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UNITED STATES DISTRICT COURT

FOR THE CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

BACK IN FIVE, LLC, a California limited liability company; BACKLIFE LTD., an Israeli company,

Plaintiffs,

vs.

INFINITE INTERNATIONAL INC., a California corporation; JACK HSU, an individual; YU-LING LINDA HSU, an individual; and DOES 1-10,

Defendants.

CASE NO.: CV11 0243 GAF AJWx

COMPLAINT FOR:

1. Patent Infringement (35 U.S.C. § 271 (a)-(c))
2. Trademark Infringement and Counterfeiting (15 U.S.C. § 1114)
3. False Designation of Origin and Trade Dress Infringement (15 U.S.C. § 1125(a))
4. Unfair Competition (15 U.S.C. § 1125(a))
5. Common Law Trade Dress Infringement
6. Unfair Competition (Cal. Bus. & Prof. Code § 17200)
7. Unjust Enrichment

JURY TRIAL DEMANDED

Plaintiffs BACK IN FIVE, LLC (hereinafter "Back in Five") and BACKLIFE LTD. (hereinafter "BackLife") for their complaint against Defendants INFINITE INTERNATIONAL INC., JACK HSU, YU-LING LINDA HSU and DOES 1-10 (hereinafter collectively "Defendants"), allege and aver as follows:

NATURE OF THE CASE

1. Back Life is the holder of a number of patents for, among other things, a therapeutic mechanical device (hereinafter the "Back2Life") that moves the users' back in a confined motion to relieve lower back pain. Back in Five is the exclusive licensee of Back Life's patents and related rights for the Back2Life product for the world, excepting Israel. Pursuant to that license, Back in Five manufactures, distributes, markets, offers for sale, promotes and sells its Back2Life product in the United States and elsewhere. The Back2Life product incorporates BackLife's licensed patented technology and is also protected by numerous trademarks and trade dress registrations with the United States Patent and Trademark Office ("USPTO") and abroad. Back in Five is the exclusive owner of the Back2Life trademarks and trade dress in the United States. Back in Five has invested substantial sums of money to heavily promote the Back2Life product, largely through television (including infomercials) and internet media and has garnered widespread commercial success and notoriety throughout the United States.

2. As detailed below, Defendants' infringing products, which are being promoted and sold on the internet and at national retail stores in the United States (including among others Sears and Linens and Things), are intended to trade on the significant promotion and good will of Back in Five and its Back2Life products. Defendants' infringing goods are being sold under the name "Infinite International Therapeutic Back Massager Model IF-A1110" (hereinafter the "Imposter Device").

3. Plaintiffs became aware of Defendants' infringing conduct as a result of numerous telephone calls received on Back in Five's customer service line from consumers who had purchased the Imposter Device under the mistaken belief that

they were in fact purchasing Back in Five's Back2Life product. Many of these consumers complained of having received defective and/or malfunctioning Imposter Devices. The inferior quality of Defendants' Imposter Device, as reflected by such consumer complaints, is not only damaging to Back in Five, but given the intended use of the Imposter Device, also poses a significant threat of serious injury to its users.

4. Concerned both for its own rights and for the safety of consumers, on December 9, 2010, Back in Five sent a cease and desist letter to Defendants wherein it set forth its superior rights in the Back2Life intellectual property and demanded that Defendants cease and desist the sale of the Imposter Device. Defendants' refused to comply. A true and correct copy of the December 9, 2010 cease and desist letter from Back in Five to Defendants is attached hereto as Exhibit 1 and is incorporated herein by this reference.

5. Plaintiffs therefore were compelled to bring this action in order to enforce their intellectual property rights and to protect the consuming public from the danger posed by the Imposter Device. Plaintiffs seek, *inter alia,* to enjoin Defendants' manufacture, import, distribution, promotion, offer for sale and sale of Defendants' products which unlawfully infringe Plaintiffs' patents and trade dress, and which appear to be virtually identical to Back in Five's Back2Life product.

