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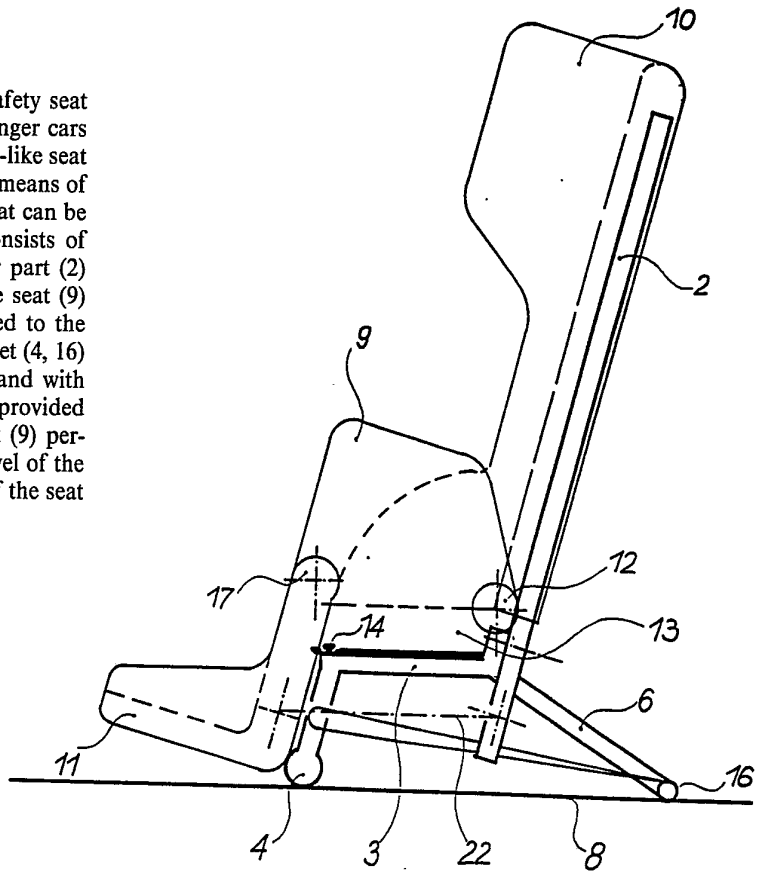
(54) Title: SAFETY SEAT FOR CHILDREN, ESPECIALLY IN PASSENGER CARS

(57) Abstract

The invention relates to a safety seat for children, in particular in passenger cars which is provided with an armchair-like seat fixed to the back seat of the car by means of a frame construction. The safety seat can be characterized in that the frame consists of two parts (2, 3), namely the upper part (2) supporting the head-support of the seat (9) and of the lower part (3) connected to the upper part (2) and provided with feet (4, 16) supporting the seat from beneath and with stiffening means (5, 6), further it is provided with a mechanism turning the seat (9) perpendicularly to the direction of travel of the car and putting the head-support of the seat (9) in a horizontal position.



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SAFETY SEAT FOR CHILDREN, ESPECIALLY IN PASSENGER CARS

Technical field

The invention relates to a safety seat for children, especially in passenger cars, which is provided with an armchair-like seat fixed to the back seat of the car by means of a frame construction.

Background Art

Several safety seats for children are well known, which are aimed at the most safe placing and transport of children in cars.

Said known seats for children can be ordered essentially to two groups. The first group is formed by the seats which are arranged mainly on the back seat and the child sitting therein is facing the direction of travel of the car.

The other group includes the seats for children which have been arranged and fixed so, that the child sitting therein is either turning the back to the direction of travel or is sitting sideways. Generally, in case of the aforementioned solutions the seat for the child used to be fixed on the part behind the fore-seats of the car.

Common disadvantage of all known seats for children lies in that the child may occupy one single position only. As it is well known, generally children - mainly the smaller ones - are sleeping through the major part of the travel. The child - excited by the adventure of travelling - gets sleepy upon the monotonous "murmuring" of the car and in the majority of cases the child falls asleep indeed, in particular in course of a long-distance travel.

