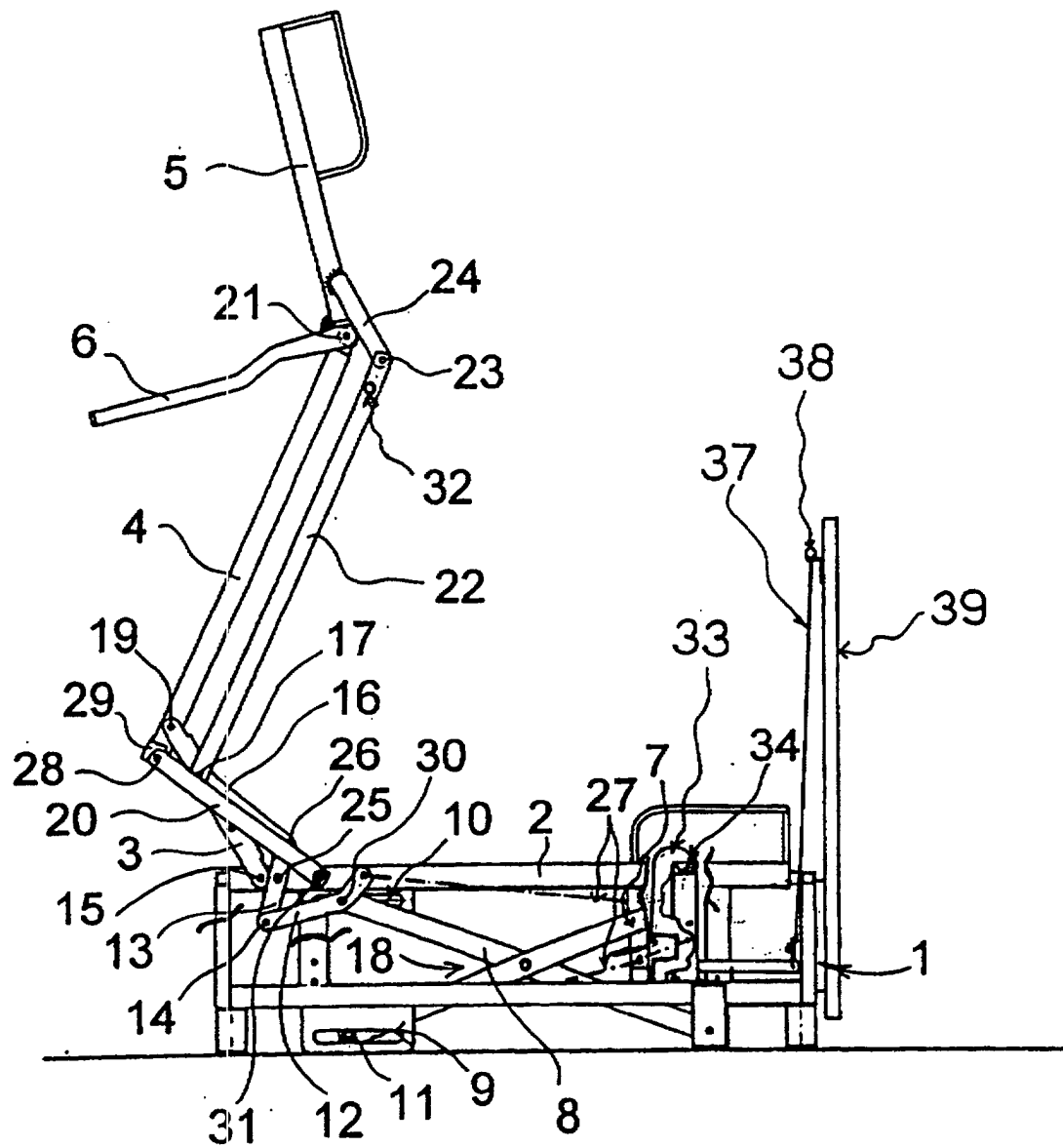