THE PARTIES

6. Plaintiff Back in Five, LLC is and at all times relevant was a California limited liability company formed and existing under the laws of the State of California, with its principal place of business in the County of Los Angeles, State of California.

7. Plaintiff BackLife Ltd. is and at all times relevant was an Israeli limited company formed and existing under the laws of the Country of Israel, with its principal place of business in the Country of Israel.

8. Plaintiffs are informed and believe, and based thereon allege, that

defendant Infinite International Inc. currently is, and at all times relevant was, a corporation formed and existing under the laws of the State of California, with its principal place of business in the County of San Bernardino, and doing business within the jurisdiction of this Court.

9. Plaintiffs are informed and believe and based thereon allege that defendant Jack Hsu currently is, and at all times relevant was, an individual residing in the State of California, County of Los Angeles. Plaintiffs are further informed and believe, and based thereon allege, that defendant Jack Hsu currently is, and at all relevant times was, a shareholder and officer of defendant Infinite International Inc. and doing business within the jurisdiction of this Court.

10. Plaintiffs are informed and believe, and based thereon allege, that defendant Yu-Ling Linda Hsu currently is, and at all times relevant was, an individual residing in the State of California, County of Los Angeles. Plaintiffs are further informed and believe and based thereon allege that defendant Yu-Ling Linda Hsu currently is, and at all relevant times was, a shareholder and officer of defendant Infinite International Inc. and doing business within the jurisdiction of this Court.

11. Plaintiffs are presently unaware of the true names and capacities, whether individual, corporate, associate, or otherwise of the defendants sued herein as Does 1 through 10, inclusive, but will seek leave of Court to amend this Complaint to show their true names and identities when the same has been ascertained. Plaintiffs are informed and believe, and based thereon allege, that each of the defendants designated as "Doe" is responsible in some manner for the events and happenings herein referred to, and caused damages thereby to Plaintiffs as herein alleged.

12. Plaintiffs are informed and believe, and based thereon allege, that at all times herein mentioned, Defendants, including Does 1 through 10, inclusive, were and still are the agents or employees of the other named Defendants, and that in

doing the things alleged herein, said Defendants were acting within the course and scope of said agency or employment, and with the knowledge and consent of each of the other Defendants, and all of them jointly.

JURISDICTION AND VENUE

13. This action arises under the Patent Laws of the United States, Title 35, United States Code, the Lanham Act of 1946, as amended, 15 U.S.C. § 1051, *et seq.*, Cal. Bus. & Prof. Code § 17200, *et seq.* and California common law.

14. The Court has original subject matter jurisdiction over the Plaintiffs' Federal claims pursuant to 28 U.S.C. §§ 1331, 1337(a), and 1338(a). The Court has supplemental subject matter jurisdiction over the Plaintiffs' State law claims pursuant to 28 U.S.C. § 1367(a).

15. The Court has personal jurisdiction over all Defendants in that Defendants either reside or have their principal place of business in the State of California.

16. Venue is proper in the United States District Court for the Central District of California pursuant to 28 U.S.C §§ 1391(b), 1391(c), and 1400(a) as: (a) this is a judicial district in which a substantial part of the events giving rise to the claims occurred; (b) this is a judicial district in which Defendants reside or have their principal place of business; and (c) this is a judicial district in which Defendants may be found, and there is no judicial district in which the action may otherwise be brought.

THE BACK2LIFE PRODUCTS AND INTELLECTUAL PROPERTY

A. The Patents-In-Suit.

17. On June 30, 1998, the United States Patent and Trademark Office issued U.S. Patent No. 5,772,612 entitled "Stretching Method for preventing or relieving lower back pain" (hereinafter "the '612 patent"). A true and correct copy of the '612 patent is attached hereto as Exhibit 2.

18. On September 3, 2002, the United States Patent and Trademark Office

issued U.S. Patent No. 6,443,916 entitled "Stretching Method for preventing or relieving lower back pain" (hereinafter "the '916 patent"). A true and correct copy of the '916 patent is attached hereto as Exhibit 3.