In this case the careful parents try to create the most comfortable position for the child. With the known safety seats change of position of the cild can be achieved by tilting slightly backwards the seat or in the majority of cases the car has to be stopped and the child is allowed to lie down on the back-seat; now, this action disturbes generally the child, who is awaked from sleep, it has to be placed repeatedly into the seat involving difficulties due to the child's whining. Safety--seats for children are also known, by the aid of which the child can be brought into a horizontal position by

bending the feet of the seat, at the same time the child is still facing the direction of travel, simultaneously changing of the seat demands a considerable space requirement, feasible only with large luxury cars.

The aim of the invention is to develop a safety seat for children in cars, by the aid of which disadvantageous features of known seats can be eliminated, at the same time comfortable and safe travel can be assured for small children too.

Disclosure of Invention

The invention is based on the recognition, in so far as that turning the seat from the position facing the direction of travel into another position can be realized without the removal of the child from the seat, even while driving, with a single movement of the hand, in such a manner conditions of comfortable travel can be established.

The aim set for the invention is realized by means of a safety seat, with which the frame construction consists of two parts, namely the upper part supporting the back of the seat and the lower part connected to the upper part and provided with feet supporting the seat from beneath and stiffening means; additionally, there is a mechanism which is turning the seat perpendicularly to the direction of travel and putting the head-support of the seat in a horizontal position.

In a preferred embodiment of the invention the turning mechanism is built-up of constructions with two pairs of displaced centres of rotation.

In another preferred embodiment of the safety seat according to the invention, one of the constructions of the mechanism for turning the seat includes an element

each with the displaced centres of rotation and it is formed as means interconnecting the upper and lower part of the frame, consisting of a piece of pipe fixed to the lower part of the frame and lying perpendicularly to the plane of the seat, further, of a pin fixed on said pipe and the pin is formed so, as to be displaced on the upper part of the frame, in a groove formed perpendicularly to the plane of the upper part.

In another preferred embodiment of the seat for children in accordance with the invention one of the elements of the mechanism for turning the seat consists of an element having been formed on the bottom part of the frame and being movable in an arcuated groove on the bottom of the seat, while the other element is a hinge, arranged between the back and the seating surface of the seat.

In a further preferred embodiment of the safety seat according to the invention the seat can be adjusted in height and it is provided with a safety-belt fixed on three points.

Brief Description of Drawings

The invention will be described in details with reference to the drawings enclosed, wherein:

Fig. 1 shows a side view of a safety seat for children in accordance with the invention,

Fig. 2 illustrates a front-view of the safety seat according to Fig. 1 in a turned position,

Fig. 3 shows the top-view of the frame construction of the safety seat for children, as to be seen in Fig. 2,

Fig. 4 shows an enlarged detail A of the frame construction according to Fig. 3,

Fig. 5 shows a side-view of another possible embodiment of the invention.

Best Mode of Carrying out the Invention

Fig. 1 illustrates a safety seat for children according to the invention, showing the side-view thereof, when the child seated in the safety chair is sitting so, as facing the direction of travel of the car, in the same way, as the other persons travelling in the car. Essentially, the safety seat for children - as illustrated in Fig. 1 - is composed of the frame 1 consisting of two parts, namely the lower part 3 and the upper part 2, as well as of the seat 9 fixed to the frame 1 and can be turned therewith. The upper part 2 of the frame 1 supports the back-part of the seat 9 provided with a head-support 10, while the lower part - connected to the upper part 2 - supports the sitting surface 13 of the seat 9, provided with the supporting feet. Between the head-rest 10 of the seat 9 and the sitting surface 13, as well as between the sitting surface 13 and the supporting feet 11 there are the hinges 12 resp. 17 to be found, wherein the hinge 12 partakes in establishing the turned horizontal position of the seat 9, while the hinge 17 serves for lifting the foot-support.

The lower part 3 of the frame 1 is provided with feet 4 and 16, as well as with stiffening means 5, 6, by the aid of which the seat 9 is fixed to the back-seat 8 of the car, by means of a traditional safety-belt mounted onto the seat. The upper part 2 of the lower part 3 of the frame 1 are provided with a turning mechanism, which turns the seat 9 - in a way to be described later - into a position lying perpendicularly to the direction of travel of the car. Essentially, this turning mechanism contains two constructions with displaced centres of rotation.

