(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 384 183 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
21.12.2016 Bulletin 2016/51

(21) Application number: **10726813.8**

(22) Date of filing: **04.01.2010**

(51) Int Cl.:
A61H 1/02 *(2006.01)* *A61H 23/02* *(2006.01)*

(86) International application number:
PCT/NO2010/000003

(87) International publication number:
WO 2010/077153 (08.07.2010 Gazette 2010/27)

(54) **STRETCHING APPARATUS**

STRECKVORRICHTUNG

APPAREIL D'ÉTIREMENT

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **05.01.2009 NO 20090034**

(43) Date of publication of application:
09.11.2011 Bulletin 2011/45

(73) Proprietor: **Holmsen, Stein**
1346 Gjettum (NO)

(72) Inventor: **Holmsen, Stein**
1346 Gjettum (NO)

(74) Representative: **Ekstedt, Måns et al**
Zacco Norway AS
P.O. Box 2003 Vika
0125 Oslo (NO)

(56) References cited:
CH-A- 465 764
DE-A1- 10 214 996
GB-A- 421 216
GB-A- 191 106 645
US-A- 3 556 090
US-A1- 2005 159 683
US-A1- 2007 037 676

EP 2 384 183 B1

Printed by Jouve, 75001 PARIS (FR)

Description

Field of the invention

[0001] The present invention relates to a stretching apparatus, in particular for stretching muscles in the arms and torso of a person.

Background of the invention

[0002] The document US3556090 (Viel) discloses an apparatus that supposedly may be used for carrying out traction transversely to the length of a patient's body. The apparatus comprises two elongated flexible elements secured together by ties. The apparatus further comprises two bracelets on short lengths of string, respectively. One length is secured to the free end of one of the elements. The other length is secured at the free end of the other element to a rodlet. In use, the patient bends the two elements by displacing the rodlet. Thereafter, the patient engages the bracelets with his or hers wrists. Thereafter, the patient seizes the rodlet and allows the two elements to straighten up until his or hers arms are completely subjected to the stress exerted by the two elements. In order to remove the stress, the patient may allow one of the bracelets to escape.

[0003] However, a problem with the apparatus in US3556090 is that it may be difficult to operate.

Summary of the invention

[0004] It is an object of the present invention to at least partly overcome the above problem, and to provide an improved stretching apparatus.

[0005] This object, and other objects that will be apparent from the following description, is achieved by a stretching apparatus according to the appended independent claim. Advantageous embodiments are set forth in the appended dependent claims.

[0006] According to the present invention, there is provided a stretching apparatus, comprising: a longitudinally extendable bar provided at each end thereof with a fastening means for securing a user's hand or wrist to the bar, and a drive mechanism adapted to longitudinally extend the bar. In use, as the bar is longitudinally extended by means of the drive mechanism, oppositely directed forces may be exerted pulling the user's hands or wrists away from each other, thereby stretching muscles in the arms and torso of the user. The present apparatus advantageously allows stretching without using very much or any of one's own power/muscles to initiate the stretching.

[0007] In one embodiment, the drive mechanism is adapted to extend the bar until a counteracting force reaches a particular value. In this way, a suitable stretching force may be achieved. The particular value may for instance be a general preset value at which the stretching force of the apparatus is experienced as comfortable for the user, or a value set by the user.

[0008] In one embodiment, the drive mechanism comprises a drive motor for extending the bar. The drive motor is preferably an electric motor. The drive mechanism may further comprise a clutch mechanism adapted to disconnect or disable the electric motor when the counteracting force reaches the particular value. The clutch mechanism may for instance be a separate clutch or included in the motor.

[0009] In one embodiment, the bar comprises a bar member longitudinally moveable in relation to the rest of the bar, said bar member being provided with one of said fastening means. Preferably, said bar member is moveable by means of the drive mechanism. For instance, the drive mechanism may further comprise conversion means for transforming rotary motion of the drive motor to linear motion of said bar member. Said conversion means may for example be a screw mechanism. Instead of a screw mechanism and clutch mechanism, a hydraulic system and a release valve could be used, for instance. Also, a linear drive motor could be directly connected to said bar member.

