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(11)

EP 1 911 373 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

16.04.2008 Bulletin 2008/16

(51) Int Cl.:

A47C 1/121 (2006.01)

A47C 1/16 (2006.01)

(21) Application number: **07014480.3**

(22) Date of filing: **24.07.2007**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

Designated Extension States:

AL BA HR MK RS

(30) Priority: **13.10.2006 IT MI20061967**

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(54) **Seat in particular for stadiums and sports facilities**

(57) There is disclosed a seat comprising a supporting structure (4) and at least one seating unit (3), wherein the seating unit (3) is made of plastic material and comprises a structural element (8) defined by a hollow tubular

element made of plastic material in one piece with the seating unit (3) and extending along at least part of the perimeter of the seating unit (3). The structural element (8) is also produced by a gas-assist process to inject a gas into the plastic material forming the seating unit (3).

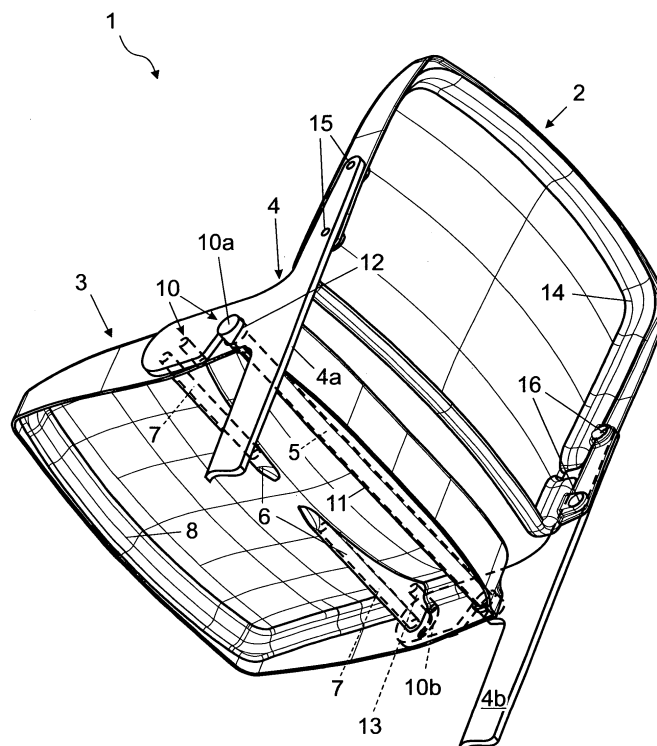


Fig. 1

EP 1 911 373 A1

Description

[0001] The present invention relates to a seat provided in particular for stadiums and sports facilities in general, as specified in the preamble of Claim 1.

[0002] There are currently known different types of seats for stadiums, various sports facilities, indoor stadiums, buildings used to host events and the like.

[0003] These are prevalently made of plastic materials including a metal framework, in particular a steel framework, and connected to the ground or to the stands or the like by means of a specific metal structure.

[0004] The metal structure is necessary as seats for stadiums and the like require high mechanical strength.

[0005] In fact, they are frequently subject to stresses of hundreds of kgw (kg weight), caused in particular by the manifestations and movements of the users. They must also withstand any acts of vandalism and in particular, insofar as feasible, must be impossible to smash, tear up or damage.

[0006] The seats in question can have a seat and a backrest, generally realized by two separate elements, and the element that realizes the seat very often can be tipped up. Therefore, when not in use, it is aligned with the backrest so that it does not occupy space.

[0007] The aforesaid prior art has some important drawbacks.

[0008] In fact, the connection between two different materials, metal and plastic, is inadequate and does not solve the problems of mechanical strength.

[0009] Moreover, a seat made of plastic material with a metal framework has reduced durability and higher operating costs.

[0010] This is due to the different properties of the metals and plastics, which have coefficients of thermal dilation that differ greatly and different chemical properties, so that, for instance, the metal can be corroded by humidity and atmospheric agents.

[0011] These seats must therefore undergo periodic maintenance operations.

[0012] In this situation the technical aim of the present invention is to create a seat in particular for stadiums and the like that is capable of substantially overcoming the aforesaid drawbacks.

[0013] Within said technical aim an important object of the invention is to produce a seat in particular for stadiums and the like that substantially requires no maintenance and that is inexpensive.

[0014] Another object of the invention is to provide a seat in particular for stadiums and the like capable of withstanding stresses of hundreds of kgw.

