



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 555 004 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.07.2005 Bulletin 2005/29

(51) Int Cl.7: **A61H 1/00**

(21) Application number: **04030738.1**

(22) Date of filing: **23.12.2004**

(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 MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL BA HR LV MK YU

(72) Inventors:
• **Asai, Rika c/o Omron Healthcare Co.,Ltd.
Ukyo-ku, Kyoto-shi,Kyoto 615-0084 (JP)**
• **Fukao, Akihiro c/o Omron Healthcare Co.,Ltd
Ukyo-ku, Kyoto-shi,Kyoto 615-0084 (JP)**

(30) Priority: **19.01.2004 JP 2004010996**

(74) Representative: **Kilian, Helmut, Dr.
Wilhelms, Kilian & Partner
Patentanwälte
Eduard-Schmid-Strasse 2
81541 München (DE)**

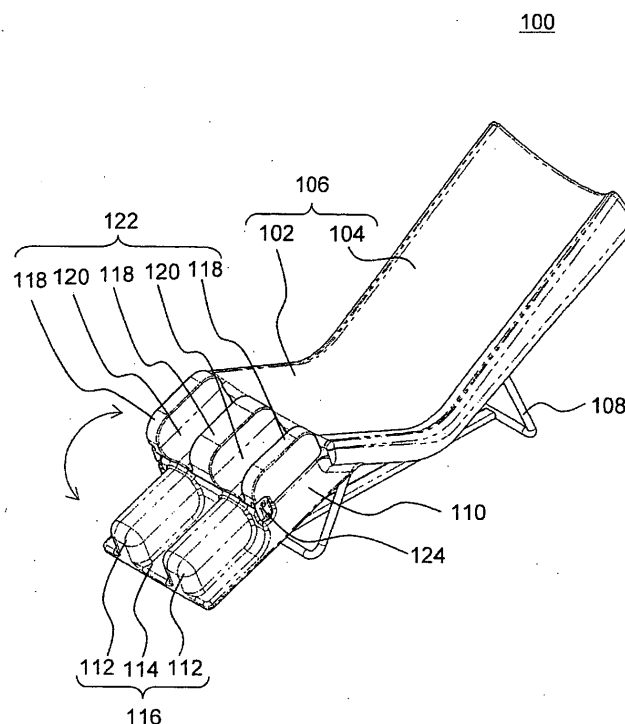
(71) Applicant: **Omron Healthcare Co., Ltd.
Kyoto 615-0084 (JP)**

(54) **Massaging device**

(57) A massage chair (100) comprises: a below-knee-region supporting part (110), which is attached to the front of a seat part (102), and supports upper below-knee regions of legs of a user of the massage chair (100), and; a massaging tool (122), which has one surface in concavo-convex form and the other surface in

almost flat form, the surface in concavo-convex form supporting the below-knee regions of the user's legs when the massaging tool (122) is rotated forward around a pivot (124) as a rotational axis, the other surface in almost flat form supporting the lower below-knee regions of the user's legs when the massaging tool (122) is rotated backward.

Fig. 1



EP 1 555 004 A1

Description

BACKGROUND OF THE INVENTION

Technical Field

[0001] The present invention relates to a massaging machine for applying massage to below-knee regions of a user's legs.

Related Prior Art

[0002] There have hitherto been proposed massage chairs having a massage function of applying massage to below-knee regions of a user's legs while the user remains seated (e.g. Japanese Patent Laid-Open No. Hei 8-257084).

[0003] Fig. 5 shows an external view of a first conventional massage chair. As shown in Fig. 5A and Fig. 5B, a below-knee-region supporting part 14 in concavo-convex form having a massage function is attached rotatably around a pivot 16 as a rotational axis, which is mounted on the front end of a seated part 12. When the user is to be massaged, the below-knee-region supporting part 14 is rotated (horizontally) forward, as shown in Fig. 5A, and the below-knee-regions of the user's legs are then placed in the concave parts of the below-knee-region supporting part 14. On the other hand, when the user is not to be massaged, the below-knee-region supporting part 14 is rotated downward, as shown in Fig. 5B.

[0004] It is sometimes the case that the user considers the below-knee regions of his or her legs need some kind of support so as to be comfortably seated on the massage chair even when not massaged. In such a case, although massage is not applied, the below-knee-region supporting part 14 is rotated to the front of the seat part 12, as shown in Fig. 5A. The user then places the below-knee regions of his or her legs in the concave parts of the below-knee-region supporting part 14, which may, however, cause the user to have a strong feeling of restraint due to the difficulty in freely moving the below-knee regions of his or her legs.

[0005] In view of this problem, there have been proposed massage chairs capable of eliminating the user's feeling of restraint (e.g. Japanese Patent Laid-Open No. 2003-62024).

[0006] Fig. 6 shows an external view of a conventional second massage chair. As shown in Fig. 6A and Fig. 6B, a support arm 31 is attached rotatably around a pivot 34 as a rotational axis, which is mounted on the front end of a seat part 22. Further, a footrest 25 is attached rotatably around a pivot 26 as a rotational axis, which is mounted on the center of the portion extending from the back to the front, of the support arm 31.