[0010] In one embodiment, said drive mechanism is placed inside the bar, to protect the drive mechanism and allow the outside of the apparatus to be free from superfluous elements.

[0011] In one particular embodiment of the present invention, the bar comprises a main tube containing said drive mechanism, and a telescopically arranged tube or rod (bar member) extending from any end of the main tube. Alternatively, the bar may comprise two telescopically arranged tubes or rods, in addition to the main tube.

[0012] In one embodiment, each of said fastening means comprises a hoop or loop strap. By using fastening means, the user does not have to apply a gripping force to the bar. The length of the hoop or loop strap may be adjustable, to accommodate for different users of the apparatus.

[0013] In one embodiment, the stretching apparatus further comprises a first actuator for causing extension of the bar and a second actuator for releasing the bar from an extended state. In this way, the present apparatus may be totally self-operated by the user and no assistance is needed. The first and second actuators may for instance be pedals provided on a control unit of the apparatus. The control unit may be adapted to rest on a floor with the pedals facing upwards such that the pedals conveniently may be manoeuvred by the user's foot. Alternatively, the first and second actuators may be finger operable switches located at one or different end(s) of the bar, so that the user conveniently may operate the switches even as he or she is secured to the bar via the fastening means.

[0014] In one embodiment, the stretching apparatus further comprises a vibrator placed inside the bar, in order to supply the user with vibrations, which may enhance the effect of the stretching.

[0015] It should be noted that the above mentioned

embodiments may be combined in various ways.

Brief description of the drawings

[0016] This and other aspects of the present invention will now be described in more detail, with reference to the appended drawings showing a currently preferred embodiment of the invention.

Fig. 1 is a schematic side view of a stretching apparatus according to an embodiment of the present invention.

Fig. 2 is a schematic, partly cross-sectional view of a portion of the apparatus of fig. 1.

Figs. 3a-3b illustrate an exemplary use of the present apparatus.

Detailed description

[0017] Fig. 1 is a schematic side view of a stretching apparatus 10 according to an embodiment of the present invention.

[0018] The apparatus 10 comprises an elongated bar 12. The bar 12 is straight or substantially straight. Further, the bar 12 is longitudinally or axially extendable. The bar 12 in turn includes an intermediate tube 14, a fixed member 18, and a moveable member 26. At one end 16 of the tube 14, there is provided the fixed member 18. The fixed member 18 is rod-shaped and aligned with the tube 14. At the far end 20 of the fixed member 18, there is provided a first hoop 22 for securing the hand or wrist of a person to the fixed member 18 of the bar 12. Preferably, the hoop 22 is adjustable in length, so that hands or wrists of different sizes may be safely secured. At the opposite end 24 of the tube 14, there is provided the moveable member 26. The moveable member 26 is rod-shaped, and adapted to be moved longitudinally along or in alignment with the longitudinal axis 28 of the bar 12, at least partly entering the tube 14 and hence allowing extension of the bar 12. At the far end 30 of the moveable member 26, there is provided a second hoop 32 for securing the person's other hand or wrist to the moveable member 26 of the bar 12. Preferably, the hoop 32 is adjustable in length, so that hands or wrists of different sizes may be safely secured.

