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(54) **Chair with pre-pressing structure**

Stuhl mit Vordruck-Struktur

Chaise dotée d'une structure de pré-compression

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**Description****BACKGROUND OF THE INVENTION****1. Field of the Invention**

**[0001]** The present invention relates generally to a chair, and more particularly to an innovative chair with a pre-pressing structure for extending service life thereof.

**2. Description of the Related Art**

**[0002]** There are currently available a variety of chairs, which are designed functionally to meet the requirements of ergonomics and to improve convenience. Generally, the seat back is permanently assembled with a seat cushion, so the users have to maintain a fixed posture, leading to a lack of flexibility in practice. For this problem, a chair with an elastic mechanism has been developed recently; namely, an elastic mechanism is arranged between the seat cushion and seat back, so that the seat back enables comfortable and flexible seating via the torsional force of the elastic mechanism.

**[0003]** Document US 2003/0164635 A1 describes a chair with an elastic mechanism between the seat cushion and the backrest.

**[0004]** Thus, to overcome the aforementioned problems of the prior art, it would be an advancement in the art to provide an improved structure that can significantly improve efficacy.

**[0005]** Therefore, the inventor has provided the present invention of practicability after deliberate design and evaluation based on years of experience in the production, development and design of related products.

**SUMMARY OF THE INVENTION**

**[0006]** There is enhanced efficacy of the present invention.

**[0007]** Based on the unique present invention as defined in claim 1, a chair is mainly composed of the main body and pre-pressing structure. The pre-pressing member's permanent seat is arranged onto the backingplate's assembly surface of the main body, and the pre-pressing member is assembled onto the pre-pressing member's permanent seat, so that the main body presents elastic restoring force. Moreover, the multi-segment directional bulge of the pre-pressing member is correspondingly mated with the multi-segment directional groove of the pivoted seat, so the circular elastic member of the pre-pressing member can obtain a torsional restoring force, thereby enhancing the structural strength, improving the durability and extending the service life of the chair.

**[0008]** Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the invention as hereinafter claimed.

**BRIEF DESCRIPTION OF THE DRAWINGS****[0009]**

5 FIG 1 shows an assembled perspective view of the present invention that the pre-pressing structure is applied to the chair.

FIG 2 shows an exploded perspective view of the pre-pressing structure of the present invention.

10 FIG. 3 shows a top plan view of the present invention, showing the pre-pressing structure assembled.

FIG. 4 shows a sectional view of the present invention, showing the pre-pressing structure unassembled.

15 FIG. 5 shows a top plane view of the present invention, showing the pre-pressing structure assembled.

FIG. 6 shows a sectional view of the present invention, showing the pre-pressing structure assembled in two segments.

20 FIG. 7 shows a schematic view of the application of the pre-pressing structure of the present invention.

**DETAILED DESCRIPTION OF THE INVENTION**

25 **[0010]** FIGS. 1-4 depict preferred embodiments of a chair of the present invention with pre-pressing structure. The embodiments are provided for only explanatory purposes with respect to the patent claims.

30 **[0011]** The chair comprises a main body 10, including at least a backing plate 11 with an assembly surface 111 as well as supports 12. The main body 10 is fitted with a pre-pressing structure 20, so that the main body 10 presents elastic restoring force.

35 **[0012]** The pre-pressing structure 20 comprises at least a pre-pressing member's permanent seat 21, arranged onto the assembly surface 111 of the backing plate 11. The pre-pressing member's permanent seat 21 is provided with a chamber 210. The pre-pressing member 20 also comprises at least a pre-pressing member 22, assembled into the chamber 210 of the pre-pressing member's permanent seat 21. The pre-pressing member 22 contains a limiting seat 221, a circular elastic member 222 and a multi-segment directional bulge 223.

45 **[0013]** The chair includes at least a pivoted seat 23, which is provided with a multi-segment directional groove 233 that is interlocked with the multi-segment directional bulge 223, so the circular elastic member 222 can obtain a torsional restoring force. Moreover, a pre-pressing locator 30 is used to realize a pre-pressing ) locating. The pivoted seat 23 is fitted with an inserting portion 234 for inserting into the support 12 of the main body 10.