[0007] Fig. 7 shows an external view of the footrest in the conventional second massage chair. One surface of the footrest 25 is a massage surface 24 in concavo-convex form, as shown in Fig. 7A, and the other surface of

the footrest 25 is a flat foot placing surface 35, as shown in Fig. 7B. When a user is to be massaged, the footrest 25 is rotated to turn the massage surface 24 upward, and when the user is not to be massaged, the footrest 25 is rotated to turn the foot placing surface 35 upward. Thereby, the below-knee regions of the user's legs are supported by the foot placing surface 35 when the user is not massaged.

10 DISCLOSURE OF THE INVENTION

[0008] However, in the conventional massaging machine shown in Fig. 6, the longitudinal length of the footrest 25 is limited so as to avoid contact between the footrest 25 and a floor when the footrest 25 is rotated. As shown in Fig. 8, for example, a part 41 of each of the lower below-knee regions (e.g. calves) of the user's legs is in touch with the angular part of the front end of the footrest 25, which might cause the user to feel pain in the part 41. There has thus been a demand for a massage chair having further improved a user's comfort.

[0009] The present invention was made in order to solve the conventional problems, and has an object to provide a massage chair having improved a user's comfort.

[0010] A massaging machine of the present invention is configured to comprise: a seat part on which a user is seated; a below-knee-region supporting part, which is attached to the front of the seat part, and has an almost flat upper surface capable of supporting upper below-knee regions of the user's legs, and; a massaging tool, which is attached rotatably around the front end of the below-knee-region supporting part as a rotational axis, and has a first surface in concavo-convex form including concave parts and convex parts and a second surface in almost flat form, the first surface being turned upward when the massaging tool is rotated backward, for supporting the below-knee regions of the user's legs in the concave parts, the second surface being turned upward when the massaging tool is rotated forward to form an almost flat surface together with the upper surface of the below-knee-region supporting part, for supporting the below-knee regions of the user's legs.

[0011] With this configuration, when the user is to be massaged, the massaging tool is rotated backward to turn the first surface in concavo-convex form upward, for supporting the below-knee regions of the user's legs in the concave parts. On the other hand, when the user is not to be massaged, the massaging tool is rotated forward to turn the second surface in almost flat form upward so as to form the almost flat surface together with the upper surface of the below-knee-region supporting part, and the below-knee-region supporting part supports the upper below-knee regions while the massaging tool supports the lower below-knee region.

[0012] The massaging machine of the present invention can further be configured to have a supporting part, positioned in front of the below-knee-region supporting

part, which supports the lower below-knee regions of the user's legs when the massaging tool is rotated backward, and supports the massaging tool when the massaging tool is rotated forward.

[0013] With this configuration, when the massaging tool is rotated backward, the lower below-knee regions of the user's legs can be supported, and even when the massaging tool is rotated forward and the below-knee regions of the user's lower legs apply a large force to the massaging tool, the supporting part can sufficiently support the massaging tool and further the below-knee regions of the user's legs.

[0014] The massaging machine of the present invention can further be configured such that the upper surface of the supporting part is concavo-convex to be fitted into the first surface of the massaging tool.

[0015] With this configuration, the convex parts on the upper surface of the supporting part can support the lower below-knee regions of the user's legs when the massaging tool is rotated backward, and further, the supporting part can restraint the movement of the massaging tool when the massaging tool is rotated forward.

[0016] The massaging machine of the present invention can further be configured such that the bottoms of the concave parts in the first surface of the massaging tool and the tops of the convex parts on the upper surface of the supporting part form an almost flat surface when the massaging tool is rotated backward.

[0017] With this configuration, the upper and lower below-knee regions of the user's legs can be supported by the almost uniform surface when the user is massaged.

[0018] The massaging machine of the present invention can further be configured such that the bottoms of the concave parts in the first surface of the massaging tool and the upper surface of the supporting part form an almost flat when the massaging tool is rotated backward.

[0019] With this configuration, the upper and lower below-knee regions of the user's legs can be supported by the almost uniform surface when the user is massaged.

[0020] In the present invention, when the user is to be massaged, the massaging tool is rotated backward to turn the first surface in concavo-convex form upward, for supporting the below-knee regions of the user's legs. On the other hand, when the user is not to be massaged, the massaging tool is rotated forward to turn the second surface in almost flat form upward so as to form the almost flat surface together with the upper surface of the below-knee-region supporting part, for supporting the upper below-knee regions of the user's legs by the below-knee-region supporting part and for supporting the lower below-knee regions by the massaging tool, thereby improving the comfort of the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

Fig. 1 shows a first external view of a massage chair according to a first embodiment of the present invention.

Fig. 2 shows a second external view of the massage chair according to the first embodiment of the present invention.

Fig. 3 shows a first external view of a massage chair according to a second embodiment of the present invention.

Fig. 4 shows a second external view of the massage chair according to the second embodiment of the present invention.

Fig. 5 shows an external view of a first conventional massage chair.

Fig. 6 shows an external view of a second conventional massage chair.

Fig. 7 shows an external view of a footrest in the massage chair of the second conventional massage chair.

Fig. 8 shows a view showing the positional relationship between the footrest and the user's leg on the second conventional massage chair.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] In the following, massage machines according to embodiments of the present invention are described using the drawings.