Fig. 2 illustrates the safety seat for children according to Fig. 2 in its turned position, lying perpendicularly to the direction of travel of the car, wherein the child in the seat occupies the lying horizontal position.

Fig. 3 shows the top view of the frame 1 of the safety-seat according to Fig. 2. Turned position of the safety seat will be achieved by the hinged connection between the upper part 2 and the lower part 3 of the frame 1, this connection is formed by the pin 21 arranged in a piece of pipe 18 formed in the lower part 3 of the frame 1 and moving in a groove 20 having been formed on the upper part 2 of the frame 1. Furtheron, Fig. 3 illustrates in a well percipible way the fixed arrangement of the safety seat for children in accordance with the invention, namely the rear foot 16 of the lower part 3 of the frame 1 is bearing up against the connection (meeting) of the seat and head-rest part of the car. Between the rear foot 16 and the fore feet 4 there are stiffening means 6, while the feet 4 are provided with the stiffening means 5. As already mentioned before, the seat is fixed by means of the safety-belt 7 fixed to the back seat of the car, and so, in so far as the safety--belt of the car is led through the stiffening means 5 interconnecting the feet 4 of the lower part 3 of the frame 1 and it is fixed thereon. In such a manner the mode of fixation yields the proper safety, even at a sudden braking of the car, as resulting from the fixing construction of the safety-belt the seat of the child is kept in a fixed position.

Fig. 4 is showing the enlarged detail A of Fig. 3, incorporating essentially one of the constructions of the

turning mechanism, containing one element each of the pairs of the displaced centre of rotation -- so the pin 21 moving in the groove 20, the other one the pin 21 rotating in the piece of pipe 18 - and which consists of the piece of pipe 19 belonging to the upper part 2 of the frame 1 and of the piece of pipe 18 fixed to the lower part 3 of the frame 1, while the pin 21 is connected to the piece of pipe 18, said pin 21 is moving in the groove 20 of the pipe 19, thereby turning the frame 1 and thus putting the seat in a horizontal position.

Mode of operation of the safety seat for children according to the invention will be detailed on basis of Figs 1 to 3.

As a first step the seat 9 should be fixed to the back seat 8 of the car in compliance with the position of travel, as described previously, by means of the safety-belt 7 belonging to the seat 8 of the car and so, in so far as the safety-belt 7 is led through the stiffening means 5 of the frame 1 of the seat 9, thereafter the safety-belt 7 is fixed in the desired position. While positioning the seat 9 in the way, as described above, the foot 16 of the frame is bearing up against the meeting point between the sitting part and the head-rest of the back-seat 8 of the car (see figure 3).

After having fixed the seat 9, the child can be placed into the seat 9 and the safety-belt 7 should be adjusted on the seat 9 in compliance with the height of the child, thereafter the safety-belt 22 is to be fixed. In course of fixing the safety-belt, one has to take care that freedom of motion of the child should be restricted to the possibly least extent, at the same time all the

requirements in respect to safety-belts should be met. In this position of the seat 9 the child is facing the direction of travel and sees the traffic through the first wind-shield.

Generally, in course of travelling in a car - mainly in course of long-distance travels - the child becomes sleepy upon the murmuring sound of the motor. When having a traditional safety seat and we intend to bring the child in a more comfortable lying position to enable sleep, we lift the child from the seat 9 and lay it down on the back-seat of the car. However, changing the position awakes mostly the sleeping child.

By using the safety seat according to the invention, this problem can be fully eliminated, as by turning the seat 9 with one motion of the hand perpendicularly to the direction of travel, the child is already in its comfortable position without taking it out from the seat.

Turning can be realized so, in so far as - as a first step - the seat is turned with one single motion of the hand, so the child is brought in a lying horizontal position, perpendicularly to the direction of travel. In course of turning the pin 14 on the lower part 3 of the frame 1 will be displaced in the curved groove 15 having been formed on the lower part of the seat 9, thereafter further forced motions are taking place. In such a manner by means of the construction lying between the upper part 2 and the lower part 3 of the frame 1 -- as described in connection with Fig. 4 - the supporting part of the seat 9 gets into the horizontal position, simultaneously the hinge 12 between the head-support of the seat 9 and the sitting surface 13 opens.

