(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 759 714 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
26.01.2000 Bulletin 2000/04

(21) Application number: **96907853.4**

(22) Date of filing: **22.03.1996**

(51) Int Cl.[7]: **A47C 1/024**

(86) International application number:
PCT/SE96/00369

(87) International publication number:
WO 96/28996 (26.09.1996 Gazette 1996/43)

(54) **CHAIR WITH ADJUSTABLE BACK**

STUHL MIT VERSTELLBARER RÜCKENLEHNE

CHAISE A DOSSIER REGLABLE

(84) Designated Contracting States:
CH DE DK FR GB LI NL

(30) Priority: **22.03.1995 SE 9501032**

(43) Date of publication of application:
05.03.1997 Bulletin 1997/10

(73) Proprietor: **MERCADO MEDIC AB**
S-181 22 Lidingö (SE)

(72) Inventor: **DU REES, Stephan**
S-181 62 Lidingö (SE)

(74) Representative: **Bjelkstam, Peter et al**
Kransell & Wennborg AB
Box 27834
115 93 Stockholm (SE)

(56) References cited:
DE-C- 374 511
US-A- 2 982 586
US-A- 3 434 756
US-A- 3 501 182

EP 0 759 714 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a back support height adjustment device for chairs, and includes a pillar upwardly directed from the seat or its substructure for carrying a back support, which is adjustable in relation to the seat, the pillar comprising at least two sections, which are mutually, telescopically displaceable, such a device is known from US-A-3 434 756.

[0002] Implementations usually available at present for adjusting the height of pillars carrying a back support can be either complicated or simple structures. The complicated kind is expensive to produce and the simple kind, which is cheap to produce, has, inter alia, the drawback that ugly clamping marks are caused on the means forming the pillar, these means being mutually displaceable for enabling different height settings for the back support. Another drawback with the simple structures is that when adjustment takes place, it happens quite often at greater heights that the part of the pillar means to which the support is attached is pulled out from the part with which it telescopes, causing it to fall on the floor together with the support.

[0003] The object of the present invention is to provide a back support adjustment device of the kind mentioned above, which answers its purpose excellently, while being both simple and cheap in manufacture at the same time. The locking mechanism, used to positionally fix the telescoping hollow sections in given mutual relationship, has an implementation making it impossible to form any ugly clamping marks on the sections. In addition, the two sections forming the pillar means cannot slide apart into separate relationship. This situation is prevented by a locking pin, which keeps both sections together until released by a simple thumb-grip in case the chair is to be dismantled, e.g. for transport and/or packing.

[0004] The invention will now be described in more detail with the aid of a preferred embodiment example and with reference to the accompanying drawings, where

Fig. 1 is a schematic, perspective view of a back support adjustment device in accordance with the present invention,

Fig. 2 is a side elevation of a hollow section with associated means for attaching it to a chair seat or the substructure thereof and constitutes the lower part of the pillar means,

Fig. 3 is a second side elevation of the hollow section in Fig. 2 and

Fig. 4 is a plan of the hollow section in Fig. 2.

[0005] As will most easily be seen from Fig. 1, a preferred embodiment example of the invention comprises a back support adjustment device 1 for a chair, including a pillar 2 upwardly directed from the seat or its substructure, for carrying a back support 3. In the illustrated example the pillar 2 comprises at least two hollow sections 4, 5, which are mutually, telescopically displaceable, and in the present example they have rectangular cross-sections. Since the hollow sections 4, 5 can move inside the section (5), a desired back support height can be achieved by pushing the former into, or withdrawing it from the latter, and since the pillar 2 is provided with a locking mechanism 23 actuatable by a screw 9 via a thumb-wheel 24, the sections 4, 5 are readily, positionally fixable at a desired setting position.

[0006] The actual positional fixation of the sections 4, 5 to each other is achieved with the aid of at least one tongue 6 formed in, and integral with, a wall of the outer hollow section 5 at a face 7 thereof. This tongue is intended to lock the two sections 4, 5 together by friction caused by applying a compressive force to it, which is achieved by operating the thumb-wheel 24 with its attached screw 9. By reason of the large engagement surface of the tongue 6 against the face 7' of the inner section 4 there will be no clamping marks on this face after actuating the mechanism 23 such as to lock the sections 4 and 5 to each other in different positions in relation to each other. The screw 9, providing compressive force against the tongue 6, coacts via a thread 10 with a thread 11 in a yoke 8 surrounding the tongue 6 and fastened to the outer section 5.