[0019] In the tube 14 (see fig. 2), there is provided a drive motor, specifically an electric motor 34. The electric motor 34 may be powered by an internal battery (not shown). Alternatively, the electric motor 34 may be externally powered, e.g. via the mains supply. The electric motor 34 is mechanically connected via a clutch 36 to a rotatable sleeve 38 provided in the tube 14 towards the end 24. The electric motor 34 is adapted to rotate the sleeve 38 about the axis 28. The sleeve 38 is provided with an inner screw thread 40. Further, the moveable member 26 is opposite its far end 30 provided with a screw thread 42. The thread 42 is complementary to the inner thread 40 of the sleeve 38, and the moveable member 26 is partly screwed into the sleeve 38, whereby the member 26 kept non-rotating may be moved longitudinally or axially in relation to the rest of the bar 12 as indicated by the arrow 44 when the electric motor 34 is operated. In other words, the rotational motion of the motor 34 is transformed to linear motion (i.e. motion along a straight line) of the member 26. For not rotating, the moveable member 26 may for instance be provided with a tap engaged in a longitudinal groove of the tube 14. Further, the clutch 36 is adapted to disconnect the electric motor 34, or making the electric motor 34 to "slip", when a force counteracting the extension or lengthening of the bar 12 reaches a particular value. The moveable member 26 may be retained in the position it holds when the particular value is reached. For this, the clutch 36 may be adapted to allow rotation of the sleeve 38 in one direction only, i.e. the direction causing extension of the bar 12. Also, a spring member (not shown) may be installed in the tube 14 for smoothing the operation of the moveable member 26 in particular at its end positions.

[0020] The stretching apparatus 10 further comprises a control unit 46. The control unit 46 is operatively connected to the bar 12 via a cable 48. Alternatively, a wireless connection between the bar 12 and the unit 46 may be provided. The control unit 46 is designed to rest on a floor, while the bar 12 may be portable or non-stationary. On the upside 50 of the control unit 46, there is provided a first push button or pedal 52 and also a second push button or pedal 54. Operation of the first pedal 52 is designed to causes the bar 12 to be extended. Specifically, when the pedal 52 is pressed the electric motor 34 is initiated to rotate the sleeve 38 such that the moveable member 26 is screwed out of the sleeve 38 (towards the left in fig. 1) causing the distance between the ends 20 and 30 to increase and hence the bar 12 to be extended. Further, operation of the second pedal 54 is designed to release the bar 12 from an extended state. Specifically, when the pedal 54 is pressed the clutch 36 is deactivated or disengaged from the sleeve 38 allowing the moveable member 26 to be "pushed" back into the tube 14 by the counteracting force, causing the bar 12 to be retracted.

[0021] The operating range of the bar 12, i.e. the minimum-maximum length of the bar 12, may be about 150-200 cm.

[0022] An example of use or operation of the present stretching apparatus 10 will now be described. In case the bar 12 is unduly extended, the second pedal 54 is first pressed so that the bar 12 may be retracted to a suitable length somewhat shorter than the span of the arms of the person about to use the apparatus 10. Then, the person's first hand or wrist is secured to the bar 12 by means of one of the hoops, e.g. hoop 22, and the person's other hand or wrist is secured to the bar 12 by means of the other hoop 32, as illustrated in fig. 3a. Then, the person or user presses the first pedal 52 on the control unit 46, beneficially using his or hers foot. Operation of pedal 52 will cause the bar 12 to be longitudinally extended or lengthened. The lengthening of the bar 12 will pull

the person's hands or wrists in opposite directions away from each other, stretching the muscles in the person's arms and torso. As the bar 12 is extended, a force caused by the person's hands or wrists being attached to the bar 12 via the hoops 22, 32 will counteract or work against the bar 12 being extended. In a certain extended state of the bar 12, i.e. a certain position of the moveable member 26, this counteracting force will reach the particular value defined above, whereby the clutch 36 disconnects the electric motor 34. The bar 12 may remain in this certain extended state (fig. 3b) until the person presses the second pedal 54 of the control unit 46 to release the bar 12 from this state.

[0023] The person skilled in the art realized that the present invention by no means is limited to the embodiment described above. On the contrary, many modifications and variations are possible within the scope of the appended claims. For instance, the member 18 could be moveable like the member 26. Also, the sleeve 38 could be replaced by a screw and the moveable member 26 could be provided with a matching sleeve. Also, the "clutch" may be included in the electric motor in that the motor is adapted to be disabled when the power needed to drive the motor exceeds a certain value. Also, the buttons 52 and 54 could be finger operable switches located at one end of the bar. Further, a vibrator (not shown) could be placed inside the bar, in order to supply the user with vibrations, which could enhance the effect of the stretching.