[0015] The technical aim and the objects specified are achieved by a seat in particular for stadiums and sports facilities, which is characterized by the fact that it comprises one the technical solutions described in claim 1.

[0016] Preferred embodiments are shown by way of example in the accompanying drawings. In particular:

Figure 1 shows the seat according to the invention in an axonometric view from below;

Figure 2 shows the seat according to the invention in an axonometric view from above; and

Figure 3 shows the side view of the seat according to the invention.

[0017] With reference to the Figures, the seat according to the invention is indicated as a whole with the number 1. It is suitable to be used in stadiums, sports facilities, indoor stadiums, buildings used to host events and facilities of various kinds.

[0018] In particular, stadiums and the like have a tiered structure or the like to support these seats.

[0019] The seat 1 comprises, briefly: a backrest 2, a seating unit 3, a structure 4 to support the backrest 2 and the seating unit 3, constrained to said tiered structure or the like, and finally a stop element 5.

[0020] In particular, the supporting structure 4 is appropriately made of metal and comprises two lateral up-rights 4a and 4b.

[0021] This structure 4 can have different shapes and features, in particular it can be constrained both to a horizontal plane and to a vertical plane. The further features thereof will be described hereunder.

[0022] The backrest 2 and the seating unit 3 are made of plastic materials.

[0023] Moreover, the seating unit 3 preferably comprises a structural element 8 realized by a hollow tubular element made of plastic material, appropriately made of the same plastic material that realizes the seating unit 3 and in one piece therewith.

[0024] The structural element 8 is disposed along at least part of the perimeter of the seating unit 3. The term perimeter of the seating unit 3 indicates the perimeter of the two opposed faces of the seating unit 3 which are placed substantially in the direction of the main plane of extension of said unit 3.

[0025] This structural element 8 is preferably obtained by means of a gas-assist process to inject a gas into the plastic material forming the unit 3 and preferably has a diameter between 16 mm and 20 mm and walls with a thickness between 2 mm and 5 mm.

[0026] This process in fact allows elements made of plastic materials with high mechanical properties to be produced.

[0027] More specifically, the seating unit 3 has a substantially quadrilateral plan and presents a seating face, suitable to realize a comfortable seating surface for the user, and a lower face, opposite the seating face.

[0028] It is realized by a membrane 3a the upper face of which realizes the seating side and by an edge structure 3b projecting at the sides of the lower face and suitable to provide said membrane 3a with mechanical strength.

[0029] The structural element 8 is appropriately housed on the lower face of the seating unit 3, and in particularly in the corner that is formed between the mem-

brane 3a and the edge structure 3b.

[0030] Moreover, it is preferably positioned along three sides of the quadrilateral perimeter of the seating unit 3. In practice, it does not extend only along the rear side of the unit 3, which is the one in closest proximity to the backrest 2.

[0031] The seating unit 3 also comprises at least one housing 6 suitable to house at least one tipping pin 7. In particular, the tipping pin 7 is integral with the supporting structure 4 and positioned in a direction parallel to the main plane of extension of the backrest 2. Preferably two aligned pins 7 are provided, each integral with an upright 4a and 4b.

[0032] The pins 7 appropriately have a circular section with a diameter between 8 mm and 12 mm.

[0033] There are also provided two housings 6, disposed in opposite positions on the sides of the seating unit 3 and appropriately passing through the edge structure 3b. These are suitable to house the two tipping pins 7.

[0034] Alternatively, there is provided a single through pin 7 joining the two lateral uprights 4a and 4b and a single through housing 6 suitable to house said pin 7.

[0035] The housings 6 are preferably positioned on the lower face of the seating unit 3, in proximity to the rear side thereof. Appropriately, they are positioned at approximately a third of the length of the seating unit 3 starting from the rear side.

[0036] The housings 6 and the pins 7 allow the unit 3 to be supported on the structure 4.

[0037] They also allow tipping of the seating unit 3, consequently rotation thereof by an angle of approximately 90° about the axis realized by the pins 7 and by the housings 6.

[0038] The seating unit 3 can thus be disposed in a horizontal position, and the seating face can be placed in a horizontal position suitable to allow a user to sit, and in a vertical position, thus substantially parallel to the backrest 2.

[0039] Figure 3 shows with a solid line the seat 1 with the seating unit 3 in a horizontal position, while the broken line shows the seat 1 with the seating unit 3 in a vertical position.

[0040] The seating unit 3 also preferably comprises at least one limit stop element 10. This is suitable to interfere with the structure 4 and prevent rotation of the seating unit 3, in the moment in which it has reached one of said two positions, vertical or horizontal.

