



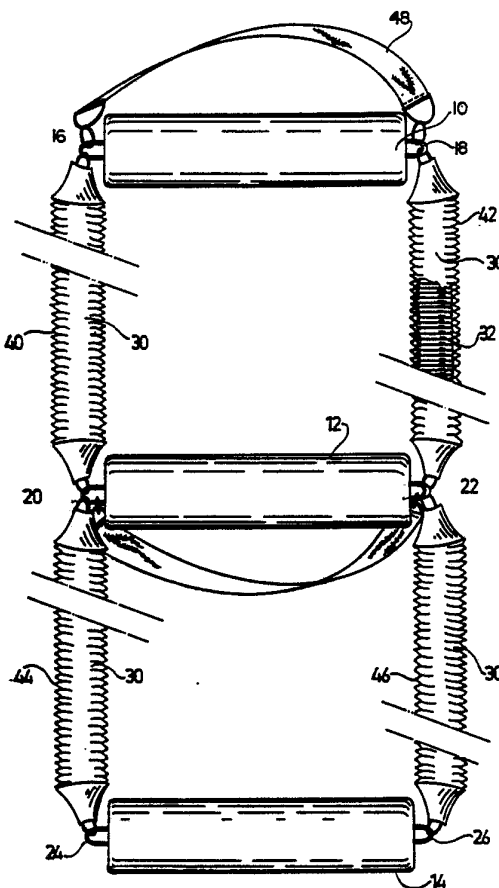
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(51) International Patent Classification <sup>5</sup> :<br/><br/>A63B 21/02</p>  | <p>A1</p> | <p>(11) International Publication Number: <b>WO 91/08025</b><br/><br/>(43) International Publication Date: 13 June 1991 (13.06.91)</p>   |
| <p>(21) International Application Number: PCT/US90/07112<br/>(22) International Filing Date: 5 December 1990 (05.12.90)<br/><br/>(30) Priority data:<br/>92553 5 December 1989 (05.12.89) IL<br/><br/>(71) Applicant: EPILADY INTERNATIONAL INC. [US/US]; Ruchelman &amp; Felgoise, 30 Rockefeller Plaza, Suite 1900, New York, NY 10112 (US).<br/>(72) Inventor: TAL, Ran ; 48 Brodetzky Street, 69 051 Ramat Aviv (IL).<br/>(74) Agents: GALLOWAY, Peter, D. et al.; Ladas &amp; Parry, 26 West 61 Street, New York, NY 10023 (US).</p> |           | <p>(81) Designated States: AT (European patent), AU, BE (European patent), BR, CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), HU, IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent).</p> <p><b>Published</b><br/><i>With international search report.<br/>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> |

(54) Title: EXERCISE APPARATUS

(57) Abstract

An exercise device including at least first and second resilient flexible elongate elements (40, 42), each having first and second ends (16, 18, 20, 22); first and second handles, the first handle (10) being attached to the first ends of the first (16) and second (18) resilient flexible elongate elements and the second handle (12) being attached to the second ends of the first (20) and second (22) resilient flexible elongate elements; at least third (44) and fourth (46) resilient flexible elongate elements, each having third (20) and fourth (22) ends; the second handle (12) being attached to the third ends of the third and fourth resilient flexible elongate elements and a third handle (14), the third handle being attached to the fourth ends (24, 26) of the third and fourth resilient flexible elongate elements.



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EXERCISE APPARATUSFIELD OF THE INVENTION

The present invention relates to exercise apparatus generally.

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BACKGROUND OF THE INVENTION

A great variety of exercise apparatus appears in the patent literature. Examples of patents describing exercisers which bear some similarity to that of the present invention include the following: U.S. Patent 4,059,265 which describes an elastic pull-type exerciser which is arranged for stand-alone use as well as door mounting; U.S. Patent 4,033,580, which describes elastic type exercising apparatus preferably comprising an integrally molded device of stiffened rubber having a plurality of handles connected to a junction portion by corresponding straps; U.S. Patent 4,057,246 which describes a multipurpose push pull exerciser comprising first and second elongated flexible elements; U.S. Patent 4,406,453 which describes a portable exerciser incorporating resilient elements disposed within a frame and U.S. Patent 605,237 which describes an exercising device adapted for either stand alone use or wall mounting and including a pair of handles and resilient straps coupled to a further resilient strap.

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SUMMARY OF THE INVENTION

The present invention seeks to provide an improved exercise device. There is thus provided in accordance with a preferred embodiment of the present

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invention an exercise device including at least first and second resilient flexible elongate elements, each having first and second ends; first and second handles, the first handle being attached to the first ends of the first and second resilient flexible elongate elements and the second handle being attached to the second ends of the first and second resilient flexible elongate elements; at least third and fourth resilient flexible elongate elements, each having third and fourth ends; the second handle being attached to the third ends of the third and fourth resilient flexible elongate elements and a third handle, the third handle being attached to the fourth ends of the third and fourth resilient flexible elongate elements.

In accordance with a preferred embodiment of the invention, the resilient flexible elongate elements include coil springs.

Further in accordance with a preferred embodiment of the invention the resilient flexible elongate elements also include a extendible flexible sheath covering the coil springs.

Additionally in accordance with a preferred embodiment of the invention retainers are associated with at least some of the handles.

Further in accordance with an embodiment of the invention extension limiting apparatus is associated with the resilient flexible elongate elements.

Additionally in accordance with a preferred embodiment of the invention apparatus is providing for connecting the exercise device to a similar exercise device to constitute a composite exercise device.

