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(54) **Wheelchair for heavy persons**

(57) The invention concerns a wheelchair provided with two legrests, each legrest comprising a frame part (3) and, connected thereto, a footrest (1), characterized

in that each footrest (1) comprises at one of their ends (4), namely connecting end, first connecting means so as to detachably connect an extension plate (2) between said connecting ends (4).

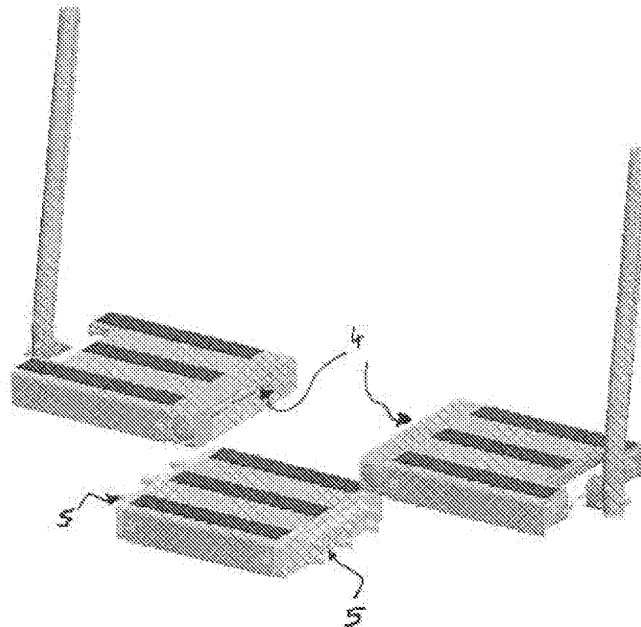


Fig. 2

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DescriptionFIELD OF THE INVENTION

[0001] The present invention relates to a wheelchair provided with two legrests, each legrest comprising a frame part and, connected thereto, a footrest.

BACKGROUND OF THE INVENTION

[0002] With the known wheelchairs, the legrest usually comprises a frame part which is connected centrally to the wheelchair frame and which is often provided with a footrest and a calfrest. Such a footrest and calfrest contribute to the comfort of the user seated in the wheelchair. In the conventional wheelchairs, each legrest has its own footrest and calfrest. But these conventional wheelchairs are not adapted to the needs of heavy disabled persons. Indeed, for these persons, the wheelchair frame is wider and only a single footrest, connected at both ends to the right and left legrests, is used. However, the problem in this solution is the great difficulty to transfer the user in or from the wheelchair, due to the presence of this footrest.

[0003] For improving this, it has already been proposed to design the footrest to be pivotable so that prior to a transfer, it can temporarily be pivoted sideways. However, in this solution, the legs of the user seated in the wheelchair are to be lifted from the path of travel of the footrest pivoting by. This leads to a very uncomfortable sitting posture for the user and requires substantial physical effort from the assistant, especially considering the high weight of the user's legs.

[0004] The aim of the present invention is therefore to provide a wheelchair for heavy persons, wherein the drawback mentioned of the known wheelchairs is avoided.

SUMMARY OF THE INVENTION

[0005] In this view the present invention is concerned with a wheelchair as claimed in claim 1.

[0006] Important features of the device are defined in the dependant claims. With a wheelchair according to the invention, the footrest assembly made in one piece before the transfer of the user can be splitted in three parts, the middle part being temporarily removed and the two external parts keeping attached to the legrests. Consequently, the user can place one of his feet outside of the footrest by the open space previously occupied by the middle part so as to move it to the floor. At the same time, and optionally, it is also possible to pivot sideways the external part of the footrest on which rested said foot. The same action can be repeated for the second foot of the user so that the user is completely transferred from the wheelchair. Accordingly, the solution of the invention avoids high physical effort for the assistant and uncomfortable sitting posture for the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Other features and advantages of the present invention will appear more clearly from the detailed description of embodiments of the invention which are presented solely by way of a non-restricted example and illustrated by the attached drawings in which:

Figure 1 is a perspective view of a footrest assembly used in the wheelchair of the present invention;

Figure 2 is a perspective view similar to Figure 1 but with the footrest assembly splitted in three parts;

Figure 3 is a perspective view similar to Figure 2, but with the external parts of the footrest assembly positioned in an aside pivoted position;

Figure 4 is a view in detail of first and second connecting means, in the splitted position of the footrest assembly of Figure 1;

Figure 5 is a view similar to Figure 4, but in the partially assembled position of the footrest assembly of Figure 1;

Figure 6 is a view similar to Figure 4, but in the assembled position of the footrest assembly of Figure 1;

Figure 7 is a perspective view of a calfrest used in the wheelchair of the present invention;

Figure 8 is a perspective view similar to Figure 7 but with the calfrest positioned in a completely folded up position.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0008] In reference to Figures 1 to 3, a footrest assembly conform to the present invention is shown.

