

(19)



(11)

EP 2 873 346 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

14.12.2016 Bulletin 2016/50

(21) Application number: **12880870.6**

(22) Date of filing: **12.07.2012**

(51) Int Cl.:

A47C 1/032 ^(2006.01)

(86) International application number:

PCT/ES2012/000193

(87) International publication number:

WO 2014/009572 (16.01.2014 Gazette 2014/03)

(54) **AUTOMATIC RECLINING SEAT**

AUTOMATISCHER LIEGESITZ

SIÈGE RABATTABLE AUTOMATIQUE

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(43) Date of publication of application:

20.05.2015 Bulletin 2015/21

(73) Proprietors:

- **Muñiz Vázquez, Xana**
33204 Gijón - Asturias (ES)
- **Muñiz Cabeza, Juan Ramón**
3203 Gijón - Asturias (ES)
- **Duperron, Jean-Paul**
33204 Gijón - Asturias (ES)

(72) Inventors:

- **Muñiz Vázquez, Xana**
33204 Gijón - Asturias (ES)

• **Muñiz Cabeza, Juan Ramón**

3203 Gijón - Asturias (ES)

• **Duperron, Jean-Paul**

33204 Gijón - Asturias (ES)

(74) Representative: **Garcia-Cabrerizo y del Santo,**

Pedro Maria

Oficina Garcia Cabrerizo, S.L.,

Vitruvio, 23

28006 Madrid (ES)

(56) References cited:

EP-A1- 1 410 738 WO-A1-91/12750

WO-A1-94/19991 ES-A1- 363 163

ES-A6- 2 024 114 ES-T3- 2 076 547

ES-U- 1 010 601 US-A- 5 967 609

US-A1- 2009 021 057

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

Technical field of the invention

[0001] This invention refers to an automatic reclining seat designed for use in the manufacturing of deck chairs, armchairs (for outdoors or indoors), seats, easy chairs, sofas, beds, etc.

Background of the invention

[0002] The main request for a reclining or reclining seat is simply for it to be practical and comfortable. The back reclining facility of a reclining seat offers a variety angles so the user can attain the most comfortable position. A seat of this type is described, for example, in document US2002/0125745. The disadvantage of this seat is that it only has a limited number of angles and the user has to get off the seat, in order to adjust the angle. Therefore, such a design is not flexible enough to meet the user's needs.

[0003] As a result of these defects, some inventors have redesigned the foldable reclining seat to correct the aforementioned problems. Chinese patent number CN2346300Y introduced an adjustment device situated on a guiding lever, this adjustment device allows users to adjust the recline angle of the foldable seat as they wish. This adjustment device does not have the limitations of the recline angle when adjusting the seat, which means it offers more adjustment options and the defect of the conventional foldable reclining chair is resolved, which does not offer such flexibility. However, the conventional foldable reclining seat has another defect, given that the support frame does not have a fixed mechanism. Therefore, this support frame often slides freely as a result of the weight imbalance and the unstable centre of gravity, when users are adjusting the recline angle of the seat or when they are simply lying on the chair. It also requires users to manipulate it in order to adjust the recline angle.

[0004] Patent ES2307115T3 also describes a foldable reclining chair that enables users to adjust the recline angle as they wish and also enables them to use it safely.

[0005] However, conventional reclining chairs or seats need to be manipulated by the user in order to adjust the recline angle, which is normally limited to a series of positions. In this invention, a chair is described that can be automatically reclined to the desired angle safely and comfortably, simply with the user's weight, without having to manipulate the reclining mechanism.

[0006] An other reclining seat is known from WO 94/19991 A1.

Invention description

[0007] This invention relates to an automatic reclining seat, made up of three main elements: a bedplate, made up of the base of the seat and the back rest and the

reclining mechanism.

[0008] The bedplate is the structure or element that supports the assembly formed by the base of the seat and the back rest, both of which are joined to the reclining mechanism. The structure or bedplate has four support points that support the assembly formed by the base of the seat and the back rest: Two rotating points on each side of the front part of the seat and two support points that slide along a rail-guide, also on each side, but in this case on the upper rear part of the bedplate. This rail-guide can be attached to the side of the bedplate or it can form a part thereof, which is decided during the manufacturing process.

[0009] The base of the seat and the back rest are the elements that support the user's body and they are joined together sharing a supporting point; the base of the seat and the back rest can be joined together by means of a hinge mechanism between the two parts, either with a hinge directly incorporated into both elements or with hinges joined laterally or any other type of hinge mechanism.

[0010] The base of the seat consists of two floating supporting points shared with the back rest and situated at the ends of the axle that joins the back rest with the base.

[0011] The back rest is supported by the two aforementioned floating support points and by another two points supported by springs and joined at the lower end to the reclining mechanism.

[0012] The two floating support points that are shared by the base of the chair and the back rest are attached to the reclining mechanism. The reclining mechanism includes a connecting rod joined at one end to each floating point and at the other end it is equipped with a wheel or ferrule that is supported on a rail-guide and along which it can run or slide respectively.

[0013] The back rest is supported on the connecting rod with the help of the spring, which enables the back rest to move more or less together with the connecting rod that supports it, in such a way that the point of balance is re-established by allowing the connecting rod to get as close as possible to the body's centre of gravity.

[0014] The back rest is always supported on the spring, enabling the distance between the wheel or ferrule at the end of the connecting rod and the back rest to vary in accordance with the weight and the physical constitution of each user. The varying degree of pressure on the spring, depending on the weight of each user results in the distance increasing or decreasing in such a way that the wheel or ferrule follows the centre of gravity of that person and restores the balance.

[0015] The mechanism simultaneously enables the back rest to be lowered and the base of the seat to return to its horizontal position, in a reclining movement or angle from the normal position (seated) to the horizontal position (reclined) and also return to the original position.

[0016] When we refer to the base of the seat returning to a horizontal position, it is because in the normal posi-

tion (seated), the base of the seat is slightly tilted downwards in the direction of the back rest, forming an approximate angle of 10° with the horizontal, while the back rest is slightly tilted forming an approximate angle of 15° with the vertical, guaranteeing maximum comfort.

[0017] The hinge mechanism of the base of the seat with the back rest will be equipped with a bolt that enables the automatic reclining seat to be blocked in the reclined position, offering users the possibility of using it in a face down position. It is unblocked by simply pressing on the head of the bolt. This hinge mechanism or joint is made up of two leaves, one coupled to the back rest and the other to the seat.

[0018] This automatic reclining seat is designed for use in the manufacturing of deck chairs, armchairs (for outdoors or indoors), seats, easy chairs, sofas, beds, etc. and it is designed to enable the abovementioned items to be used and enjoyed without having to manipulate levers or mechanisms for intermediate positions, in such a way that users can slide backwards or forwards, completely uniformly and continuously, reaching a stable position at any intermediate point and enabling users to enjoy maximum comfort.