Further in accordance with a preferred embodiment of the invention there is provided a composite exercise device including first and second exercise units each including at least first and second resilient flexible elongate elements, each having first and second ends; first and second handles, the first

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handle being attached to the first ends of the first and second resilient flexible elongate elements and the second handle being attached to the second ends of the first and second resilient flexible elongate elements;  
5 at least third and fourth resilient flexible elongate elements, each having third and fourth ends; the second handle being attached to the third ends of the third and fourth resilient flexible elongate elements and a third handle, the third handle being attached to the fourth  
10 ends of the third and fourth resilient flexible elongate elements and apparatus for connecting the first and second exercise units together.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1 is a pictorial illustration of exercise apparatus constructed and operative in accordance with a preferred embodiment of the present invention;

Fig. 2A is an illustration of an end of a coil spring forming part of a resilient element employed in the apparatus of Fig. 1;

Fig. 2B is an illustration of the end of a protective sheath disposed over the end of the coil spring illustrated in Fig. 2A;

Fig. 2C is an illustration of the protective sheath tied about the end of the coil spring; and

Fig. 2D is an illustration of the apparatus of Fig. 2C with a connection ring attached to the end of the coil spring and an exterior end sheath disposed over the end of the coil spring;

Fig. 3 is an illustration of a door mounting attachment for use with the apparatus of Fig. 1;

Figs. 4A and 4B are illustrations of the use of the door mounting apparatus of Fig. 3 in various orientations;

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Figs. 5 - 10 illustrate various exercise modes employing the apparatus of the present invention;

Figs. 11A - 11C illustrate three different foot engagement arrangements using the present  
5 invention;

Figs. 12 and 13 illustrate additional exercise modes employing the apparatus of the present invention; and

Fig. 14 is an illustration of yet another  
10 exercise mode employing the apparatus of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

Reference is now made to Fig. 1 which illustrates exercise apparatus constructed and operative  
15 in accordance with a preferred embodiment of the present invention. The apparatus preferably comprises first, second and third handles 10, 12, and 14. Preferably the handles are formed of solid or reinforced plastic or rubber and are resilient both in a radial direction with  
20 respect to their longitudinal axes and with respect to bending of the longitudinal axes thereof. Each of handles 10, 12 and 14 defines first and second ends, respectively numbered 16, 18, 20, 22, 24 and 26.

In accordance with a preferred embodiment of  
25 the present invention, there are provided four resilient flexible elongate elements 30. Each of elements 30 preferably comprises a coil spring 32, which is far more resistant to breakage than rubber or similar materials.

According to a preferred embodiment of the  
30 present invention, as illustrated in Figs. 2A - 2D, the coil spring 32 is covered with a protective, flexible sleeve or sheath 34. Preferably the ends 36 of each sheath 34 are bifurcated as shown in Fig. 2B, enabling them to be tied about an upstanding end loop 38 of the  
35 coil spring 32. A generally cylindrical end sleeve 40, typically formed of rubber is then disposed over the upstanding end loop 38, leaving exposed a connection

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ring 39 attached thereto.

It is a particular feature of the present invention that the protective sheath prevents unwanted mechanical interaction of the coils of the coil spring 32 with the body or clothing of a user. The sheath 34 also preferably acts to limit the total extension of the coil spring 32. It is appreciated that the particular structure of attachment of the sheath 34 to the coil spring may be modified as suitable.

Ends 16 and 18 of handle 10 are flexibly mounted onto respective first ends of two resilient elongate elements 40 and 42. Ends 20 and 22 of handle 12 are flexibly mounted onto respective second ends of resilient elongate elements 40 and 42 and are flexibly mounted onto respective first ends of two resilient elongate elements 44 and 46. Ends 24 and 26 of handle 14 are flexibly mounted onto respective ends of resilient elongate elements 44 and 46.

The engagement between the respective ends of the handles and the respective ends of the resilient elongate elements is typically provided by connection rings 39.

According to a preferred embodiment of the invention, a hand or foot retaining strap 48 is mounted to the respective ends of at least one of the handles. In Fig. 1, straps 48 are seen mounted onto handles 10 and 12.

Reference is now made to Fig. 3, which illustrates an arrangement for joining two of the exercise devices of Fig. 1 to form a composite exercise device and to permit this device to be mounted, for example, on a door. The arrangement of Fig. 3 comprises a strap 50 including a loop 52 fixed at one end thereof. At the opposite end of strap 52 there is provided a double walled portion 54 which is adapted to receive a plug 56. When the plug 56 is inserted in the double wall portion 54, the double wall portion is prevented

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from passing through loop 52 or slidably passing out of engagement with a door jamb or the like. It is thus appreciated that strap 50 may be employed for joining two exercise devices of the type illustrated in Fig. 1 together to define a composite exercise device.

Figs. 4A illustrates a variety of mounting locations for strap 50 on a door. Fig. 4B illustrates the mechanical interaction between the elements of the strap and a door. It is noted that the strap preferably includes a folded over sewn multi-thickness portion as a primary stop and plugged double wall portion 54 as a secondary stop.

Fig. 5 illustrates the use of two separate exercise devices of the type illustrated in Fig. 1 for simulated weight lifting exercise.

Fig. 6 illustrates use of part of the device of Fig. 1, particular handles 10 and 12 and the resilient elements 30 interconnecting them for chest expansion.

Fig. 7 illustrates use of the device of Fig. 1 for back exercise.

Fig. 8 illustrates use of the device of Fig. 1 for simulated biceps weight training.

Fig. 9 illustrates use of a composite device including two devices of Fig. 1 joined together as shown in Fig. 3 and mounted on a door for rowing exercise.

Fig. 10 illustrates use of the device of Fig. 1 for leg exercises.

Reference is now made to Figs. 11A - 11C, which illustrate three alternative foot engagement arrangements using a handle 10 and a retaining strap 48 forming part of the apparatus of the invention.

Fig. 12 illustrates use of a composite device including two devices of Fig. 1 joined together as shown in Fig. 3 and mounted on a door for prone position simulated weight lifting exercise.

Fig. 13 illustrates use of a composite device



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including two devices of Fig. 1 joined together as shown in Fig. 3 and mounted on a door for simulated push-ups.

Fig. 14 illustrates the use of the device of Fig. 1 together with a mounting belt 50 and a slide mat 52, which functions effectively as a treadmill for walking exercise. The slide mat may be attached to the chair shown if necessary.

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the invention is defined only by the claims which follow:

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C L A I M S

1. An exercise device comprising:  
at least first and second resilient flexible elongate elements, each having first and second ends;  
first and second handles, said first handle being attached to said first ends of said first and second resilient flexible elongate elements and said second handle being attached to said second ends of said first and second resilient flexible elongate elements;  
at least third and fourth resilient flexible elongate elements, each having third and fourth ends;  
said second handle being attached to said third ends of said third and fourth resilient flexible elongate elements; and  
a third handle, said third handle being attached to said fourth ends of said third and fourth resilient flexible elongate elements.
2. An exercise device according to claim 1, and wherein said resilient flexible elongate elements comprise coil springs.
3. An exercise device according to claim 2, and wherein said resilient flexible elongate elements also comprise an extendible flexible sheath covering said coil springs.
4. An exercise device according to claim 2, and also comprising retainer means associated with at least one of said handles.
5. An exercise device according to claim 2, and also comprising extension limiting means associated with at least one of said handles.
6. An exercise device according to claim 5, and wherein said extension limiting means comprises generally non-stretchable cord located inside said resilient flexible elongate elements.
7. An exercise device according to claim 1, and wherein said handle is flexible and resilient.