Simultaneously, the hinge 17 between the sitting surface of the seat 9 and the foot-support 11 also opens, the foot-support 11 is lifted. Opening of the hinge 17 will be realized by means of the interconnecting element 22 between the upper part 2 of the frame 1 and the foot--support 11.

It goes without saying that the safety-belt of the seat 9 remains in a fastened state even after having turned the seat 9, as a consequence the lying child is protected against the danger caused by sudden braking.

As a consequence of increased number of car accidents, regulations directed to safety became more rigorous. In such a manner in certain countries only those types of safety seats for children are allowed, in which the child is sitting with its back to the direction of travel.

The seat for children can be formed so, as to meet the requirements by means a simple structural change, in so far as in course of travel the child sits with its back to the direction of travel.

Such an embodiment is shown in Fig. 5. In comparison to the embodiments according to Figs. 1 to 4, the difference lies in that the height of the feet 4 are somewhat increased and said feet 4 are continued in the support element 23. Said supporting elements 23 are bearing up against the head-rest 24 of the back seat 8. The safety seat is also fixed at the safety belt of the back seat, and so, in so far as the safety-belt is led through the additional stiffening means interconnecting the stiffening means 6 and being parallel with the rear feet 16, thereafter the safety belt is to be fixed in the desired position.

Further, the safety seat for children as illustrated in Fig. 5, for transporting the child with its back to the direction of travel, corresponds completely to the embodiments according to Figs 1 to 4 in respect to layout and function, so detailed description thereof is considered as superfluous.

The advantage of the safety seat for children according to the invention lies in that meanwhile driving, with one single motion of the hand, the driver can put the seat in the desired position, while during the travel the maximal safety can be assured for the child, whether it is sitting or lying.

A further advantage of the safety seat according to the invention lies in that it can be simply assembled into any car type. In case, if there is no safety belt on the back seat, it seems to be suitable to get one, as later, when the child is growing and the safety seat becomes superfluous, the safety belt can be advantageously used to assure safety of those sitting on the back seat.

CLAIMS

1) Safety seat for children in passenger cars, which is provided with an armchair-like seat fixed to the back seat of the car by means of a frame construction, characterized in that the frame (1) consists of two parts (2, 3), namely the upper part (2) supporting the head-support of the seat (9) and of the lower part (3) connected to the upper part (2) and provided with feet (4, 16) supporting the seat from beneath and with stiffening means (5, 6), further, the frame is provided with a mechanism turning the seat (9) perpendicularly to the direction of travel of the car and putting the head-support of the seat (9) in a horizontal position.

2) Safety seat for children as claimed in claim 1, characterized in that the mechanism turning the seat consists of constructions with two pairs of displaced centre of rotation.

3) Safety seat for children as claimed in claim 1 or 2, characterized in that one of the constructions of the mechanism performing turning of the seat (9) - which incorporates each an element of the two pairs of displaced centre of rotation - is a construction interconnecting the upper part (2) and the lower part (3) of the frame (1), consisting of a piece of pipe (18) fixed to the lower part (3) of the frame (1) and arranged perpendicularly to the plane of the seat (9), as well as of a pin (21) fixed in the pipe (18) and the pin (21) is connected on the upper part (2) of the frame (1) displaceably in a groove (20) being perpendicular to the plane of the upper part (2).

4) Safety seat for children as claimed in any of the claims 1 to 3, characterized in that one element of the pair of the mechanism for turning the seat is formed of an element (14) arranged on the lower part (3) of the frame (1) and being displaceable in the curved groove (15) on the bottom part of the seat (9), while the other element is formed as a hinge (12) between the head-support (10) and the sitting surface (13).

5) Safety seat for children as claimed in any of the claims 1 to 4, characterized in that the seat (9) is provided with a safety-belt fixed on three points, which can be adjusted in height.

6) Safety seat for children as claimed in any of the claims 1 to 5, characterized in that height of the feet (4) has been somewhat increased and the feet (4) are continued in the support element (23) which is bearing up against the head-support (24) of the back seat (8).