[0019] The position is easily changed by gently pushing backwards on the back rest or gently leaning forward until the desired position is reached. Regardless of when the user stops pushing, the seat will remain in a stable and balanced position. This balanced position is achieved by means of a sliding supporting point which is able to follow the body's centre of gravity.

Description of the diagrams

[0020] Below are some diagrams with their descriptions that will help to explain the invention and which are expressly related to a preferred embodiment of said invention and are presented by way of example but not limited thereto:

- Diagram 1: Schematic representation of this invention's automatic reclining seat in the form of an armchair.
- Diagram 2: Schematic representation of this invention's automatic reclining seat in the form of a deck chair.
- Diagrams 3 to 6 schematically represent the automatic reclining mechanism including in each case: a leaf spring mechanism, a helical spring, a compression spring and a drive spring assembly respectively.
- Diagram 7 represents the reclining mechanism's connecting rod equipped with a wheel system that runs along the rail-guide.
- Diagram 8 shows the same connecting rod equipped with a sliding ferrule on the rail guide.
- Diagram 9 shows a front view and a side view of the hinge leaf that is coupled to the back rest, joined to the connecting rod by a shared axle.

Diagram 9 also shows the hinge leaf which is coupled to the seat

- Diagram 10 shows the hinge assembly with the bolt that enables the seat to be blocked in the reclined position. The diagram references represent:

(A, A'): The seat's rotating support points
 (B): The support point for the wheel or ferrule that slides along the rail-guide
 (C, C'): Back rest and seat's floating support points
 (D and D'): Support points for the back rest on the springs
 (G, G'): Rail guide (E): Bedplate
 (H): connecting rod
 (J): Hinge leaves coupled to the back rest
 (K): Hinge leaf coupled to the seat
 (F) Hinge leaf housing (J) for the leaf spring (M_b) or coil spring (M_e)
 (M): spring or coil spring
 (M_b): Leaf spring
 (M_e): Coil spring
 (M_c): Compression spring
 (M_d): Drive spring
 (P): pin
 (R): Back rest
 (S): Base of seat
 (T): bolt
 (W): Rail guide separator
 (a): Recline angle
 (z-z'): shared axle between back rest and base of seat
 (1, 1'): rear end bolt for the rail-guide
 (2, 2'): front end bolt for the rail-guide
 (d): Distance between the back rest and the upper end of the connecting rod
 (n): Cap that limits the opening angle between the back rest (R) and the connecting rod (H)
 (q): Sliding ferrule
 (r): wheel
 (s): Bolt axle
 (t): Cap for the hinge leaf (J) coupled to the back rest
 (u): Rotating joining point between connecting rod and rod
 (v): rod

• Detailed description of the invention

[0021] In order to gain a better understanding of the invention, below is a detailed description of the reclining seat that is the subject matter of the invention based on the diagrams. Diagrams 1 and 2 represent the seat in an armchair and a deck chair format respectively.

[0022] As shown, the automatic reclining seat is assembled on a structure or bedplate (E), which supports it. The base of the seat (S) and the back rest (R) are joined together by their two adjoining edges sharing the

same axle (z-z') with hinges. The bedplate will be different in each case, depending on whether it is a deck chair, an armchair, an easy chair, etc., as shown in diagrams 1 and 2. The support points that are described shall have a fixed position between them on any of the bedplates and on any of the different designs in each case.

[0023] The structure or bedplate (E) has four support points that support the assembly formed by the base of the seat and the back rest: Two rotating points (A, A') on both sides of the front part of the seat that rotate on the axle (x-x') and two support points that slide along a rail-guide (G and G'), also on both sides, but in this case on the upper back part of the bedplate. This rail-guide is also attached by its ends (1-1' and 2-2') to the bedplate (E). The aforementioned rail-guide (G and G') may be attached sideways to the bedplate (E) or it may directly form part of the bedplate (E), as decided during the manufacturing process.

[0024] Diagrams 3 to 6 schematically represent the automatic reclining mechanism including in each case: a leaf spring mechanism, a helical spring, a compression spring and a drive spring assembly respectively. The automatic reclining mechanism represented is for one of the sides, since both sides are symmetrical. When reference is made to the points of the opposing sides (A', B', etc.) diagrams 1 and 2 can be viewed.

[0025] The reclining mechanism is that which supports the base of the seat (S) and the back rest (R).

[0026] This mechanism is made up of a connecting rod (H) equipped at one of its ends with a wheel (r) or ferrule (q), which slides along the rail-guide (G, G'). The other end has floating points (C, C') that act as a joint between the seat (S) and the back rest (R) and which slide along an arch, the centre of which is on the rotating supporting points (A, A') of the seat (S).

[0027] The seat (S) is therefore supported on four points, its two front apexes to the structure via fixed rotating elements (A and A'), and on its two rear apexes hinged to the back rest, by floating support points (C and C'), which in turn are supported by the connecting rod (H) on the rail-guide (G).

[0028] The back rest (R) is also supported by four points, two at its lower apexes to the seat, on the floating support points (C and C') as mentioned in the preceding paragraph and the other two back rest support points (D and D') which do so on a spring (M) which may be a leaf spring (M_b, as shown in diagrams 1, 2 and 3), a coil spring (M_c, as shown in diagram 4), a compression spring (M_c, diagram 5) or a drive spring (M_t, diagram 6). The effect is the same in each case.

[0029] The manufacturing process shall determine which of these is the most suitable in each case. The back rest (R) leans on the abovementioned connecting rod (H) with the help of the spring (M), which enables the back rest (R) to be moved forward more or less together with the connecting rod (H) that supports it so the point of balance is re-established by allowing the connecting rod to get as close as possible to the body's centre of

gravity.

[0030] In the case of a leaf spring (M_b) or a coil spring (M_c), one of the ends would be attached between the floating support point (C) and the cotter (P) situated on the bottom part of the connecting rod (H), as shown in diagrams 3, 4 and 9. At the opposite end, the leaf (M_b) or coil (M_c) springs are anchored in both cases to the back rest (R) at the support point (D) by an eyelet or a sliding joint. A cap (n) will be inserted between the back rest and the connecting rod (H), which will limit the maximum opening between the back rest (R) and the connecting rod (H) and which in turn will ensure the spring (M) is not overloaded.

[0031] For a compression spring (M_c), as shown in diagram 5, it is guided by a rod (v) attached in turn to the connecting rod (H) at a connecting point (u) by a rotating joint, while the other end of said rod (v) remains free. The rod (v) goes through an eyelet at the support point (D) that is attached to the back rest (R).

[0032] For a drive spring (M_t), as shown in diagram 6, it is anchored to the body of the connecting rod (H) and to the back rest (R) at the support point (D) as shown.

[0033] The back rest (R) is always supported on the spring (M), enabling the distance (d) between the back rest (R) and the upper end of the connecting rod (H) that slides along the rail guide (G) to vary in accordance with the weight and physical constitution of each user. More or less pressure on the spring, depending on the weight of the user, makes the distance (d) increase or decrease so the wheel (r) or ferrule (q) coincides with the centre of gravity of the person, restoring the balance. All the variations of springs (M) may be used pursuant to the structural interest at all times.