Claims

1. A stretching apparatus (10), comprising:

   a longitudinally extendable bar (12) provided at each end (20, 30) thereof with a fastening means (22, 32) for securing a user's hand or wrist to the bar, and
   a drive mechanism adapted to longitudinally extend the bar.

2. A stretching apparatus according to claim 1, wherein the drive mechanism is adapted to extend the bar until a counteracting force reaches a particular value.

3. A stretching apparatus according to claim 1 or 2, wherein the drive mechanism comprises a drive motor (34) for extending the bar.

4. A stretching apparatus according to claim 3, wherein the drive mechanism further comprises a clutch mechanism (36) adapted to disconnect or disable the drive motor when the counteracting force reaches the particular value.

5. A stretching apparatus according to any preceding claim, wherein the bar comprises a bar member (26) longitudinally moveable in relation to the rest of the bar, said bar member being provided with one of said fastening means.

6. A stretching apparatus according to claims 3 and 5, wherein the drive mechanism further comprises conversion means (40, 42) for transforming rotary motion of the drive motor to linear motion of said bar member.

7. A stretching apparatus according to any preceding claim, wherein said drive mechanism is placed inside the bar.

8. A stretching apparatus according to any preceding claim, wherein the bar comprises a main tube (14) containing said drive mechanism, and a telescopically arranged tube or rod (26) extending from any end of the main tube.

9. A stretching apparatus according to any preceding claim 1-7, wherein the bar comprises two telescopically arranged tubes or rods.

10. A stretching apparatus according to any preceding claim, wherein each of said fastening means comprises a hoop or loop strap.

11. A stretching apparatus according to any preceding claim, further comprising a first actuator (52) for causing extension of the bar and a second actuator (54) for releasing the bar from an extended state.

12. A stretching apparatus according to claim 11, further comprising a control unit (46) separate from the bar, wherein said first and second actuators are pedals provided on said control unit.

13. A stretching apparatus according to claim 11, wherein said first and second actuators are finger operable switches located at one or different end(s) of the bar.

14. A stretching apparatus according to any preceding claim, further comprising a vibrator placed inside the bar.

Patentansprüche

1. Streckvorrichtung (10) umfassend:

   eine in Längsrichtung erstreckbare Stange (12), die an jedem Ende (20, 30) mit einem Befestigungsmittel (22, 32) zur Befestigung der Hand oder des Handgelenks eines Benutzers an der Stange versehen ist, und
   einen Antriebsmechanismus, die dafür eingerichtet ist, die Stange in Längsrichtung zu erstre-

cken.

2. Streckvorrichtung nach Anspruch 1, wobei der Antriebsmechanismus dafür eingerichtet ist, die Stange zu erstrecken, bis eine entgegenwirkende Kraft einen bestimmten Wert erreicht.

3. Streckvorrichtung nach Anspruch 1 oder 2, wobei der Antriebsmechanismus einen Antriebsmotor (34) zum Erstrecken der Stange umfasst.

4. Streckvorrichtung nach Anspruch 3, wobei der Antriebsmechanismus weiter einen Kupplungsmechanismus (36) umfasst, welcher dafür eingerichtet ist, den Antriebsmotor zu unterbrechen oder auszuschalten, wenn die entgegenwirkende Kraft den bestimmten Wert erreicht.

5. Streckvorrichtung nach einem der vorgehenden Ansprüche, wobei die Stange ein Stangenelement (26) umfasst, welches im Verhältnis zur restlichen Stange in Längsrichtung beweglich ist, wobei das Stangenelement mit einem der Befestigungsmittel versehen ist.

6. Streckvorrichtung nach Anspruch 3 und 5, wobei der Antriebsmechanismus weiter Umwandlungsmittel (40, 42) zum Umformen der Rotationsbewegung des Antriebsmotors in eine lineare Bewegung des Stangenelements umfasst.

7. Streckvorrichtung nach einem der vorgehenden Ansprüche, wobei der Antriebsmechanismus innerhalb der Stange angebracht ist.