19. On February 20, 2007, the United States Patent and Trademark Office issued U.S. Patent No. 7,179,237, entitled "Device for preventing or relieving pain in the lower back" (hereinafter "the '237 patent"). A true and correct copy of the '237 patent is attached hereto as Exhibit 4.

20. BackLife is the exclusive assignee and owner of the '916 patent, the '612 patent and the '237 patent (hereinafter collectively the "BackLife Patents").

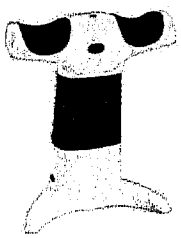
21. Back in Five is the exclusive licensee of the BackLife Patents for the United States and has the exclusive right to enforce the BackLife Patents in the United States, including the right to recover damages for past infringement.

22. As detailed below, Defendants have directly infringed and continue to directly infringe the BackLife Patents by making, using, importing, selling or offering to sell at least the Imposter Device that falls within the scope of multiple claims of each of the BackLife Patents.

B. The Back2life Trade Dress

23. In 2007, Back in Five launched its Back2Life product to the United States market and began an aggressive direct marketing campaign.

24. Since 2007, and prior to the acts of Defendants described herein, Back in Five's Back2Life product has been marketed and sold having a distinctive trade dress. A representative picture illustrating the trade dress of a Back2Life product is shown below:



25. The Back2Life trade dress includes the distinctive colors blue and

white as applied to the surface of the Back2Life product wherein the lower portion is white, the central portion is entirely blue, and the upper portion comprising the crossing arm of the "T" shape of the device is white having two discreet islands of blue symmetrically placed on the arm. Back in Five applied for and, on June 22, 2010, obtained a Federal trademark registration for the aforementioned Back2Life trade dress (Registration Number 3,844,089 (hereinafter the "'089 Registration")). A copy of the '089 Registration certificate is attached hereto as Exhibit 5.

26. Back in Five also has a pending trademark application with the United States Patent and Trademark Office for the stylized design aspects of the Back2Life product consisting of the configuration of a device for relief of back pain consisting of a generally T-shaped body, comprising a rounded base with two stylized curved extensions on either side of the exerciser, a rectangular middle section the upper part of which contains a rolled design, and a T shaped top portion with two indentations on the top of the device. (Application Serial Number 77/838,661 (hereinafter the "'661 Application")). A true and correct copy of the Trademark Electronic Search System abstract from the USPTO for the '661 Application is attached hereto as Exhibit 6.

27. Since at least December 2007, and prior to the acts of Defendants described herein, Back in Five has continuously used the trade dress and marks represented by the '089 Registration and the '661 Application (collectively the "Back2Life Trade Dress") in connection with the promotion, marketing and sales of its Back2Life product in commerce throughout the United States.

28. Back in Five's Back2Life Trade Dress is nonfunctional, is inherently distinctive and has acquired substantial secondary meaning in the marketplace.

29. To date Back in Five and its affiliates have expended in excess of $50,000,000 in promoting the Back2Life product and Back2Life Trade Dress via television, direct marketing and the worldwide web. Additionally, the Back2Life Trade Dress and product have received substantial unsolicited media coverage

including features on nationally broadcast network television programs *Regis and Kelly Show* and the *Rachel Ray Show*.

30. Back in Five's Back2Life product has been a tremendous commercial success with retail sales totaling over $100 million and nearly 800,000 units sold since 2007 alone. The Back2Life product is or has been sold in national retail stores, including without limitation, *Bed Bath and Beyond*, *Big 5, Costco, Brookstone, Walgreen and As Seen On TV Stores*, and through various mail order catalogs

31. The commercial success of the Back2Life product is attributable, in part, to the distinctive Back2Life Trade Dress which is prominently featured in virtually all advertisements and promotions for the Back2Life product.