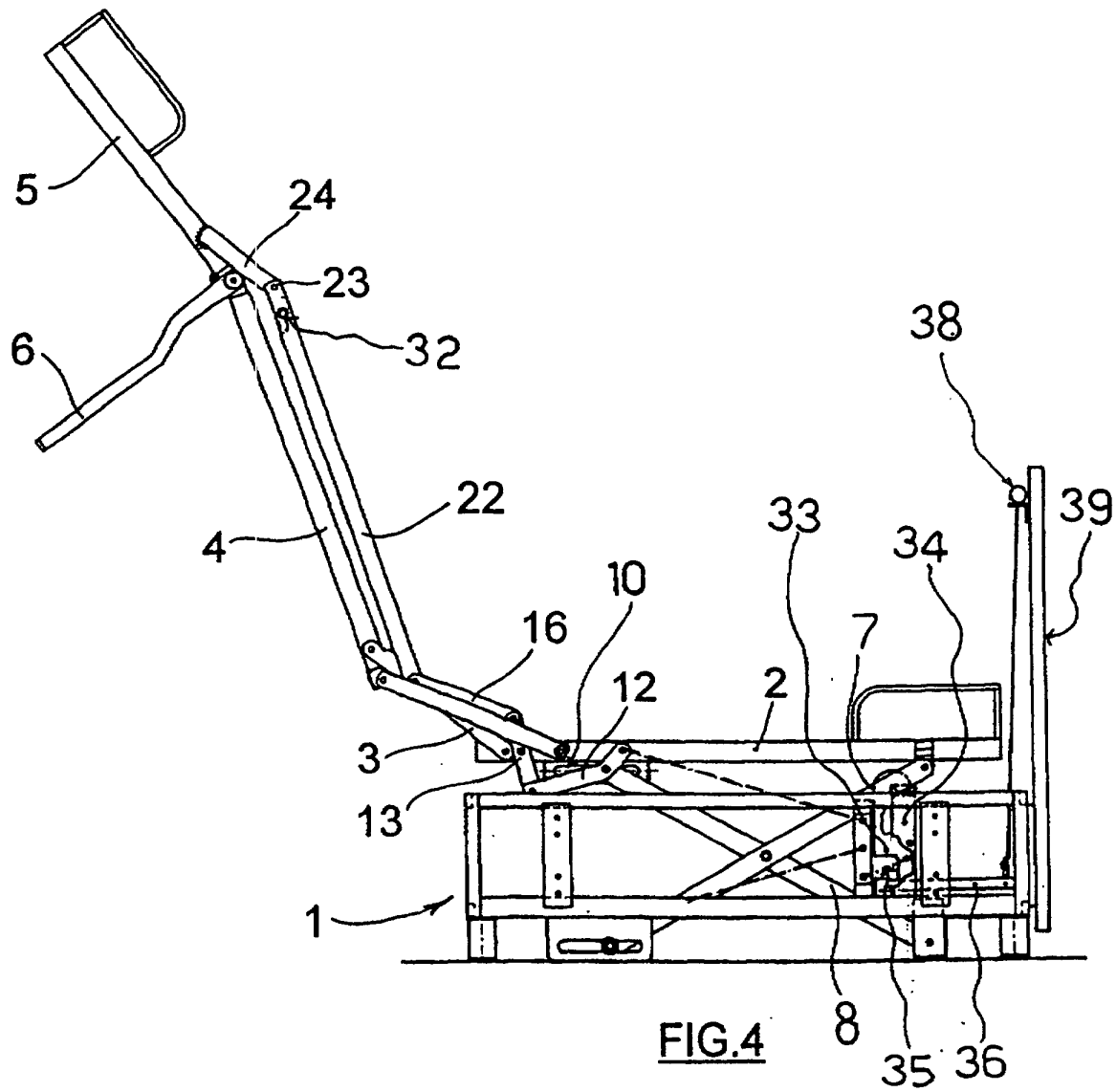
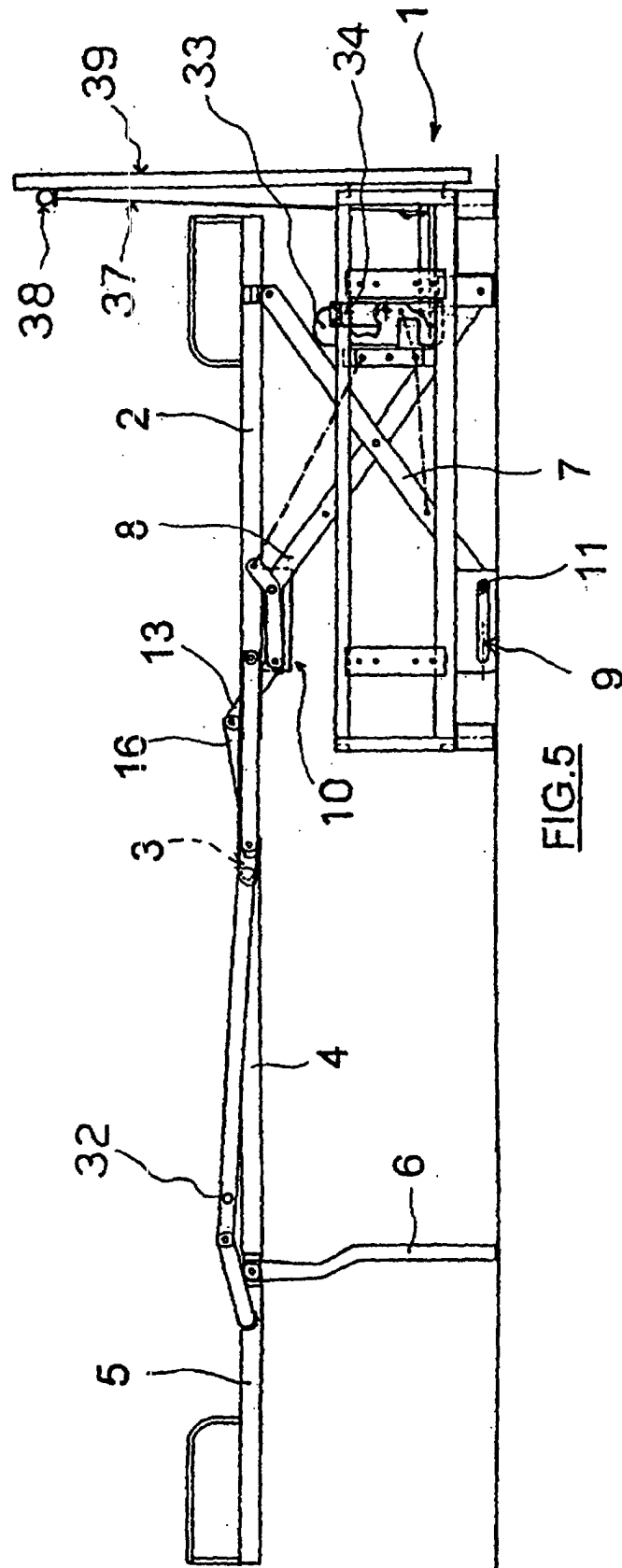