50 **[0014]** The pre-pressing locator 30 is arranged onto the locating bulge 31 of the limiting seat 221 and also into an embedding groove 32 of the pivoted seat 23. The width of the embedding groove 32 is bigger than that of the locating bulge 31, along with an angle difference, so the locating bulge 31 can be forcibly turned to an angle and embedded into the embedding groove 32 of the piv-

oted seat 23, thus forming a tilting space (shown in FIG. 7), and enabling the users to swing flexibly within it ergonomically and comfortably.

**[0015]** The backing plate 11 is applied to either of the seat back or seat cushion of the chair 10. The present invention is applied to the seat back of the chair 10 for providing elastic restoring force.

**[0016]** The multi-segment directional bulge 223 and multi-segment directional groove 233 are of a crisscrossed or polygonal shape.

**[0017]** Based upon above-specified structures, the present invention is operated as follows:

Referring to FIGS. 3, and 4, the limiting seat 221 of the pre-pressing member 22 is embedded into the chamber 210 of the pre-pressing member's permanent seat 21. In such a case, the multi-segment directional bulge 223 is protruded from one side of the limiting seat 221, next the multi-segment directional groove 233 of the pivoted seat 23 is inserted partially into the multi-segment directional bulge 223, such that the other part of the multi-segment directional bulge 223 is protruded out of the pivoted seat 23 (shown in FIG. 6(a)). In such a state, the locating bulge 31 has an angle difference with the embedding groove 32. Then, the pivoted seat 23 is turned anticlockwise to an angle, and the multi-segment directional groove 233 will drive the multi-segment directional bulge 223 to rotate anticlockwise, enabling the anticlockwise rotation of the circular elastic member 222 in a pre-pressing state. In such a case, the locating bulge 31 is positioned correspondingly to the embedding groove 32, so that the locating bulge 31 can be embedded into the embedding groove 32, and the locating bulge 31 of the limiting seat 221 is driven to be abutted onto one side of the embedding groove 32 via the circular elastic member 222 (the locating bulge 31 is abutted onto left side of the embedding groove 32 as shown in FIG. 7). Meanwhile the multi-segment directional groove 233 is fully inserted into the multi-segment directional bulge 223 (shown in FIG. 6(b)) for a pre-pressing state (referring also to FIG. 5). Finally, the inserting portion 234 is inserted into the support 12 of the main body 10 for elastic assembly.

**[0018]** The pre-pressing structure 20 of the present invention is assembled onto the seat back of the chair. In the practice, the user sits on the seat cushion, when the seat back is tilted backwards, the locating bulge 31 of the pre-pressing locator 30 is rotated clockwise in line with the tilting angle, and the circular elastic member 222 is driven to rotate for accumulating elastic restoring force, allowing the seat back to swing within the tilting space. When the user leaves from the seat back, the locating bulge 31 could drive the seat back for resetting via the elastic restoring force of the circular elastic member 222. In such a way, the user could sit on chair comfortably

with tilting or swinging functions.

**[0019]** As the width of the embedding groove 32 is bigger than that of the locating bulge 31, the tilting angle of the seat back could be adapted to the size of the embedding groove 32 with angle limitation (referring also to FIG. 7).

## Claims

1. A chair with pre-pressing structure (20), wherein the chair comprising a main body (10), including at least a backing plate (11) with an assembly surface (111) as well as supports (12); of which the main body (10) is fitted with a pre-pressing structure (20), so that the main body (10) presents elastic restoring force; the pre-pressing structure (20) comprises:

at least a pre-pressing member's permanent seat (21) arranged onto the assembly surface (111) of the backing plate (11), the pre-pressing member's permanent seat (21) being provided with a chamber (210) and at least one cavity (215) communicating with the chamber (210); at least a pre-pressing member (22) assembled into the chamber (210) of the pre-pressing member's permanent seat (21), the pre-pressing member (22) containing a limiting seat (221), a circular elastic member (222) and a multi-segment directional bulge (223), the limiting seat (221) having at least one locating bulge (31); and at least a pivoted seat (23), which is provided with a multi-segment directional groove (233) that is interlocked with the multi-segment directional bulge (223), so the circular elastic member (222) can obtain a torsional restoring force, the pivoted seat (23) having at least one embedding groove (32); moreover, a pre-pressing locator (30) is used to realize a pre-pressing locating; of which the pivoted seat (23) is fitted with an inserting portion (234) for inserting into the support (12) of the main body (10), wherein the cavity (215) of the permanent seat (21) communicates with the embedding groove (32) of the pivoted seat (23), the locating bulge (31) having one end located within the cavity (215), the other end of the locating bulge (31) being located within the embedding groove (32); wherein the width of the embedding groove (32) is bigger than that of the locating bulge (31).

