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**EP 1 714 589 A1**

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## EUROPEAN PATENT APPLICATION

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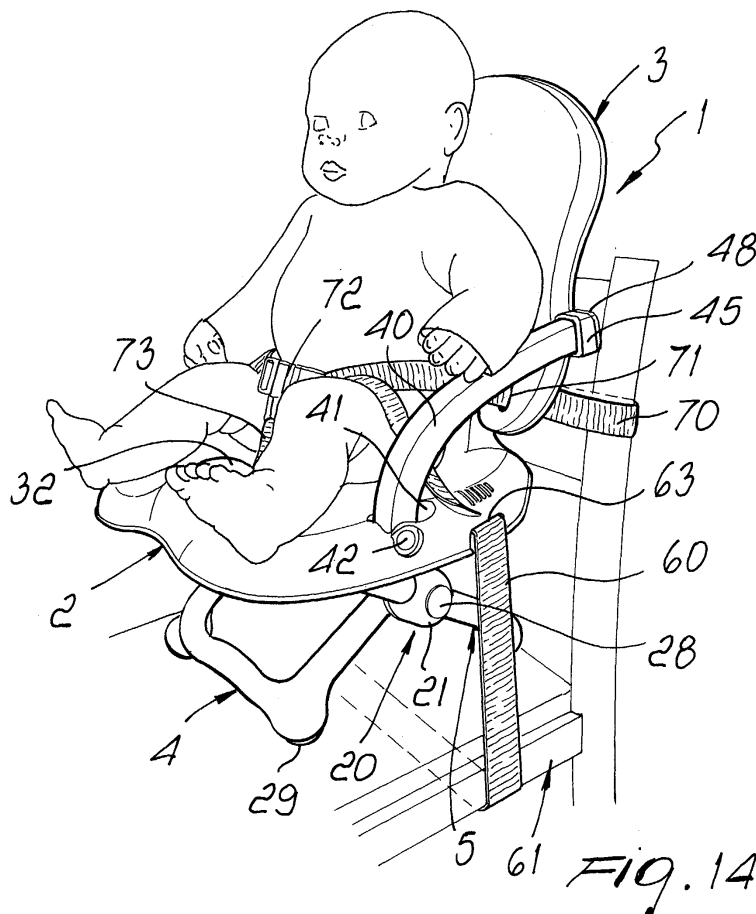
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(71) Applicant: **CAM IL MONDO DEL BAMBINO S.p.A.**  
**I-24060 Telgate (BG) (IT)**

(72) Inventor: **Rho, Gianfranco**  
**24060 Telgate (IT)**  
  
(74) Representative: **Modiano, Micaela Nadia et al**  
**Dr. Modiano & Associati SpA**  
**Via Meravigli 16**  
**20123 Milano (IT)**

### (54) Child seat capable of being attached to a chair

(57) A child seat attachable to a chair, comprising a sitting surface (2) and a folding back (3) connected to the sitting surface (2). Vertically adjustable supporting means for the sitting surface (4, 5) and means (60, 70) for fixing to a chair are also provided. The particularity of the invention consists in that the supporting means com-

prise first (4) and second (5) mutually intersecting legs, which are connected to the sitting surface (2) respectively by means of fixed pivoting points (10) and by way of a sliding coupling (11, 12). Means (20) for removable locking of the mutual inclination of the first and second legs are further provided.



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## Description

**[0001]** The present invention relates to a child seat which can be attached to a chair.

**[0002]** As is known, so-called table-mounted seats are already commercially available; they are typically hung from the edge of the table, and therefore their fixing is very often precarious.

**[0003]** In order to better solve the problem, seats or boosters, commonly known as chair boosters, have already been devised which are structured so that they can be fixed directly to the chair.

**[0004]** The solutions of the background art have not always proved to be satisfactory, since chair boosters are provided which are practically fixed and do not allow easy vertical adjustment of their position.

**[0005]** Other solutions provide a seat with a back but without armrests, which can be arranged at various heights by means of spherical elements with appropriately provided notches.

**[0006]** This embodiment is not particularly valid, since the possibility of vertical variation is very limited and because the seat does not provide optimum assurances of containment for the child.

**[0007]** Other solutions are also present which are for example made of wood, and there are also other solutions constituted by modular elements: they do not allow to fully solve the problem, because they are structurally very complicated and accordingly expensive as well as scarcely stable.

**[0008]** The aim of the invention is to solve the problems noted above by providing a child seat attachable to a chair which allows to give optimum assurances of safety in the coupling to the chair and also safety assurances as regards the containment of the child.

**[0009]** Within this aim, a particular object of the invention is to provide a seat that allows to provide optimum comfort for the child, which is easily retained therein by the presence of armrests, which though providing optimum confinement do not create awkward space occupation when the seat is in the folded position.

**[0010]** Another object of the present invention is to provide a seat that can be industrialized easily and has a highly ergonomic design, favoring rounded shapes without edges.

**[0011]** Another object of the present invention is to provide a seat which, thanks to its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use and is further competitive from a merely economical standpoint.

**[0012]** This aim and these and other objects that will become better apparent hereinafter are achieved by a child seat attachable to a chair, according to the invention, comprising a sitting surface and a folding back connected to said sitting surface, vertically adjustable supporting means for the sitting surface and means for fixing to a chair being further provided, characterized in that said supporting means comprise first and second inter-

secting legs, which are connected to said sitting surface respectively by means of fixed pivoting points and by way of a sliding coupling, means for removable locking of the mutual inclination of said first and second legs being further provided.

**[0013]** Further characteristics and advantages will become better apparent from the description of a preferred but not exclusive embodiment of a child seat attachable to a chair, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of the seat; Figures 2 and 3 are side elevation views of the seat, arranged at two different heights, with a different arrangement of the back;

Figure 4 is a side elevation view of the seat in the folded position;

Figure 5 is a schematic bottom view of the seat in the folded position;

Figure 6 is a bottom plan view of the seat;

Figures 7 and 8 are views of the means for removably locking the mutual inclination in the two different operating positions;

Figure 9 is a sectional view, taken along the line IX-IX of Figure 6;

Figure 10 is a sectional view, taken along the line X-X of Figure 6;

Figure 11 is a sectional view of the detail of the connection between the back and the armrest;

Figure 12 is a sectional view of the detail of the connection between the back and the armrest during the folding of the back;

Figure 13 is a view of the means for the passage of the strap for fixing the seat to the chair;

Figure 14 is a schematic perspective view of the seat in the position for use.