[0023] First, a first embodiment of the present invention is described. Fig. 1 and Fig. 2 each show an external view of a massaging chair according to the first embodiment of the present invention. A massage chair 100 shown in Fig. 1 and Fig. 2 comprises a chair body 106, a leg part 108, a below-knee-region supporting part 110, a supporting part 116, and a massaging tool 122.

[0024] The chair body 106 is constituted of a seat part 102 and a backrest part 104. The chair body 106 is supported by a leg part 108. A below-knee-region supporting part 110 is attached to the front of the seat part 102. The upper surface of the below-knee-region supporting part 110 is almost flat, being capable of supporting upper below-knee regions (for example, regions from around the knees to around the calves) of legs of a user of the massage chair 100. The supporting part 116 is formed in front of the below-knee-region supporting part 110. The upper surface of the supporting part 116 is concavo-convex, having two wall parts 112 extending longitudinally, and a groove part 114 formed between the two wall parts 112. It is to be noted that, although the below-knee-region supporting part 110 is integrated with the supporting part 116 in the massage chair 100 shown in Fig. 1 and Fig. 2, the below-knee-region supporting part 110 and the supporting part 116 may be mutually inde-

pendent.

[0025] The massaging tool 122 is attached around a pivot 124 as a rotational axis, which is constituted so as to horizontally extend at the front end of the below-knee-region supporting part 110. One surface of this massaging tool 122 is concavo-convex, having three wall parts 118 formed respectively at the right and left ends and the center, and two groove parts 120 formed between those three wall parts 118. As opposed to this, the other surface of the massaging tool 122 is almost flat. Further, a system (not shown) for achieving a massage function is formed inside the wall parts 118.

[0026] When the massaging tool 122 is rotated backward (in the direction approaching the chair body 106) around the pivot 124 as the rotational axis, the concavo-convex surface where the wall parts 118 and the groove parts 120 are formed is turned upward while the almost flat surface is turned downward, being supported by the below-knee-region supporting part 110, as shown in Fig. 1. In the case where the massaging tool 122 is positioned as shown in Fig. 1, the user sits on the chair body 106 and places his or her respective legs into the two grooves 120, to have the upper below-knee regions supported by the massage tool 122 and the lower below-knee regions (for example, regions from around the calves to around the ankles) supported by the wall parts 112 of the supporting part 116, so as to have the upper below-knee regions massaged.

[0027] It should be noted that the user may have the lower below-knee regions of his or her legs massaged by the massaging tool 122 by sliding his or her body upward on the chair body 106. Moreover, the chair body 106 may be configured such that the user is able to have the upper below-knee regions of his or her legs massaged by the massaging tool 122 in a state sitting more forward than in a normal position, and have the lower below-knee regions of his or her legs massaged by the massaging tool 122 in a state sitting more backward than in a normal position.

[0028] Further, in a state where the massaging tool 122 is positioned as shown in Fig. 1, the bottoms of the groove parts 120 as the concave parts of the massaging tool 122 and the tops of the wall part 112 of the supporting part 116 are preferably configured to form an almost flat surface. This configuration allows the upper and lower below-knee regions of the user's legs to be supported by the almost uniform surface when the user is massaged, thereby improving the user's comfort.

[0029] On the other hand, when the massaging tool 122 is rotated forward around the pivot 124 as the rotational axis (in the direction detaching from the chair body 106), as shown in Fig. 2, the almost flat surface faces upward while the concavo-convex surface where the wall parts 118 and the groove parts 120 are formed faces downward. In this case, the upper surface of the below-knee-region supporting part 110 and the almost flat upper surface of the massaging tool 122 form an almost flat surface. The user not to be massaged sits on the

chair body 106 and then stretches his or her legs, to have the upper below-knee region supported by the below-knee-region supporting part 110 and the lower below-knee region supported by the massaging tool 122. With this configuration, most of the below-knee regions of the user's legs are supported, thereby improving the user's comfort.

[0030] It is to be noted that, in the case where the massaging tool 122 is positioned as shown in Fig. 2, the concavo-convex surface formed by the wall parts 118 and the groove parts 120 in the massaging tool 122 is opposed to and fitted into the concavo-convex surface formed by the wall parts 112 and the groove part 114 in the supporting part 116. The supporting part 116 as thus configured can support the massaging tool 122 and can further support the lower below-knee regions of the user's legs sufficiently even when the below-knee regions of the user's lower legs apply a large force to the massaging tool. Moreover, since the massaging tool 122 and the supporting part 116 are both in concavo-convex form and fitted into each other, the supporting part 116 can restraint the movement of the massaging tool 122 to increase stability.

[0031] Next, a second embodiment of the present invention is described. Fig. 3 and Fig. 4 each show an external view of a massaging chair according to the second embodiment of the present invention. A massage chair 200 shown in Fig. 3 and Fig. 4 comprises a chair body 206, a leg part 208, a below-knee-region supporting part 210, a supporting part 216, and a massaging tool 222.

[0032] The chair body 206 has the same configuration as that of the chair body 106 in the first embodiment shown in Fig. 1 and Fig. 2, being constituted of a seat part 202 and a backrest part 204, and supported by a leg part 208. As in the case of the below-knee-region supporting part 110 in the first embodiment shown in Fig. 1 and Fig. 2, a below-knee-region supporting part 210 is attached to the front of the seat part 202, and the upper surface thereof is almost flat, being capable of supporting upper below-knee regions of legs of a user of the massage chair 200.