2. The structure defined in Claim 1, wherein the multi-segment directional bulge (223) and multi-segment directional groove (233) are of a crisscrossed or polygonal shape.

3. The structure defined in Claim 1, wherein the backing

plate (11) is applied to either of the seat back or seat cushion of the chair.

4. The structure defined in Claim 1, wherein the locating bulge (31) is parallel to a pivot axis of the pivoted seat (23).

#### Patentansprüche

1. Stuhl mit einem Druckvorstufen-Aufbau (20), worin der Stuhl einen Hauptkörper (10) umfasst, einschließlich mindestens einer Rückenlehne (11) mit einer Aufbau-Fläche (111) sowie Träger (12), worin der Hauptkörper (10) mit einem Druckvorstufen-Aufbau (20) ausgestattet ist, so dass der Hauptkörper (10) eine elastische Rückstellkraft bereitstellt, worin der Druckvorstufen-Aufbau (20) umfasst:

mindestens einen Permanent-Sitz (21) für das Druckvorstufen-Element, der auf der Aufbau-Fläche (111) der Rückenlehne (11) angeordnet ist, worin der Permanent-Sitz (21) für das Druckvorstufen-Element mit einer Aufnahme (210) ausgestattet ist und mindestens einem Hohlraum (215), die mit der Aufnahme (210) in Verbindung steht;

mindestens ein Druckvorstufen-Element (22), das in der Aufnahme (210) des Permanent-Sitzes (21) für das Druckvorstufen-Element angeordnet ist, worin das Druckvorstufen-Element (22) einen Begrenzungs-Sitz (221) aufweist, ein ringförmiges elastisches Element (222) und eine Mehrfach-Segment Richtungs-Auswölbung (223), worin der Begrenzungs-Sitz (221) mindestens eine Positionierungs-Auswölbung (31) aufweist; und

mindestens einen Schwenk-Sitz (23), der mit einer Mehrfach-Segment-Richtungs-Vertiefung (233) versehen ist, die mit der Mehrfach-Segment-Richtungs-Auswölbung (223) in Eingriff steht, so dass das ringförmige elastische Element (222) eine Torsions-Rückstellkraft erfahren kann, worin der Schwenk-Sitz (23) mindestens eine Einbett-Vertiefung (32) aufweist; worin weiterhin ein Druckvorstufen-Positionsgeber (30) dazu verwendet wird, eine Druckvorstufen-Positionierung zu erreichen, worin der Schwenk-Sitz (23) mit einem Inserierungs-Bereich (234) ausgestattet ist, um in den Träger (12) des Hauptkörpers (10) inseriert zu werden, worin der Hohlraum (215) des Permanent-Sitzes (21) mit der Einbettungs-Vertiefung (32) des Schwenksitzes (23) in Verbindung steht, worin die Positionierungs-Auswölbung (31) ein Ende in der Vertiefung (215) hat; und worin sich das andere Ende der Positionierungs-Auswölbung (31) in der eingebetteten Vertiefung (32) befindet;

det;

worin die Weite der Einbettungs-Vertiefung (32) größer ist als die der Positionierungs-Auswölbung (31).

2. Aufbau nach Anspruch 1, worin die Mehrfach-Segment-Richtungs-Auswölbung (223) und die Mehrfach-Segment-Richtungs-Vertiefung (233) eine kreuzweise oder polygonale Form aufweisen.

3. Aufbau nach Anspruch 1, worin die Rückenlehne (11) an die Sitz-Rückseite oder das Sitzkissen des Stuhls angebracht ist.

4. Aufbau nach Anspruch 1 worin die Positionierungs-Auswölbung (31) parallel zur Schwenkachse des Schwenk-Sitzes (23) verläuft.