[0034] Diagrams 7, 8, 9 and 10 show the mechanism equipped with a leaf spring in the construction plans.

[0035] Diagram 7 shows the connecting rod (H) equipped with a wheel (r) system that rides along the rail-guide (G), while figure 8 shows the same connecting rod (H) equipped with a sliding ferrule (q) on the rail-guide (G). It also shows the separator (W) that separates the rail-guide (G) from the bedplate to enable the connecting rod (H) to pass through.

[0036] The hinge is made up of two leaves: One leaf (J) coupled with the Back rest (R) and the leaf (K) coupled with the base of the seat (S).

[0037] Diagram 9 shows a leaf spring (M_b) the upper part of which is housed in the housing (F) situated at the upper end of the hinge leaf (J) coupled to the back rest.

[0038] Diagram 10 shows the hinge assembly (J, K) and the pawl (T) which is situated on each side of the seat and which enables the automatic reclining seat to be blocked in the reclined position, also allowing users to use it in a face-down position. It is unblocked by simply pressing on the head of the pawl (T).

[0039] The rotating centre of the hinge assembly, represented in diagram 10, is at the point (C) coinciding with the axle (z-z'), attached to the assembly formed by the base of the seat (S) and the back rest (R), so the hinge

leaf (J) is coupled with the Back rest (R) and the hinge leaf (K) is coupled with the base of the seat (S).

[0040] As the hinge leaf (J) is coupled with the back rest, it is equipped with the housing (F) which enables the leaf (M_b) or coil (M_e) spring to be joined to the back rest through it.

[0041] The hinge leaf (K) is a symmetrical component equipped with the cap (t) that limits how far the leaf (J) can travel. The symmetrical design enables it to be used for both sides.

[0042] The pawl (T) on the other hand, is attached to the hinge leaf (K) by means of an axle (s); this pawl enables the assembly formed by the seat and the back rest to be blocked in a horizontal position as shown in the aforementioned diagram.

[0043] The angle (a) is the recline angle from the sitting position to the reclined position; this movement is limited by the cap (t) in both directions.

Claims

1. Automatic reclining seat made up of a bedplate or structure (E) that supports the assembly made up of the base of the seat (S) and the back rest (R), with the base of the seat (S) and the back rest (R) sharing a supporting point (z-z') and a reclining mechanism **characterised by:**

- the bedplate (E) that houses four support points that support the assembly made up of the base of the seat (S) and the back rest (R), two of the support points are fixed (A and A') situated on both sides of the front part of the seat (S) that rotate around a supporting point (x-x') and the other two, slide along rail-guides (G and G') at both ends of the upper back part of the bedplate (E),

- the base of the seat (S) also consists of two floating support points (C and C'), which are shared with the back rest (R) and which correspond with the ends of the axle (z-z') shared by the base of the seat (S) and the back rest (R)

- The back rest is supported, not only by the aforementioned floating support points (C and C'), but also by springs (M and M') that are attached to the reclining mechanism,

- the reclining mechanism is connected to the assembly made up of the base of the seat (S) and the back rest (R) by the floating support points (C and C'), with said mechanism made up of connecting rods (H and H') joined at one end to one of the floating points (C and C') with the other end of each connecting rod (H and H') equipped with a wheel or ferrule (r y r', q and q') that is supported on or slides along the rail-guide (G and G') along which each end of each connecting rod (H and H') can run or slide, depend-

ing on whether it is a wheel or a ferrule; each connecting rod (H and H') of the reclining mechanism is attached to the springs (M and M') that support the back rest (R).

2. Automatic reclining seat, pursuant to claim 1, **characterised by** springs (M and M'), which may be leaf springs (M_b), coil springs (M_e), compression springs (M_c) or drive springs (Mt).

3. Automatic reclining seat, pursuant to claim 2, **characterised by** the fact that if it has leaf hinges (M_b) or coil hinges (M_e), one end of each of the hinges is fixed between the floating support point (C) and a cotter (P) situated at the lower end of the connecting rod (H), while the other end of each spring is attached to the back rest (R).

4. Automatic reclining seat, pursuant to claim 2, characterised because, if it has compression hinges (M_c), these are guided by a rod (v and v') fixed at one end to each connecting rod (H and H') by a rotating joint, while the other end of said rod remains free; the rod passes through an eyelet at the point where the hinge attaches to the back rest (R).

5. Automatic reclining seat, pursuant to claim 2, characterised because, in the case of drive hinges (M_d), each hinge is attached by one of its ends directly to the body of each connecting rod (H and H') and by the other end to the back rest (R).

6. Automatic reclining seat, pursuant to claim 1, characterised because between the back rest (R) and each connecting rod (H and H') there is a cap (n and n') that limits the maximum opening between the back rest (R) and each connecting rod (H and H') and which, in turn, will protect the spring from overloads.

7. Automatic reclining seat, pursuant to claim 3, characterised because it includes a hinge assembly with a pawl (T) at each side of the seat that enables the automatic reclining seat to be blocked in the reclined position, with the hinge being made up of two leaves, one leaf (J) coupled with the back rest (R) and another leaf (K) coupled with the base of the seat (S) and where the hinge leaf (J) coupled with the back rest is equipped with a housing (F) that enables the leaf hinge (M_b) or coil hinge (M_e) to be joined to the back rest (R) with the help of this hinge leaf (J) and where the hinge leaf (K) is equipped with a cap (t) that limits the movement of the leaf (J); the pawl (T) is attached to the hinge leaf (K) by an axle (s).

Patentansprüche

1. Automatische Liegesitz besteht aus eine Grundplatte oder Struktur (E), der die Anordnung besteht aus der Basis der Sitzes (S) und der Rückenlehne (R) unterstützt, die Basis der Sitzes (S) und die Rückenlehne (R) teilen ein Stützpunkt (z-z') und ein Klappmechanismus, **gekennzeichnet durch:**

- die Grundplatte (E) enthält vier Stützpunkte die die Anordnung besteht aus der Basis der Sitzes (S) und der Rückenlehne (R) unterstützt, zwei der Stützpunkte fixiert (A und A') befindet sich auf beiden Seiten des vorderen Teils des Sitzes (S) der um eine Stützpunkt (x-x') rotieren und die anderen zwei, entlang Schienen (G et G') an beiden Enden des oberen hinteren Teil der Grundplatte (E) gleiten,

- die Basis der Sitzes (S) besteht ebenfalls aus zwei schwimmende Stützpunkte (C und C'), die mit der Rückenlehne (R) geteilt sind und die mit den Enden der Achse (z-z') geteilt **durch** die Basis der Sitzes (S) und die Rückenlehne (R) entsprechend

- die Rückenlehne, nicht nur **durch** die oben genannten schwimmende Stützpunkte (C und C'), aber auch **durch** Federn (M und M') die an der Klappmechanismus fixiert sind, unterstützt ist

- der Klappmechanismus mit der Anordnung besteht aus der Basis der Sitzes (S) und der Rückenlehne (R) **durch** die schwimmende Stützpunkte (C y C') verbunden ist, mit diesen Mechanismus bestehend aus Pleuelstangen (H und H') verbunden **durch** ein Ende mit einer der schwimmenden Punkte (C und C') mit der anderem Ende jedes Pleuelstange (H y H') mit einem Rad oder Zwingen (r und r', q und q') die stützt sich auf oder gleitet entlang der Schiene (G und G') ausgerüstet ist, entlang, die jedem Ende jedes Pleuelstange (H und H') bewegen oder gleiten kann, je nachdem, ob es ein Rad oder eine Zwingen; jedes Pleuelstange (H und H') des Klappmechanismus auf die Federn (M und M') die die Rückenlehne (R) unterstützt, befestigt ist.

