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

(11) EP 0 818 165 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
14.01.1998 Bulletin 1998/03

(51) Int. Cl.[6]: **A47C 1/035**

(21) Application number: **97202086.1**

(22) Date of filing: **08.07.1997**

(84) Designated Contracting States:
AT BE DE DK ES FR GB IT NL

(30) Priority: **08.07.1996 NL 1003532**

(71) Applicant:
Unimeta Nederland B.V.
7514 AA Enschede (NL)

(72) Inventor: **Kuipers, Rudolf**
7161 BH Neede (NL)

(74) Representative:
Van den Heuvel, Henricus Theodorus
Arnold & Siedsma
Sweelinckplein 1
2517 GK The Hague (NL)

(54) Collapsible chair

(57) The invention relates to a collapsible chair (1) comprising: a seat part (2), a back support (3) connected pivotally to the seat part (2), a leg support (4) connected pivotally to the seat part (2) at a distance from the back support (3), and a frame with front (5) and rear (6) legs connected to the seat part (2), wherein the chair is adjustable between a collapsed position, in which the back support (3) and the leg support (4) are pivoted substantially against the seat part (2), and a lying position in which the leg support (4), the seat part (2) and the back support (3) are located substantially in the same plane.

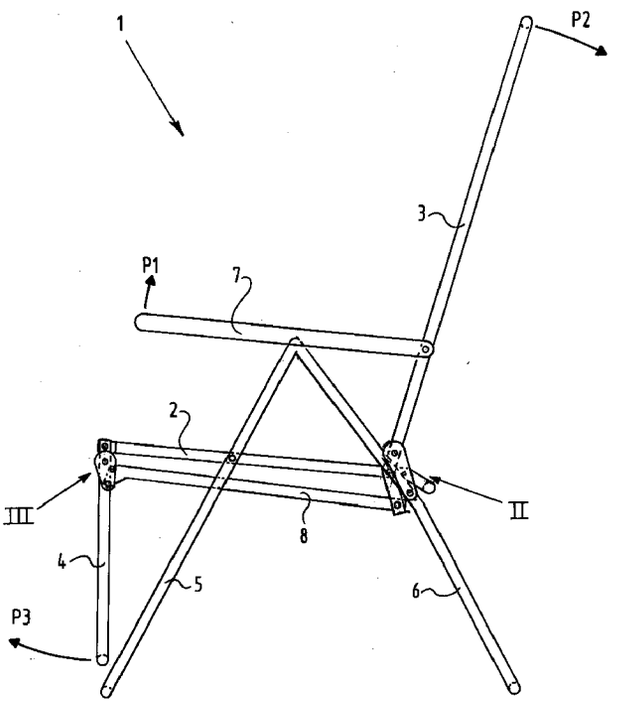

FIG. 1

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Description

The invention relates to a collapsible chair comprising: a seat part, a back support connected pivotally to the seat part, a leg support connected pivotally to the seat part at a distance from the back support, and a frame with front and rear legs connected to the seat part and back support.

Such chairs are used very generally for outdoor application, for instance as garden furniture or other recreational applications. The advantage of this type of chair is that it is possible to sit therein in normal manner and that it can also be adjusted to a position in which the back support is displaced more to the rear and the leg support is displaced partially upward. This provides the user with a comfortable sitting position. The described type of chair is also known under the name of "recliner".

The object of the present invention is to increase the options for use of the described type of chair.

The present invention provides for this purpose a collapsible chair as described in the preamble, wherein the chair is adjustable between a collapsed position, in which the back support and the leg support are pivoted substantially against the seat part, and a lying position in which the leg support, the seat part and the back support are located substantially in the same plane. The collapsible chair preferably comprises two arm rests which are each pivotally connected on one side to the back support and which are connectable on the other side to the frame at an adjustable position. The existing recliner is limited to providing a number of sitting positions. If someone wishes to lie completely flat this is not possible using the recliner but use will have to be made of a so-called stretcher or a mat or towel for placing on the ground. However, using the collapsible chair according to the invention it is also possible to adjust the collapsible chair such that it provides a completely flat supporting surface because leg support, seat part and back support are situated in a single plane. This chair has more options for use than the existing recliners and makes the possession of a stretcher as well as a collapsible chair unnecessary.