#### Revendications

1. Une chaise avec une structure de pré-compression (20) dans laquelle la chaise comprend un corps principal (10) incluant au moins une plaque d'appui (11) avec une surface de montage (111) ainsi que des supports (12) ;

dont le corps principal (10) est pourvu d'une structure de pré-compression (20) de sorte que le corps principal (10) présente une force de rappel élastique, la structure de pré-compression comprenant :

au moins un siège permanent d'un membre de pré-compression (21) disposé sur la surface de montage (111) de la plaque d'appui (11), le siège permanent du membre de pré-compression (21) étant pourvu d'une chambre (210) et d'au moins une cavité (215) communiquant avec la chambre (210) ;

au moins un membre de pré-compression (22) assemblé dans la chambre (210) du siège permanent de membre de pré-compression (21), le membre de pré-compression (22) contenant un siège limitant (221), un membre élastique circulaire (222) et un renflement directionnel multi-segments (223), le siège limitant (221) comportant au moins un renflement de positionnement (31) ; et

au moins un siège pivotant (23) pourvu d'une rainure directionnelle multi-segments (233) qui est verrouillée avec le renflement directionnel multi-segments (223) de sorte que le membre élastique circulaire (222) peut exercer une force de torsion de rappel, le siège pivotant (23) comportant au moins une rainure d'enveloppement (32) ;

en outre un localisateur de pré-compression (30) est utilisé pour réaliser un positionnement de pré-compression ; dont le siège pivotant (23)

est muni d'une portion d'insertion (234) pour s'insérer dans le support (12) du corps principal (10),

dans laquelle la cavité (215) du siège permanent (21) communique avec la rainure enveloppante (32) du siège pivotant (23), le renflement de positionnement (31) comportant une extrémité positionnée au sein de la cavité (215), l'autre extrémité du renflement de positionnement (31) étant positionnée au sein de la rainure enveloppante (32) ;  
dans laquelle la largeur de la rainure enveloppante (32) est plus grande que celle du renflement de positionnement (31).

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2. La structure définie dans la revendication 1 dans laquelle le renflement directionnel multi-segments (223) et la rainure directionnelle multi-segments (233) sont entrecroisés ou de forme polygonale.

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3. La structure définie dans la revendication 1 dans laquelle la plaque d'appui (11) est appliquée soit au dossier du siège soit au coussin du siège.

4. La structure définie dans la revendication 1 dans laquelle le renflement de positionnement (31) est parallèle à un axe de pivotement du siège pivotant (23).

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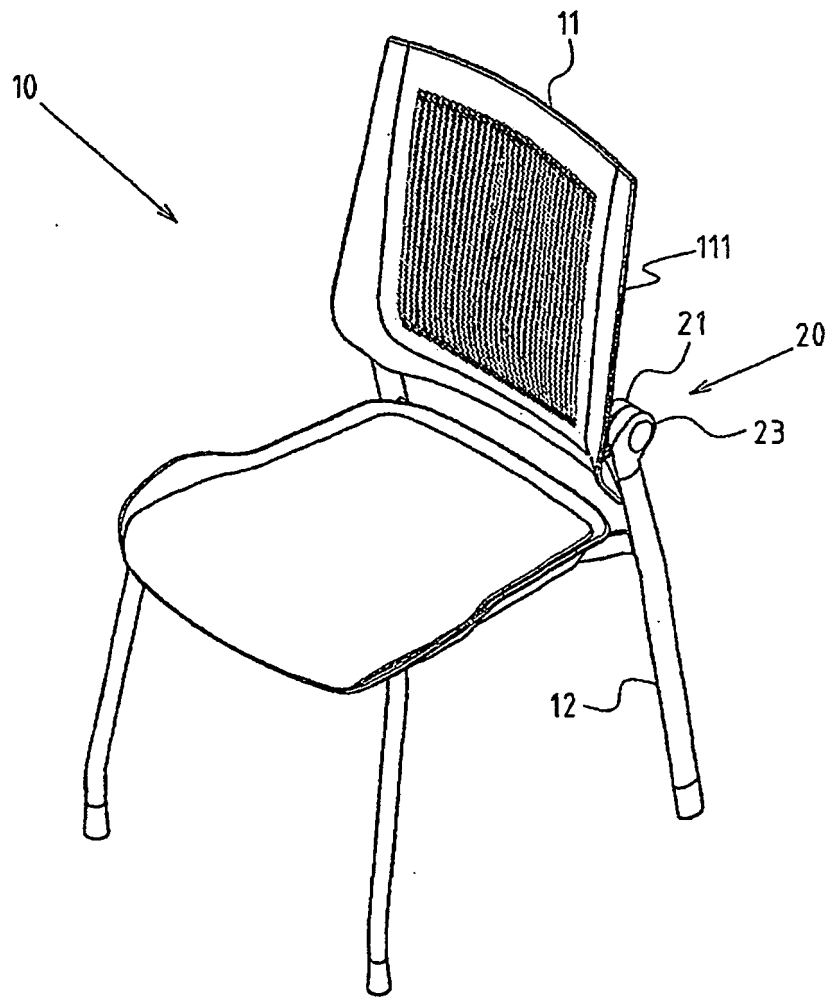