**[0014]** With reference to the figures, the child seat fixed to a chair, according to the invention, generally designated by the reference numeral 1, comprises a sitting surface 2, to which a back 3 of the folding type is pivoted.

**[0015]** Advantageously, both the sitting surface and the back are provided by molding plastic material.

**[0016]** The sitting surface 2 is provided, in a downward region, with first supporting legs constituted by a first U-shaped element 4 and second supporting legs constituted by a second U-shaped element 5.

**[0017]** The elements 4 and 5 intersect one another and are pivoted in a central portion of their respective arms.

**[0018]** The free ends of the first element 4 are pivoted to the lower face of the seat in fixed points 10, while the ends of the arms of the second element 5 have a sliding coupling provided by means of a pin 11, which is provided at the free ends of the arms of the element 5 that slide in slots 12 formed in walls 13 which protrude from the lower face of the sitting surface 2.

**[0019]** At the mutual pivoting point, the first and second elements 4 and 5 are provided with locking means, gen-

erally designated by the reference numeral 20, which are constituted by a first dome 21, which is connected to the arms of the first element 4 and lies inside the second element 5. The first dome-shaped element, which is open outward, i.e., toward the second element 5, is provided with a first slotted or grooved seat 22, and a second slotted or grooved seat 23 is formed correspondingly on the second dome 24 provided on the second element 5.

**[0020]** In order to lock the mutual rotation of the first and second legs, a floating gear 26 is arranged so that it can slide in contrast with, and by virtue of the action of, a spring 27, which acts between the floating gear 26 and the bottom of the first grooved seat 22.

**[0021]** A pushbutton element 28 can be accessed on the second dome-shaped element 24, at the outer end, and can be pressed in order to slide the floating gear 26 in contrast with the spring 27.

**[0022]** At rest, the spring 27 pushes the floating gear 26 so that it meshes simultaneously with the two grooved seats 22 and 23, preventing the mutual rotation of the dome-shaped elements 21 and 24 provided on the first and second elements 5.

**[0023]** By pressing the button 28, as shown in Figure 8, the floating gear 26 is moved away from the mating line of the two dome-shaped elements and therefore free mutual rotation is possible.

**[0024]** It should be noted that in order to be able to perform the rotation and therefore vary the useful height of the sitting surface, it is necessary to act simultaneously on both of the pushbutton elements provided on the intersection points of the elements 4 and 5, and that moreover, if the weight of the child bears on the seat, friction would not allow the floating gear to slide, thus constituting an excellent safety element.

**[0025]** It should be added to the above that the U-shaped elements 4 and 5 have, at the outer elements of the connecting portions, anti-slip supporting pads 29, which prevent the seat from sliding.

**[0026]** As noted earlier, the back 3 is hinged to the sitting surface 2, and for this purpose there is a rear protrusion 30, which enters a hollow 31 of the base of the back 3 which, when folded, overlaps the sitting portion 2, reducing space occupation.

**[0027]** It should also be added that the sitting portion 2 is provided with a front protrusion 32, which acts as a leg separator for the child, and is mated in the recess 33 of the back when it is in the lowered position.

**[0028]** A particular characteristic of the invention consists in that there are armrests 40, which are accommodated, at their front end, in a recess 41 formed by the sitting portion and are retained in position by means of an elastic pin 42 which is inserted by pressing.

**[0029]** With this arrangement, the end of the armrest is accommodated in the recess and accordingly bears very well the lateral thrusts that can be applied by the child.

**[0030]** At its other end, the armrest 40 engages slidably within a pivoting sleeve 45, provided with a coupling

pin 46, which is inserted in a corresponding lateral receptacle 47 formed on the back, so that the pin 46 acts as a rotation element, which allows the sleeve 45 to adapt easily according to the mutual inclination of the back with respect to the sitting surface.

**[0031]** The armrest 40 has, at the end for coupling to the sleeve 45, a flange 48, which acts as a retention element.

**[0032]** In order to keep the back in the raised position, there are elastic locking means advantageously constituted by an elastic clip 50, which is shown more clearly in Figures 11 and 12 and is constituted by a C-shaped elastic pusher arm 51, which leads into a pushbutton portion 52 accessible on the lower face of the armrest.

**[0033]** Retention teeth 53 are provided on the pushbutton portion 52, prevent the accidental extraction of the clip and keep in the inactive position the pushbutton portion 52, which can be accessed from outside.

**[0034]** The pushbutton portion has, on the side toward the sleeve 45, an abutment side 54, which in the inactive condition prevents the mutual sliding of the armrest 40 and the sleeve 45.

**[0035]** Pressing the pushbutton portion 52 causes the retraction of the abutment side 54, with the consequent possibility to tilt the back by way of the relative sliding of the sleeve 45 and the armrest 40.

**[0036]** It should be noted that in this case also it is necessary to act simultaneously on both armrests.

**[0037]** In order to fix the seat to the chair, means are provided for fixing the sitting surface which are constituted by means of a lower strap 60, which is made to pass below the seating surface of a chair 61, as shown in Figure 14.

**[0038]** The strap 60 can be connected to the sitting surface by way of coupling means which allow to insert the strap for fixing to the chair without extracting the buckle and the fastening element provided at the end of the strap.

**[0039]** Said coupling means are provided with a first lateral slot 63, which is arranged externally and is open at one end 64, and a second slot 65, which is arranged internally and is formed by a bar 66, which is provided in the lower face of the sitting surface and has a second opening 67 at the opposite end with respect to the first opening 64, thus creating a labyrinth-like path which allows to insert the strap without having to remove the buckles arranged at the end.

**[0040]** Closure is completed by a strap for fixing to the back, designated by the reference numeral 70, which advantageously passes through openings 71 formed in said back and also provides the child retention strap by engaging a central buckle 72 connected to a central portion 73.

**[0041]** From what has been described above, it is therefore evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that a child seat attachable to a chair is provided which is particularly stable and efficient and further can be folded

to very compact dimensions when it is not being used.