[0009] The footrest assembly 10 comprises two external parts 1 and a middle part 2. Each external part 1 constitutes a conventional footrest of a wheelchair and is pivotally connected to the frame part 3 of a legrest, respectively positioned at the left and at the right side of the wheelchair frame. The middle part 2 constitutes an extension plate that is detachably connected to said external parts 1 at its two lateral ends 5. The connection between said external parts 1 and said middle part 2 can be achieved for instance by positioning a first connecting means at the ends 4 of said external parts 1 that are in contact with the lateral ends 5 of said middle part 2, hereinafter referred to as connecting ends 4, said first connecting means being configured so as to interact with second connecting means positioned at each lateral end 5 of said middle part 2. Such first and second connecting means will be described afterwards in relation to Figure 4 to 6. However, it is evident that such a connection could also be achieved by only using first connecting means. For instance, such first connecting means could consist in at least one clip or claw positioned on the border of the connecting ends 4 and configured to pinch an external wall of the middle part 2, positioned at each lateral end

of said middle part 2. In order to detach the middle part 2 from the rest of the footrest assembly 10, each external part 1 will be advantageously provided with disconnecting means 6. In an other embodiment of the present invention, such disconnecting means could also be integrated to the middle part 2. However, such disconnecting means are only optional and specific embodiments of the present invention could also be proposed without disconnecting means. In this case, the user must act directly on the first connecting means to detach the middle part 2 from the external parts 1.

[0010] Thus, when an assistant decides to transfer a user from the wheelchair of the present invention, he begins to remove the middle part 2 from the rest of the footrest assembly 10 (see Figure 2). For doing this, he must firstly activate the disconnecting means 6 positioned on one external face of the external parts 1 so that the interaction between first connecting means and second connecting means is stopped, leading to the disconnection between said external parts 1 and said middle part 2. However, in this position, mechanical pieces of the middle part 2 or of the external parts 1 can still prevent the removal of said middle part 2. So, to completely remove said middle part 2, it is necessary to push aside the frame part 3 of each legrest so that each external part 1 can be separated from the middle part 2. Thus, when the middle part 2 is removed, a free space is created between the external parts 1, said space being sufficient for receiving at least one foot of the user. By successively putting the user's feet outside of the wheelchair and, optionally, pivoting sideways the external parts 1, it will be easier for the assistant to transfer the user from the wheelchair.

[0011] In reference to Figure 4, one can see one external part 1 and the middle part 2 in the splitted position of the footrest assembly. Figure 4 shows that said first connecting means comprise a rod 7 extending along the connecting end 4 of said external part 1, said rod 7 having series of first tubular segments 8 separated by series of second tubular segments 9, the diameter of said first tubular segments 8 being lower than the diameter of said second tubular segments 9, and said second connecting means comprise series of connecting elements 11 spaced apart along the lateral ends 5 of the middle part 2, said connecting elements 11 having a slot 12 formed inside, said slot 12 comprising a first portion 12' in which only said first tubular segments 8 can be introduced and a second portion 12'' having a tubular form and approximately the same diameter than said second tubular segments 9. Said first portion 12' can be formed by two parallel plane walls separated by a distance slightly higher than the diameter of said first tubular segments 8 but lower than the diameter of said second tubular segments 9. Therefore, in the partially assembled position of the footrest assembly 10 (see Figure 5), said first tubular segments 8 are firstly positioned in front of said connecting elements 11 and introduced inside the second portion 12'' of the slot 12 through said first portion 12'. To finalize

the assembly of said middle part 2 to said external part 1, it is necessary to move the rod 7 in a direction parallel to its axis so as to position said second tubular segments 9 in front of said said connecting elements 11, said second tubular segments 9 being then introduced inside the second portion 12'' of said slot 12. Accordingly, said rod 7 is provided with a oblong slot 14 extending in a direction parallel to its axis, inside which is inserted a pin 13 fixedly connected to the external part 1, so that said rod 7 is slidably connected to said external part 1. In this assembled position (see Figure 6), it is not possible to disconnect the middle part 2 from the external part 1.

[0012] To disconnect said middle part 2 from said external part 1, the footrest assembly 10 is provided with a disconnecting means, said disconnecting means being positioned on an external place that can be reached easily by the user and being configured to act on said rod 7 so as to disconnect said middle part 2 from said external part 1. Such a disconnecting means can consist in a button 6 fixedly connected at one end of said rod 7. Said button 6 can be pushed by the user in the assembled position of Figure 6 so as to move said rod 7 parallel to its axis. Thus, the rod 7 reaches the partially assembled position of Figure 5. Afterwards, the user can move aside said external part 1 from said middle part 2, reaching the splitted position of Figure 4. A spring 15 positioned at one end of said rod 7, in contact with the internal face of said button 6, is configured to act on said button 6 so that said rod 7 returns continuously to its position of Figure 6.