FIG.1

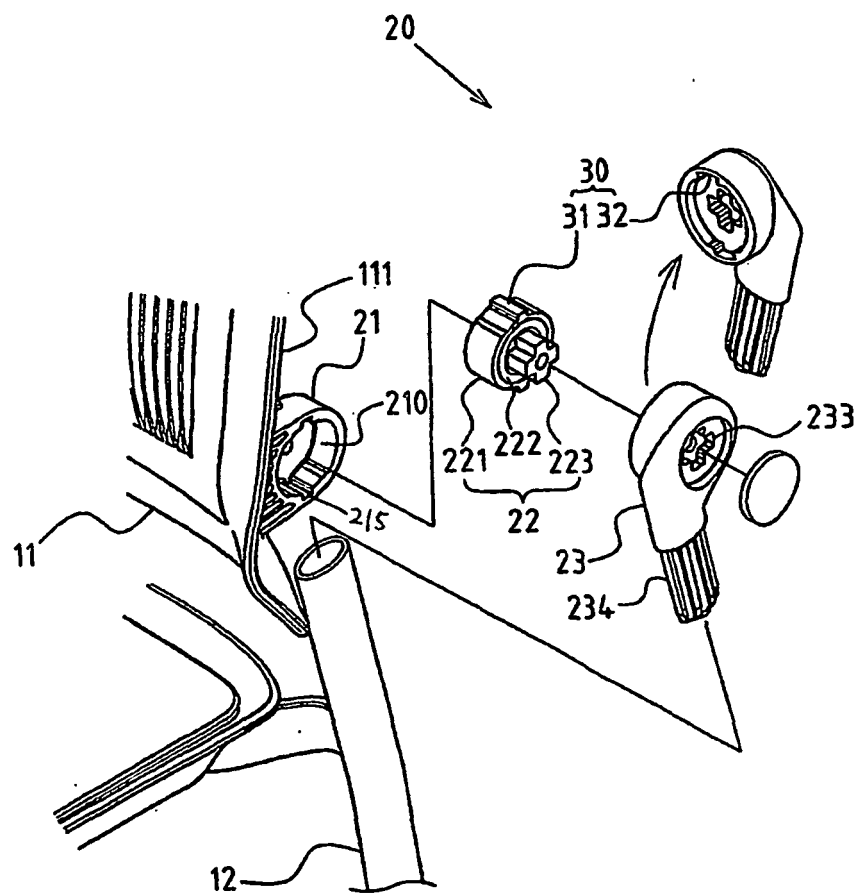


FIG.2

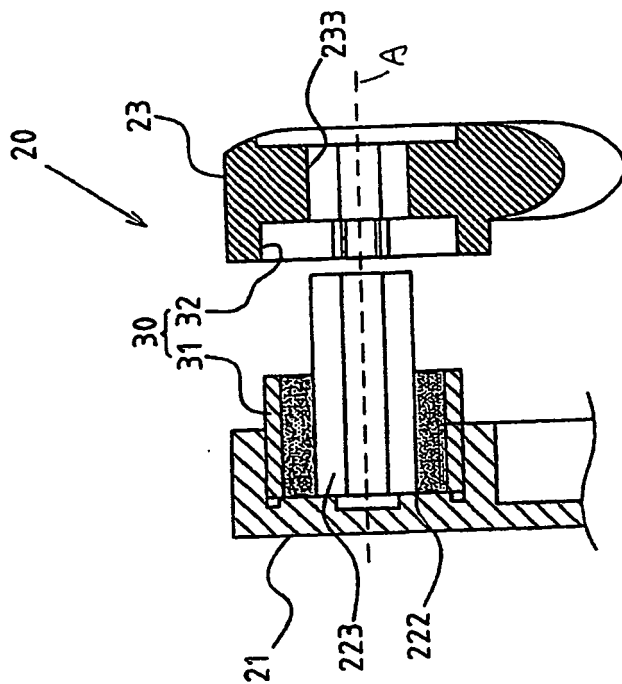


FIG.4