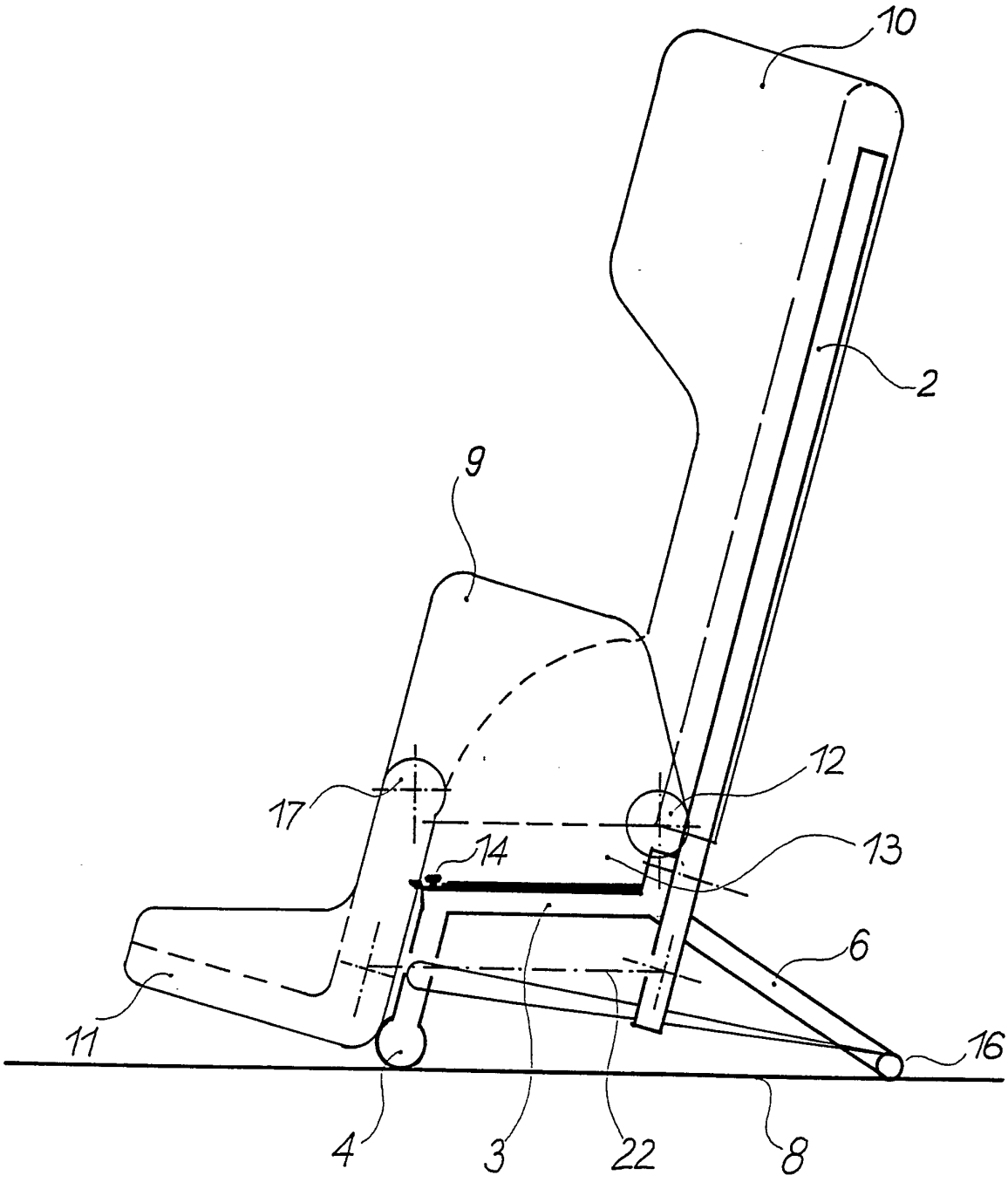

Fig. 1.