32. By virtue of the aforementioned substantial use, sale, and promotion of the Back2Life product, the Back2Life Trade Dress has acquired secondary meaning among the purchasing public. The Back2Life Trade Dress has acquired great value as an identifier of Back in Five's Back2Life product and serves to distinguish Back in Five's Back2Life product from other similar products. Consumers in this judicial district and elsewhere readily recognize the Back2Life Trade Dress as a distinctive designation of the origin of Back in Five's Back2Life product. The Back2Life Trade Dress is an asset of incalculable value as a symbol of Back in Five and its quality products and goodwill.

DEFENDANTS' INFRINGING ACTIVITIES

33. Plaintiffs are informed and believe, and based thereon allege, that in or about October 2010, Defendants began to manufacture, import, promote, offer for sale and sell the Imposter Device via the worldwide web at various websites and at national retailers including *Sears* and *Linens and Things*. Defendants' manufacture, import, distribution, promotion, offer for sale and sale of the Imposter Device directly infringes multiple claims of the BackLife Patents and the Back2Life Trade Dress. Indeed the Imposter Device appears to be a direct knockoff of the Back2Life

product, even being advertised "As Seen on TV," although only Back in Five's Back2Life product has been advertised on television, not the Imposter Device.

A. Infringement of the BackLife Patents

34. Defendants have directly infringed and continue to directly infringe the BackLife Patents by making, using, importing, selling or offering to sell the Imposter Device.

35. Plaintiffs are informed and believe, and based thereon allege, that Defendants also have provided, and continue to provide, instructional, advertising, and/or marketing materials instructing consumers as to the use of Defendants' Imposter Device in a manner that leads to direct infringement of multiple claims of each of the BackLife Patents. Plaintiffs are further informed and believe, and based thereon allege, that at all times relevant, Defendants had knowledge of the BackLife Patents, and by providing such instructional, advertising, and/or marketing materials intended that others' use of their Imposter Device would infringe the BackLife Patents. Defendants also provided and/or caused to be provided, and continue to provide and/or cause to be provided, the Imposter Device to others with knowledge that such device was made to be used in a manner that would directly infringe multiple claims of the BackLife Patents and such device has no substantial non-infringing use. Accordingly, Defendants have induced and continue to induce the infringement of the BackLife Patents, aided and/or abetted and continue to aid and/or abet the infringement of the BackLife Patents, and contributorily infringed and continue to contributorily infringe the BackLife Patents by inducing, aiding and/or abetting, and encouraging others to infringe the BackLife Patents.

36. Plaintiffs are informed and believe, and based thereon allege, that at all times relevant Defendants have had actual notice of their infringement of the BackLife Patents, and Defendants' infringement of those patents is and has been willful.

37. Defendants' acts of patent infringement have injured Plaintiffs, and

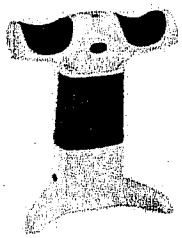
Plaintiffs are entitled to recover damages adequate to compensate them for the infringement, but in no event less than a reasonable royalty.

38. Plaintiffs are informed and believe, and based thereon allege, that Defendants' acts of patent infringement will continue after service of this Complaint, thereby causing further injury to Plaintiffs, unless and until such infringement is enjoined by this Court.

B. Infringement of the Back2life Trade Dress

39. Through their manufacture, import, promotion, advertising, offer for sale and sale, in this judicial district and elsewhere, of the Imposter Device without permission or authority from Back in Five, Defendants have infringed Back in Five's Back2Life Trade Dress in interstate commerce.

40. A picture of the Imposter Device is shown below:



41. As shown above, Defendants' Imposter Device is sold bearing a trade dress that is confusingly similar in appearance to Back in Five's Back2Life Trade Dress and in fact is an identical counterfeit of the Back2Life Trade Dress.

42. Defendants' ongoing unauthorized use of Back in Five's Back2Life Trade Dress was, and is, intended to trade upon the goodwill and substantial recognition associated with Back in Five's Back2Life product.