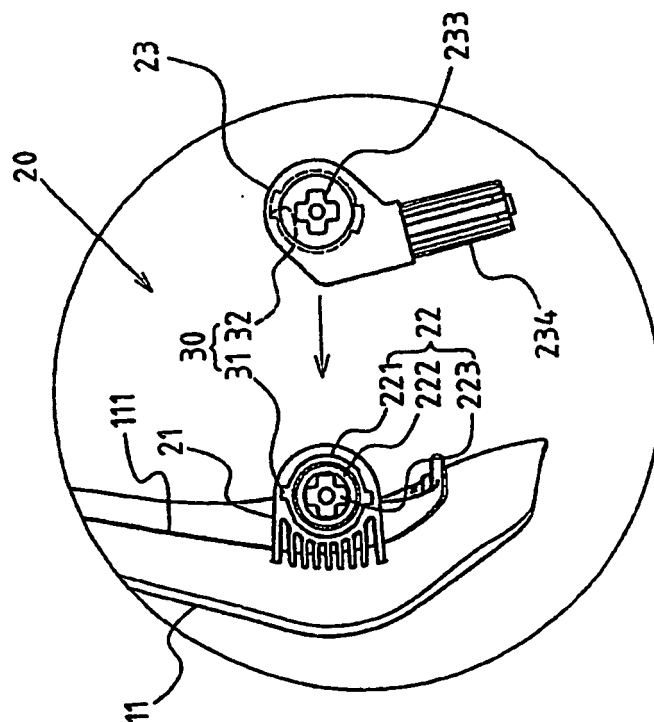


FIG.3



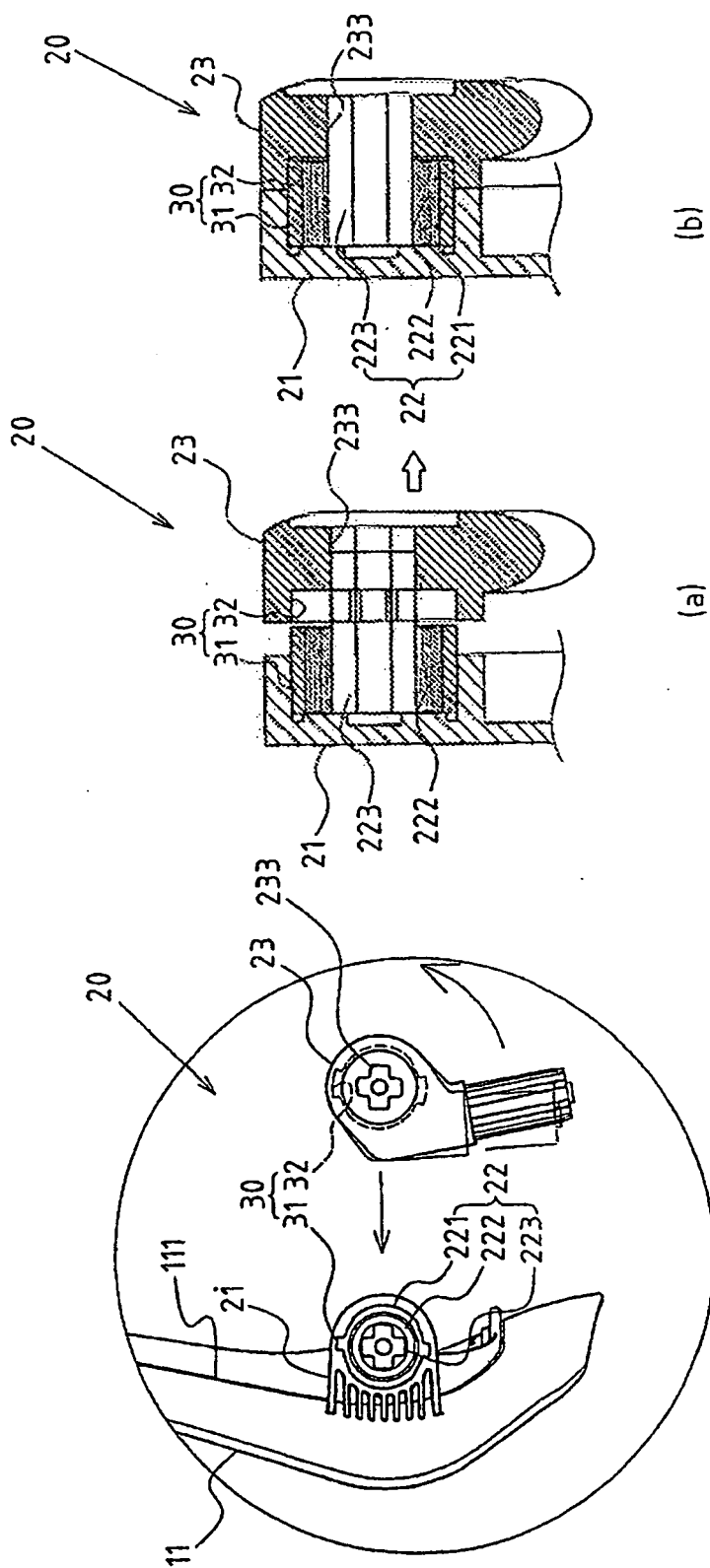


FIG.6

FIG.5

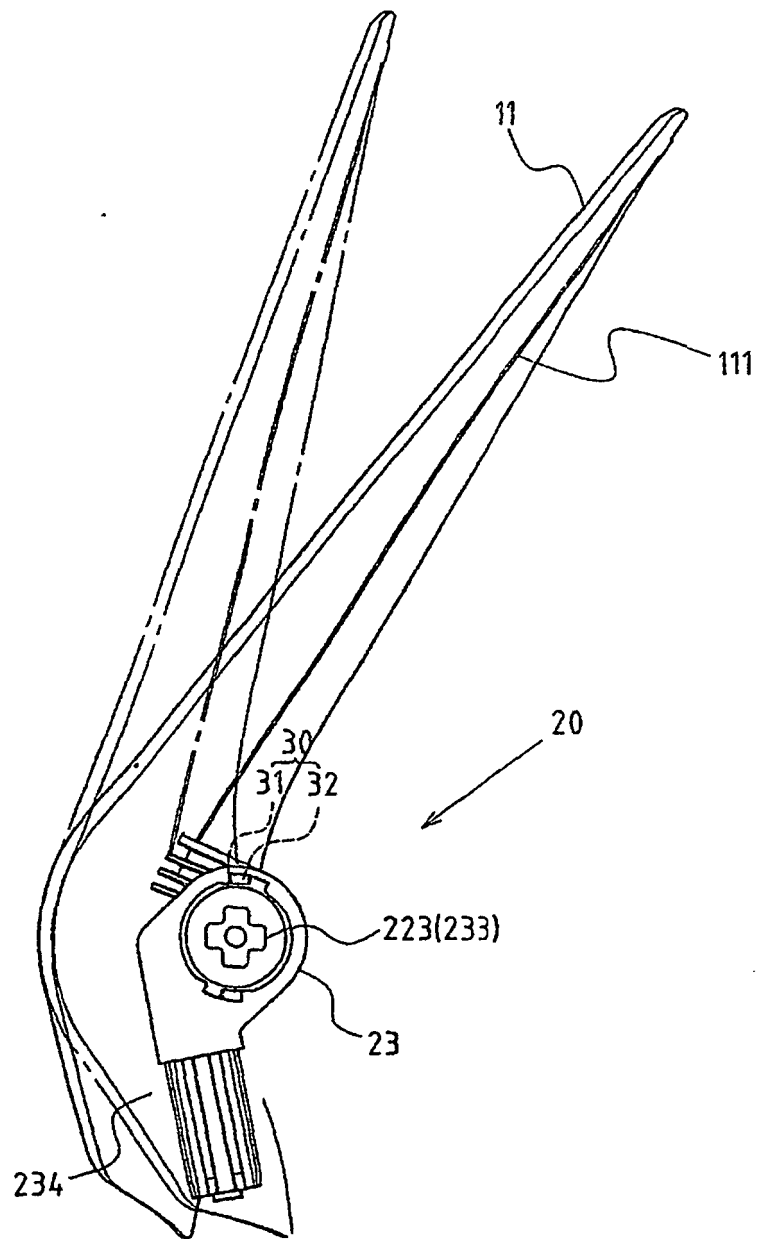


FIG. 7

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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