[0007] In order to provide uniform force distribution from the screw 9 to the inner section 4, the free end 12 of the screw is adapted to press against a centrally situated portion 13 of the tongue 6, the free end of which is flush with the free end 14 of the section 5, where the section 4 may be inserted. The tongue is laterally delimited by two slits 15, 16 in spaced relationship and departing from the free upper end 14 of sections 5 and in its longitudinal direction. The width of the tongue 6 substantially corresponds to the width of the face 7' of section 4, against which face it engages. In the example illustrated, slits 15, 16 delimiting the tongue 6 extend mutually parallel to terminate a distance from the free end 14 of section 5 substantially corresponding to its width. In the region 18 where the slits terminate there is a hole 17 between them, providing greater flexibility to the tongue 6 at its junction with the wall of section 5.

[0008] The hole 17 also has the task of accommodating a locking pin 19, which is spring-biassed away from section 4, such as to prevent, by coacting with the upper edge 20 of the hole, that sections 4 and 5 are unintentionally pulled apart. Pushing the sections together is, however, always possible, since the downward edge portion 21 of the hole is curved away, or oterhwise rounded, at 22 so as to allow automatic depression of the pin into the inner section 4. When it is desired to separate the two sections 4 and 5, the pin 19 projecting into the hole 17 can be depressed by the thumb, so that the pin glides under the upper edge 20 of the hole 17, which allows the sections 4 and 5 to be pulled apart.

Claims

1. Back support adjustment device for chairs, including a pillar (2) upwardly directed from the seat or its substructure for carrying a back support (3), said pillar (2) comprising at least two hollow sections (4, 5), which are mutually, telescopically displaceable, and are mutually, positionally fixable at a desired height with the aid of at least one tongue (6) formed in, and integral with a wall of the outer hollow section (5) at a face (7) thereof, the tongue also being laterally delimited by two slits (15, 16) in spaced relationship and departing from the free upper end (14) of said hollow section, the tongue thus being enabled, with the aid of a compressive force normal to it, to lock the other hollow section (4) against the first (5) with the aid of friction between said tongue and wall face (7') of hollow section (4), such as not to leave any clamping marks on the surface of this section (4), against which the force is exerted, and in a region (18) at the termination of the slits (15, 16) the tongue (6) having a hole (17) between said slits for increasing flexibility of said tongue, where it is integrated into the face (7) of said outer hollow section (5), the hole (17) also being utilized for accommodating a locking pin (19), which is spring-biassed away from said section (4) and may be pressed inwards to allow hollow sections (4, 5) to be separated from each other.

2. Device as claimed in claim 1, **characterized in** that said compressive force is caused by a locking screw (9), which may be urged against the tongue with the aid of a yoke (8) fastened to the outer section (5) and surrounding the tongue (6).

3. Device as claimed in claim 2, **characterized in** that said screw (9) is provided with a thread (10) coacting with a corresponding thread (11) in said yoke (8), the free end (12) of said screw (9) being disposed for pressing against a centrally situated portion (13) of said tongue (6).

4. Device as claimed in claim 1, **characterized in** that the hollow sections (4, 5) have a rectangular cross-section and that the tongue (6) on the outer section (5) has a width substantially corresponding to the width of the inner section (4).

5. Device as claimed in claim 1, **characterized in** that the slits (15, 16) delimiting the tongue (6) are mutually parallel and terminate at a distance from the free edge of the outer section (5) substantially corresponding to the width of this section.