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8. An exercise device according to claim 2, and wherein said handle is flexible and resilient.
9. An exercise device according to claim 3, and wherein said handle is flexible and resilient.
10. An exercise device according to claim 4, and wherein said handle is flexible and resilient.
11. An exercise device according to claim 5, and wherein said handle is flexible and resilient.
12. An exercise device according to claim 6, and wherein said handle is flexible and resilient.
13. An exercise device according to claim 1, and also comprising means for connecting said exercise device to a similar exercise device to constitute a composite exercise device.
14. An exercise device according to claim 2, and also comprising means for connecting said exercise device to a similar exercise device to constitute a composite exercise device.
15. An exercise device according to claim 13, and wherein said means for connecting includes removable means for connecting adjacent said second handle.
16. An exercise device according to claim 14, and wherein said means for connecting includes removable means for connecting adjacent said second handle.
17. A composite exercise device comprising first and second exercise units each comprising:
  - at least first and second resilient flexible elongate elements, each having first and second ends;
  - first and second handles, said first handle being attached to said first ends of said first and second resilient flexible elongate elements and said second handle being attached to said second ends of said first and second resilient flexible elongate elements;
  - at least third and fourth resilient flexible elongate elements, each having third and fourth ends;
  - said second handle being attached to said third

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ends of said third and fourth resilient flexible elongate elements;

a third handle, said third handle being attached to said fourth ends of said third and fourth resilient flexible elongate elements; and

means for connecting said first and second exercise units together.

18. Apparatus according to claim 1, and also comprising an extendible flexible sheath having an extension limit, for limiting the extension of said flexible elongate elements.

19. Apparatus according to claim 17, and also comprising an extendible flexible sheath having an extension limit, for limiting the extension of said flexible elongate elements.

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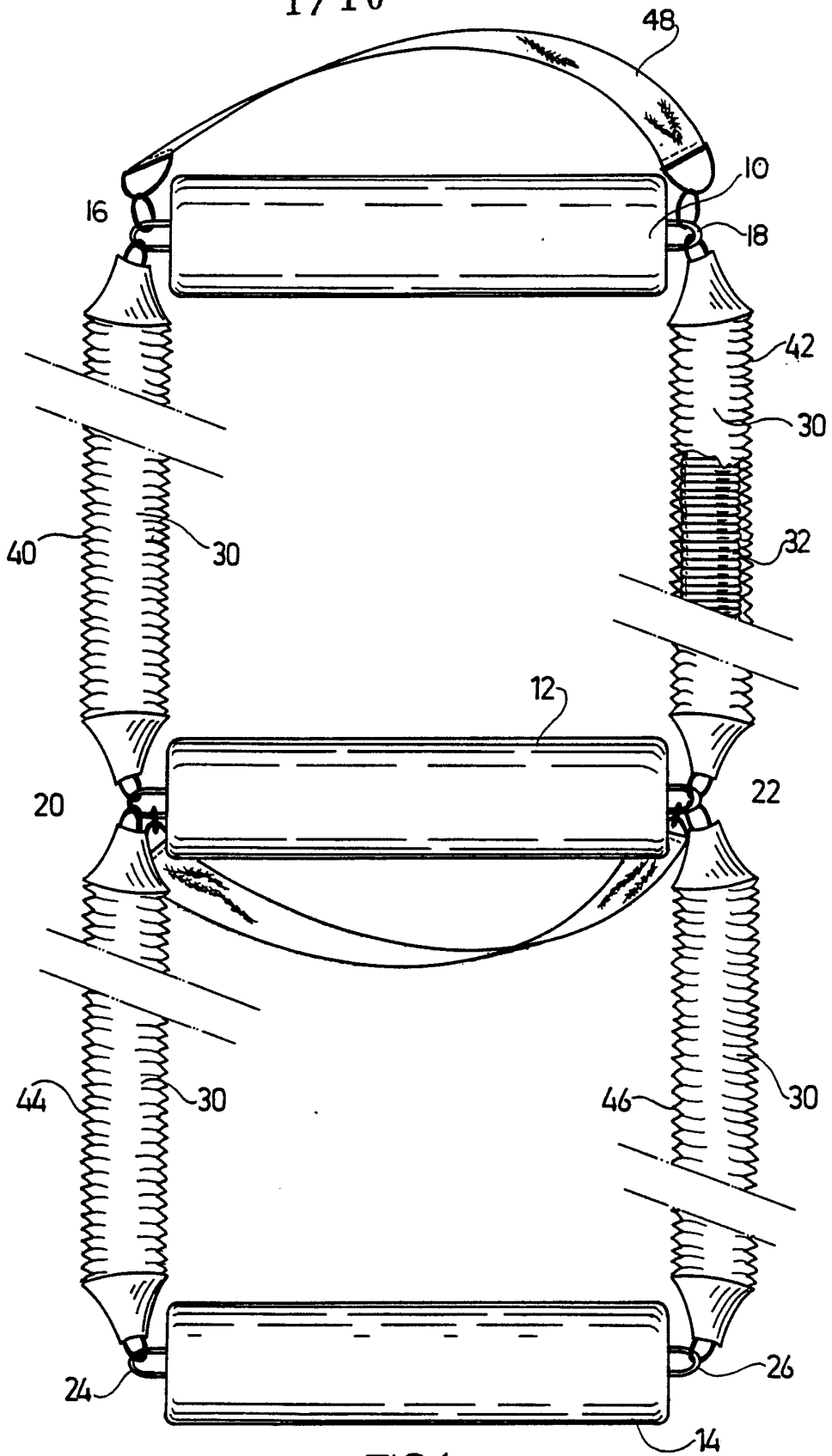