[0041] There are preferably two limit stop elements 10; one horizontal limit stop element 10a and one vertical limit stop element 10b.

[0042] In particular, the horizontal limit stop element 10a is preferably realized by the outer portions of the stop element 5.

[0043] In fact, the stop element 5 is realized by a metal bar, appropriately with a diameter between 12 mm and 18 mm, which is inserted in a specific channel 11, produced on the lower face of the seating unit 3 and in proximity to the rear side thereof.

[0044] The stop element 5 therefore preferably passes through the seating unit 3, and in particular through the channel 11.

[0045] It is constrained to the seating unit 3 by means of specific constraints, appropriately realized by two elastic washers for shafts without grooves.

[0046] This stop element 5 also has a length exceeding the width of the device 3: two portions of the stop element 5 project from the sides of the seating unit 3 and realize the horizontal limit stop elements 10a, suitable to interfere with the structure 4 when the device 3 is in the horizontal position, in particular with specific shapings 12, present in the structure on the uprights 4a and 4b.

[0047] Finally, the element 5 acts as counterweight, suitable to dispose the seating unit 3 in the vertical position when not opposed by the weight force realized by the body mass of a user.

[0048] The horizontal limit stop element 10b is instead realized by two slots produced on the edge structure 3b of the unit 3 and positioned in proximity to the seats 6. These slots interfere appropriately with two limit stop pins 13 which are part of the supporting structure 4 and which also have a diameter appropriately between 8 mm and 12 mm.

[0049] The backrest 2 preferably comprises a second structural element 14 also realized by a hollow tubular element made of plastic material, appropriately made of the same plastic material constituting said backrest 2 and in one piece therewith.

[0050] The second structural element 14 is preferably obtained with the same manufacturing process as the structural element 8, but can also be structured differently, as it is subjected to lower stresses.

[0051] It is also disposed along at least part of the perimeter of the backrest 2, but preferably along the entire perimeter of said backrest 2.

[0052] In particular, the backrest 2 has a substantially quadrilateral plan and presents a supporting face, suitable to realize a comfortable support for the back of a user, and a rear face, opposite the seat side.

[0053] Finally the backrest 2 comprises a plurality of housings 15 inside which there can be inserted constraining means 16 of known type, suitable to constrain the backrest 2 to the structure 4.

[0054] The invention achieves important advantages.

[0055] In fact, the seat 1 is simple and inexpensive and produced with advanced technology, thereby forming a solid and reliable article.

[0056] In particular, the seating unit 3 and the backrest 2 are realized exclusively by plastic materials inside which no metal parts are inserted. The device 3 and the backrest 2 therefore require no maintenance and ensure durability.

[0057] As a result of the high mechanical strength, they are able to withstand stresses of hundreds of kgw.

[0058] It is underscored that the mechanical strength is due in particular to the innovative presence of the structural elements 8 and 14 and the channel 11, and also to

the presence of the stop element 5, which realizes a wide area over which the seating unit 3 distributes the load evenly.

[0059] Not least advantage is given by the fact that in the horizontal position the seating unit 3 and the backrest 2 are not in contact. This feature prevents nasty accidents that can occur when the backrest realizes the stop element for the seating unit. In fact, injuries to the hands can occur due to these being crushed between the backrest and the seating unit.

[0060] The invention is susceptible to modifications and variants falling within the inventive concept.

[0061] For instance, the seating unit 3 can be provided both tipping and fixed. In the latter case, it is sufficient to constrain the stop element 5 to the supporting structure 4.

[0062] Finally, the seat can be used not only in the environments indicated but in any environment, thanks to its versatility, functionality, low cost and strength. All the details can be replaced by equivalent elements and the materials, shapes and dimensions can be of a different type.

Claims

1. Seat in particular for stadiums and sports facilities, comprising a supporting structure (4) and at least one seating unit (3), **characterized in that** said seating unit (3) is made of plastic material and comprises a structural element (8) defined by a hollow tubular element made of plastic material in one piece with said seating unit (3) and extending along at least part of the perimeter of said seating unit (3).
2. Seat according to claim 1, wherein said structural element (8) is produced by a gas-assist process to inject a gas into said plastic material forming said seating unit (3).
3. Seat according to one or more of the previous claims, wherein said seating unit (3) has a substantially quadrilateral plan and wherein said structural element (8) is positioned along four sides of the perimeter of said seating unit (3).
4. Seat according to one or more of the previous claims, wherein said supporting structure (4) comprises at least one tipping pin (7), and wherein said seating unit (3) comprises at least one housing suitable to house said tipping pin (7) and to allow rotation of said seating unit (3) in a direction parallel to said tipping pin (7).
5. Seat according to claim 4, wherein said supporting structure (4) comprises two lateral uprights (4a, 4b) positioned at the sides of said seating unit (3), wherein each of said lateral uprights comprises a tipping pin (7), and wherein said seating unit (3) comprises

two housings (6) aligned and spaced apart, for said tipping pins (7).