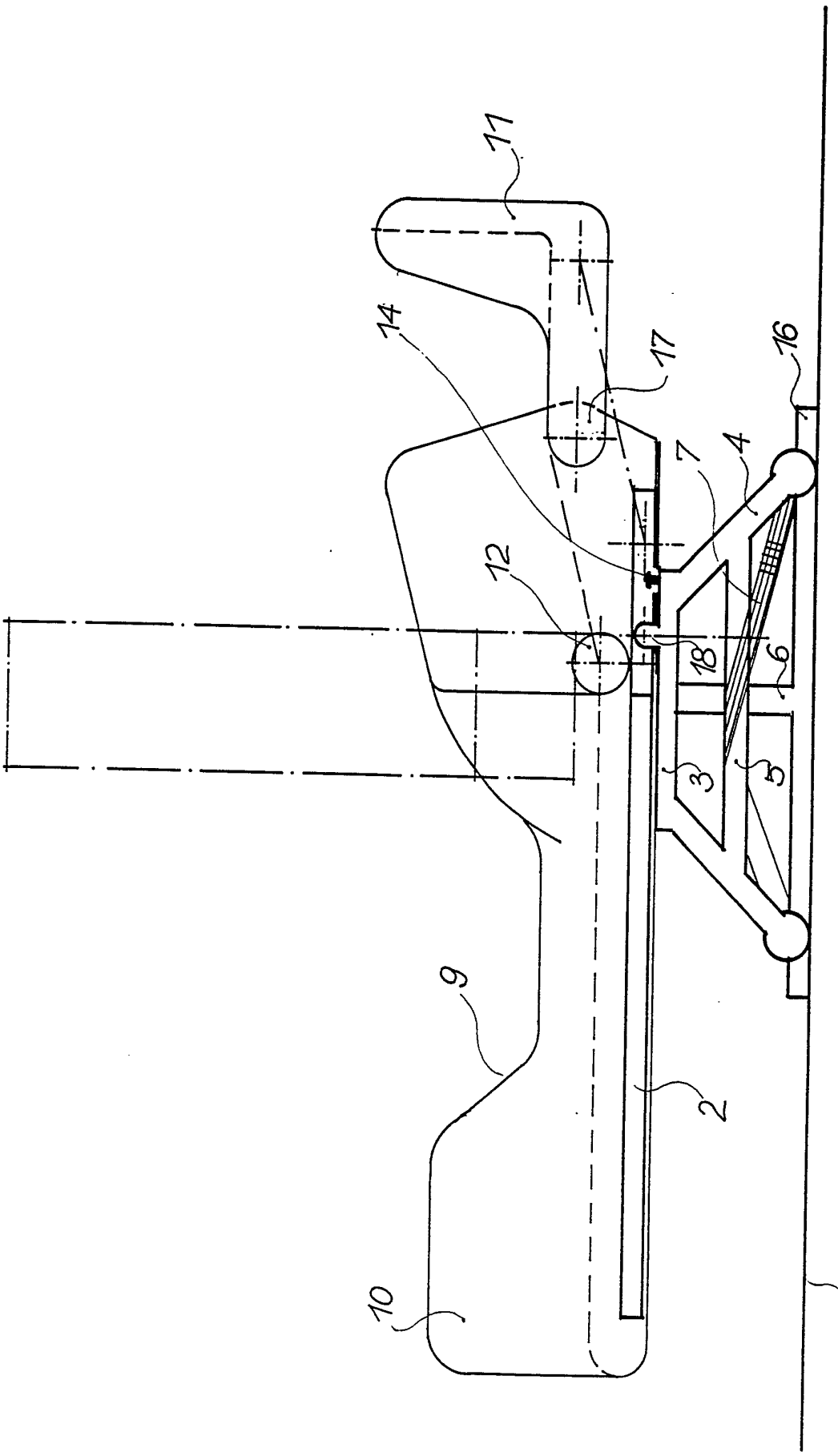

Fig. 2.

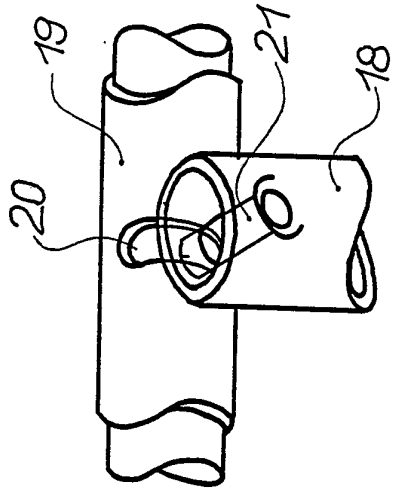

Fig. 4.