FIG.1

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FIG.2B

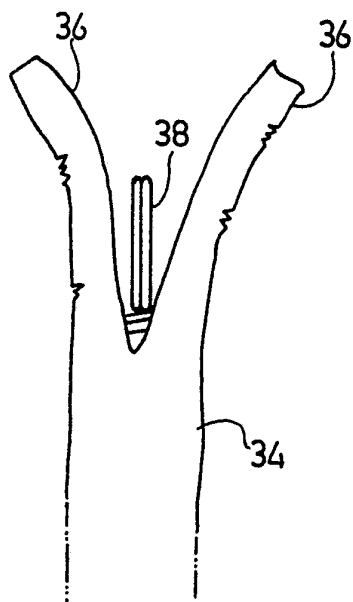


FIG.2A

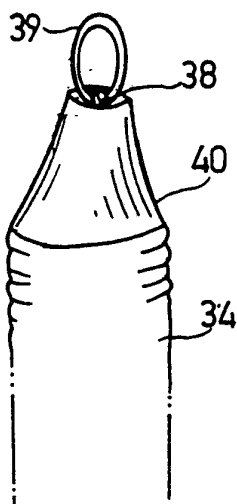
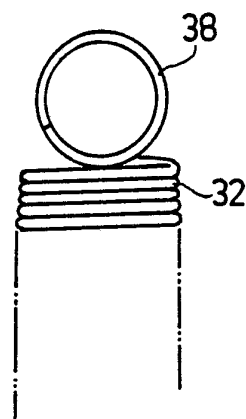