[0033] The supporting part 216 is formed in front of the below-knee-region supporting part 210. The upper surface of the supporting part 216 is almost flat. It is to be noted that, although the below-knee-region supporting part 210 and the supporting parts 216 are mutually independent in the massage chair 200 shown in Fig. 3 and Fig. 4, the below-knee-region supporting part 210 may be integrated with the supporting parts 216.

[0034] The massaging tool 222 has the same configuration as that of the massaging tool 122 in the first embodiment shown in Fig. 1 and Fig. 2. Namely, the massaging tool 222 is attached around a pivot 224 as a rotational axis, which is constituted so as to horizontally extend at the front end of the below-knee-region supporting part 210. One surface of this massaging tool 222 is concavo-convex, having three wall parts 218 formed

respectively at the right and left ends and the center, and two groove parts 220 formed between those three wall parts 218. As opposed to this, the other surface of the massaging tool 222 is almost flat. Further, a system (not shown) for achieving a massage function is formed inside the wall parts 218.

[0035] When the massaging tool 222 is rotated backward around the pivot 224 as the rotational axis, the concavo-convex surface where the wall parts 218 and the groove parts 220 are formed is turned upward while the almost flat surface is turned downward, being supported by the below-knee-region supporting part 210, as shown in Fig. 3. In the case where the massaging tool 222 is positioned as shown in Fig. 3, the user sits on the chair body 206 and places his or her respective legs into the two grooves 220, to have the upper below-knee regions supported by the massaging tool 222 and the lower below-knee region supported by the supporting part 216, so as to have the upper below-knee regions massaged.

[0036] It should be noted that the user may have the lower below-knee regions of his or her legs massaged by the massaging tool 222 by sliding his or her body upward on the chair body 206. Moreover, the chair body 206 may be configured such that the user is able to have the upper below-knee regions of his or her legs massaged by the massaging tool 222 in a state sitting more forward than in a normal position, and have the lower below-knee regions of his or her legs massaged by the massaging tool 222 in a state sitting more backward than in a normal position.

[0037] Further, in a state where the massaging tool 222 is positioned as shown in Fig. 3, the bottoms of the groove parts 220 as the concave parts of the massaging tool 222 and the upper surfaces of the supporting parts 216 are configured to form an almost flat surface so that the upper and lower below-knee regions of the user's legs can be supported by the almost uniform surface when the user is massaged, thereby improving the user's comfort.

[0038] On the other hand, when the massaging tool 222 is rotated forward around the pivot 224 as the rotational axis, as shown in Fig. 4, the almost flat surface faces upward while the concavo-convex surface where the wall parts 218 and the groove parts 220 are formed faces downward. In this case, the upper surface of the below-knee-region supporting part 210 and the almost flat upper surface of the massaging tool 222 form an almost flat surface. Further, the supporting parts 216 are fitted into the concave parts 220 of the massaging tool 222. The user not to be massaged sits on the chair body 206 and then stretches his or her legs, to have the upper below-knee region supported by the below-knee-region supporting part 210 and the lower below-knee region supported by the massaging tool 222. Namely, as in the first embodiment, most of the below-knee regions of the user's legs are supported, thereby improving the user's comfort.

Industrial Applicability

[0039] As thus described, the massaging machine according to the present invention is useful as a massaging machine for applying massage to the below-knee regions of the user's legs, having the effect of improving the user's comfort.

Claims

1. A massaging machine, comprising:

a seat part (102,202) on which a user is seated; a below-knee-region supporting part (110,210), which is attached to the front of said seat part (102,202), and has an almost flat upper surface capable of supporting upper below-knee regions of said user's legs, and;

a massaging tool (122,222), which is attached rotatably around the front end of said below-knee-region supporting part (110,210) as a rotational axis, and has a first surface in concavo-convex form including concave parts and convex parts and a second surface in almost flat form, said first surface being turned upward when the massaging tool (122,222) is rotated backward, for supporting the below-knee regions of said user's legs in said concave parts, said second surface being turned upward when the massaging tool (122,222) is rotated forward to form an almost flat surface together with the upper surface of said below-knee-region supporting part (110,210), for supporting the below-knee regions of said user's legs.

2. The massaging machine according to claim 1, **characterized in that** said massaging machine has a supporting part (116,216), positioned in front of said below-knee-region supporting part (110,210), which supports the lower below-knee regions of said user's legs when said massaging tool (122,222) is rotated backward, and supports said massaging tool (122,222) when said massaging tool (122,222) is rotated forward.

3. The massaging machine according to claim 2, **characterized in that** the upper surface of said supporting part (116,216) is concavo-convex to be fitted into the first surface of said massaging tool (122,222).

4. The massaging machine according to claim 3, **characterized in that** the bottoms of the concave parts in the first surface of said massaging tool (122,222) and the tops of the convex parts on the upper surface of said supporting part (116,216) form an almost flat surface when said massaging tool (122,222) is rotated backward.

5. The massaging machine according to claim 2, **characterized in that**, the bottoms of the concave parts in the first surface of said massaging tool (122,222) and the upper surface of said supporting part (116,216) form an almost flat surface when said massaging tool (122,222) is rotated backward.