[0042] An important aspect of the invention consists in that maximum safety is always ensured, since any actuation must be performed by acting on two separate points.

[0043] It should also be added to the above that a handle 80 which facilitates transport is provided in the rear part of the sitting surface.

[0044] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0045] All the details may further be replaced with other technically equivalent elements.

[0046] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0047] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

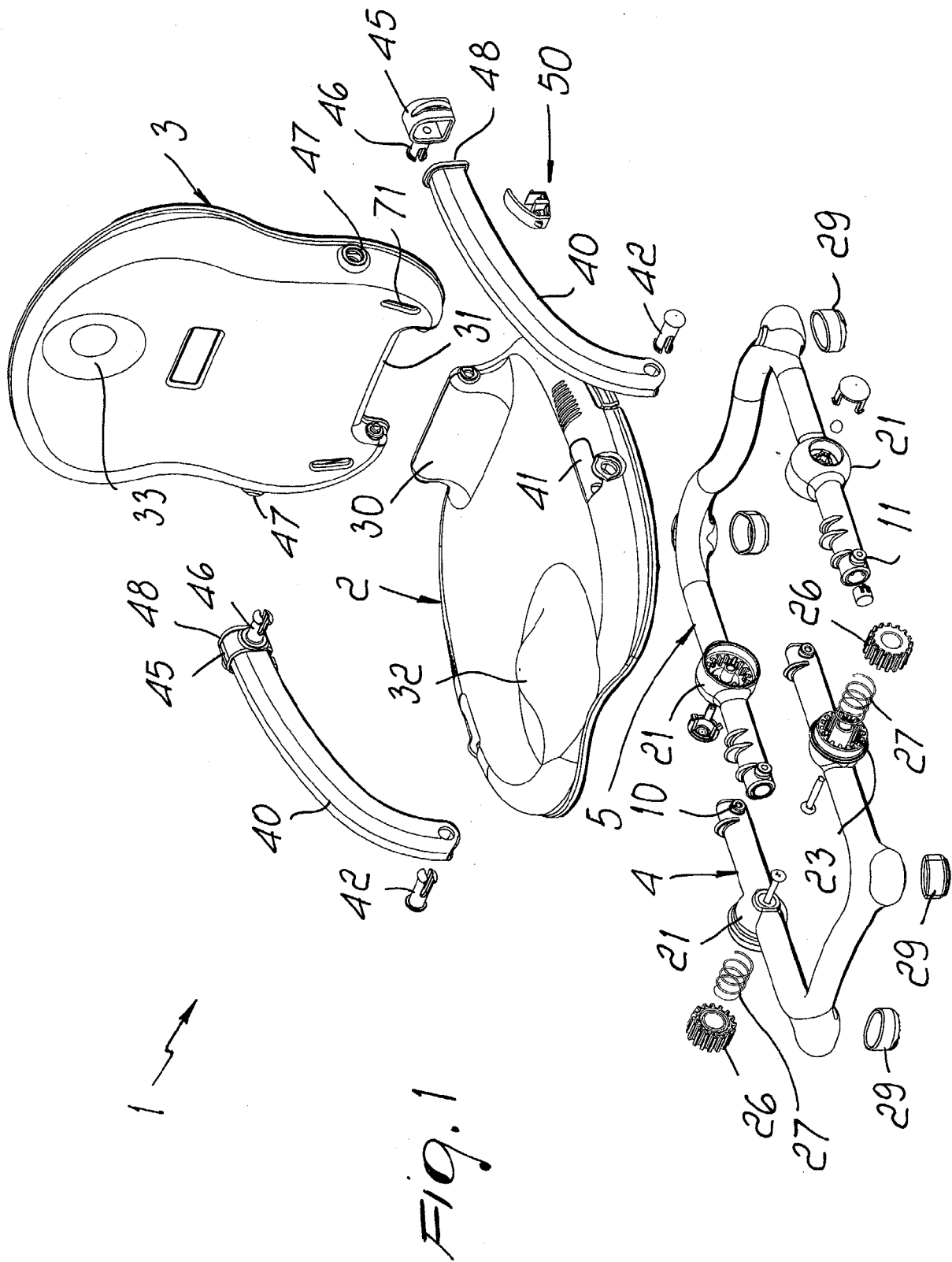
## Claims

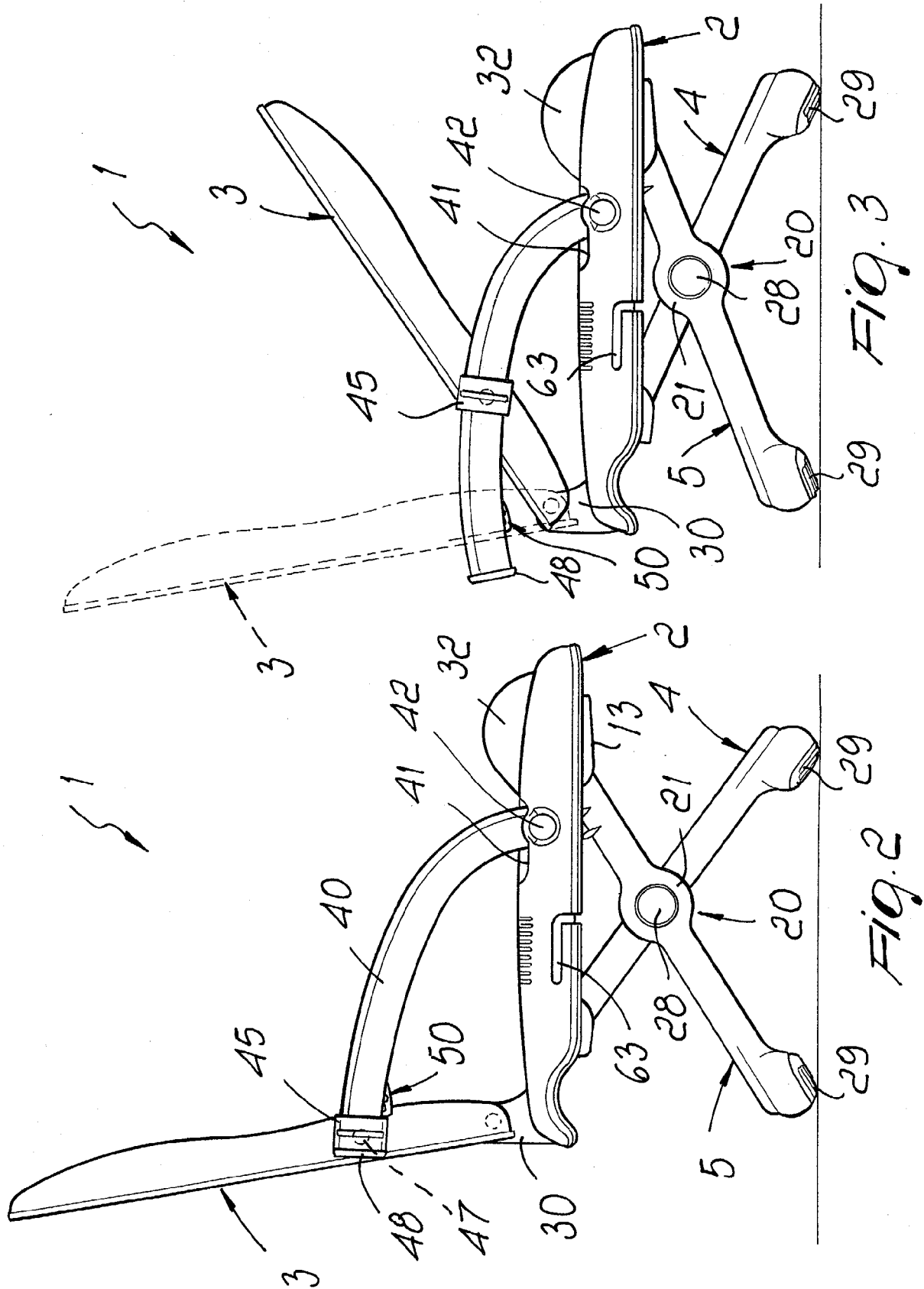
1. A child seat attachable to a chair, comprising a sitting surface and a folding back connected to said sitting surface, vertically adjustable supporting means for the sitting surface and means for fixing to a chair being further provided, **characterized in that** said supporting means comprise first and second intersecting legs, which are connected to said sitting surface respectively by means of fixed pivoting points and by way of a sliding coupling, means for removable locking of the mutual inclination of said first and second legs being further provided.