FIG.2D

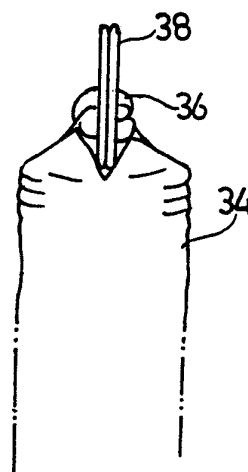


FIG. 2C

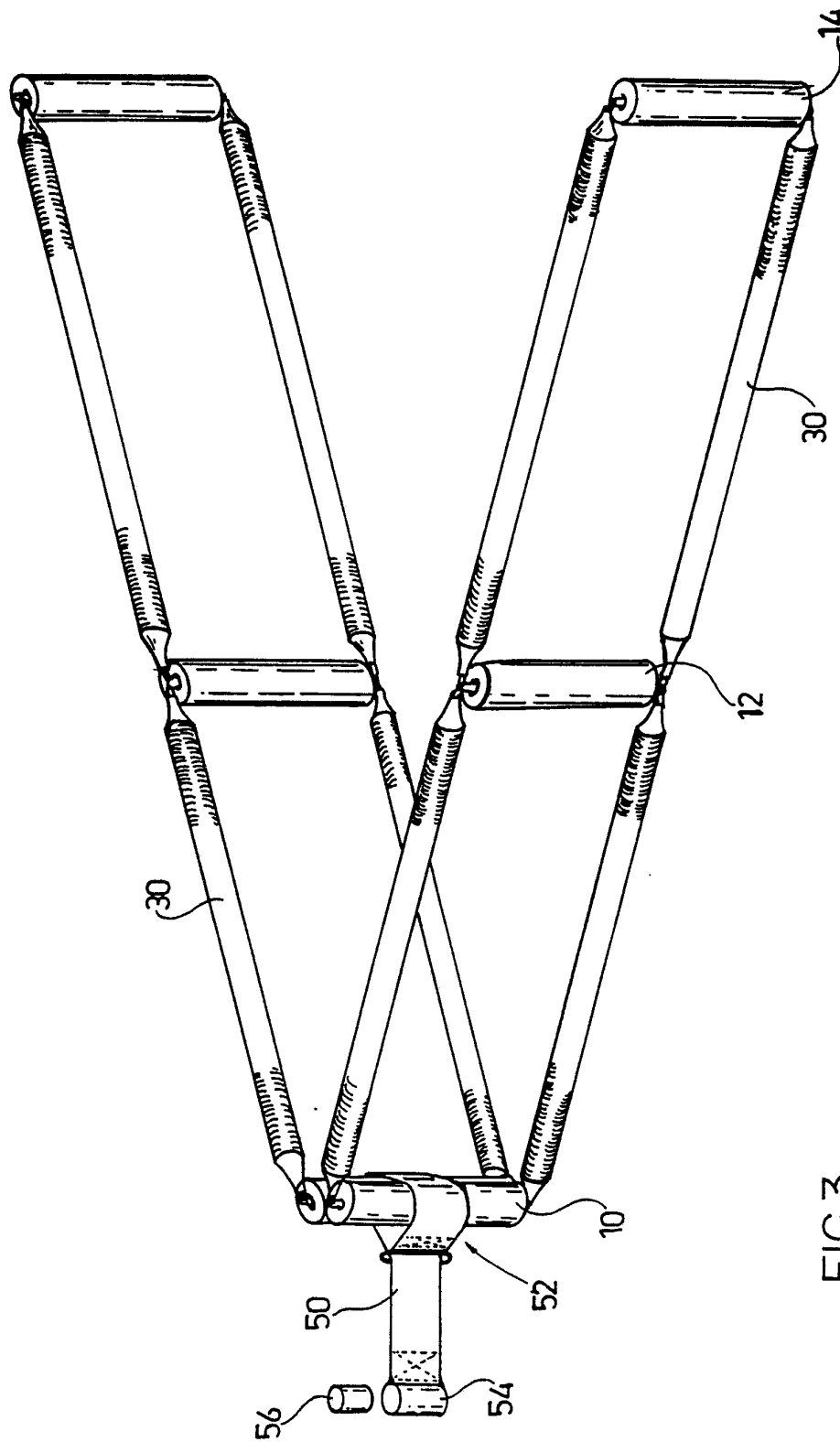


FIG.3

FIG.4A

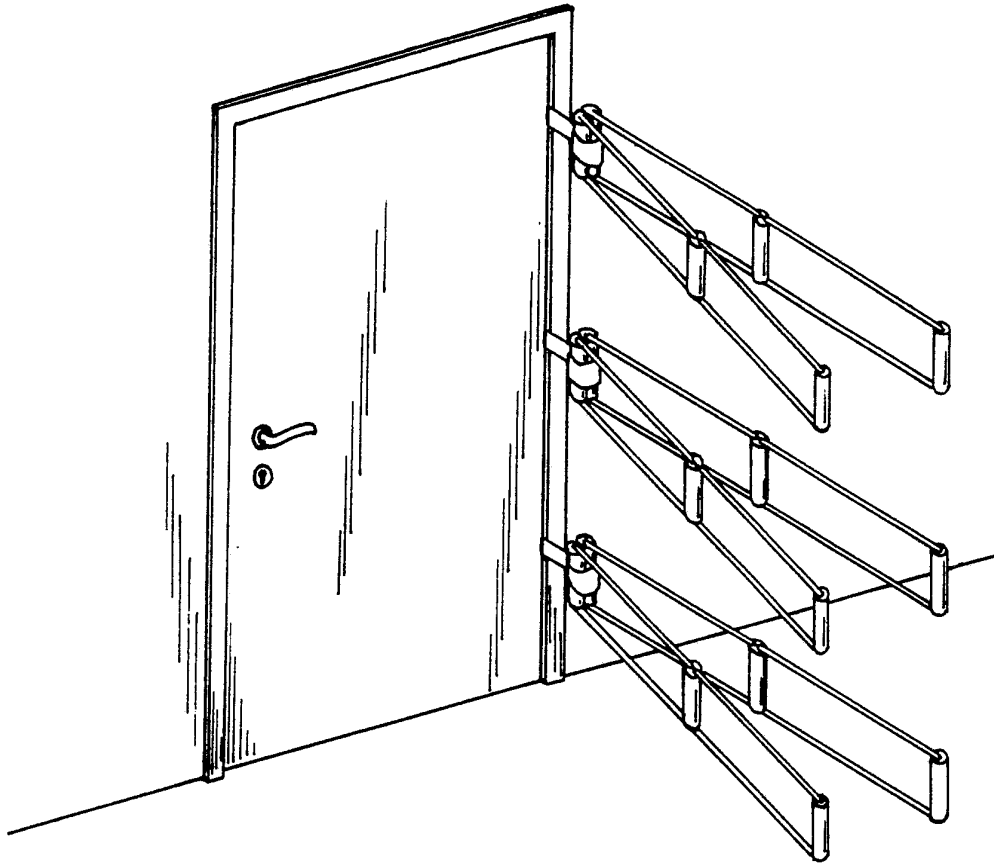


FIG.4B

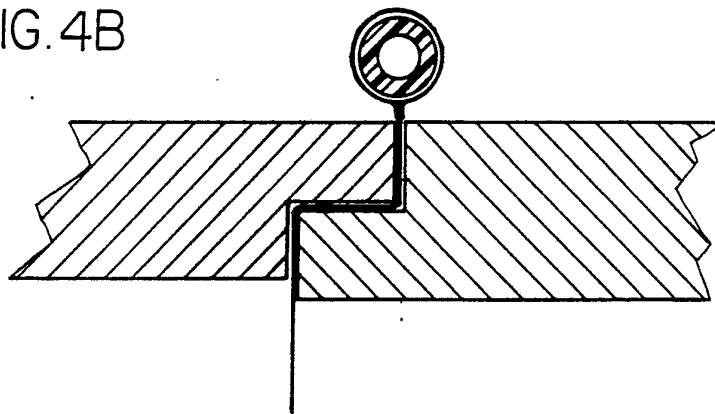