10

15

20

25

30

35

40

45

50

55

Fig. 1

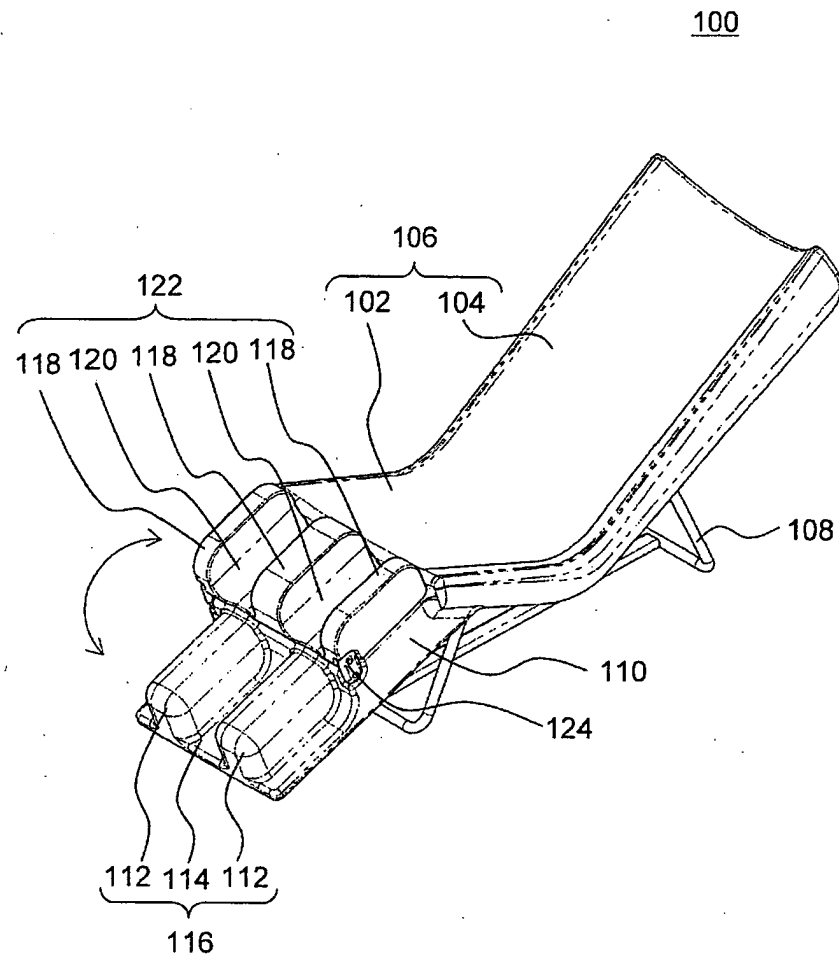


Fig. 2

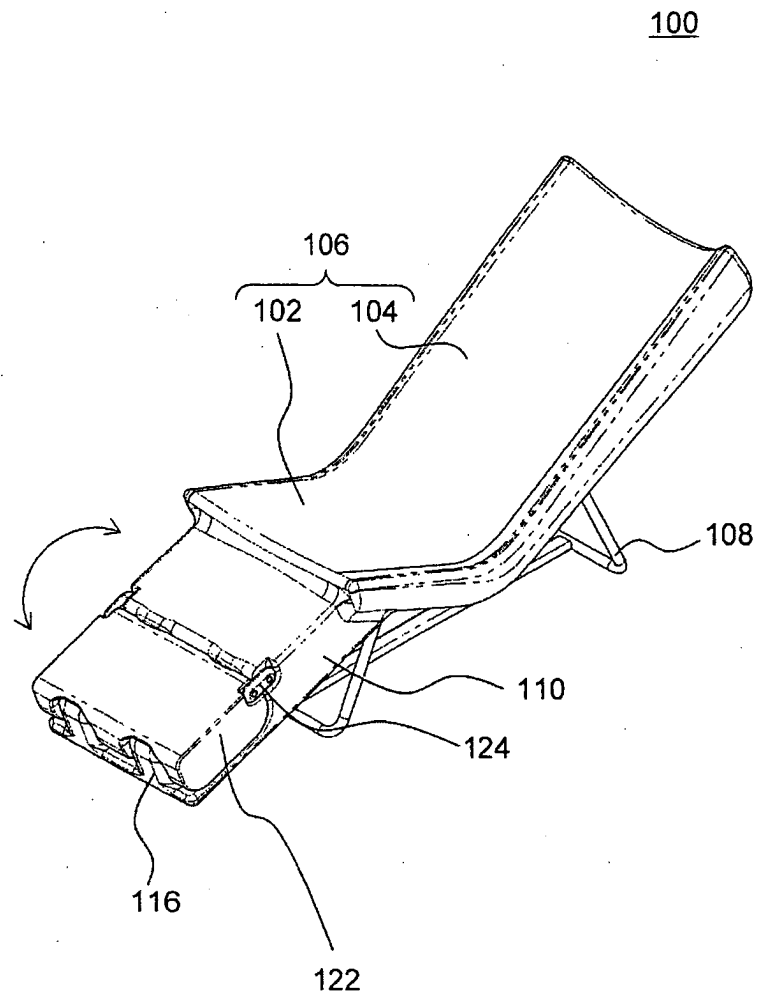


Fig. 3

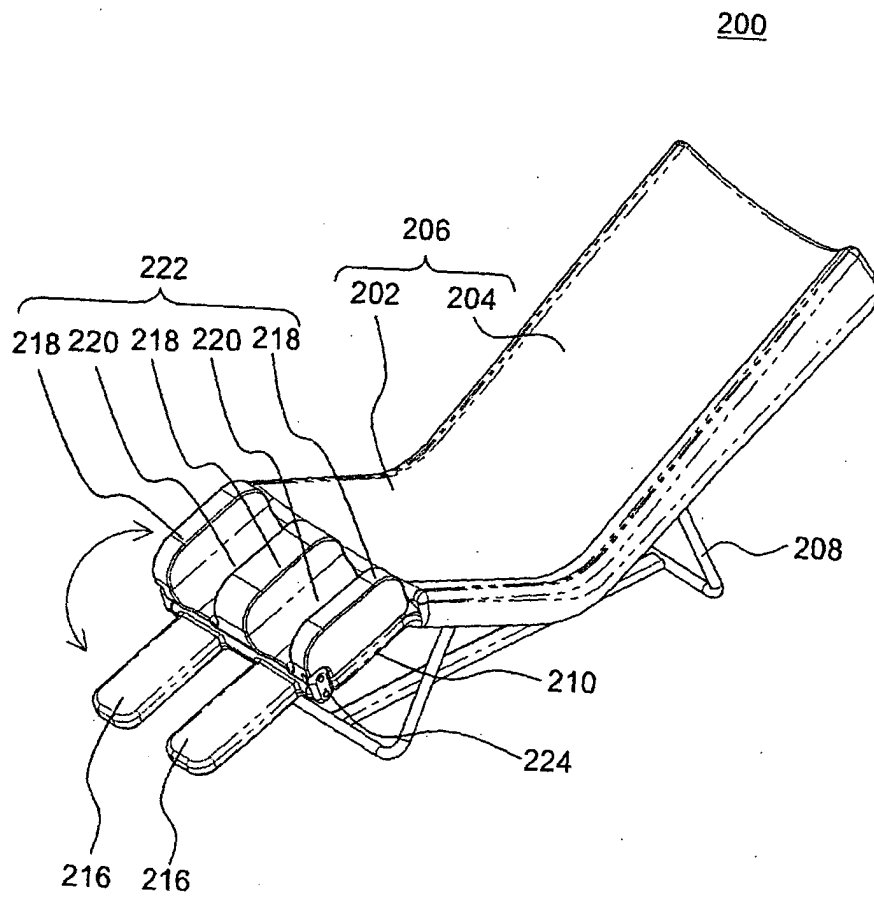


Fig. 4

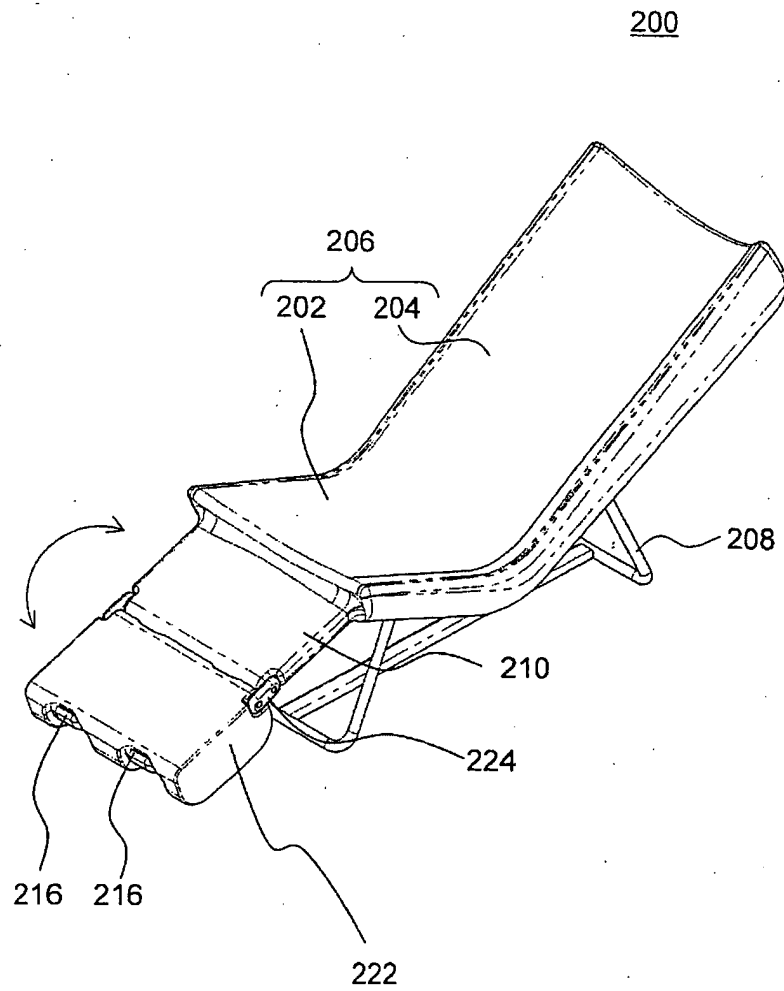


Fig. 5A

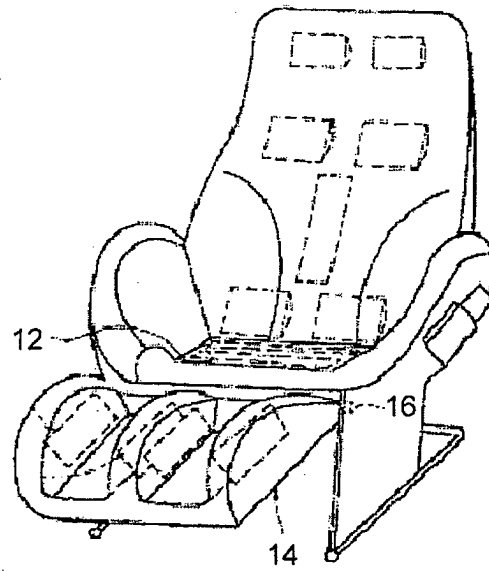


Fig. 5B

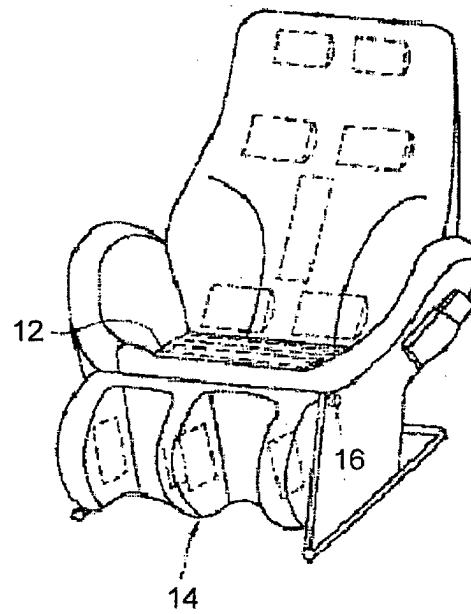


Fig. 6A

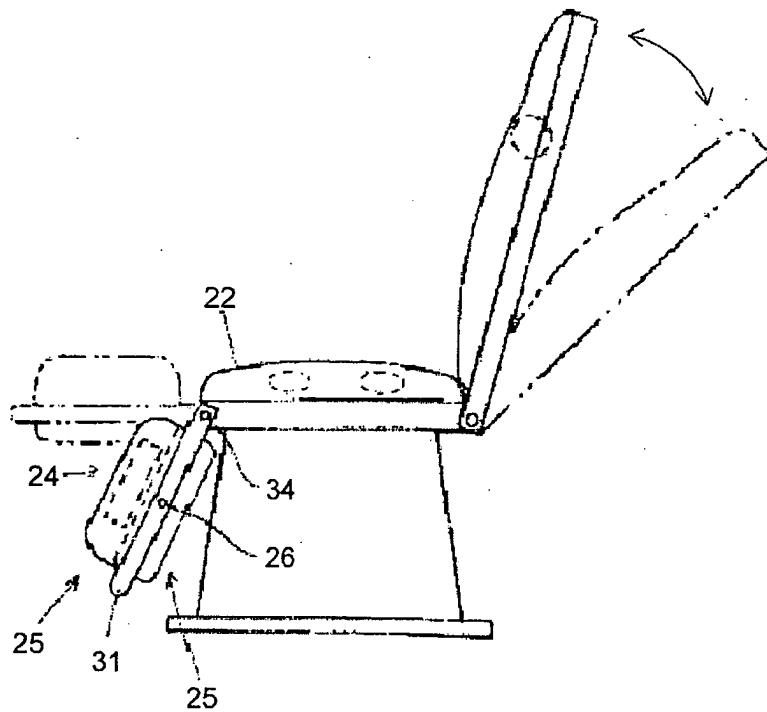


Fig. 6B

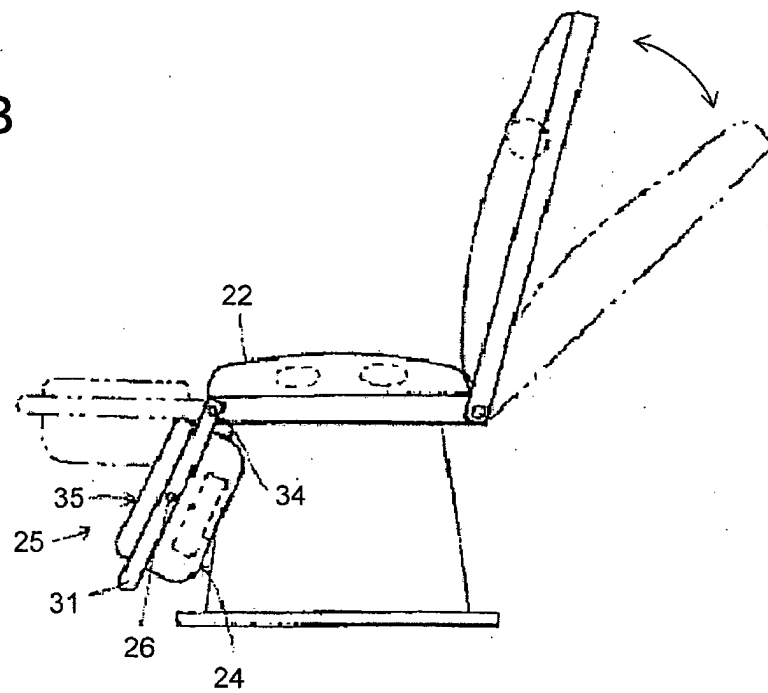


Fig. 7A

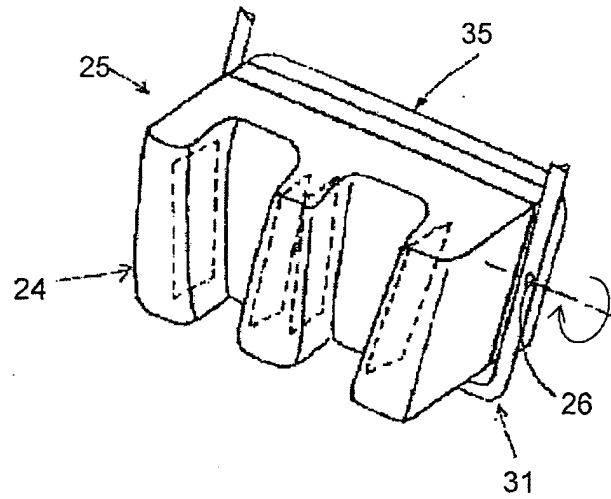