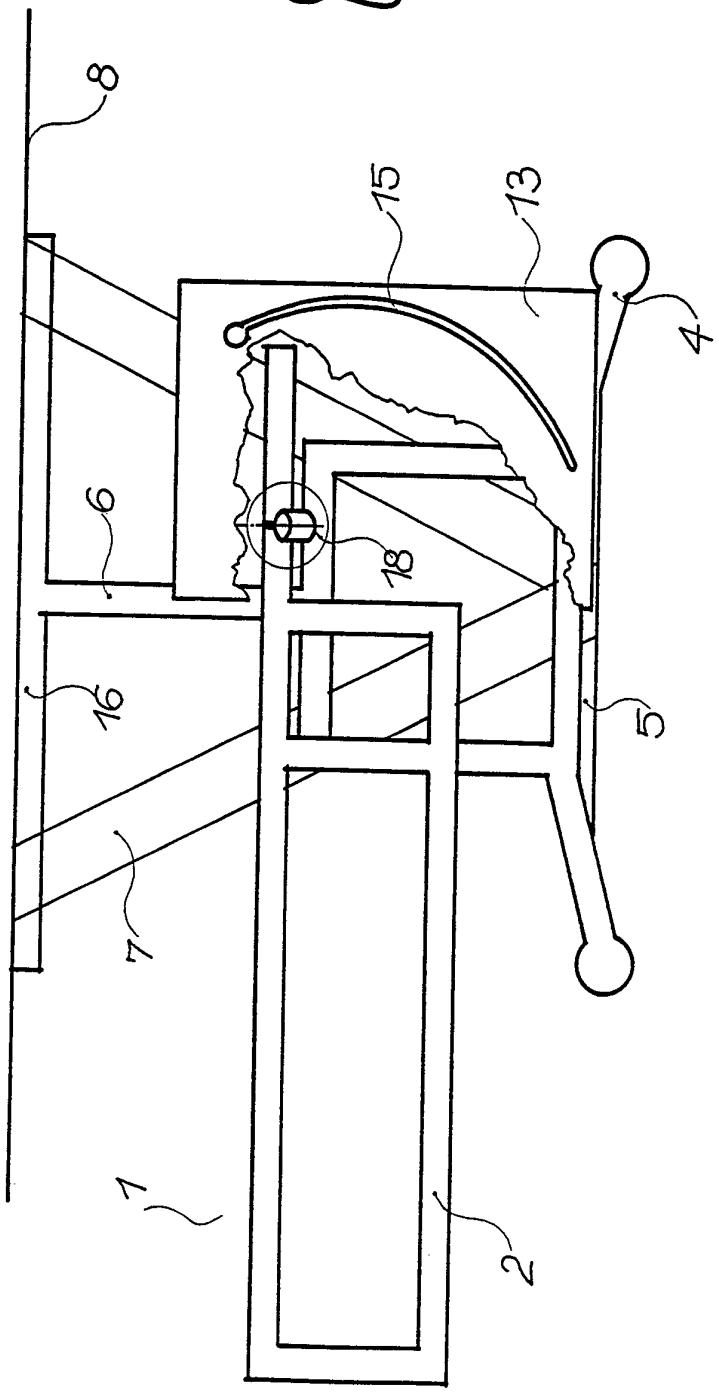

Fig. 3.