2. A child seat attachable to a chair, comprising a sitting surface and a folding back connected to said sitting surface, sitting surface supporting means and means for fixing to a chair being further provided, **characterized in that** it comprises armrests for connection between said sitting surface and said back, said armrests being pivoted to said sitting surface and engaging slidably with respect to a pivoting sleeve which is pivoted to said back.
3. A child seat attachable to a chair, comprising a sitting surface with means for resting on a chair and means for fixing to a chair, **characterized in that** said means for fixing to a chair comprise means for coupling to said sitting surface which can be applied without removing the fastening buckles connected to the end of the strap that forms said coupling means.
4. The seat according to one or more of the preceding

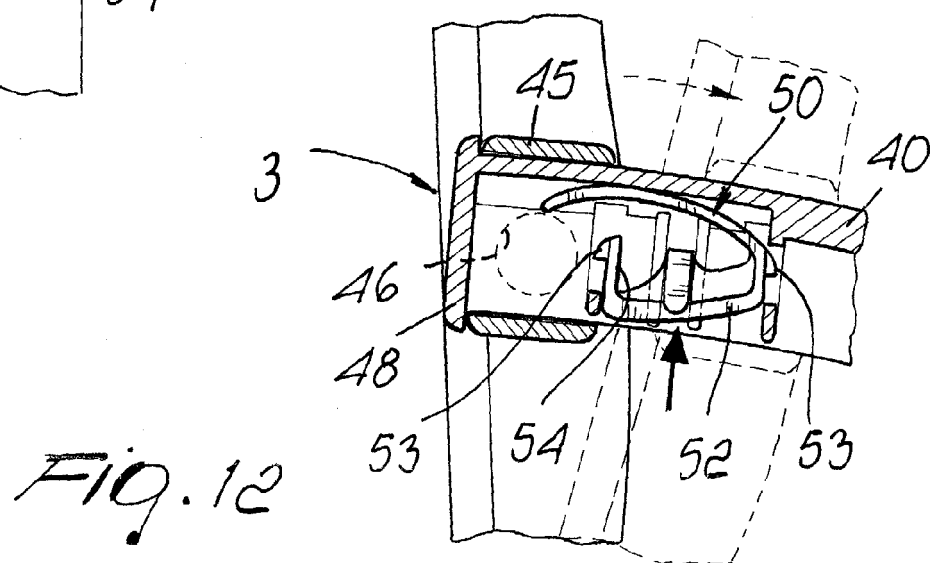
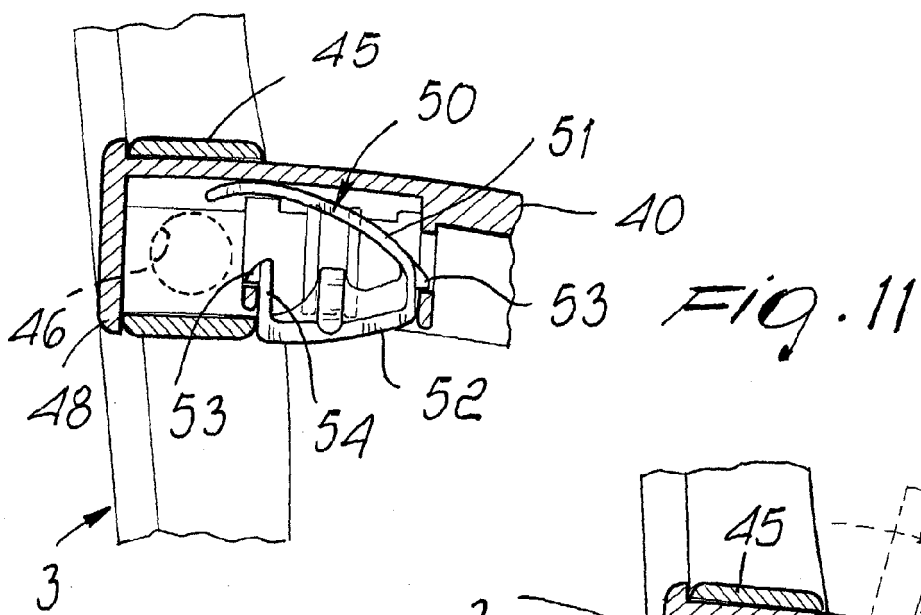
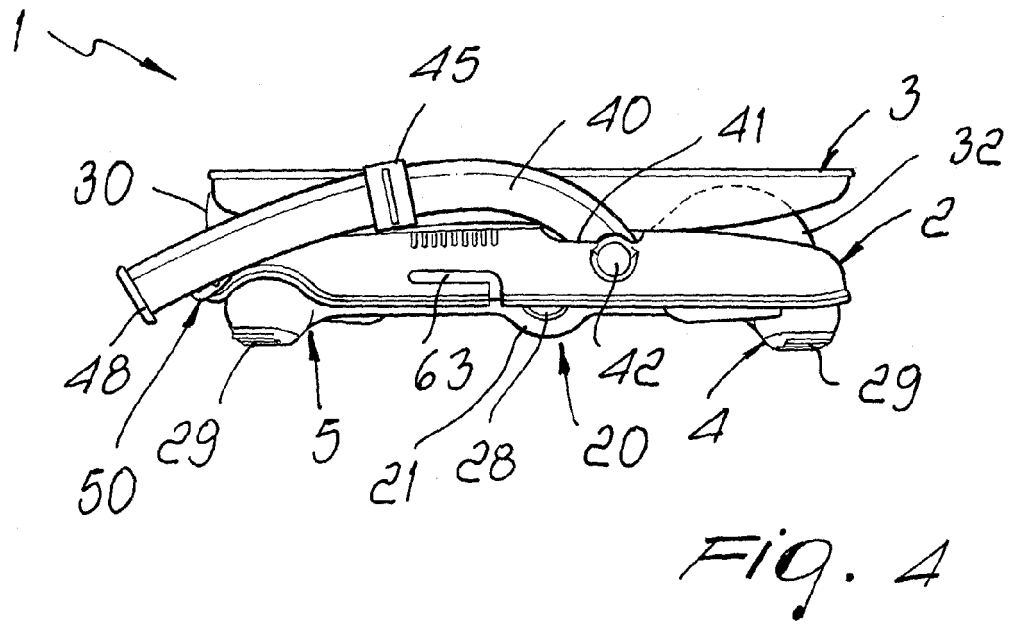
claims, **characterized in that** said first legs are constituted by a first U-shaped element and said second legs are constituted by a second U-shaped element, which are connected to said seat at the free ends of the respective arms.