The collapsible chair according to the invention is preferably characterized in that the back support is connected to the rear legs of the frame with interposing of at least one back support rod, wherein in a sitting position located between the collapsed position and the lying position a pivot point of the back support rod and the back support is situated above the pivot point of the seat part with the back support, whereby the seat part is raised on one side when the back support is pivoted further to the rear from a sitting position. When the back support is pivoted to the rear it will be held in position partly by the back support rod. A rotating movement herein takes place round the pivot point of the back support rod and the back support. This has the result that the pivot point of the seat part with the back support, which is anyway situated under the pivot point of the back support rod and the back support, is rotated upward. Since the distance between both pivot points is comparatively limited relative to the length of the back support above the pivot point of the back support rod and the back support, the latter therein forms a lever. By displacing the back support to the rear the seat part is displaced upward through a limited distance using the described construction. This upward displacement of the seat part is desirable because for a comfortable sitting position the seat part must incline rearward at a small angle, while in order to obtain a completely flat supporting surface formed by the collapsible chair a substantially horizontally placed seat part is also required. It will be apparent here that it must be possible for the back support to be pivoted rearward to a completely horizontal position. Once the back support has reached this completely horizontal position the seat part must be lifted up just so far on the side where it is pivotally connected to the back support that the seat part is also situated in a horizontal position. Both chair parts, seat and back support, are thus situated in one horizontal plane.

Preferably fixed to the back support is a link with a projecting curved contact surface for support of the back support on the rear leg by this curved contact surface. This curved contact surface can for instance be formed by a pin, the outer side of which is for instance formed by a rotatable roller. Because the seat part is connected at the front at a fixed position to the frame, i.e. the front legs of the frame, the pivot point of the seat part and the back support will be moved a limited distance to the rear when the back support is pivoted rearward. The changing distance between the pivot point of the back support rod with the back support will therefore have to be compensated by the distance at the position where the curved contact surface supports on the rear leg and said pivot point of back support rod and back support. To this end the curved contact surface must be given a form which depends on the dimensioning of the different chair elements. A very simple solution is provided by embodying the curved surface in the form of a pin. Although a very small displacement of the rear legs will herein be realized when the back support is displaced, this is found in practice not to be irksome. For an optimal construction wherein the distance between front legs and rear legs remains constant irrespective of the position of the back support, a contact surface of more complex form must, as described above, be fixed rigidly to the back support.

The embodiment is preferably further characterized in that close to the underside a coupling bar is fixed to the back support, which bar is pivotally connected on the other side to a leg support rod, which leg support rod is also pivotally connected to the leg support. The side of the coupling bar facing toward the leg support herein preferably comprises an engaging element for engaging on the leg support, which engaging element is situated in the sitting and lying position above the pivot

point of the leg support rod and the coupling bar. This engaging element may for instance be in the form of a pin. In a preferred embodiment the engaging element and the pivot point with the leg support are integrated in a widened head which forms part of the coupling bar and is situated on the side thereof facing toward the leg support. When the back support is displaced to the rear the coupling bar, which is preferably situated under the seat part, moves forward. The engaging element of the coupling bar herein presses the leg support forward while this movement also results in the leg support rod being displaced. The rotation of the leg support and the leg support rod fixed thereto has the result that the side of the coupling bar facing toward the leg support is pulled upward by the leg support rod. This results in the coupling bar being displaced such that the engaging element is displaced upward from a level located clearly below the seat part to a level immediately below the seat part (this when the chair is situated in a completely flat position). This displacement of the engaging element is desirable to carry the leg support to a fully horizontal position. In the first place, i.e. when the chair is situated in sitting position, a moment is in any case required on the seat support by exerting a force on the seat support at a distance under the pivot point of the leg support with the seat part, while for the lying position a support of the leg support is required immediately under the leg support, i.e. at a level immediately below the pivot point of the leg support with the seat part. For this purpose the engaging element is displaced upward during forward movement of the coupling bar by the leg support rod.

The present invention will be further elucidated with reference to the non-limitative embodiment shown in the following figures. Herein:

figure 1 shows a schematic side view of a collapsible chair according to the invention in the sitting position,
figure 2 shows a perspective view of the connecting construction of frame, seat part and back support of the collapsible chair of figure 1,
figure 3 shows a perspective view of a connecting construction of frame, seat part and leg support of the collapsible chair of figure 1, and
figure 4 is a schematically depicted side view of the collapsible chair in lying position.