FIG.6

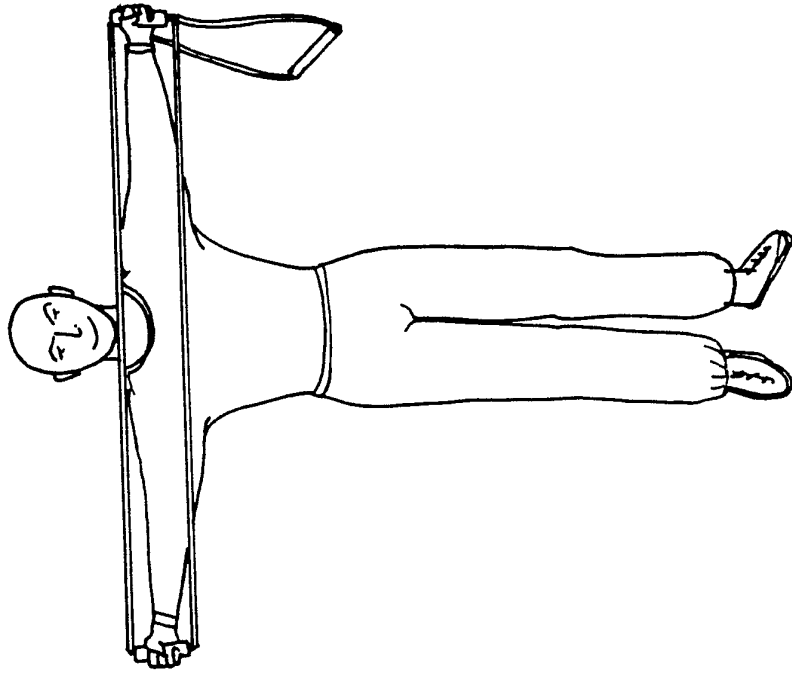


FIG.5

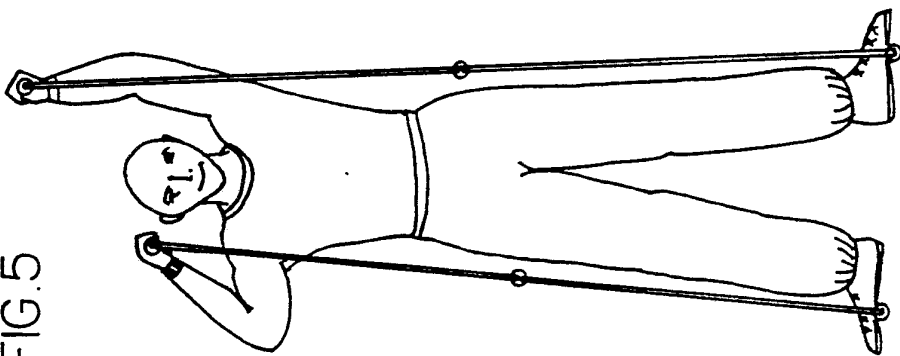


FIG.8

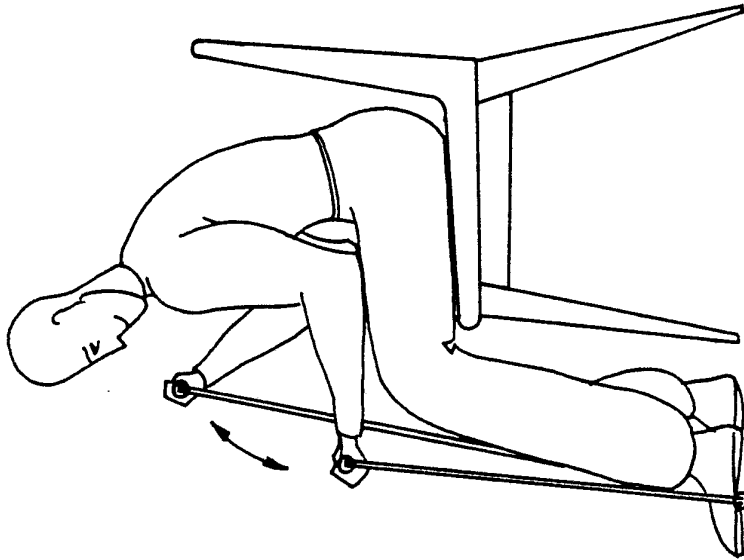
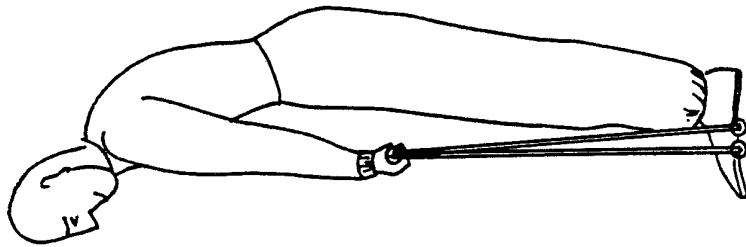