5. The seat according to one or more of the preceding claims, **characterized in that** said sliding coupling is provided by means of pins formed at the free ends of said second U-shaped element, which are accommodated so that they can slide in slots formed in walls that protrude from the lower face of said sitting surface.
6. The seat according to one or more of the preceding claims, **characterized in that** said removable locking means comprise a first dome-shaped element, which is connected to the arms of said first U-shaped element, and a second dome-shaped element, which is connected to the arms of said second U-shaped element, said first and second dome-shaped elements being open at their opposite ends, forming slotted receptacles inside them, and accommodating a floating gear, which can slide in contrast with, and by virtue of the action of, a spring which acts between said floating gear and the bottom of one of said slotted seats, said floating gear, when at rest, locking the mutual rotation of said dome-shaped elements.
7. The seat according to one or more of the preceding claims, **characterized in that** it comprises a push-button element, actuatable for the sliding of said floating gear in contrast with said spring, in order to disengage said gear from one of said dome-shaped elements in order to allow rotation.
8. The seat according to one or more of the preceding claims, **characterized in that** said floating gear is prevented from performing a translational motion by the weight of the user on said seat.
9. The seat according to one or more of the preceding claims, **characterized in that** it comprises, at the contact regions of said U-shaped elements, resting pads made of anti-slip material.
10. The seat according to one or more of the preceding claims, **characterized in that** it comprises, on said sitting surface, a rear protrusion which can be inserted in a hollow formed at the base of said back.
11. The seat according to one or more of the preceding claims, **characterized in that** said sitting surface has a front leg-dividing protrusion, which can be accommodated removably in a recess of said back when said back is folded onto said sitting surface.