Patentansprüche

1. Rückenstütze-Einstellvorrichtung für Stühle, die einen Ständer (2) aufweist, der von dem Sitz oder seinem Unterbau nach oben ausgerichtet ist, um eine Rückenstütze (3) zu tragen, wobei der Ständer (2) wenigstens zwei hohle Profile (4,5) auweist, die wechselseitig teleskopartig verschiebbar und in einer gewünschten Höhe wechselseitig positionsmäßig fixierbar sind mittels wenigstens einer Zunge (6), die in einer Wand des äußeren hohlen Profils (5) an einer Stirnseite (7) davon ausgebildet und mit dieser einstückig ist, wobei die Zunge auch seitlich begrenzt ist durch zwei Schlitze (15,16), die voneinander beabstandet sind und von dem freien oberen Ende (14) dieses hohlen Profils ausgehen, so daß so die Zunge in der Lage ist, mit Unterstützung einer senkrecht zu ihr ausgerichteten Druckkraft das andere hohle Profil (4) gegen das eine (5) mit der Unterstützung der Reibung zwischen der Zunge und der Wandfläche (7') des hohlen Profils (4) zu verriegeln, ohne daß irgendwelche Klemmarkierungen an der Oberfläche dieses Profils (4) zurückbleiben, gegen welches die Kraft ausgeübt wird, und wobei die Zunge (6) in einem Bereich (18) an dem Ende der Schlitze (15,16) ein Loch (17) zwischen diesen Schlitzen aufweist für eine Erhöhung der Flexibilität dieser Zunge, wo sie in die Stirnseite (7) dieses äußeren hohlen Profils (5) integriert ist, wobei das Loch (17) auch für die Aufnahme eines Verriegelungsstiftes (19) genutzt wird, der durch eine Feder weg von diesem Profil (4) vorgespannt ist und nach innen gedrückt werden kann, damit die hohlen Profile (4,5) voneinander getrennt werden können.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Druckkraft durch eine Verriegelungsschraube (9) bewirkt wird, die gegen die Zunge mittels eines Jochs (8) gedrückt werden kann, welches an dem äußeren Profil (5) befestigt ist und die Zunge (6) umgibt.

3. Vorrichtung nach Anspruch 2, dadurch gekennzeichnet, daß die Schrauben (9) mit einem Gewinde (10) versehen ist, das mit einem korrespondierenden Gewinde (11) in dem Joch (8) zusammenwirkt, wobei das freie Ende (12) der Schraube (9) angeordnet ist für ein Drücken gegen einen zentral angeordneten Bereich (13) der Zunge (6).

4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die hohlen Profile (4,5) einen rechteckigen Querschnitt haben und daß die Zunge (6) an dem äußeren Profil (5) eine Breite hat, die im wesentlichen der Breite des inneren Profils (4) entspricht.

5. Vorrichtung nach Anspruch 1, dadurch gekenn-

zeichnet, daß die Schlitze (15, 16), welche die Zunge (6) begrenzen, wechselseitig parallel verlaufen und in einem Abstand von der freien Kante des äußeren Profils (5) enden, der im wesentlichen der Breite dieses Profils entspricht.

Revendications

1. Dispositif d'ajustement du support du dos pour des chaises, comportant un pilier (2) dirigé vers le haut à partir du siège ou de sa sous-structure destiné à porter un support (3) du dos, le pilier (2) comportant au moins deux sections (4, 5) creuses, qui peuvent se déplacer l'une par rapport à l'autre de manière télescopique et peuvent être fixées en position l'une par rapport à l'autre à une hauteur souhaitée à l'aide d'au moins une languette (6) formée dans une paroi de la section (5) creuse extérieure à une de ses faces (7) et d'une pièce avec cette paroi, la languette étant également délimitée latéralement par deux fentes (15, 16) à distance l'une de l'autre et partant de l'extrémité (14) libre supérieure de la section creuse, la languette étant ainsi capable, à l'aide d'une force en compression qui lui est normale, de verrouiller l'autre section (4) creuse à la première (5) à l'aide du frottement entre la languette et la face (7') de paroi de la section (4) creuse, de manière à ne laisser aucune marque de serrage sur la surface de cette section (4), contre laquelle la force est exercée, et, dans une région (18) à la fin des fentes (15, 16), la languette (6) ayant un trou (17) entre les fentes pour accroître la souplesse de la languette, où elle est intégrée dans la face (7) de la section (5) creuse extérieure, le trou (17) étant également utilisé pour recevoir une broche (19) de verrouillage, qui est sollicitée par ressort de manière à s'éloigner de la section (4) et qui peut être pressée vers l'intérieur pour permettre aux sections (4, 5) creuses d'être séparées l'une de l'autre.