2. Automatische Liegesitz, nach Anspruch 1, **gekennzeichnet durch** die Federn (M und M'), Blattfedern (M_b), Schraubenfedern (M_e), Druckfedern (M_c) oder Antriebfedern (M_t) sein können.

3. Automatische Liegesitz, nach Anspruch 2, **dadurch gekennzeichnet, dass** wenn es Blattscharniere (M_b) oder Schraubenscharniere (M_e) hat, ein Ende von jedem der Scharniere zwischen den schwimmenden Stützpunkt (C) und ein Keil (P) der am unteren Ende des Pleuelstanges (H), fixiert ist, während das andere Ende jedes Feder an der Rücken-

lehne (R) befestigt ist.

4. Automatische Liegesitz, nach Anspruch 2, **dadurch gekennzeichnet, dass**, wenn es Druckscharniere (M_c) hat, diese durch eine Stange (v und v') geführt sind, an einem Ende jeder Pleuelstange (H und H') durch eine Drehgelenk befestigt, während das andere Ende des Stabes frei bleibt; die Stange verläuft durch eine Öse an dem Punkt, an dem das Scharnier an der Rückenlehne (R) befestigt.

5. Automatische Liegesitz, nach Anspruch 2, **dadurch gekennzeichnet, dass**, im Falle von Antriebsscharnieren (M_t), jedes Scharnier mit einem ihrer Ende direkt an den Körper jedes Pleuelstange (H und H') und mit dem anderen Ende an der Rückenlehne (R) angebracht ist.

6. Automatische Liegesitz, nach Anspruch 1, **dadurch gekennzeichnet, dass** zwischen der Rückenlehne (R) und jeder Pleuelstange (H und H') eine Kappe (n und n') aufweist, die die maximale Öffnung zwischen der Rückenlehne (R) und jeder Pleuelstange (H und H') begrenzt und die, in turn, wiederum wird die Feder vor Überlastung zu schützen.

7. Automatische Liegesitz, nach Anspruch 3, **dadurch gekennzeichnet, dass** es an jeder Seite des Sitzes eine Scharnieranordnung mit einer Sperrklinke (T) umfasst, die die automatische Liegesitz ermöglicht in der zurückgelehnten Position blockiert werden, mit dem Scharnier wird aus zwei aus Blätter, ein Blatt (J) gekoppelt mit der Rückenlehne (R) und einem weiteren Blatt (K) gekoppelt mit der Basis des Sitzes (S) und wobei das Scharnierblatt (J) mit der Rückenlehne gekoppelt ist mit einem Gehäuse ausgestattet (F) die das Blattscharnier (M_b) oder Schraubenscharnier (M_e) ermöglicht mit der Rückenlehne (R) zusammenstecken werden mit Hilfe dieses Scharnierblatt (J) und wobei das Scharnierblatt (K) mit einer Kappe (t) die die Bewegung des Blattes (J) begrenzt ausgerüstet ist; die Sperrklinke (T) an das Scharnierblatt (K) durch eine Achse (s) angebracht ist.

Revendications

1. Siège rabattable automatique constitué d'une plaque de base ou structure (E) qui supporte l'ensemble constitué par la base du siège (S) et le dossier (R), avec la base du siège (S) et le dossier (R) partageant un point d'appui (z-z') et un mécanisme de rabattement **caractérisé par :**

- la plaque de base (E) qui loge quatre points d'appui soutenant l'ensemble constitué par la base du siège (S) et le dossier (R), deux des points d'appui sont fixes (A et A') situés sur les

- deux côtés de la partie avant du siège (S) qui tourne autour d'un point d'appui (x-x') et les deux autres, glissent le long rails de guidage (G et G') aux deux extrémités de la partie supérieur arrière de la plaque de base (E),
- la base du siège (S) comporte également deux points d'appui flottants (C et C'), qui sont partagés avec le dossier (R) et correspondant aux extrémités de l'axe (z-z') partagés par la base du siège (S) et le dossier (R)
 - Le dossier est supporté, non seulement par les points d'appui flottants mentionnés ci-dessus (C et C'), mais aussi par des ressorts (M et M') qui sont reliés au mécanisme de rabattement,
 - le mécanisme de rabattement est relié à l'ensemble constitué par la base du siège (S) et le dossier (R) par les points d'appui flottants (C et C'), avec ledit mécanisme constitué par bielles (H et H') reliées par une extrémité à l'un des points flottants (C et C') avec l'autre extrémité de chaque bielle (H et H') équipée d'une roue ou d'une bague (r et r', q et q') qui est supporté sur ou qui glisse le long du rail de guidage (G et G') le long duquel chaque extrémité de chaque bielle (H et H') peut tourner ou se glisser, selon qu'elle soit une roue ou une bague; chaque bielle (H et H') du mécanisme de rabattement est fixée aux ressorts (M et M') que supportent le dossier (R).
2. Siège rabattable automatique, selon la revendication 1, **caractérisé par** des ressorts (M et M'), qui peuvent être des ressorts à lames (M_b), des ressorts hélicoïdaux (M_e), des ressorts de compression (M_c) ou ressorts d'entraînement (M_t).
 3. Siège rabattable automatique, selon la revendication 2, **caractérisé par le fait que** s'il possède de charnières à lames (M_b) ou charnières hélicoïdales (M_e), une extrémité de chacune des charnières est fixée entre le point d'appui flottant (C) et une goupille (P) située à l'extrémité inférieure de la bielle (H), tandis que l'autre extrémité de chaque ressort est fixée au dossier (R).
 4. Siège rabattable automatique, selon la revendication 2, **caractérisé en ce que**, s'il possède des charnières de compression (M_c), celles-ci sont guidées par une tige (v et v') fixée sur une extrémité de chaque bielle (H et H') par une joint tournant, tandis que l'autre extrémité de ladite tige est libre; la tige passe à travers un oeillet au point où la charnière se fixe sur le dossier (R).
 5. Siège rabattable automatique, selon la revendication 2, **caractérisé en ce que**, dans le cas des charnières d'entraînement (M_t), chaque charnière est fixée par une de ses extrémités directement sur le corps de chaque bielle (H et H') et par l'autre extré-
- mité sur le dossier (R).
6. Siège rabattable automatique, selon la revendication 1, **caractérisé en ce que** entre le dossier (R) et chaque bielle (H et H') il y a un plafond (n et n') limitant l'ouverture maximale entre le dossier (R) et chaque bielle (H et H') et qui, à son tour, protégera le ressort contre les surcharges.
 7. Siège rabattable automatique, selon la revendication 3, **caractérisé en ce qu'il** comprend un ensemble de charnière à cliquet (T) à niveau de chaque côté du siège, permettant au siège rabattable automatique être bloqué en position rabattue, avec la charnière étant constituée par deux lames, une lame (J) couplée avec le dossier (R) et une autre lame (K) couplée avec la base du siège (S) et où la lame de charnière (J) couplée au dossier est équipée d'une boîtier (F) permettant au charnière à lames (M_b) ou charnière hélicoïdale (M_e) d'être relié au dossier (R) à l'aide de cette lame de charnière (J) et où la lame de charnière (K) est équipée d'un plafond (t) limitant le mouvement de la lame (J); le cliquet (T) est fixé à la lame de charnière (K) par un axe (s).