Figure 1 shows a collapsible chair 1 in sitting position provided with a seat part 2, a back support 3 and a leg support 4 which in this position has no function. The supporting surfaces 2, 3, 4 are supported by a frame of which a front leg 5 and a rear leg 6 can be seen here. Engaging on front leg 5 and rear leg 6 is an arm rest 7 which is also pivotally connected to back support 3. Finally, this figure clearly further shows a coupling bar 8 with which back support 3 is connected to leg support 4. The chair 1 shown in this figure is collapsible as is usual for existing recliners. By lifting arm rest 7 as according to arrow P1 and exerting a rearward force on back support 3 it is also possible to displace the back support a limited distance to the rear as according to arrow P2. Leg support 4 will herein be displaced a limited distance forward by coupling bar 8 as according to arrow P3. These displacements result in a more relaxed sitting position wherein the legs of the person seated on chair 1 are also supported. This is all very comparable with the recliners known in the prior art.

Figure 2 shows a connecting construction of seat part 2, back support 3 and rear leg 6 according to the invention. Seat part 2 and back support 3 are shown in this figure by means of bars but it should be apparent that these bars support for instance cushions or a fabric with which the actual seat part 2 and back support 3 are realized. However, for the sake of clarity these are omitted from this figure. Arranged between rear leg 6 and back support 3 is a back support rod 9 which is pivotally connected to rear leg 6 with a pivot point 10, embodied here as a pin, and connected to back support 3 by means of a pivot point 11. When back support 3 is pivoted rearward the pivot point 11 will be kept to height by back support rod 9 whereby a pivot point 12 forming the connection between seat part 2 and back support 3 will be displaced upward. This provides the desired functionality of upward displacement of the seat part 2 on one side during pivoting of back support 3 to the rear. For a good support of back support 3 on rear leg 6 a link 13 is fixed to back support 3, to which link is fixed a curved contact surface 14, here in the form of a pin, which supports on rear leg 6. Finally, this figure shows that the underside of back support 3, i.e. a part of back support 3 situated below pivot point 11 of back support 3 with back support rod 9, is connected by means of a pivot point 15 to coupling bar 8 for displacing the leg support 4 not shown in this figure.

Figure 3 shows the connecting construction between leg support 4 and seat part 2. A leg support rod 16 is fixed to leg support 4 with interposing of a pivot point 17, here in the form of a pin. A pivot point 18 engages coupling bar 8 on leg support rod 16. Coupling bar 8 is herein provided with a widened head 19. Pivot point 18 is embodied such that it can be moved along the leg support 4. Also situated in the widened head 19 of coupling bar 8 is an engaging element 20 with which coupling bar 8 supports on leg support 4. When coupling bar 8 is moved forward the engaging element 20 will cause leg support 4 to pivot forward. Further progression of bar 8 results in the leg support rod 16 pivoting forward whereby the widened head 19 is pulled obliquely upward. Engaging element 20 will consequently also be moved upward to a position in which it is situated just below the level of the seat part 2 in lying position of collapsible chair 1. Leg support 4 is in that case pivoted forward round the pivot point 21 of seat part 2 and back support 3 such that it lies in a fully horizontal position. See the following figure herefor.

Figure 4 finally shows collapsible chair 1 in lying position wherein leg support 4, seat part 2 and back support 3 are located substantially in the same plane. It is also noted here that the attachment point of arm rest 7 to the front leg 5 and rear leg 6 is emphatically changed relative to the attachment point as shown in figure 1. Arm rest 7 must be provided for this purpose with a lock construction which enables realization of such large displacements.

Claims

1. Collapsible chair comprising: a seat part, a back support connected pivotally to the seat part, a leg support connected pivotally to the seat part at a distance from the back support, and a frame with front and rear legs connected to the seat part and back support, wherein the chair is adjustable between a collapsed position, in which the back support and the leg support are pivoted substantially against the seat part, and a lying position in which the leg support, the seat part and the back support are located substantially in the same plane.

2. Collapsible chair as claimed in claim 1, wherein the collapsible chair comprises two arm rests which are each pivotally connected on one side to the back support and which are connectable on the other side to the frame at an adjustable position.

3. Collapsible chair as claimed in claim 1 or 2, wherein the back support is connected to the rear legs of the frame with interposing of at least one back support rod, wherein in a sitting position located between the collapsed position and the lying position a pivot point of the back support rod and the back support is situated above the pivot point of the seat part with the back support, whereby the seat part is raised on one side when the back support is pivoted further to the rear from a sitting position.