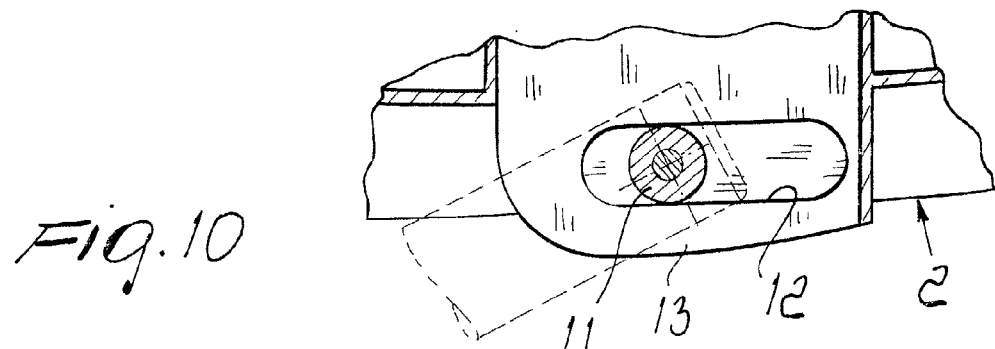
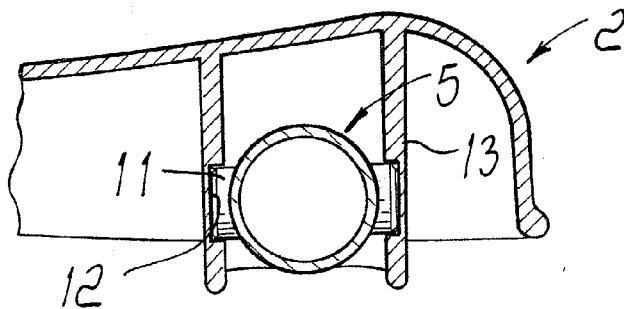
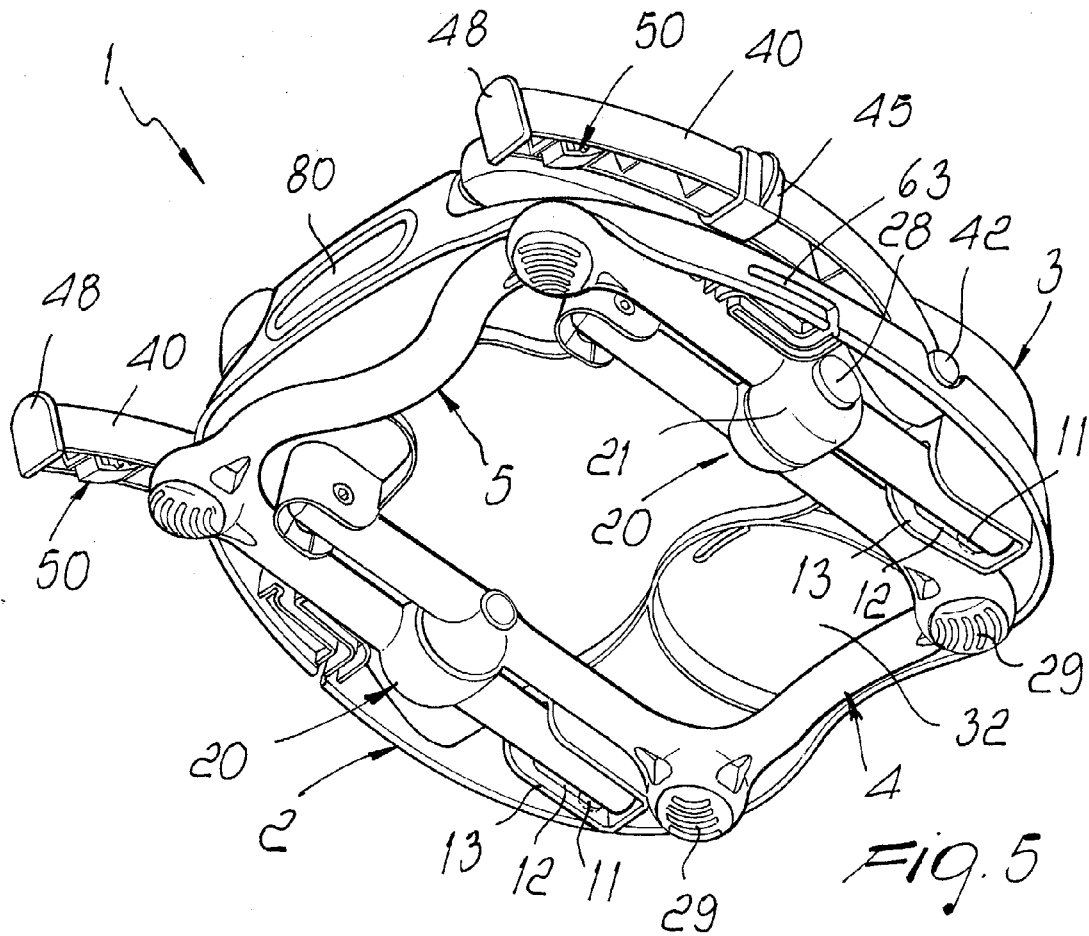
12. The seat according to one or more of the preceding claims, **characterized in that** said armrests are accommodated, at their front end, in a recess formed by said sitting surface and are retained in position by an elastic pin that can be inserted by pressing. 5
13. The seat according to one or more of the preceding claims, **characterized in that** said armrests have, at the end that can be engaged within said sleeve, a flange which can engage said sleeve in order to prevent its extraction. 10
14. The seat according to one or more of the preceding claims, **characterized in that** said sleeve has a coupling pin, which can be inserted in a lateral seat formed by said back in order to act as a rotation element of said sleeve during the movement of said back with respect to said sitting surface. 15
15. The seat according to one or more of the preceding claims, **characterized in that** it comprises means for the elastic locking of said back in the raised position, said elastic locking means comprising an elastic clip, which forms a C-shaped elastic pusher portion which leads to a pushbutton portion provided with an abutment side, said pushbutton portion, in the inactive condition, protruding from the lower face of said armrest, retention teeth being further provided which are adapted to prevent the extraction of said pushbutton from said armrest. 20  
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16. The seat according to one or more of the preceding claims, **characterized in that** said means for coupling the strap for fixing to the chair comprise a first lateral slot formed in said sitting surface, which is open at one end, and a second slot, which is arranged internally and is formed by a bar which protrudes from the lower face of said sitting surface and ends at a second opening provided at the end that lies opposite with respect to said first opening. 35  
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17. The seat according to one or more of the preceding claims, **characterized in that** it comprises means for fixing to the back, which are constituted by a strap for fixing to the back, which can be inserted in openings formed in said back, said back fixing strap engaging a central buckle connected to a central portion which provides the child retention strap. 45  
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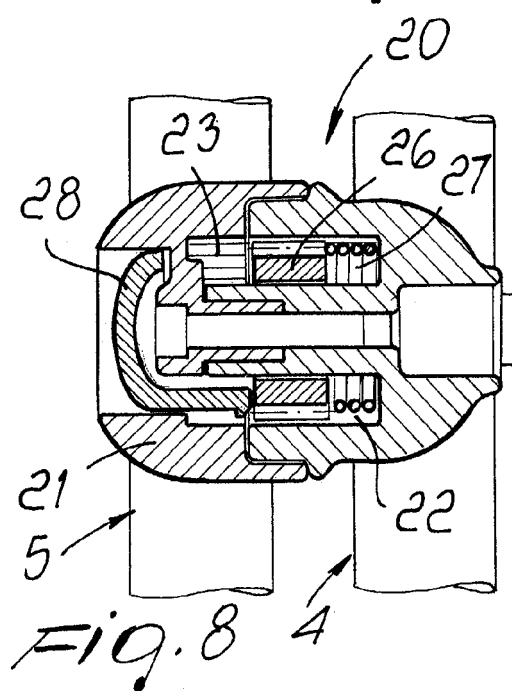
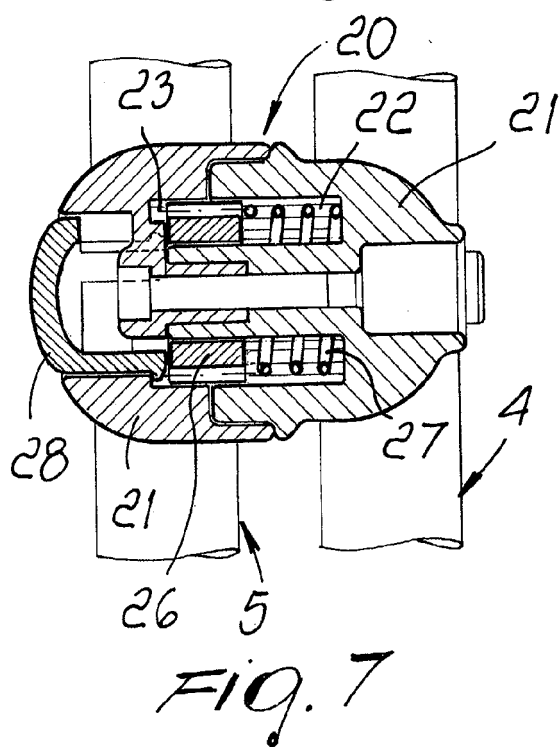
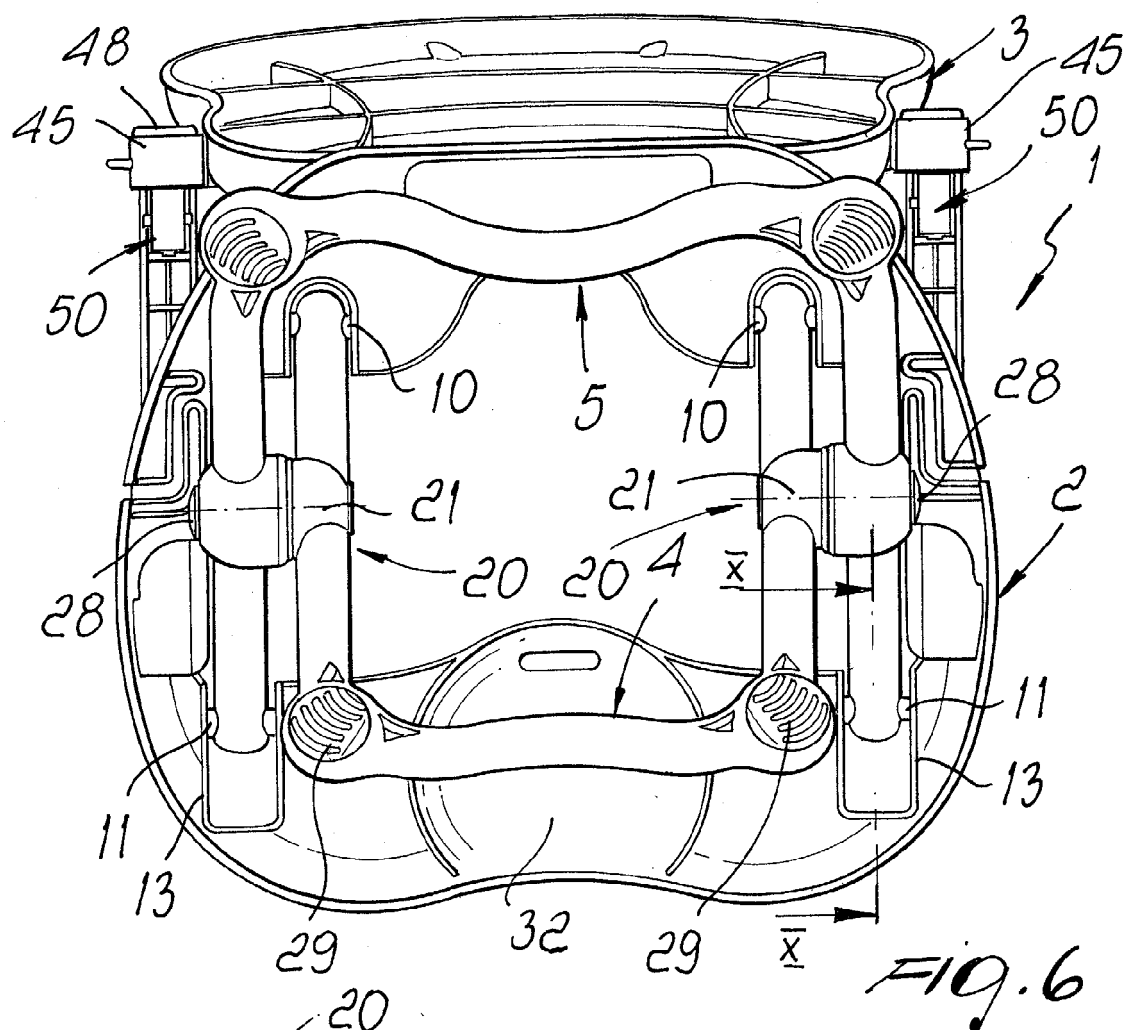