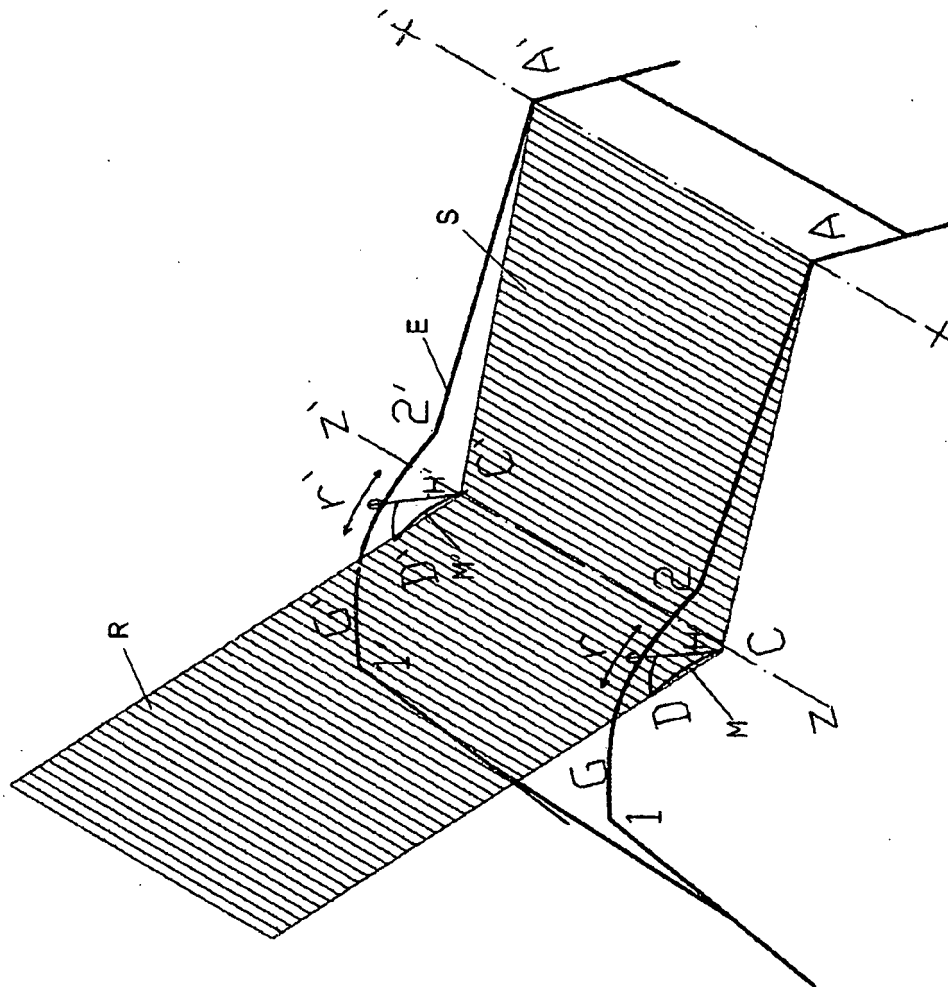


Fig. 1

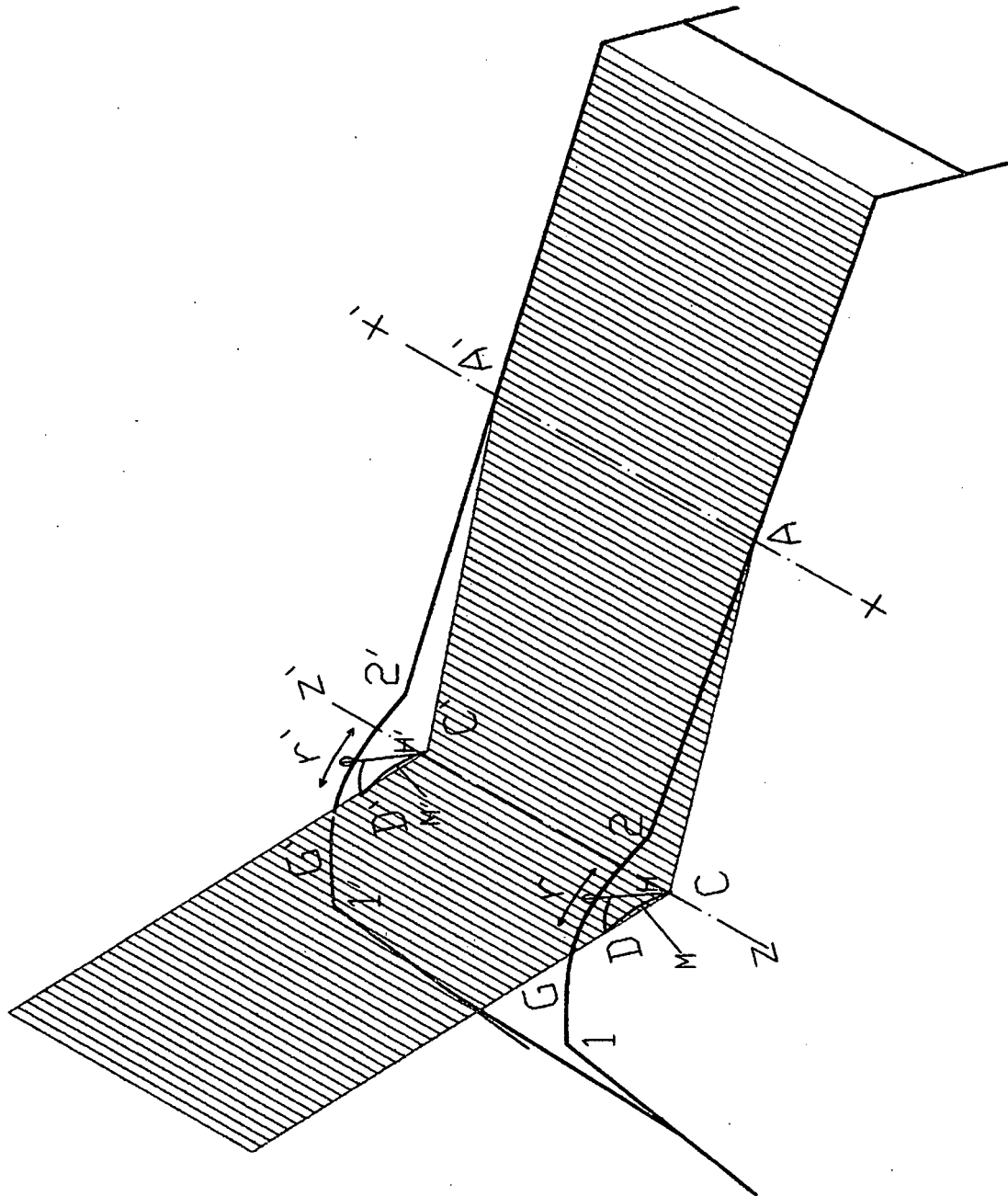


Fig. 2

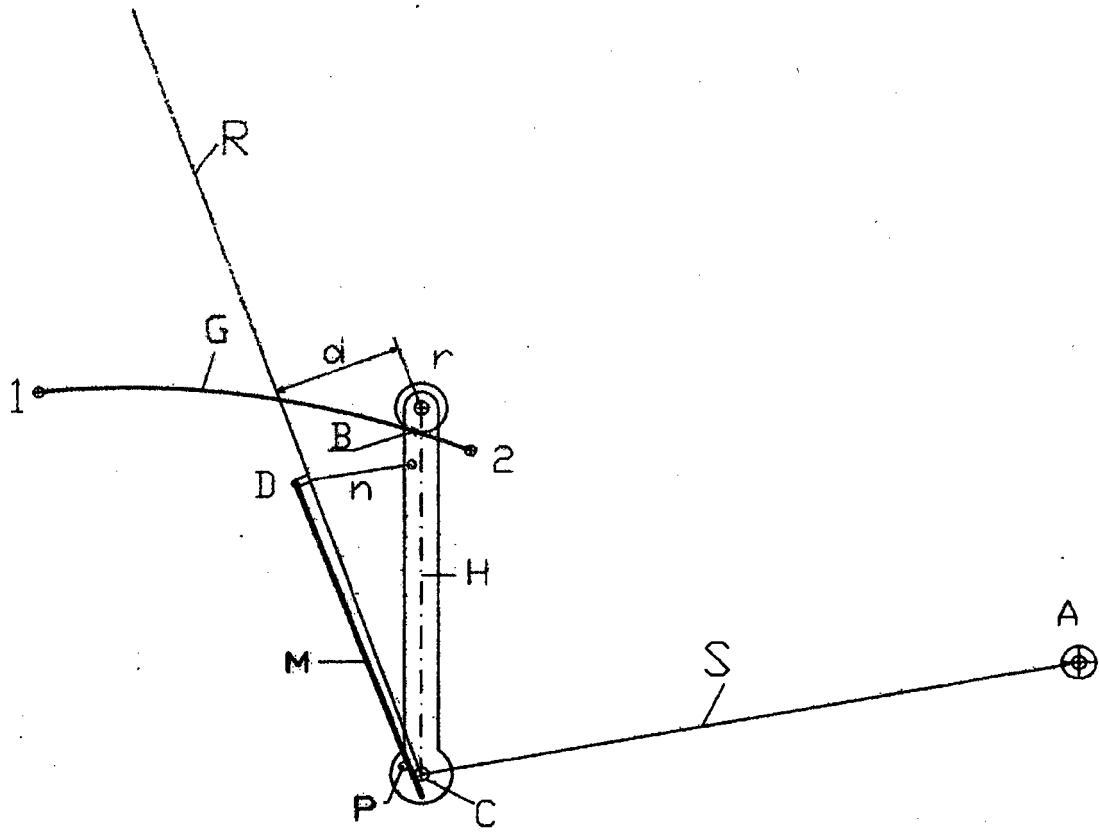


Fig. 3