4. Collapsible chair as claimed in claim 3, wherein a link is fixed to the back support with a projecting curved contact surface for support of the back support on the rear leg by this curved contact surface.

5. Collapsible chair as claimed in claim 4, wherein the curved surface is formed by a pin.

6. Collapsible chair as claimed in claim 5, wherein the pin is formed by a roller rotatable round a shaft rigidly connected to the link.

7. Collapsible chair as claimed in any of the foregoing claims, wherein close to the underside a coupling bar is fixed to the back support, which bar is pivotally connected on the other side to a leg support rod, which leg support rod is also pivotally connected to the leg support.

8. Collapsible chair as claimed in claim 7, wherein the side of the coupling bar facing toward the leg support comprises an engaging element for engaging on the leg support, which engaging element is situated in the sitting and lying position above the pivot point of the leg support rod and the coupling bar.

9. Collapsible chair as claimed in claim 8, wherein the engaging element is in the form of a pin.

10. Collapsible chair as claimed in claim 8 or 9, wherein the side of the coupling bar facing toward the leg support comprises a widened head in which the engaging element and the pivot point with the leg support are received at a mutual distance.

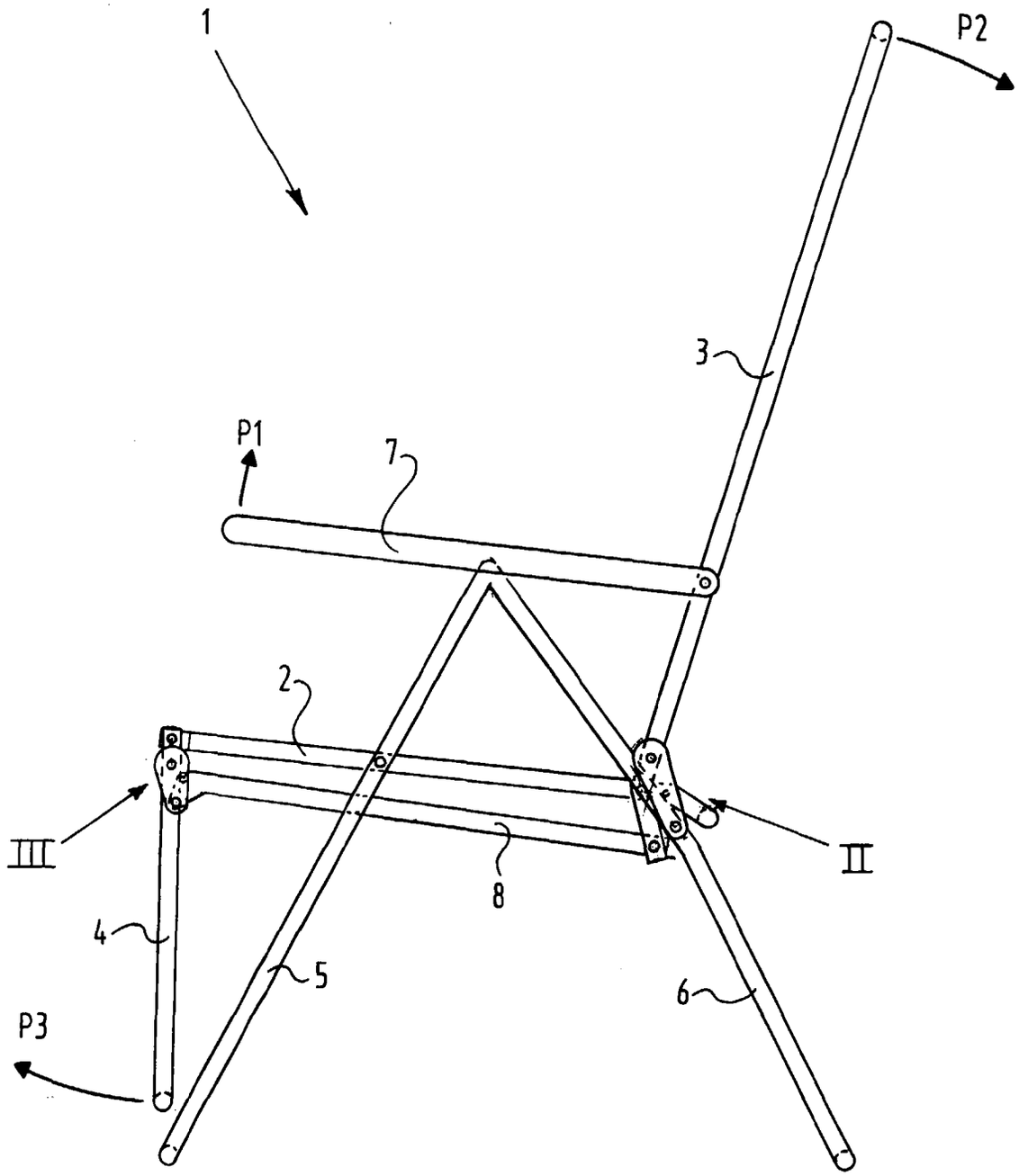

FIG. 1

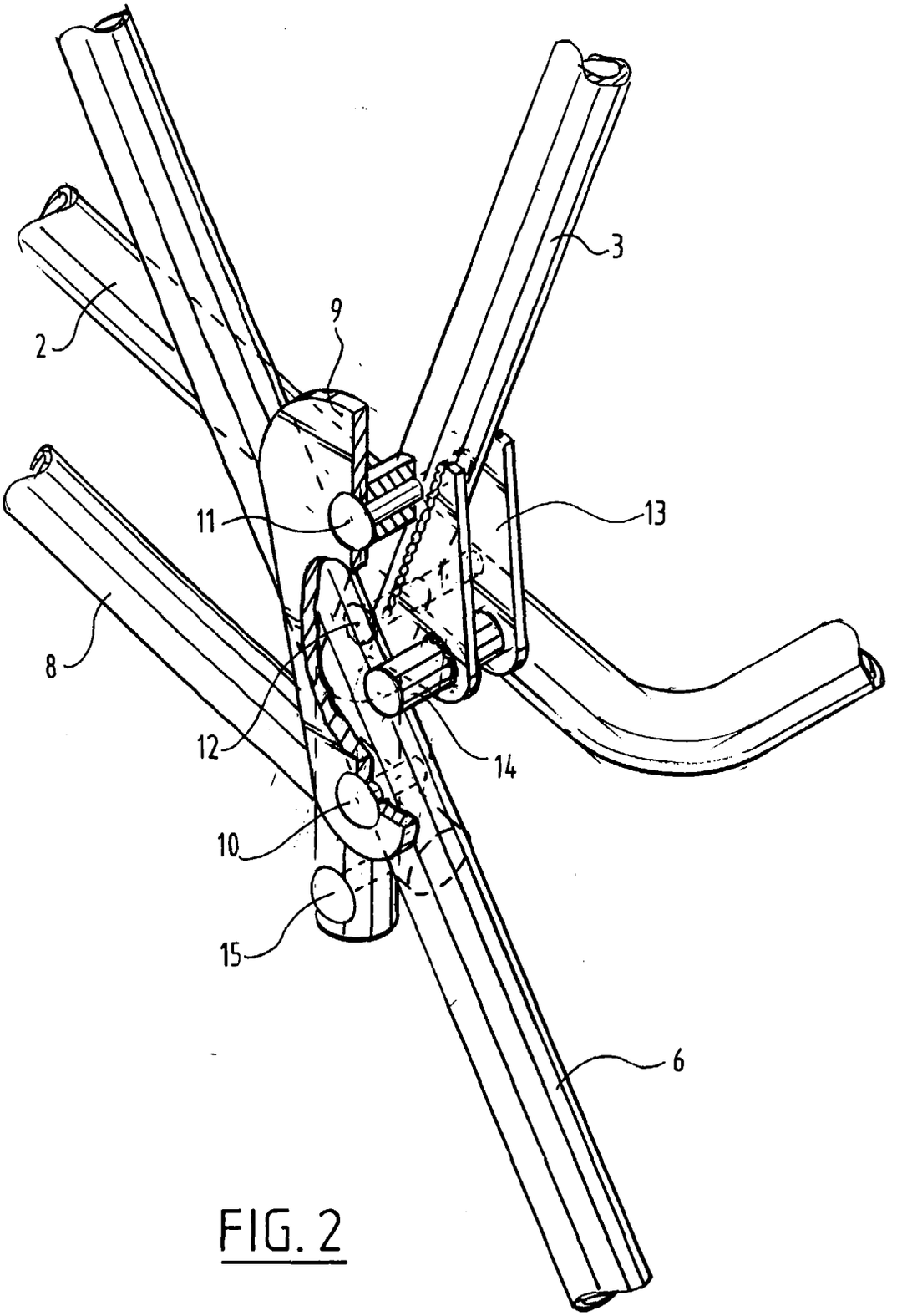

FIG. 2