[0013] The wheelchair of the present invention comprises also a calfrest 20 connected to the wheelchair frame 30 (see Figure 7). In the conventional wheelchairs, the calfrest is generally attached to the legrest frame. However, in the specific case of a wheelchair for heavy persons, this calfrest is too heavy and too large to connect it on the legrest. Furthermore, this big calfrest can be embarrassing during the transfer of the user from the wheelchair. The solution of the present invention consists in movably connecting this calfrest to the wheelchair frame so as to provide a completely folded up position of the calfrest in which it does not interfere with the legs of the user. To get this result, the calfrest 20 is slideably connected to a first support 21, said first support 21 being slideably connected to a second support 22 fixedly connected to the wheelchair frame 30. Accordingly, a connecting bar 23 fixedly connected to the back 20' of said calfrest 20 is slidably connected, for instance by using a screw, to a first connecting part 24 of said first support 21 so that the position of said back 20' with regard to said first support 21 can be modified. In addition, a second connecting part 25 of said first support 21 is slideably connected to a first connecting part 26 of said second support 22 so that the angular position of said back 20' with regard to the wheelchair frame 30 can be modified. Said second connecting part 25 comprises an arcuated plate fixedly connected at one end to the first connecting part 24 and defining a guide path inside which is slideably connected the first connecting part 26, for instance by

using a screw, said first connecting part 26 having a complementary form to said guide path. A second connecting part 27 of said second support 22 is fixedly connected at one end to said first connecting part 26 and fixedly connected at its other end to the wheelchair frame 30. Therefore, in the work position of Figure 7, the first connecting part 24 being positioned at the free end of the connecting bar 23, the back 20' is distant from the first support 21 and, the first connecting part 26 being positioned partially outside of the guide path defined by the second connecting part 25, said back 20' is tilted with regard to the vertical. In the rest position of Figure 8, the first connecting part 24 being positioned at the other end of the connecting bar 23, said back 20' is close to said first support 21 and, the first connecting part 26 being positioned completely inside of the guide path defined by the second connecting part 25, said back 20' is aligned with the vertical.

Claims

1. A wheelchair provided with two legrests, each legrest comprising a frame part (3) and, connected thereto, a footrest (1),
characterized in that each footrest (1) comprises at one of their ends (4), namely connecting end, first connecting means (7) so as to detachably connect an extension plate (2) between said connecting ends (4).
2. A wheelchair according to claim 1, wherein each footrest (1) comprises disconnecting means (6) configured to act on said first connecting means (7) so as to disconnect the extension plate (2) from said connecting ends (4).
3. A wheelchair according to any one of the preceding claims, wherein the extension plate (2) comprises second connecting means (11) at each of its lateral ends (5) configured to interact with said first connecting means (7) so as to be detachably connected to the footrests (1).
4. A wheelchair according to claim 3, wherein said first connecting means comprise a rod (7) extending along the connecting end (4) of each footrest (1), said rod (7) having series of first tubular segments (8) separated by series of second tubular segments (9), the diameter of said first tubular segments (8) being lower than the diameter of said second tubular segments (9), and said second connecting means comprise series of connecting elements (11) spaced apart along the lateral ends (5) of the extension plate (2), said connecting elements (11) having a slot (12) formed inside, said slot (12) comprising a first portion (12') in which only said first tubular segments (8) can be introduced and a second portion (12'') having a tubular form and approximately the same diameter than said second tubular segments (9).
5. A wheelchair according to claim 4, wherein disconnecting means comprise a button (6) fixedly connected to said rod (7), said button (6) acting on said rod (7) so as to move said first tubular segments (8) in front of said connecting elements (11).
6. A wheelchair according to claim 5, wherein a spring (15) positioned inside each footrest (1) acts on said rod (7) so as to move said second tubular segments (9) in front of said connecting elements (11).
7. A wheelchair according to any one of the preceding claims, wherein each footrest (1) is pivotally connected to said frame part (3).
8. A wheelchair according to any one of the preceding claims, wherein it comprises a wheelchair frame (30) and, connected at each side thereof, a calfrest (20).
9. A wheelchair according to claim 8, wherein said calfrest (20) is movably connected to said wheelchair frame (30).
10. A wheelchair according to claim 9, wherein said calfrest (20) is detachably connected to said wheelchair frame (30).