8. Streckvorrichtung nach einem der vorgehenden Ansprüche, wobei die Stange ein Hauptrohr (14), welches den Antriebsmechanismus enthält, und ein Rohr oder einen Stab (26) umfasst, das bzw. der teleskopisch angeordnet ist und sich von einem Ende des Hauptrohrs erstreckt.

9. Streckvorrichtung nach einem der vorgehenden Ansprüche 1-7, wobei die Stange zwei teleskopisch angeordnete Rohre oder Stäbe umfasst.

10. Streckvorrichtung nach einem der vorgehenden Ansprüche, wobei jedes der Befestigungsmittel ein Klettverschlussband umfasst.

11. Streckvorrichtung nach einem der vorgehenden Ansprüche, weiter umfassend einen ersten Aktuator (52) zum Veranlassen von Erstreckung der Stange und einen zweiten Aktuator (54) zum Freigeben der Stange von dem Erstreckten Zustand.

12. Streckvorrichtung nach Anspruch 11, weiter umfassend eine von der Stange getrennte Steuereinheit (46), wobei der erste und zweite Aktuator Pedale sind, die an der Steuereinheit vorgesehen sind.

13. Streckvorrichtung nach Anspruch 11, wobei der erste und zweite Aktuator fingerbedienbare Schalter sind, die an einem oder verschiedenen Enden der Stange angeordnet sind.

14. Streckvorrichtung nach einem der vorgehenden Ansprüche, weiter umfassend einen Vibrator, der in der Stange angebracht ist.

Revendications

1. Dispositif d'étirement (10), comprenant:

une barre longitudinalement extensible (12) prévue à chaque extrémité (20, 30) de celui-ci par un moyen de fixation (22, 32) pour fixer la main ou le poignet d'un utilisateur à la barre, et
un mécanisme d'entraînement adapté pour étendre longitudinalement la barre.

2. Dispositif d'étirage selon la revendication 1, dans lequel le mécanisme d'entraînement est adapté pour étendre la barre jusqu'à ce qu'une force contrariante atteigne une valeur donnée.

3. Dispositif d'étirage selon la revendication 1 ou 2, dans lequel le mécanisme d'entraînement comprend un moteur d'entraînement (34) pour l'extension de la barre.

4. Dispositif d'étirage selon la revendication 3, dans lequel le mécanisme d'entraînement comprend en outre un mécanisme d'embrayage (36) adapté pour déconnecter ou désactiver le moteur d'entraînement lorsque la force contrariante atteint la valeur donnée.

5. Dispositif d'étirage selon l'une quelconque des revendications précédentes, dans lequel la barre comprend un élément de barre (26) longitudinalement mobile par rapport au reste de la barre, ledit élément de barre étant muni d'un desdits moyens de fixation.

6. Dispositif d'étirage selon les revendications 3 et 5, dans lequel le mécanisme d'entraînement comprend en outre des moyens de conversion (40, 42) pour transformer le mouvement de rotation du moteur d'entraînement en un mouvement linéaire dudit élément de barre.

7. Dispositif d'étirage selon l'une quelconque des revendications précédentes, dans lequel ledit mécanisme d'entraînement est placé à l'intérieur de la barre.

8. Dispositif d'étirage selon l'une quelconque des revendications précédentes, dans lequel la barre comprend un tube principal (14) contenant ledit mécanisme d'entraînement, et un tube ou une tige disposé(e) de façon télescopique (26) s'étendant à partir de n'importe quelle extrémité du tube principal.

9. Dispositif d'étirage selon l'une quelconque des revendications précédentes 1 à 7, dans lequel la barre comprend deux tubes ou tiges disposés de manière télescopique.

10. Dispositif d'étirage selon l'une quelconque des revendications précédentes, dans lequel chacun desdits moyens de fixation comprend un anneau ou une sangle de boucle.

11. Dispositif d'étirage selon l'une quelconque des revendications précédentes, comprenant en outre un premier actionneur (52) destiné à provoquer l'extension de la barre et un deuxième actionneur (54) pour libérer la barre à partir d'un état étendu.