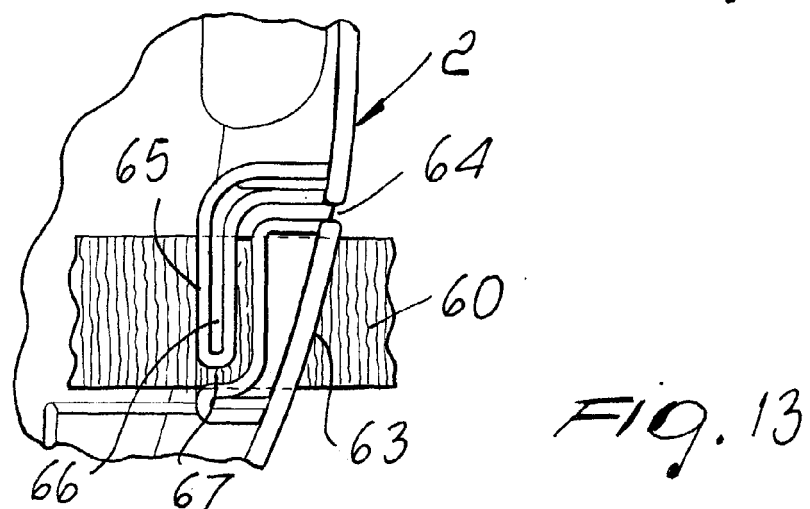
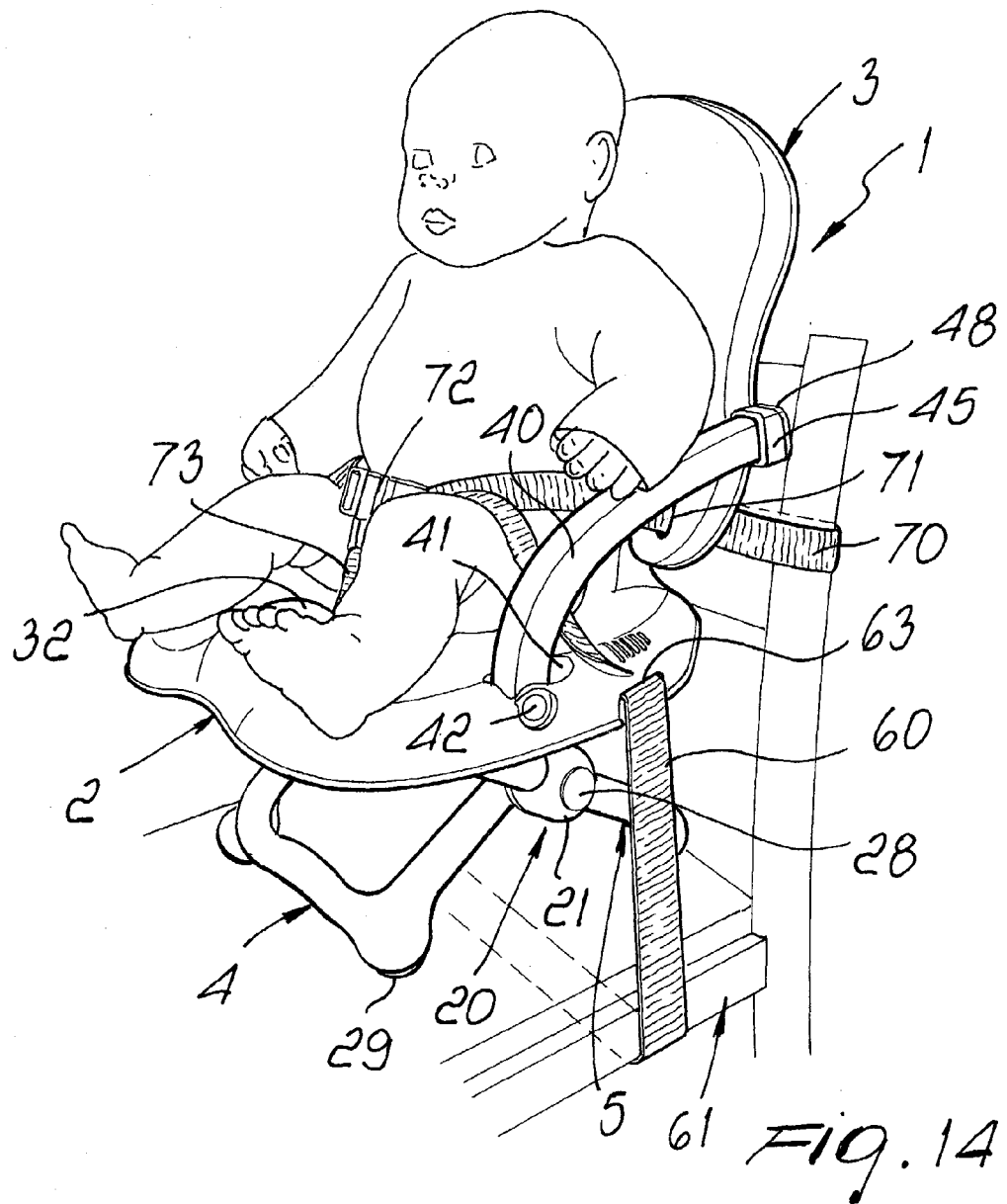