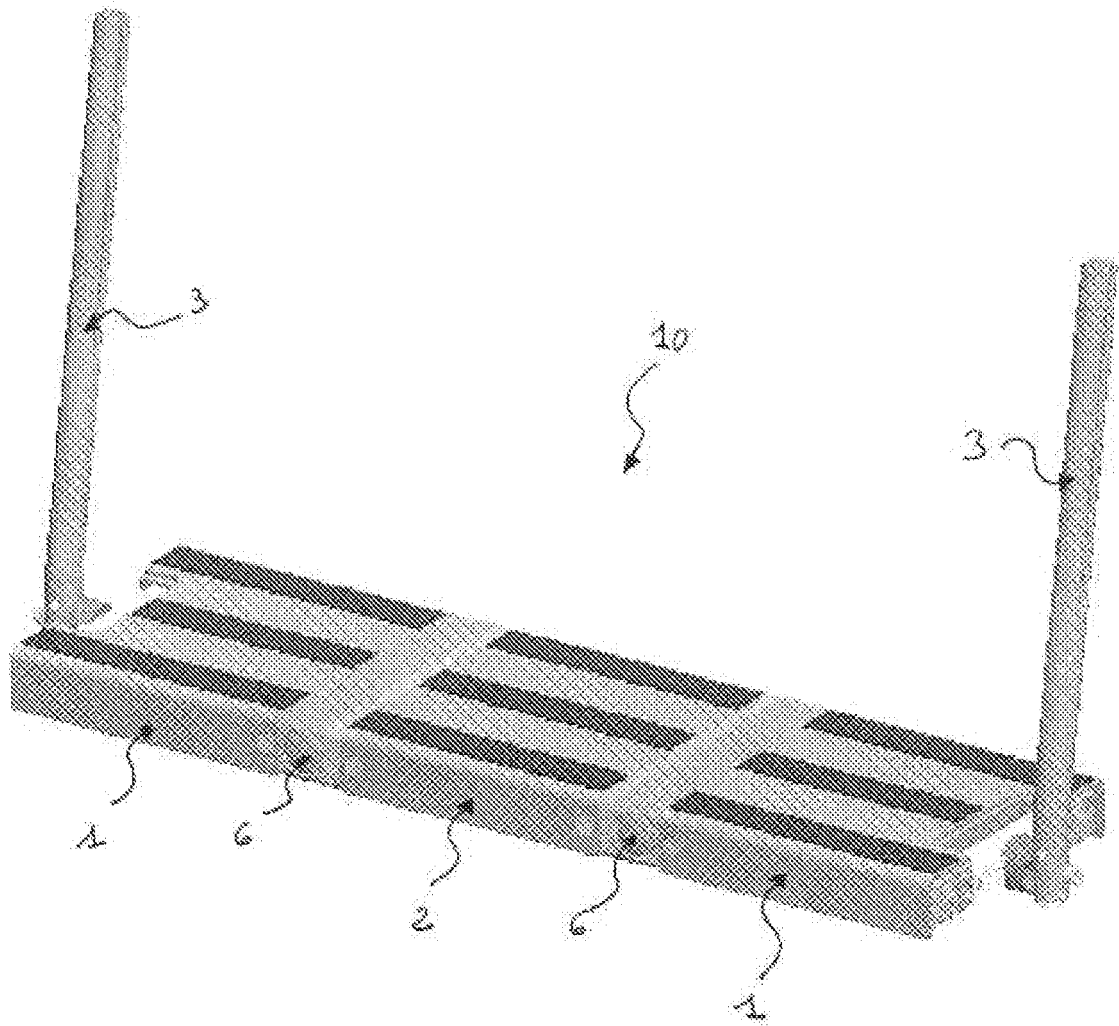


Fig. 1

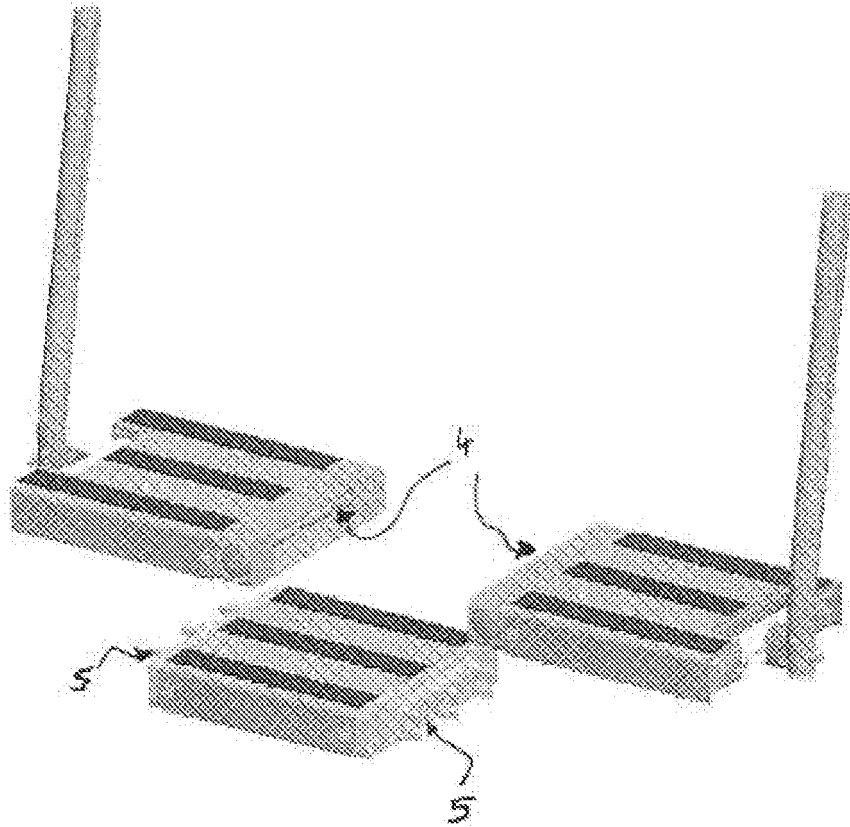


Fig. 2

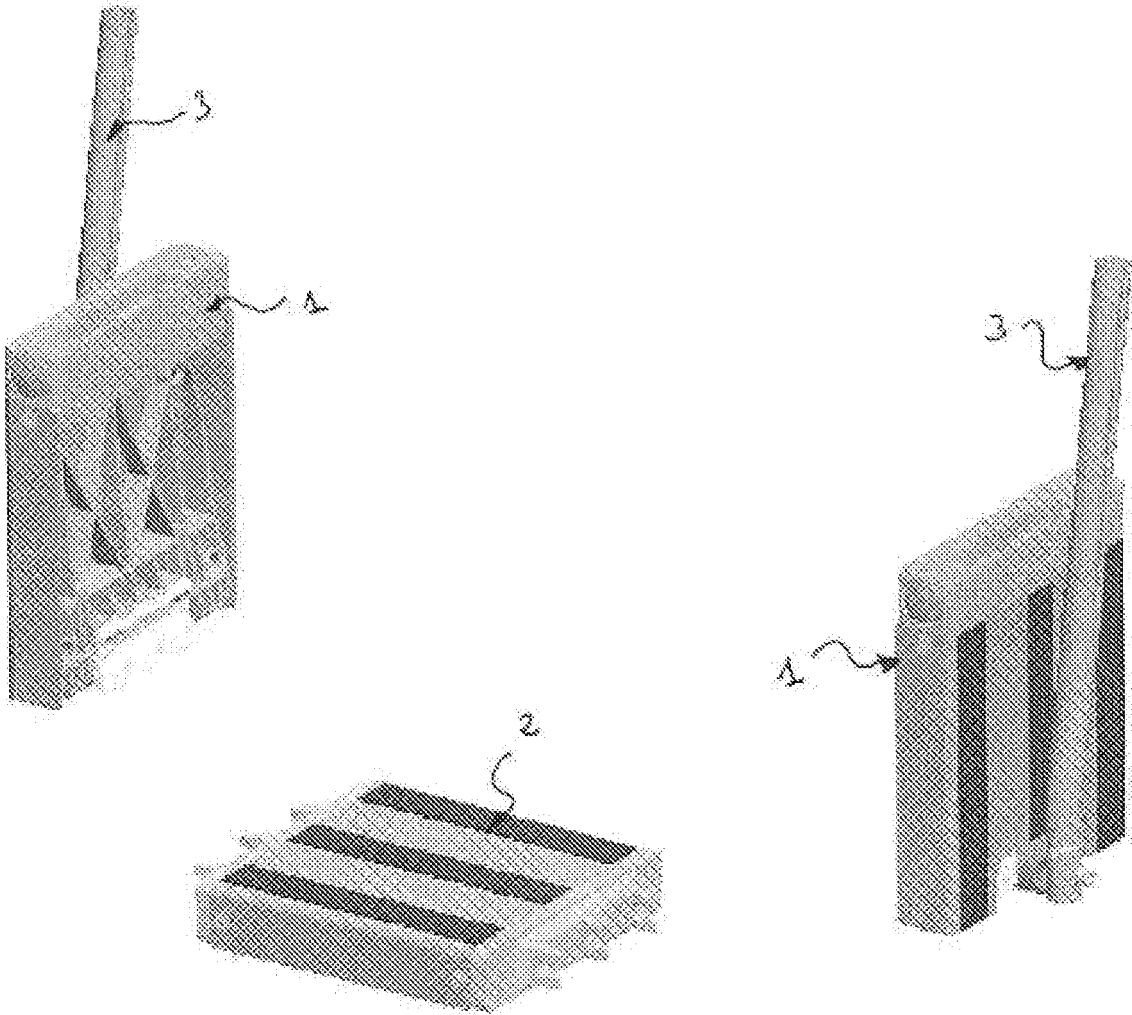


Fig. 3

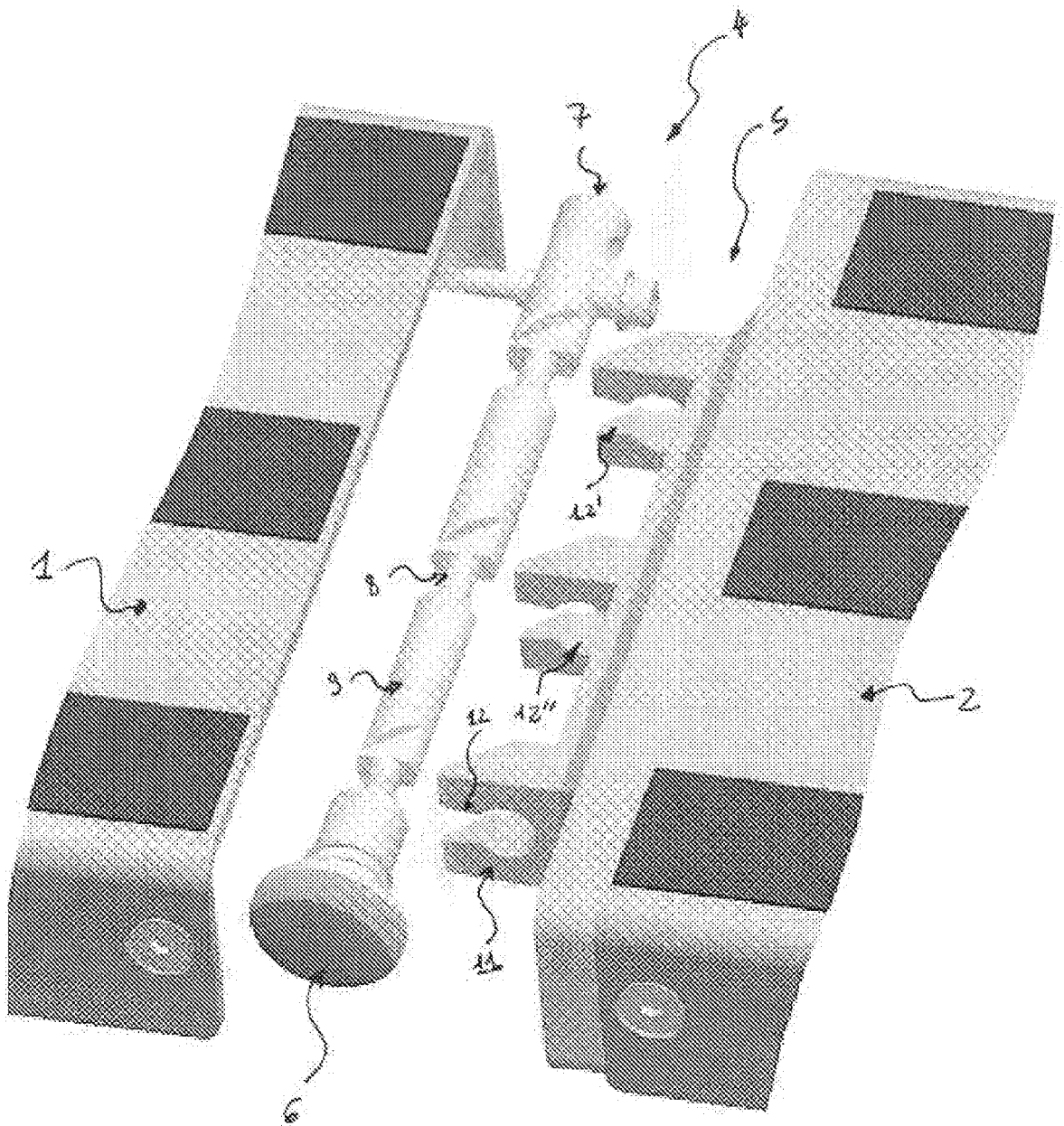


Fig. 4

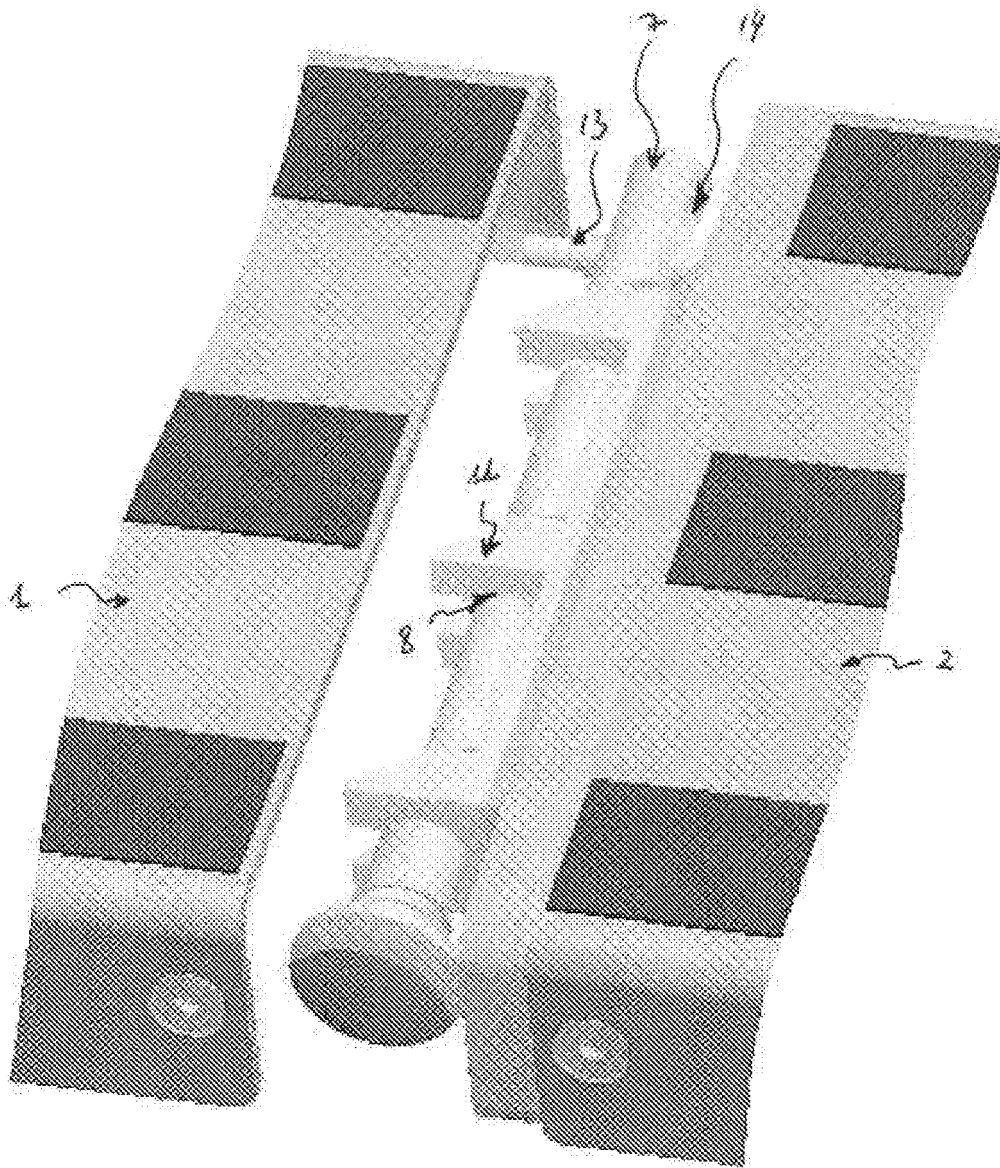