12. Dispositif d'étirage selon la revendication 11, comprenant en outre une unité de commande (46) séparée de la barre, lesdits premier et deuxième actionneurs sont des pédales prévues sur ladite unité de commande.

13. Dispositif d'étirage selon la revendication 11, dans lequel lesdits premier et deuxième actionneurs sont des commutateurs actionnables par doigts situés à une extrémité ou à différentes extrémités de la barre.

14. Dispositif d'étirage selon l'une quelconque des revendications précédentes, comprenant un vibrateur placé à l'intérieur de la barre.

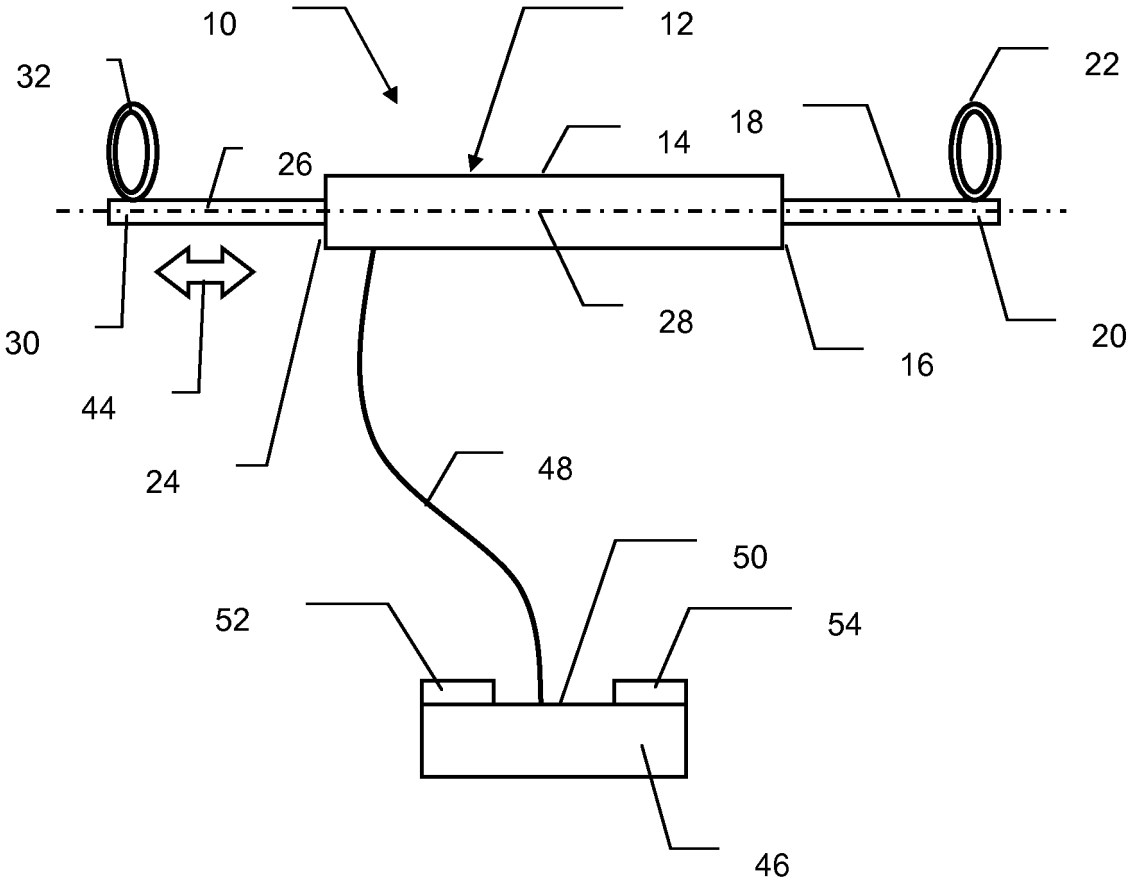

Fig. 1

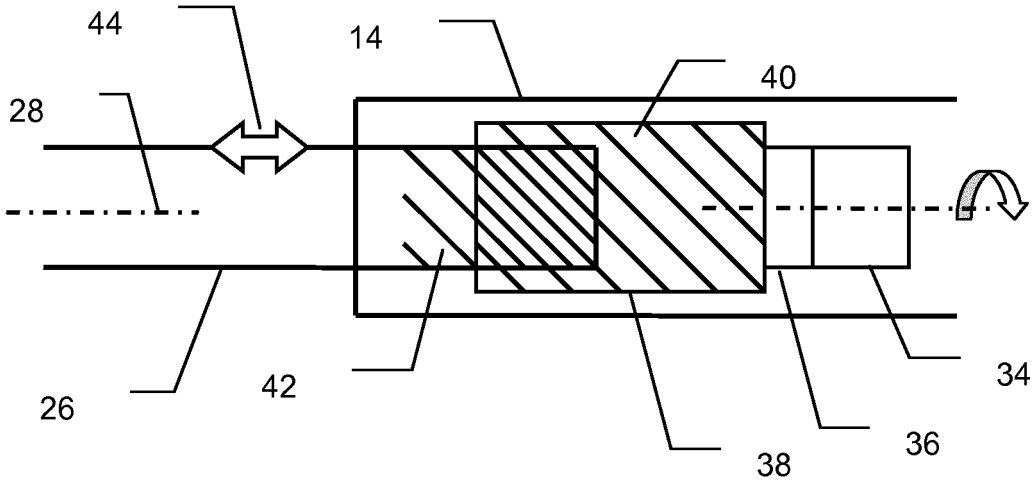

Fig. 2

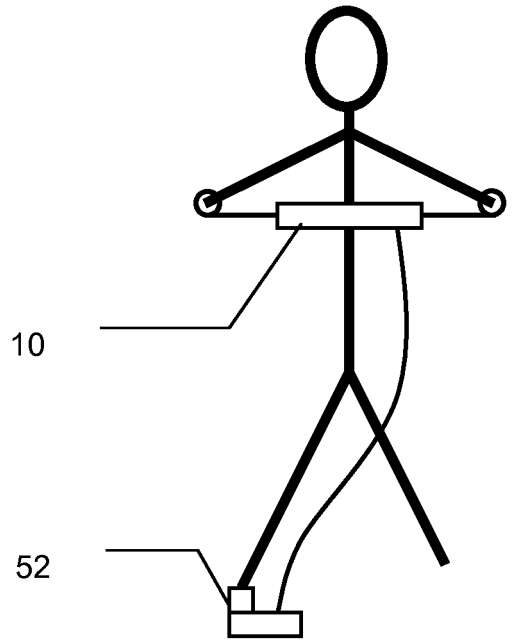

Fig. 3a

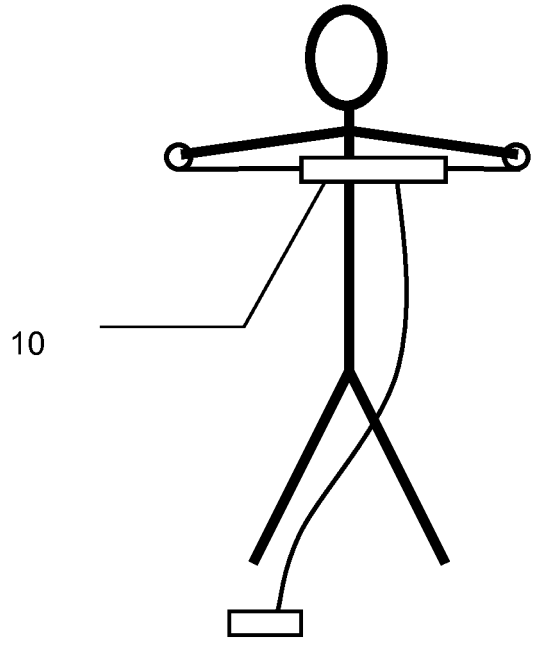

Fig. 3b

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 3556090 A, Viel **[0002] [0003]**