6. Seat according to one or more of the previous claims, wherein said seating unit (3) comprises a through channel (11) suitable to define a housing for a stop element (5) realized by a metal bar passing through said seating unit (3).
7. Seat according to one or more of the previous claims, in particular claim 6, wherein said stop element (5) projects from the sides of said seating unit (3) and realizes a limit stop element for said seating unit (3).
8. Seat according to one or more of the previous claims, comprising a backrest (2) constrained to said supporting structure (4), wherein said backrest (2) and said seating element (3) are made of the same plastic material.
9. Seat according to claim 8, wherein said backrest (2) comprises a second structural element (14) realized by a hollow tubular element made of plastic material in one piece with said backrest (2) and extending along the perimeter of said backrest (2).
10. Seat according to claim 9, wherein said structural element (14) is produced by a gas-assist process to inject a gas into said plastic material forming said backrest (2).

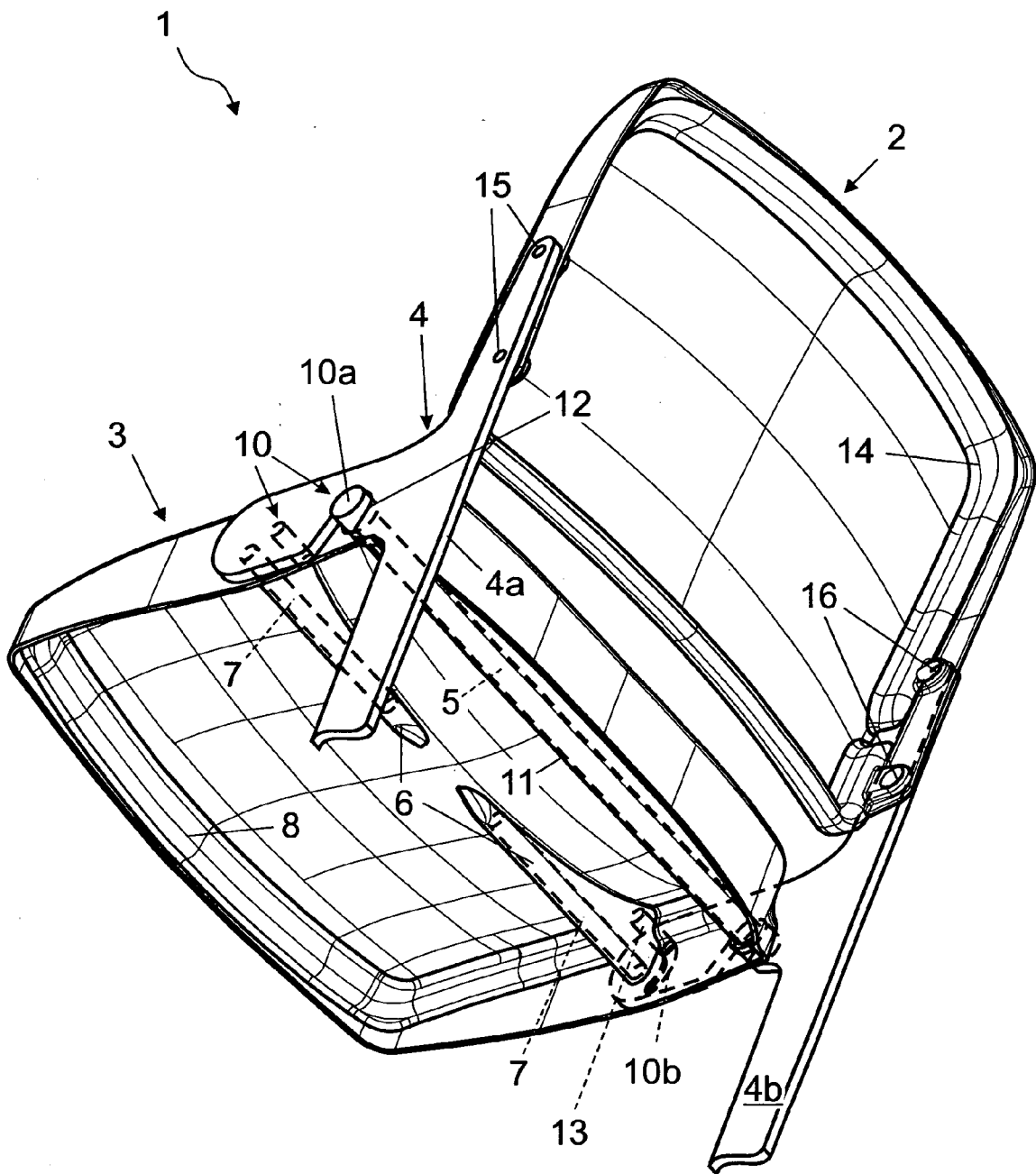


Fig. 1

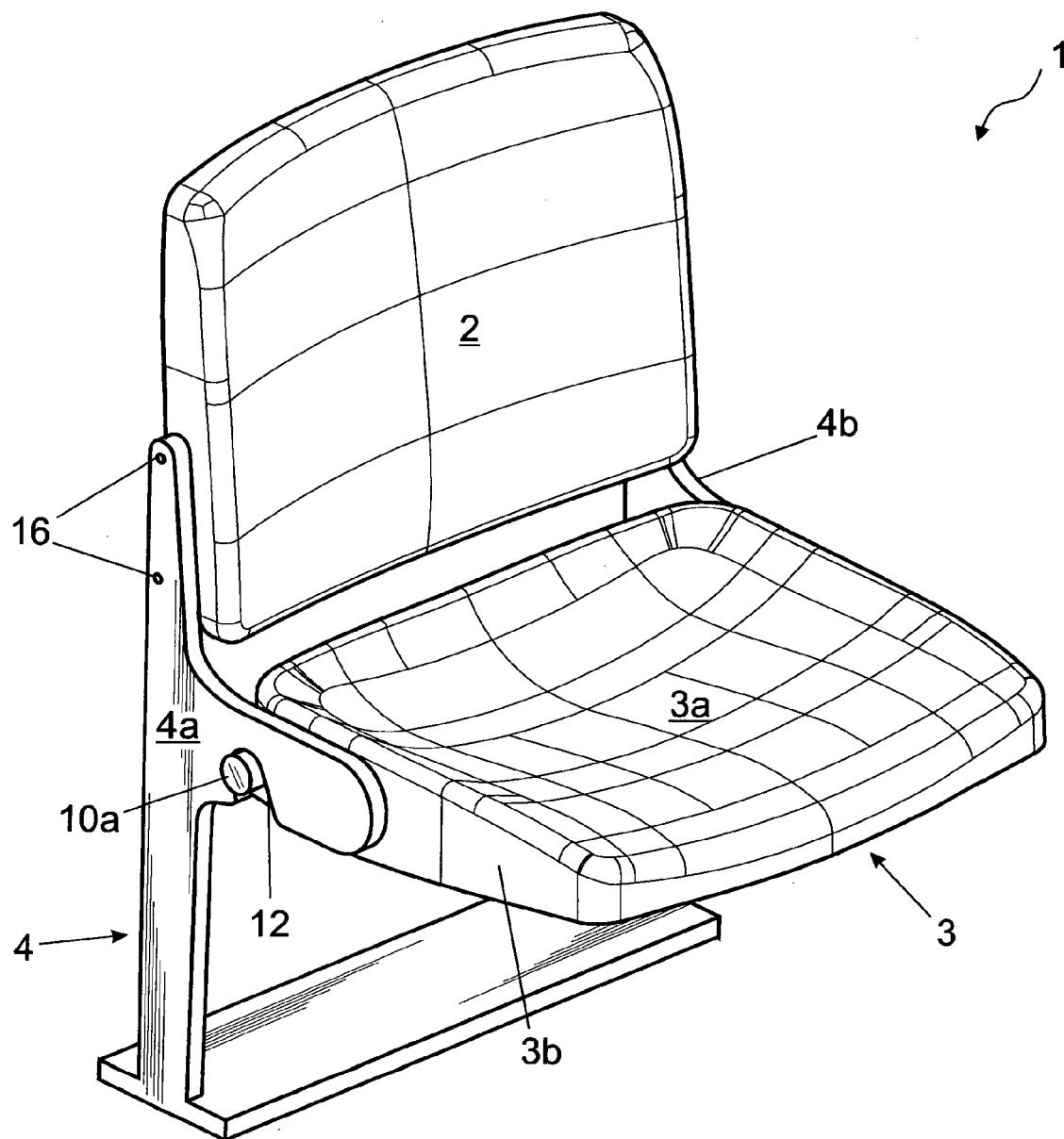


Fig. 2

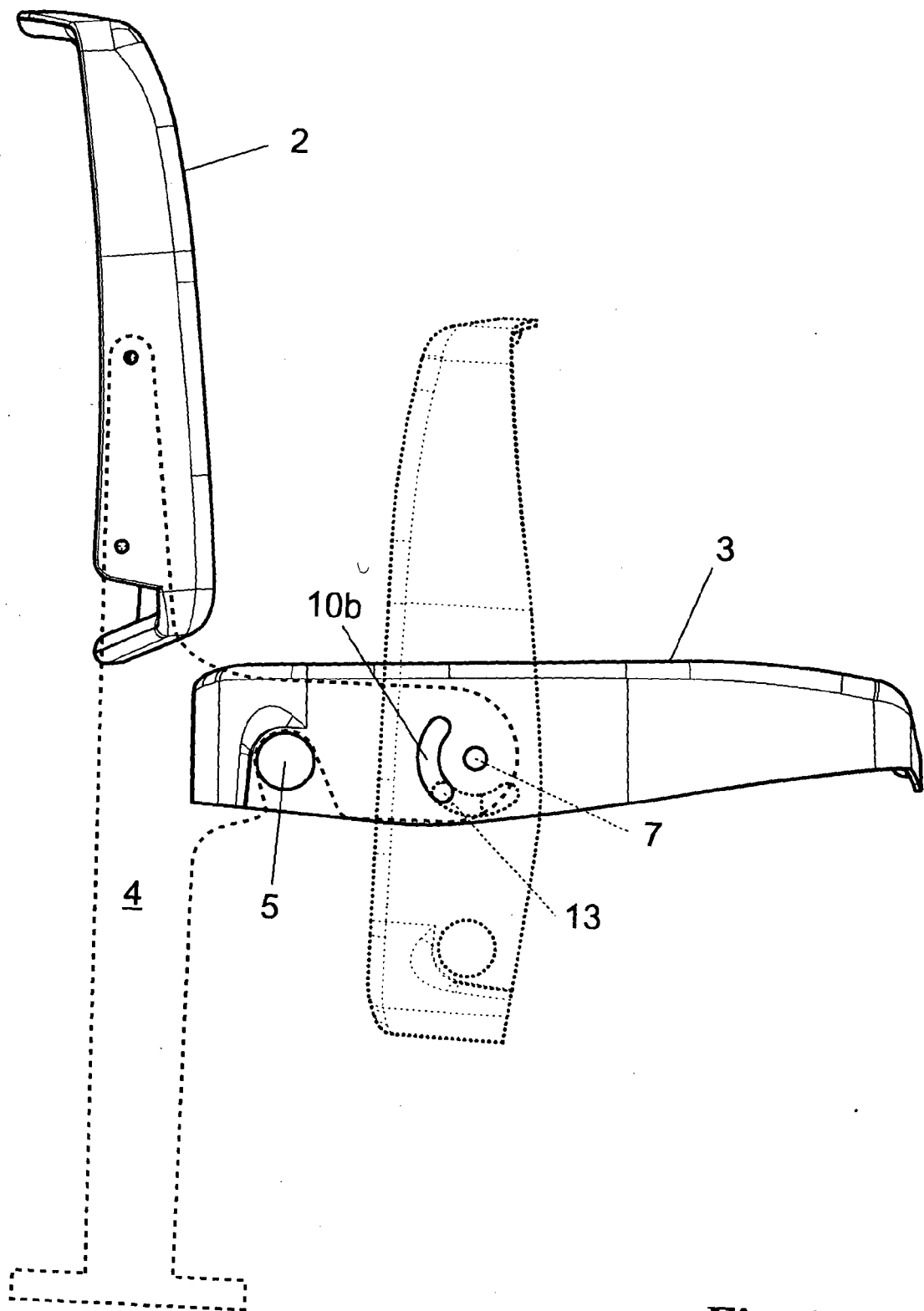


Fig. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 01 4480

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 February 2008	Examiner Kus, Slawomir
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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