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[Continued on next page]

(54) **Title**: BIOMETRIC AND LOW RESTRAINT CONTINUOUS PASSIVE MOTION REHABILITATION DEVICE

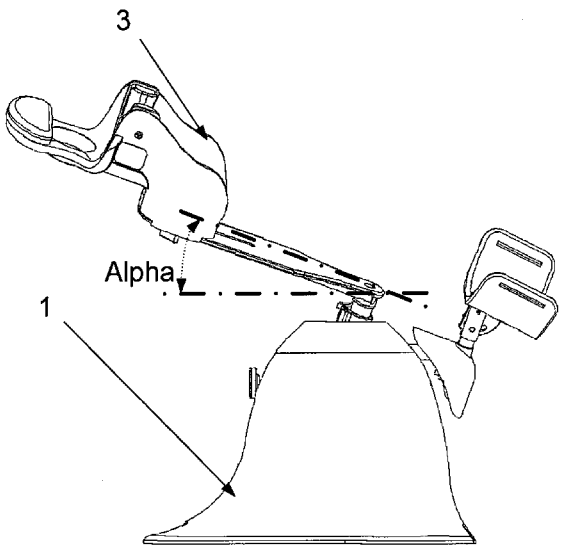

Figure 2

(57) **Abstract**: An active-passive rehabilitation device is disclosed providing natural and relatively unconstrained motion of the treated joint, which promotes drainage and mitigates edema in the extrema. This active-passive rehabilitation device enables the application of adjunctive therapeutic modalities such as cryotherapy units and pneumatic sequential compression devices. Electronic controls allow the active-passive rehabilitation device to be programmed to provide resistive load for Active Range of Motion or Active Resistive Range of Motion (AROM or ARROM) for prescribed therapeutic cycles. Speed, range of motion and therapeutic torque limitations are some of the parameters that may be user controlled and/or programmable. Historical data can be stored in the device and can be downloaded electronically in real-time or at discrete intervals, allowing caretakers to monitor progress and even modify load cycles via electronic communication means. The unit has a lifting provision, can be folded to accommodate storage, and has integrated stabilization and bed attachment devices.

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A. CLASSIFICATION OF SUBJECT MATTER

A63B 23/04(2006.01)i, A61F 5/01(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC : A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models since 1975
Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO Internal), Keyword : joint, drive shaft, trough

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/0227837 A1 (HUGO BROADBENT) 13 OCTOBER 2005 see abstract and figures 3-5	None
A	US 5980435 A (FRANK EDWARD JOUTRAS et al) 9 NOVEMBER 1999 see abstract and figures 1-2	None
A	JP 2001-295111 A (KYOTO FIBER INDUSTRY) 26 OCTOBER 2001 see abstract and figures 1-4	None
A	JP 05-48928 U (LIKURA INC. RESEARCH INSTITUTE) 29 JUNE 1993 see abstract and Figures 1-2	None

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005/0227837 A1	13.10.2005	None	
US 05980435 A	09.11.1999	AU 724663 B2	28.09.2000
		AU 1996-62925 B2	20.06.1996
		CA 2166977 C	10.10.2006
		EP 0707467 A1	24.04.1996
		EP 0707467 A4	25.02.1998
		EP 0707467 B1	01.06.2005
		JP 09-502366 A	11.03.1997
		JP 03-713046 B2	26.08.2005
		JP 11-508167 A	21.07.1999
		US 2008-0108918 A1	08.05.2008
		US 05788618 A	04.08.1998
		US 05954621 A	21.09.1999
		US 05976063 A	02.11.1999
		US 2008-0108917 A1	08.05.2008
		WO 1995-001769 A3	19.01.1995
		WO 1997-000661 A1	09.01.1997
JP 2001-295111 A	26.10.2001	None	
JP 05-48928 U	29.06.1993	None	