FIG. 3





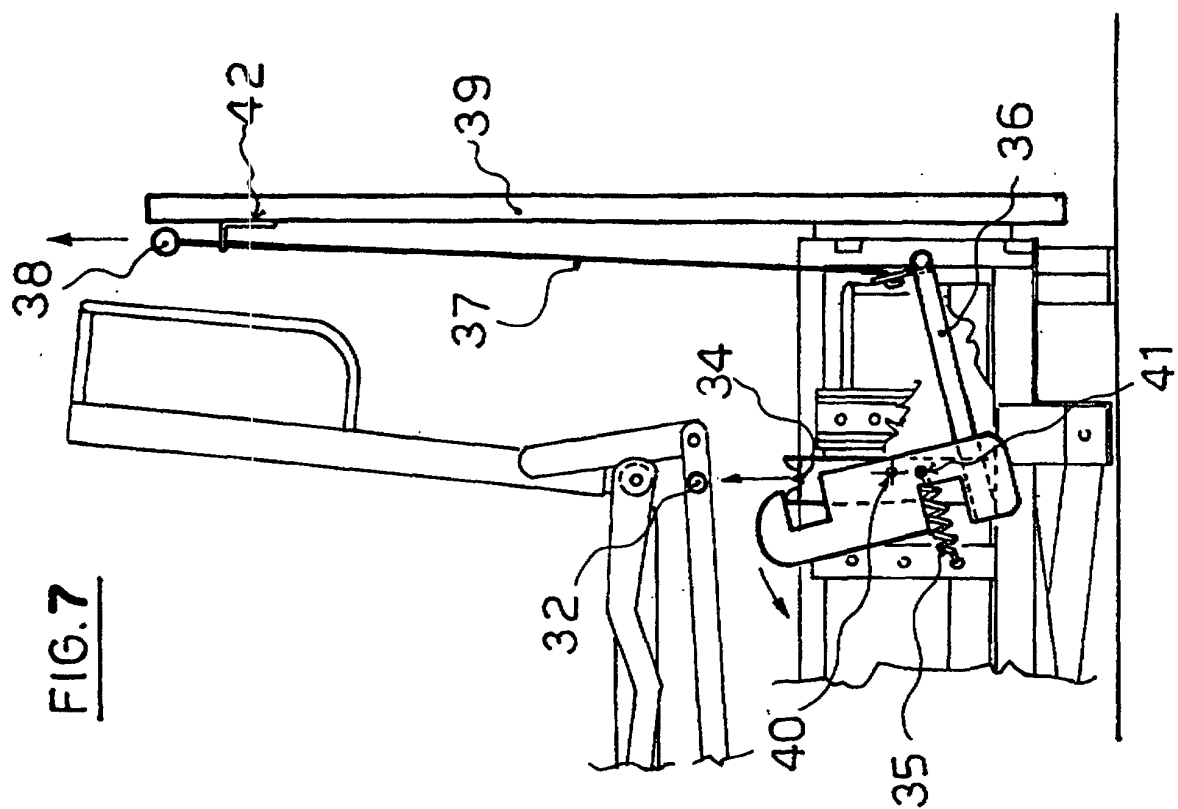