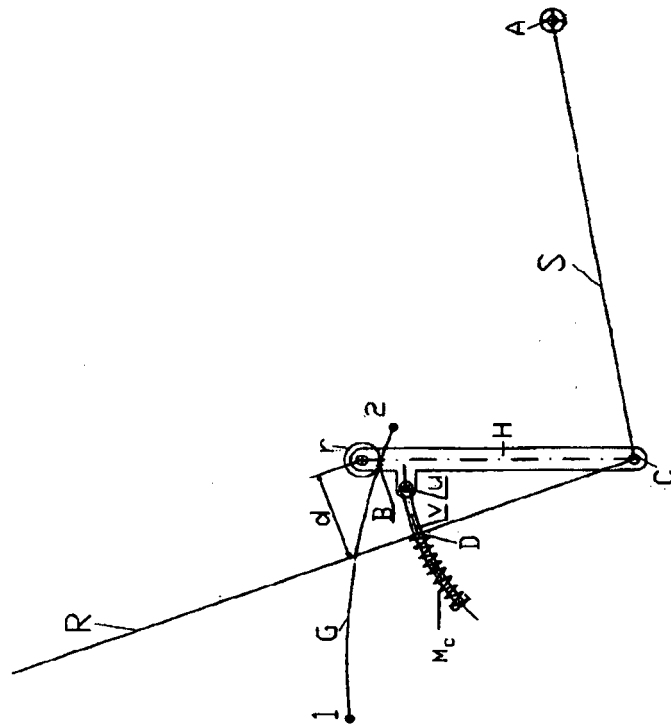


Fig. 5

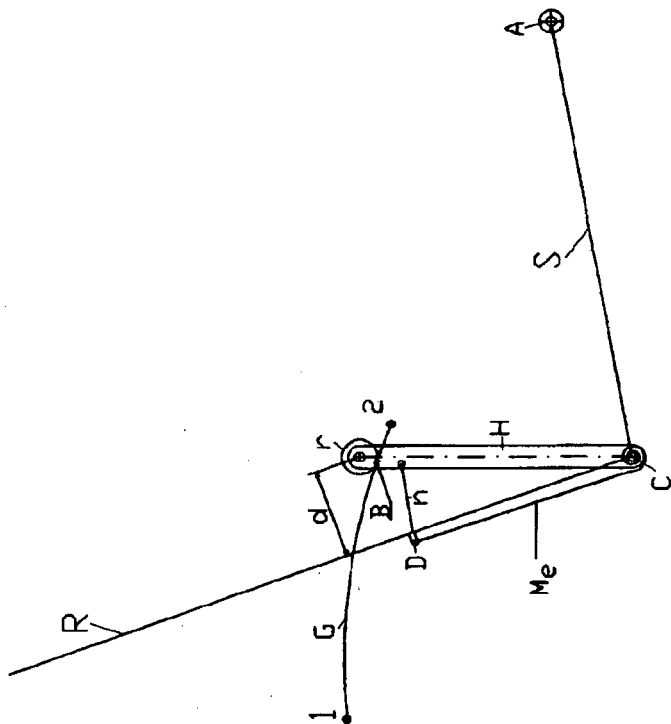


Fig. 4

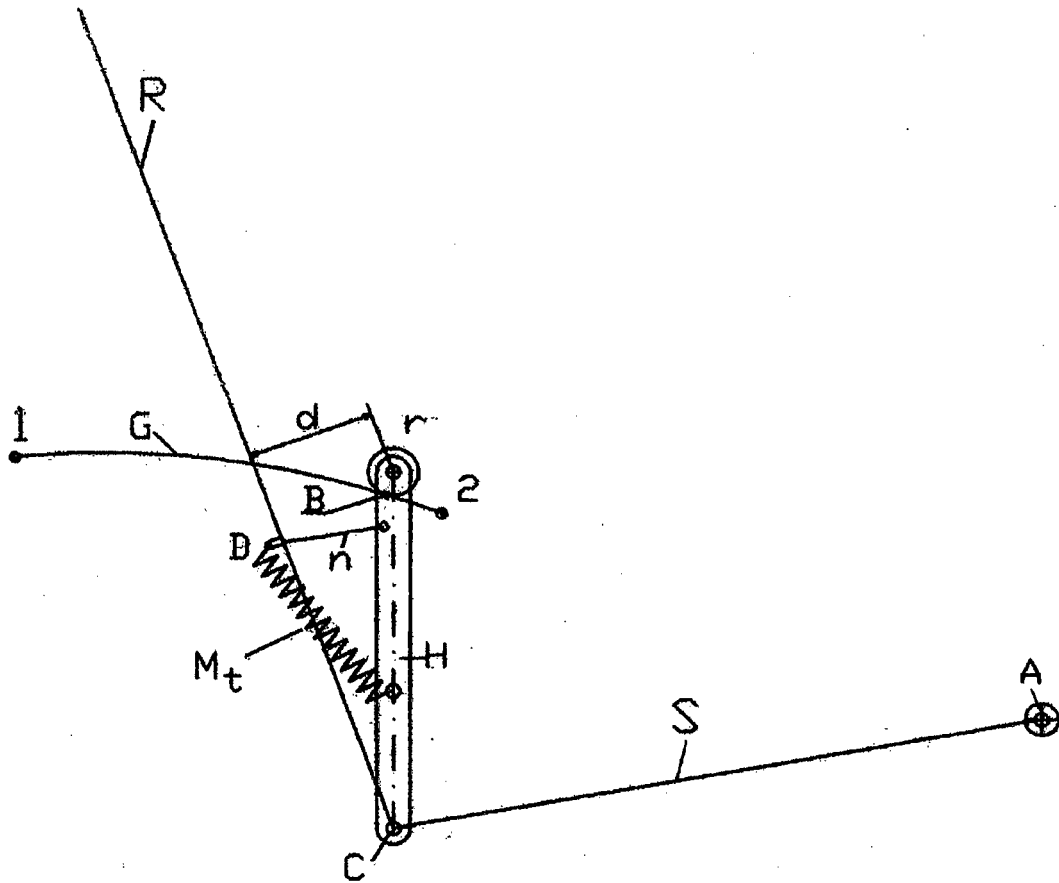


Fig. 6