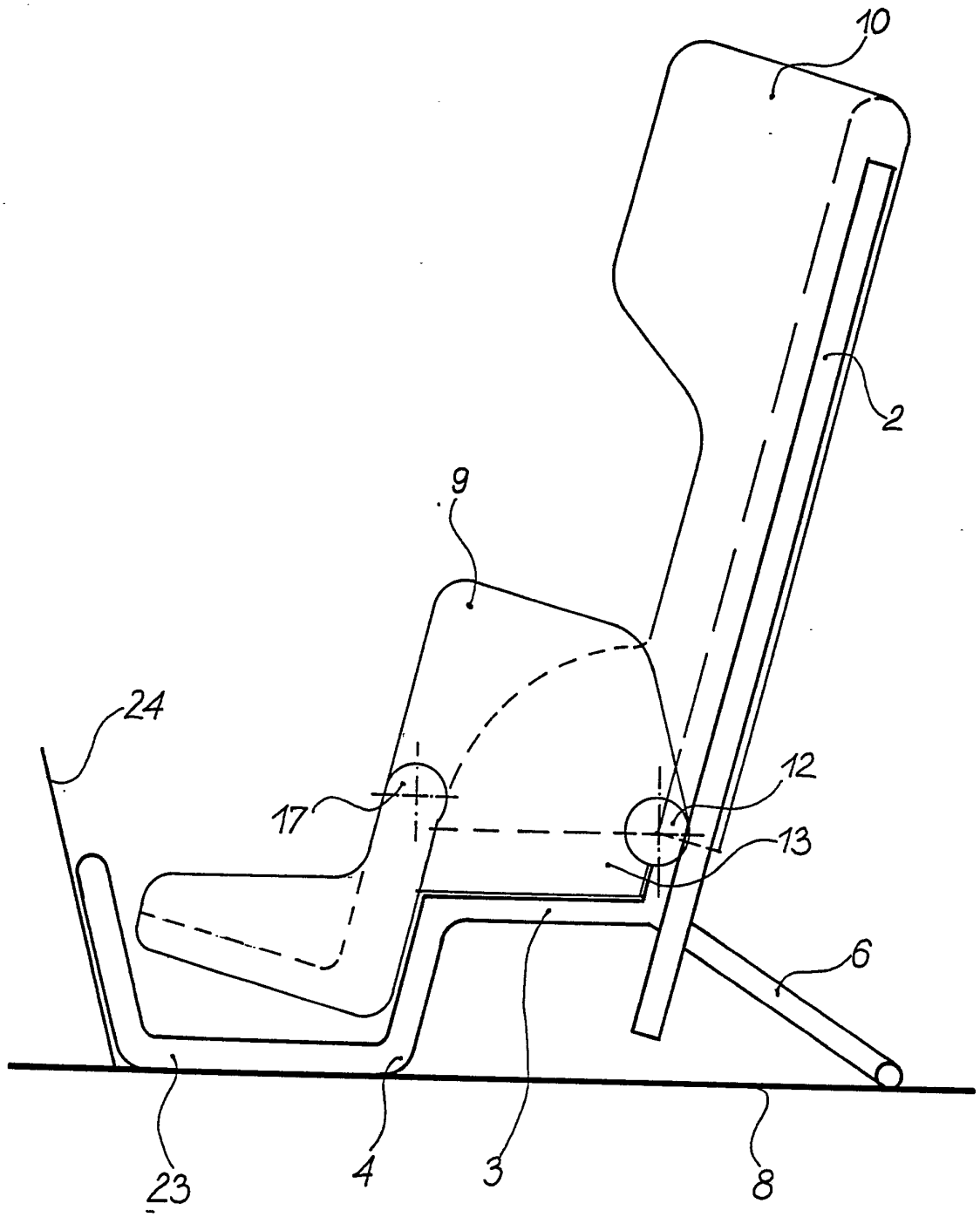

Fig. 5.

INTERNATIONAL SEARCH REPORT

International Application No PCT/HU 90/00041

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[5]: B 60 N 2/26

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
Int. Cl.[5]:	B 60 N 2/00, 2/24, 2/26; A 47 D 1/00, 1/10

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [10]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
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A	EP, A1, 0 009 439 (SOCIÉTÉ ANONYME DITE: BABY RELAX) 02 April 1980 (02.04.80), see fig. 1.	(1,5)
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A	DE, A , 2 221 489 (ETABLISSEMENTS MORELLET-GUERINEAU) 15 November 1973 (15.11.73), see totality.	(1)

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
07 September 1990 (07.09.90)	12 September 1990 (12.09.90)
International Searching Authority	**Signature of Authorized Officer**
AUSTRIAN PATENT OFFICE	Müller

Anhang zum internationalen Recherchenbericht über die internationale Patentanmeldung Nr.

Annex to the International Search Report on International Patent Application No. PCT/HU 90/00041

Annexe au rapport de recherche internationale relatif à la demande de brevet international n°.

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