2. Dispositif suivant la revendication 1, caractérisé en que la force en compression est créée par une vis (9) de verrouillage, qui peut être poussée contre la languette à l'aide d'un étrier (8) fixé à la section (5) extérieure et entourant la languette (6).

3. Dispositif suivant la revendication 2, caractérisé en ce que la vis (9) est munie d'un filetage (10) coopérant avec un taraudage (11) correspondant dans l'étrier (8), l'extrémité (12) libre de la vis (9) étant disposée pour presser contre une partie (13) située au centre de la languette (6).

4. Dispositif suivant la revendication 1, caractérisé en ce que les sections (4, 5) creuses ont une section en coupe transversale rectangulaire et en ce que la languette (6) sur la section (5) extérieure a une largeur qui correspond sensiblement à la largeur de la section (4) intérieure.

5. Dispositif suivant la revendication 1, caractérisé en ce que les fentes (15, 16) délimitant la languette (6) sont parallèles l'une à l'autre et se terminent à une distance du bord libre de la section (5) extérieure qui correspond sensiblement à la largeur de cette section.

Fig.1

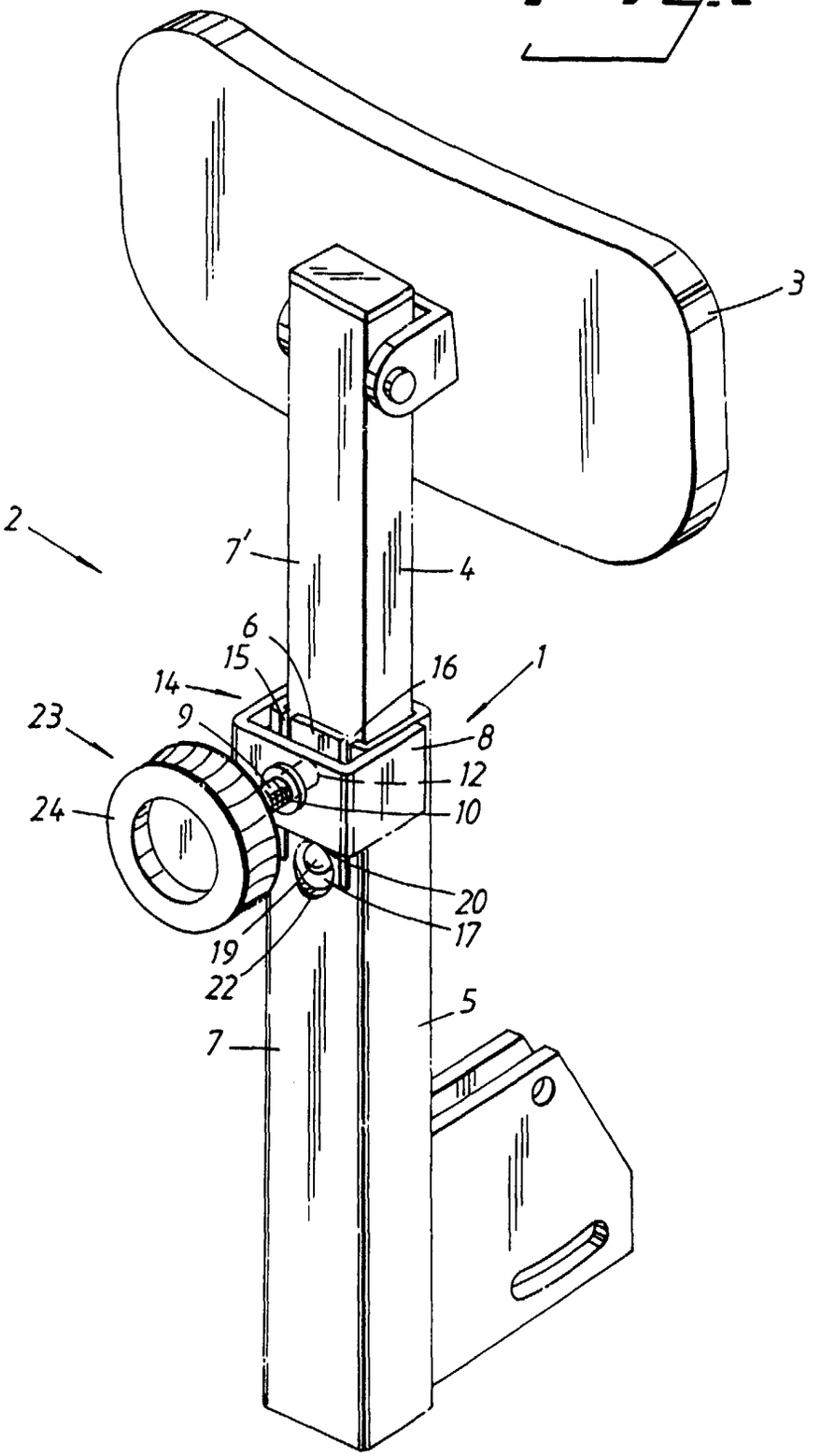

Fig. 2

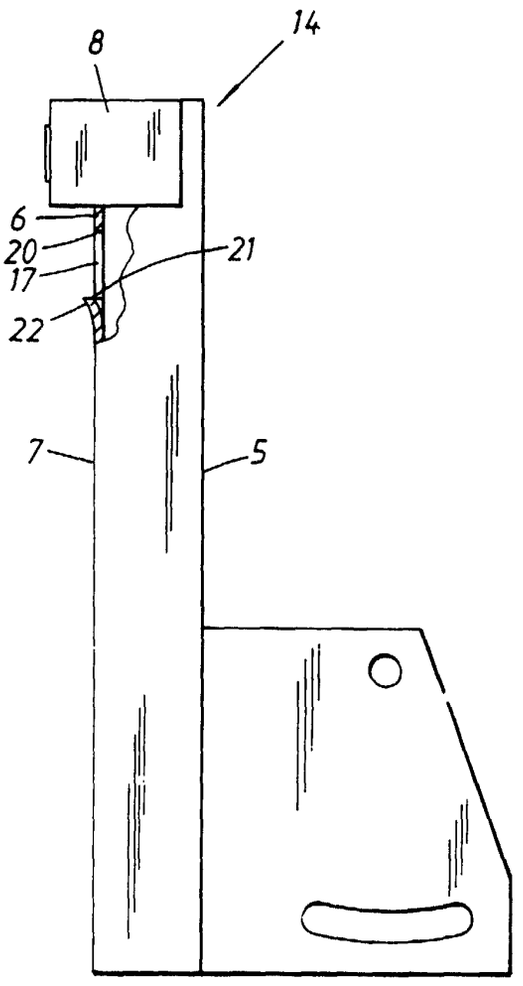

Fig. 3

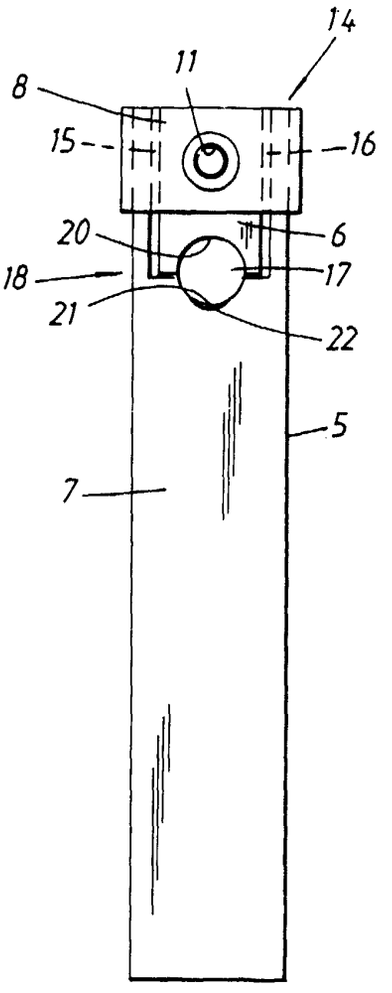

Fig. 4