Fig. 5

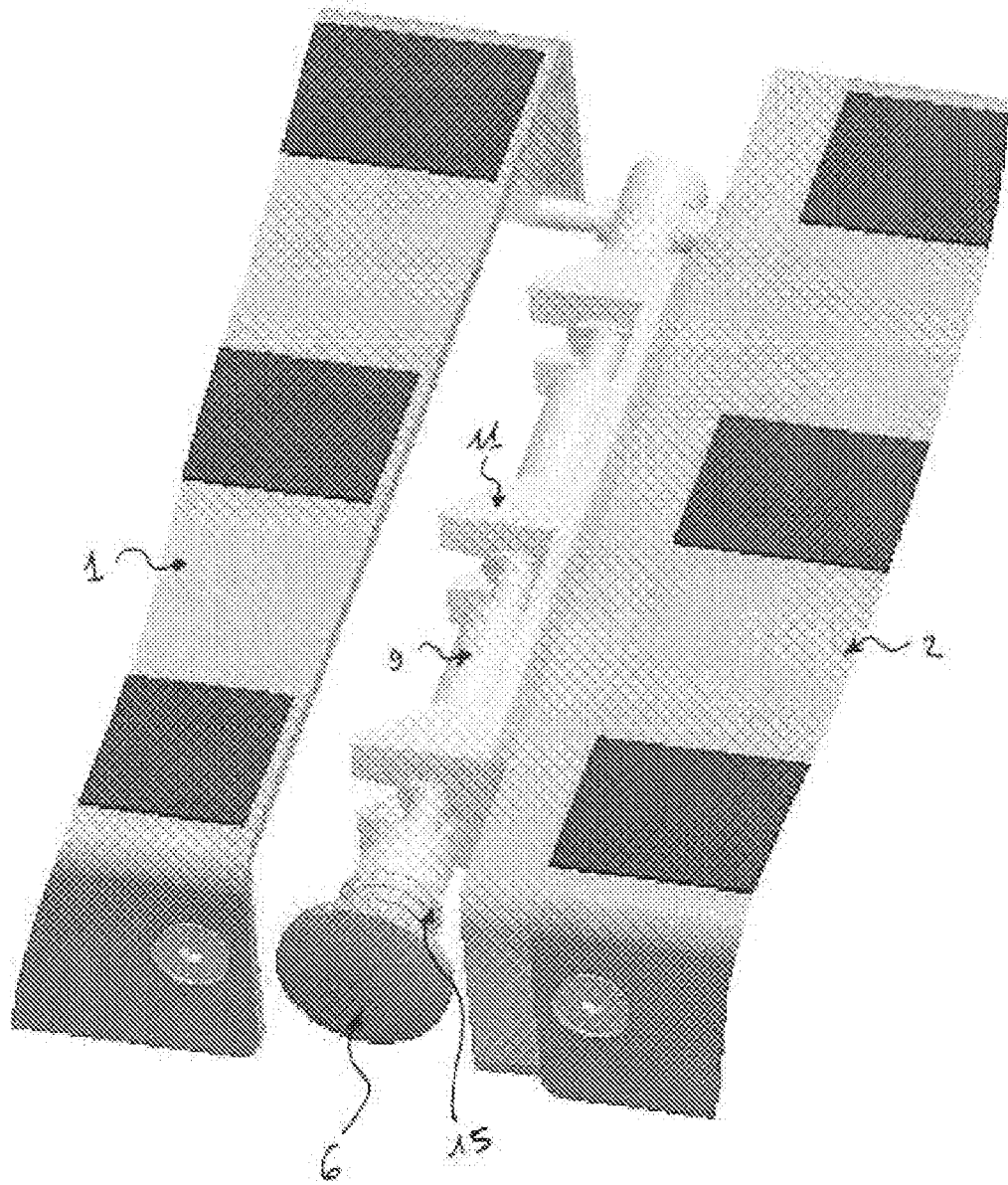


Fig. 6

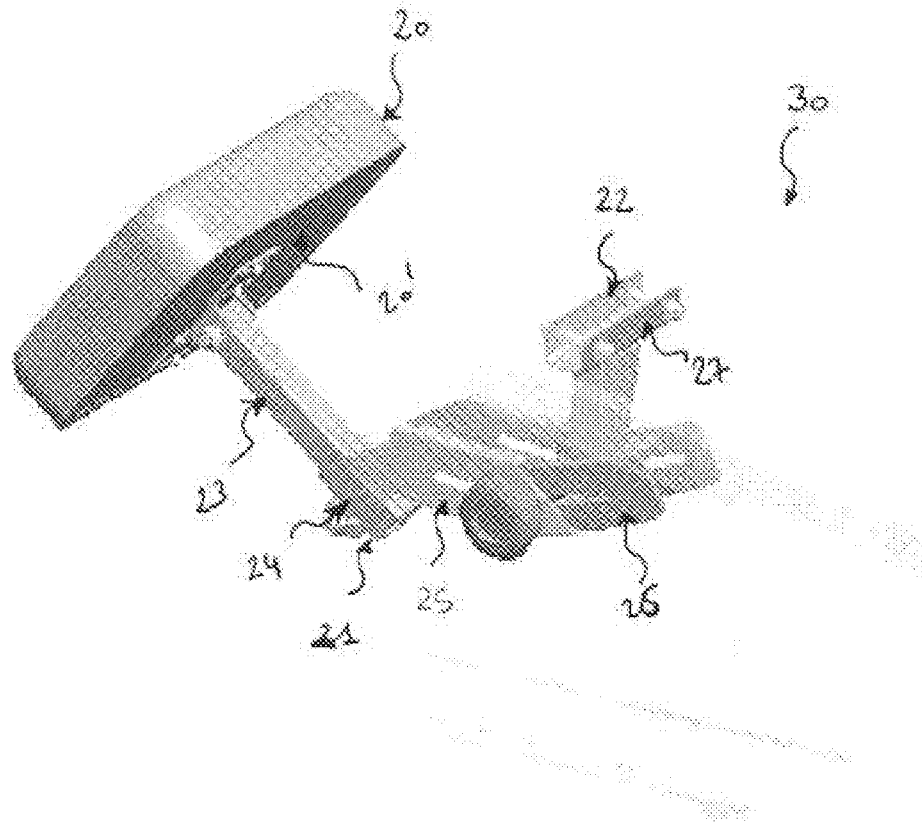


Fig. 7

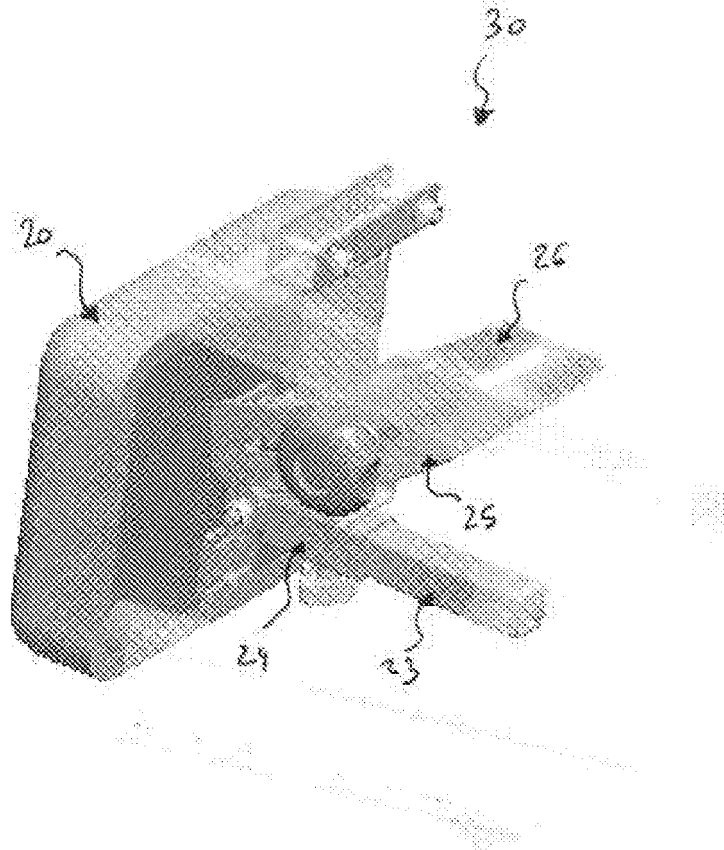


Fig. 8



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 1772

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	WO 2005/034826 A2 (TURBO WHEELCHAIR CO INC [US]) 21 April 2005 (2005-04-21) * page 11, line 14 - page 12, line 24; figures 3-6 *	1	
A	US 5 186 480 A (MORGAN JERRY E [US] ET AL) 16 February 1993 (1993-02-16) * column 3, lines 56-63; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A61G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 February 2010	Examiner Birlanga Pérez, J
CATEGORY OF CITED DOCUMENTS		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
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 17 1772

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03-02-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82