FIG.7



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FIG. 9

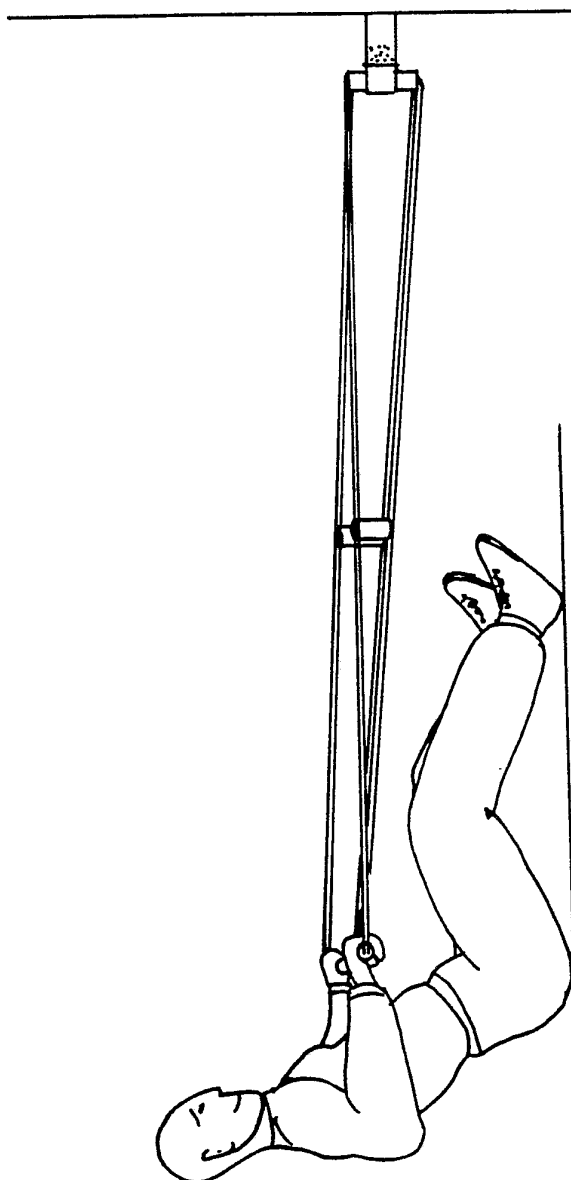


FIG.10

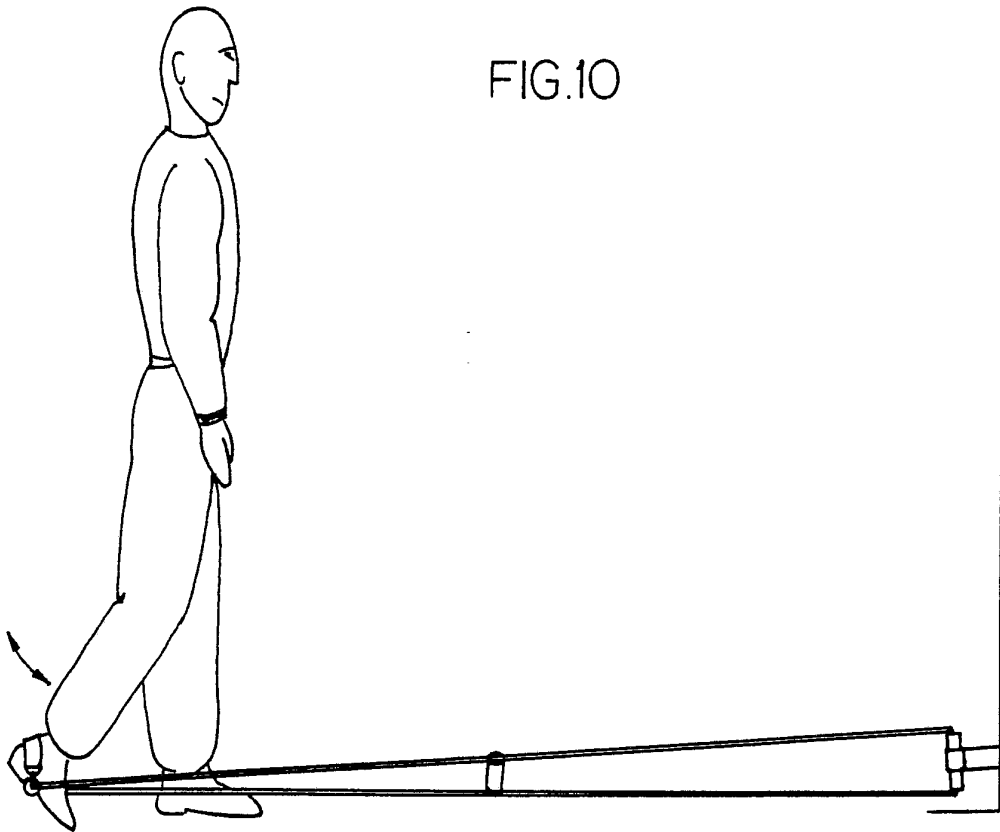


FIG.IIA

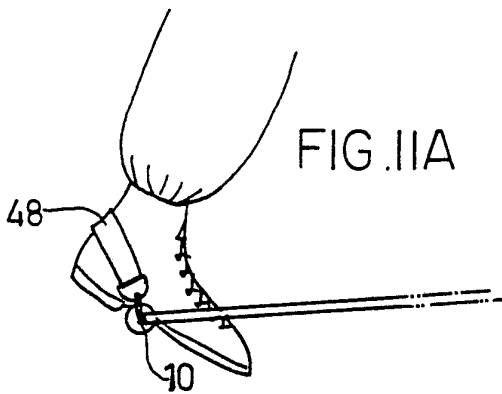


FIG.IIB

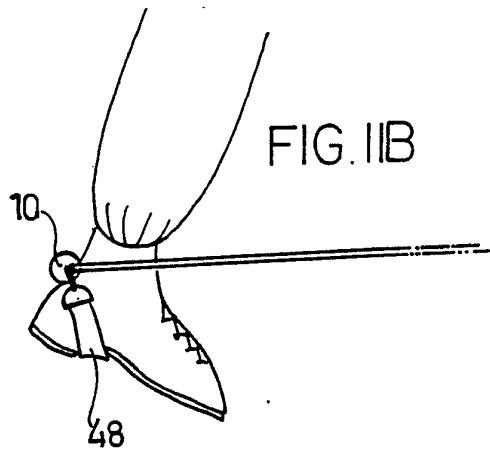
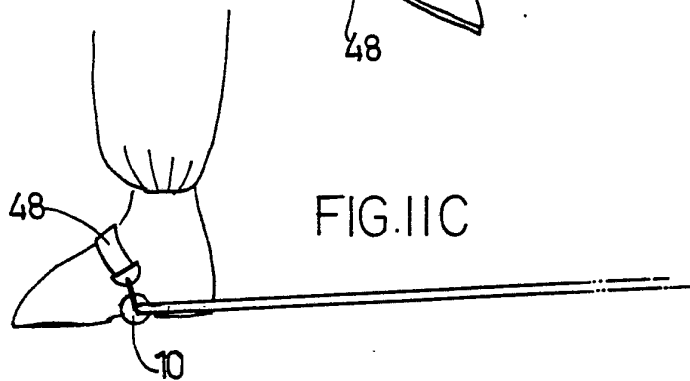


FIG.IIC



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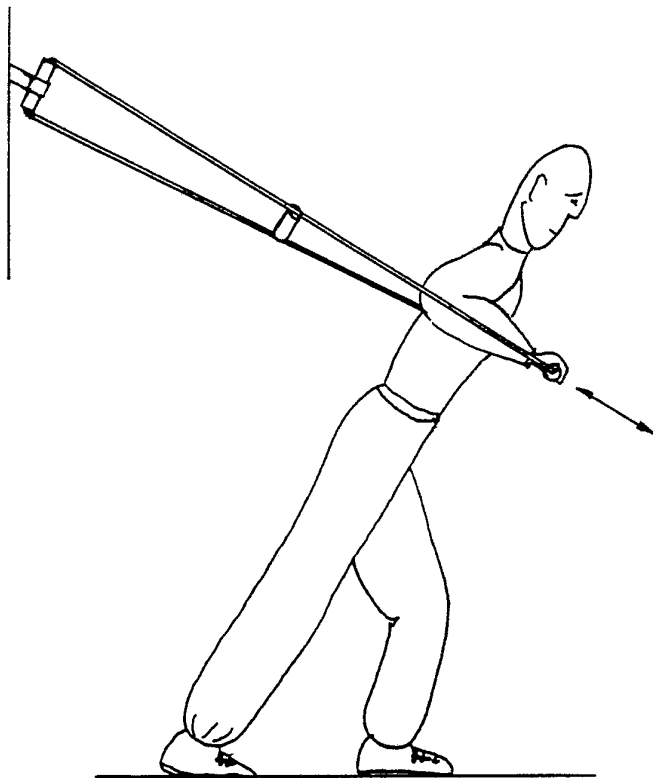