FIG. 7

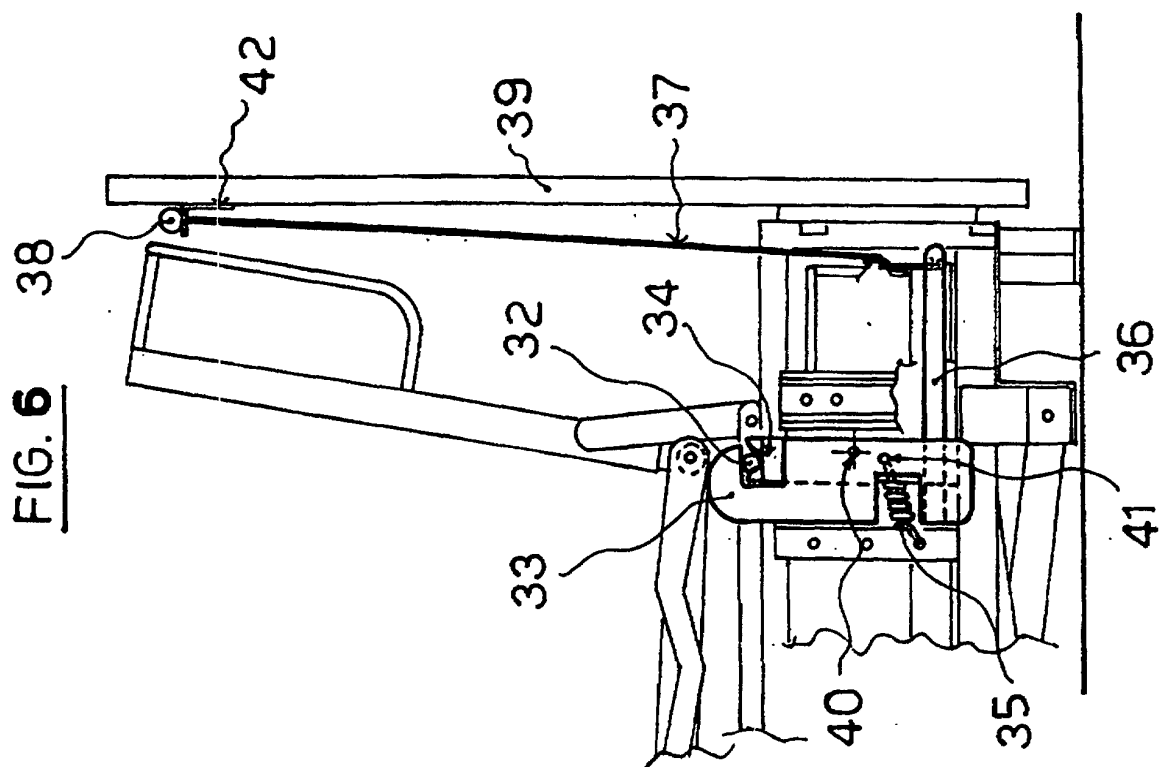


FIG. 6 38,