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# EUROPEAN SEARCH REPORT

Application Number  
EP 05 42 5240

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                    |                                                   |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                      | Relevant to claim                                 | CLASSIFICATION OF THE APPLICATION (IPC) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DE 28 45 983 A1 (STAHL MARC-ANTON)<br>30 April 1980 (1980-04-30)<br>* page 8; claim 14; figure C * | 1                                                 | A47D1/10                                |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 2 089 090 A (DI GIACOMO VINCENT ET AL)<br>3 August 1937 (1937-08-03)<br>* figures 4,6 *         | 1                                                 |                                         |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FR 1 449 891 A (CHARRIER MARCEL)<br>6 May 1966 (1966-05-06)<br>* figures 1,3 *                     | 1                                                 |                                         |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FR 748 198 A (WICKER MARIE-LOUIS ET AL)<br>29 June 1933 (1933-06-29)<br>* figure 2 *               | 1                                                 |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                    |                                                   | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                    |                                                   | A47D<br>A47C                            |
| <del>The present search report has been drawn up for all claims</del>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                    |                                                   |                                         |
| Place of search<br>Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                    | Date of completion of the search<br>3 August 2005 | Examiner<br>Reichhardt, O               |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                    |                                                   |                                         |

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Application Number

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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1, 4- 17 (when referring to claim 1)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1,4-17 (when referring to claim 1)

A child seat comprising intersecting legs

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2. claims: 2,4-17 (when referring to claim 2)

A child seat comprising armrests

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3. claims: 3,4-17 (when referring to claim 3)

A child seat comprising a coupling strap

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 42 5240

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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03-08-2005

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|----|---------------------|----------------------------|---------------------|
| DE 2845983                                | A1 | 30-04-1980          | NONE                       |                     |
| US 2089090                                | A  | 03-08-1937          | NONE                       |                     |
| FR 1449891                                | A  | 06-05-1966          | NONE                       |                     |
| FR 748198                                 | A  | 29-06-1933          | NONE                       |                     |