FIG.13

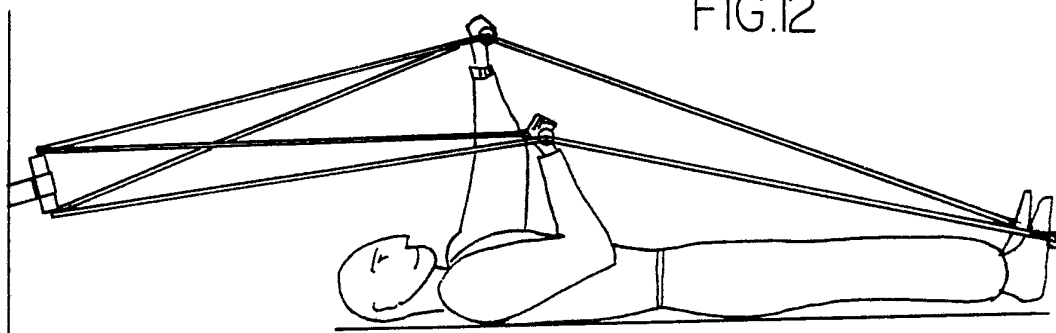


FIG.12

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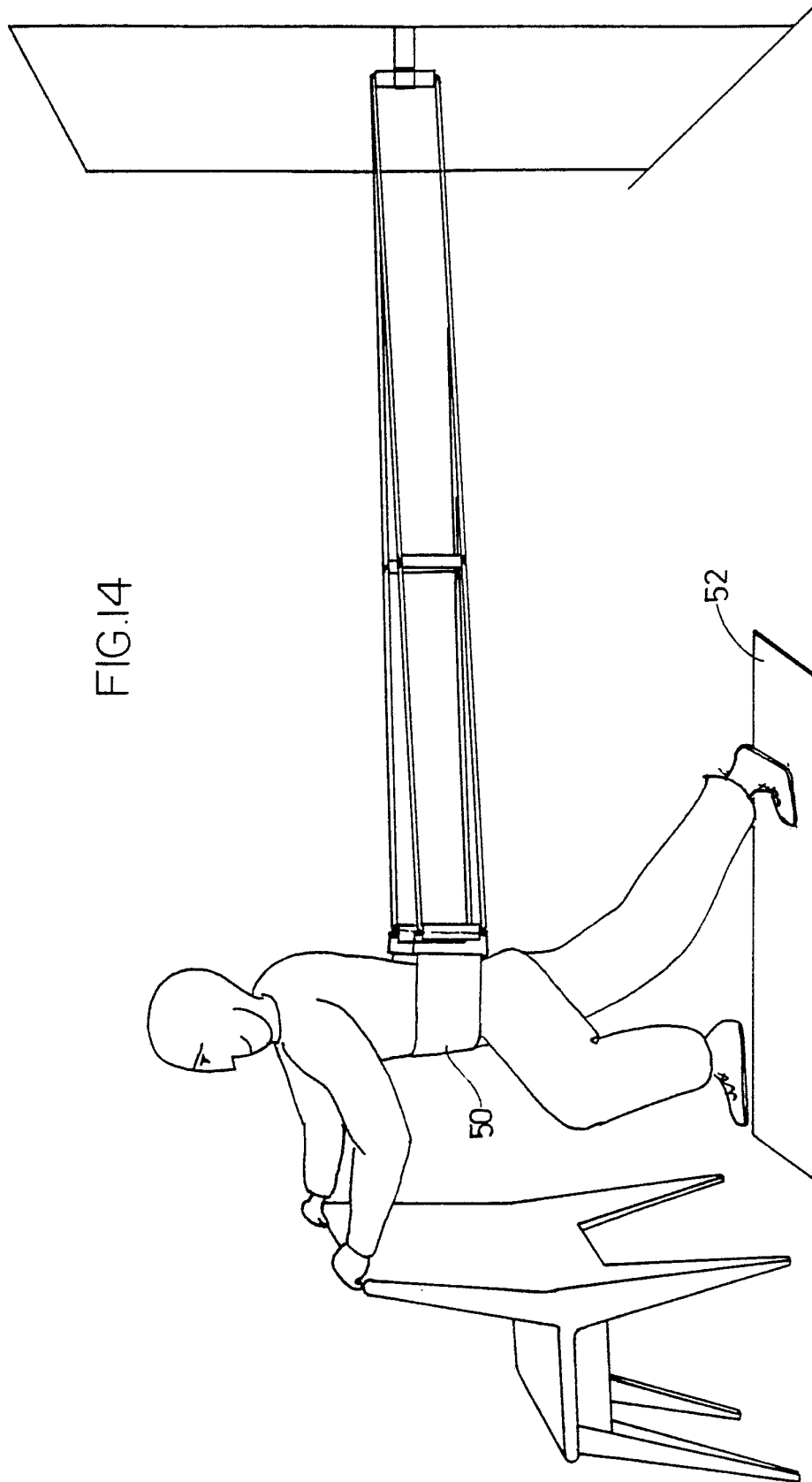


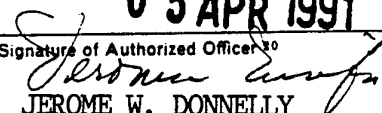
FIG.14

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US90/07112

|  |   |                                     |
|--|---|-------------------------------------|
| <b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>3</sup>  |   |                                     |
| According to International Patent Classification (IPC) or to both National Classification and IPC  |   |                                     |
| IPC(5): A63B 21/02   |   |                                     |
| US CL.: 272/136,125,900,142  |   |                                     |
| <b>II. FIELDS SEARCHED</b>   |   |                                     |
| Minimum Documentation Searched <sup>4</sup>  |   |                                     |
| Classification System  | Classification Symbols  |                                     |
| US   | 272/136,142,317,122,125,900<br>128/80   |                                     |
| Documentation Searched other than Minimum Documentation<br>to the Extent that such Documents are Included in the Fields Searched <sup>5</sup>  |   |                                     |
| <b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <sup>14</sup>  |   |                                     |
| Category <sup>6</sup>  | Citation of Document, <sup>16</sup> with indication, where appropriate, of the relevant passages <sup>17</sup>                                    | Relevant to Claim No. <sup>18</sup> |
| Y  | US, A, 3,337,215 (MELCHIONA) 22 August 1967<br>Fig. 1 and 2 show a plurality of springs in series and extension limiting means (7).               | 1-6,8-12,14,17,18                   |
| Y  | US, A, 4,463,948 (MCHR) 07 August 1984<br>Shows a plurality of handles interconnected with a plurality of resilient members Fig. 1,2 and 9.       | 1-14,17-19                          |
| Y  | US, A, 775,989 (ROBERTS) 29 November 1904<br>Figs. 1 and 2 shows door connection means (a) and means for connecting device to similar device (b). | 13-17,19                            |
| Y  | US, A, 3,415,515 (OTTO) 10 December 1968<br>Fig. 3, col. 1 lines 55-60 teaches resilient member covering.   | 18-19                               |
| Y  | US, A, 4,647,037 (DONOHUE) 03 March 1987<br>See fig. 1 366 resilient member connecting means.   | 1-19                                |
| Y  | US, A, 4,591,150 (MOSHER) 27 May 1986<br>See fig. 1 32 col. 1 lines 51-52 Fabric sheath.  | 18-19                               |
| <p><sup>15</sup> Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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.</p> <p>"&amp;" document member of the same patent family</p> |   |                                     |
| <b>IV. CERTIFICATION</b>   |   |                                     |
| Date of the Actual Completion of the International Search <sup>2</sup>   | Date of Mailing of this International Search Report <sup>3</sup>  |                                     |
| 05 MARCH 1991  | 05 APR 1991   |                                     |
| International Searching Authority <sup>1</sup>   | Signature of Authorized Officer <sup>20</sup>   |                                     |
| ISA/US   | <br>JEROME W. DONNELLY  |                                     |