Fig. 7B

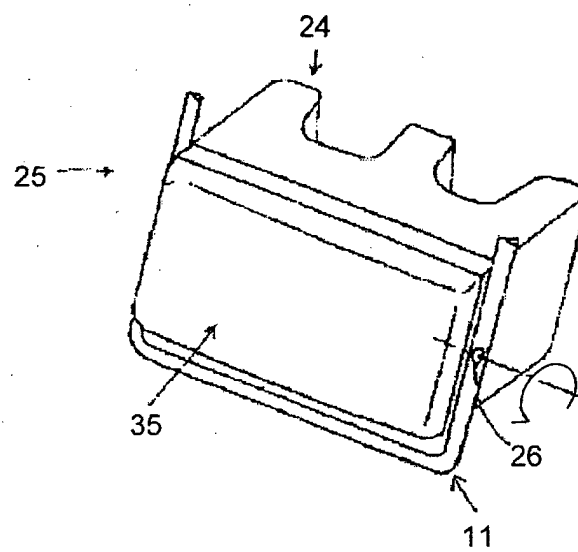
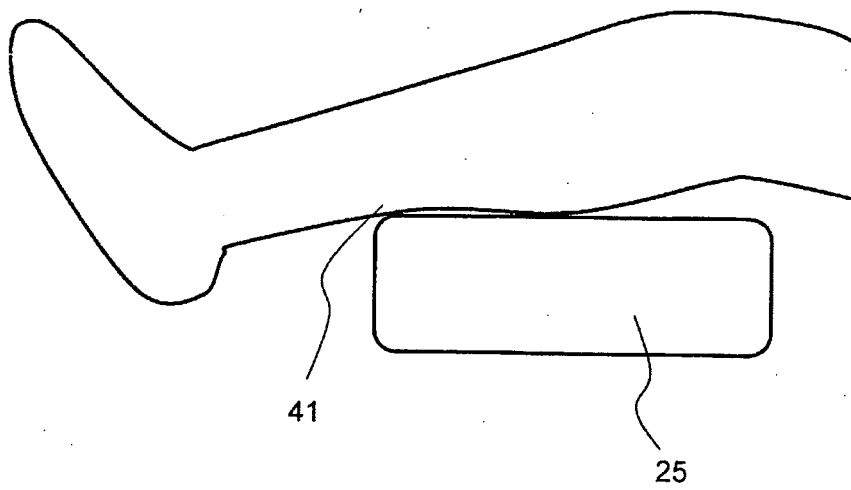


Fig. 8





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 03 0738

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 2003/006639 A1 (SHIMIZU NOBUZO) 9 January 2003 (2003-01-09) * paragraph [0032] * * paragraph [0041] - paragraph [0045] * * paragraph [0052] - paragraph [0053] * * paragraph [0062] * * paragraph [0068] * * paragraph [0077]; figures 1,2,5 * -----	1-5	A61H1/00
A	US 4 819 987 A (STRINGER ET AL) 11 April 1989 (1989-04-11) * abstract * -----	1	
A	EP 0 998 894 A (FAMILY KABUSHIKI KAISHA) 10 May 2000 (2000-05-10) * paragraph [0052] - paragraph [0054] * * paragraph [0049]; figures 6-12 * -----	1-5	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A61H A47C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 May 2005	Examiner Georgiou, Z
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			

1
EPO FORM 1503.03.82 (P04C01)

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

EP 04 03 0738

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-05-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003006639 A1	09-01-2003	JP 2003062024 A	04-03-2003
		CN 1395898 A	12-02-2003

US 4819987 A	11-04-1989	NONE	

EP 0998894 A	10-05-2000	JP 2000197676 A	18-07-2000
		CN 1252984 A	17-05-2000
		DE 69917560 D1	01-07-2004
		DE 69917560 T2	16-09-2004
		EP 0998894 A1	10-05-2000
		JP 2000197677 A	18-07-2000
		KR 2000034965 A	26-06-2000
		TW 471966 B	11-01-2002