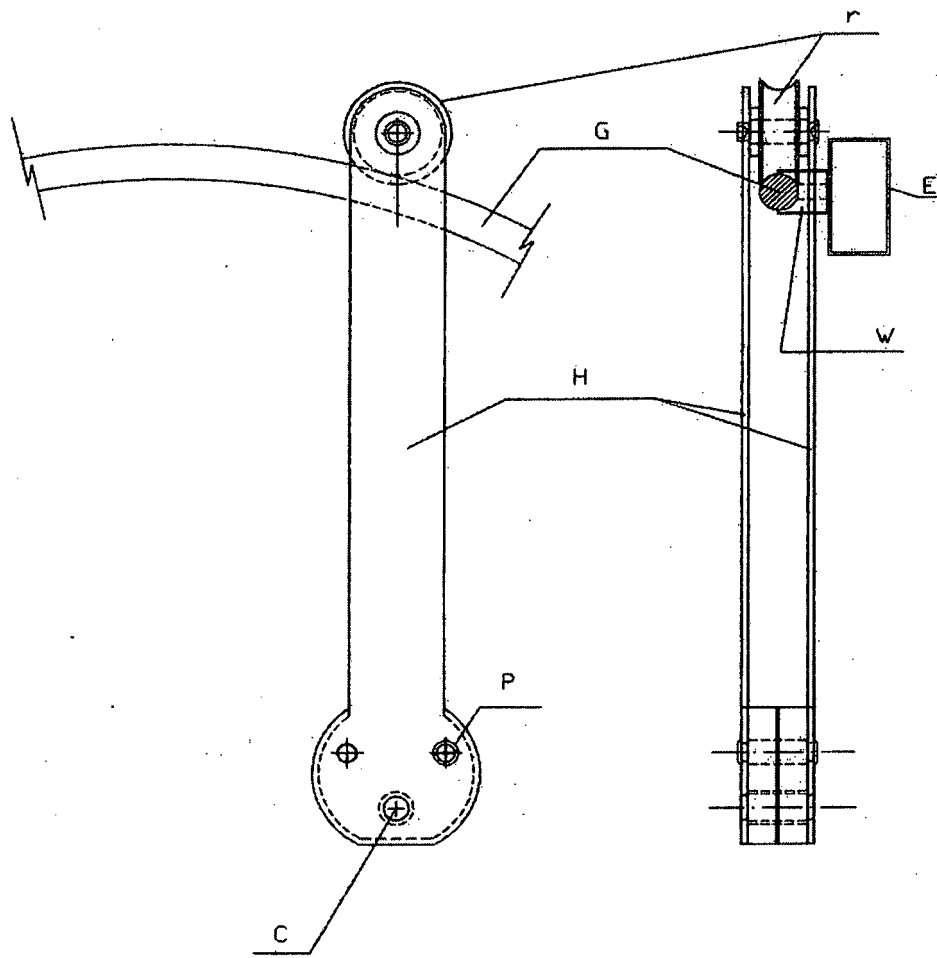


Fig. 7

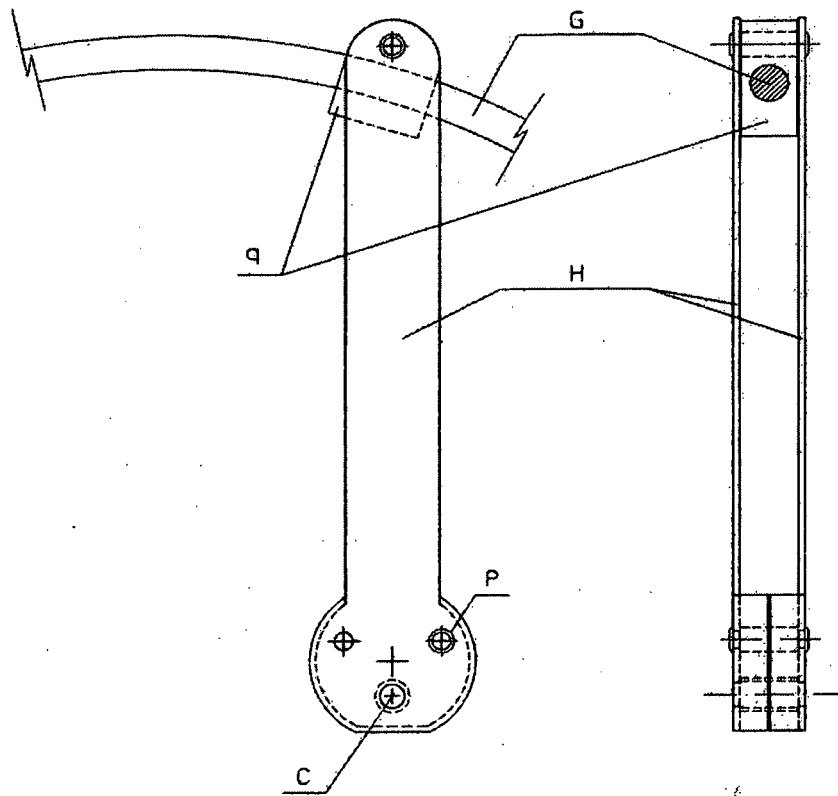


Fig. 8

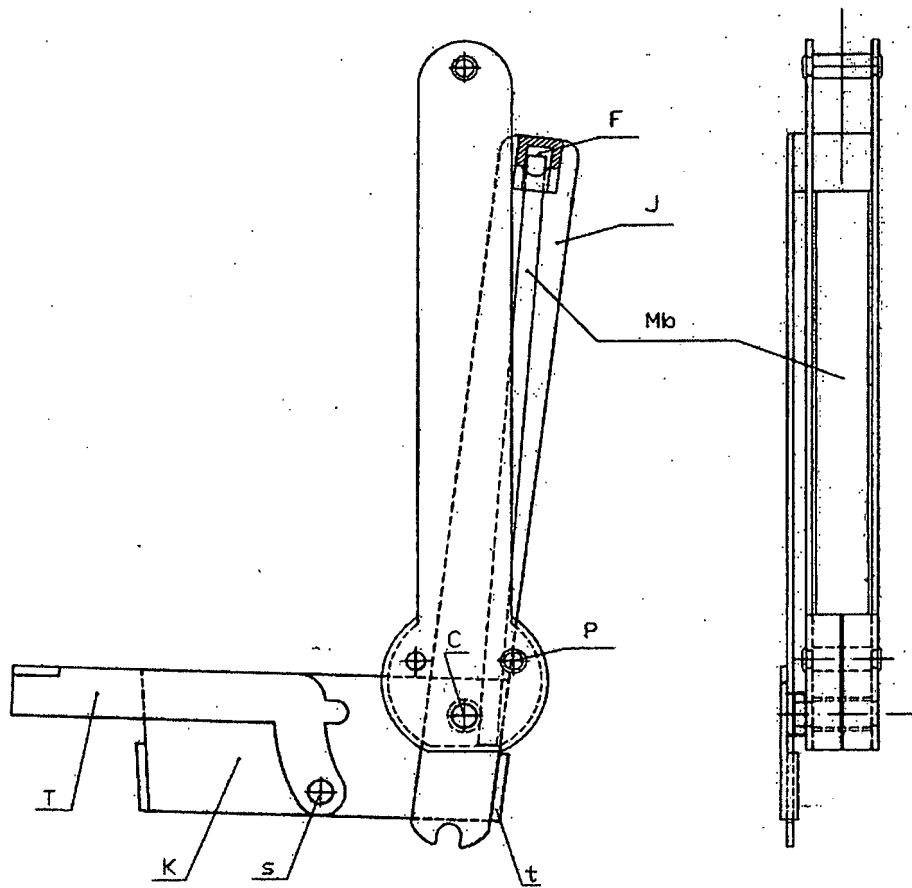


Fig. 9

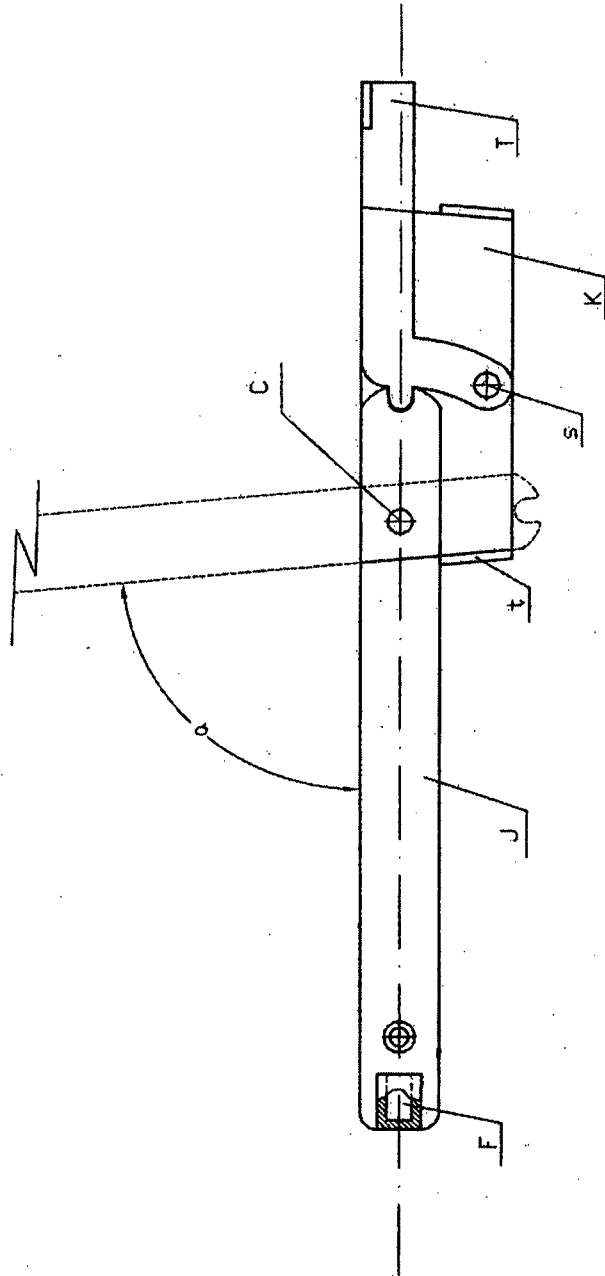


Fig. 10

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 20020125745 A [0002]
- CN 2346300 Y [0003]
- ES 2307115 T3 [0004]
- WO 9419991 A1 [0006]