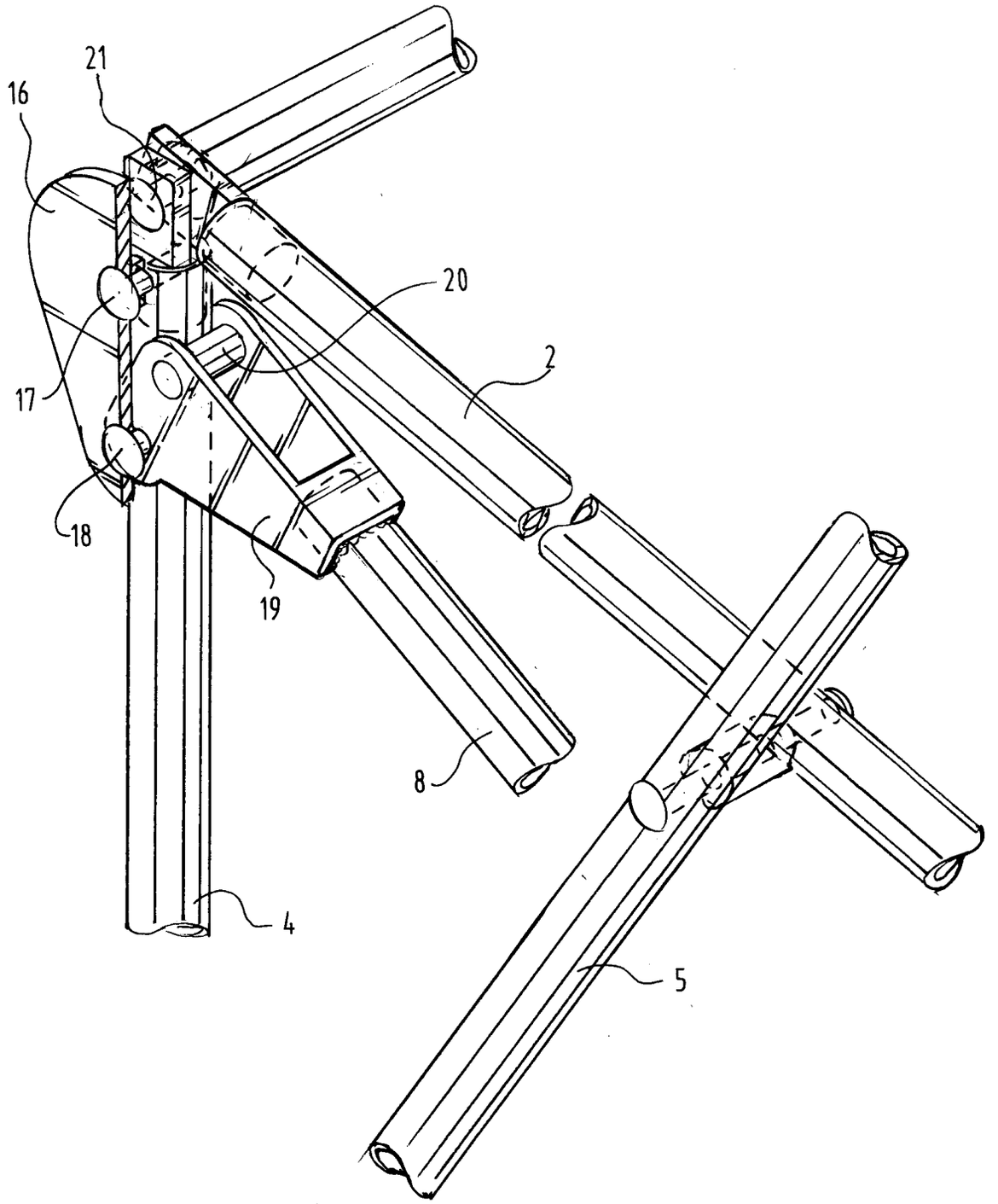

FIG. 3

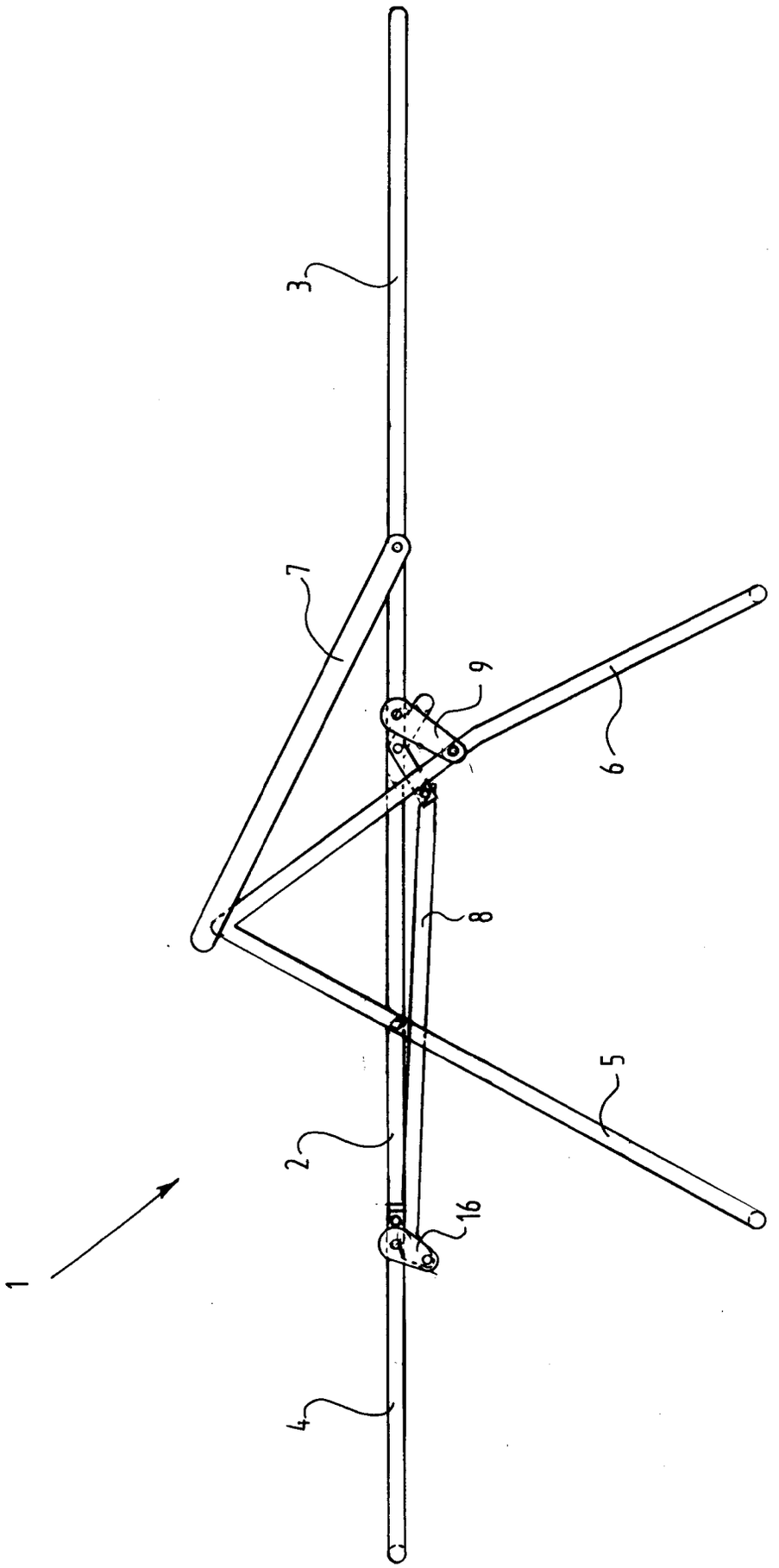

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 2086

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR 2 112 289 A (MAX MEIER+CO. GMBH METALLWARENFABRIK) 16 June 1972	1,2,7	A47C1/035
A	* page 5, line 1 - line 25; figure 1 *	3	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 September 1997	Mysliwetz, W

CATEGORY OF CITED DOCUMENTS

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