43. Defendants have used, and are continuing to use Back in Five's Back2Life Trade Dress in an attempt to associate themselves with Back in Five or otherwise trade upon Back in Five's reputation and goodwill.

44. Defendants' ongoing use of the Back2Life Trade Dress is designed to cause confusion, mistake and/or deception.

45. Defendants' purpose in using the Back2Life Trade Dress was, and is,

to cause consumers and potential consumers to believe that Defendants' Imposter Device is actually the Back2Life product or otherwise associated, affiliated with or authorized by Back in Five. Consumers are likely to be misled as to the source, sponsorship and/or affiliation of the Imposter Device.

46. Defendants were, and are, aware of Back in Five's rights arising under trademark law but have refused, and continue to refuse, to respect them. Accordingly, in this action Back in Five seeks to enjoin Defendants from using the Back2Life Trade Dress or any confusingly similar trade dress. One of the classic functions of a trademark is to serve as a unique identifier of a predictable nature and quality of goods coming from a single source. Defendants' unauthorized association of Back in Five's Back2Life Trade Dress with Defendants' comparatively inferior products has diluted Back in Five's marks by diminishing consumer capacity to associate the marks with the quality goods signified by Back in Five's Back2Life Trade Dress. Trademark laws do not sanction such a result.

47. Defendants' acts of trade dress infringement have injured Plaintiff Back in Five, and Back in Five is entitled to recover damages adequate to compensate it for the infringement, all profits derived by Defendants, treble damages and reasonable attorneys' fees.

48. The trademark laws prohibit "latecomers," such as Defendants, from coping a famous mark or trade dress and to "free ride" on its attendant goodwill. Back in Five's extensive investment in the Back2Life Trade Dress has made the same synonymous with quality and Back in Five, and Defendants, direct competitors of Back in Five, must not be allowed to benefit from that investment at the expense of Back in Five and to the detriment of consumers.

49. Plaintiff Back in Five is informed and believes, and based thereon alleges, that Defendants' acts of trade dress infringement will continue after service of this Complaint, thereby causing further injury to Back in Five, unless and until such infringement is enjoined by this Court.

FIRST CLAIM FOR RELIEF

Patent Infringement by Plaintiffs against All Defendants (Patent Laws of the United States § 271(a)-(c), 35 U.S.C. § 271 (a)-(c))

50. Plaintiffs reallege each of the paragraphs herein above as though fully set forth herein.

51. Defendants have directly infringed and continue to directly infringe the BackLife Patents by making, using, importing, selling or offering to sell the Imposter Device, in violation of the Patent Laws of the United States, § 271(a) (35 U.S.C. § 271 (a)).

52. Defendants also have induced and continue to induce the infringement of the BackLife Patents, aided and/or abetted and continue to aid and/or abet the infringement of the BackLife Patents. contributorily infringed and continue to contributorily infringe the BackLife Patents and encouraged and continue to encourage others to infringe the BackLife Patents, by (a) providing instructional, advertising, and/or marketing materials instructing consumers as to the use of the Imposter Device in a manner that leads to direct infringement of multiple claims of each of the BackLife Patents while having knowledge of the BackLife Patents and intending that others' use of the Imposter Device would infringe the BackLife Patents, and (b) by providing and/or causing to be provided the Imposter Device to others with knowledge that such device was made to be used in a manner that would directly infringe multiple claims of each of the BackLife Patents and that such device has no substantial non-infringing use. Such actions by Defendants are in violation of Sections 271 (a) and (b) of the Patent Laws of the United States (35 U.S.C. § 271 (b) and (c)).

53. Plaintiffs are informed and believe, and based thereon allege, that at all times relevant Defendants are and have been on actual notice of their infringement of the BackLife Patents and their infringement of those patents is and has been willful.

54. Defendants' infringing acts have irreparably injured Plaintiffs. Such irreparable injury will continue unless Defendants are preliminarily and permanently enjoined by this Court from continuing to engage in their ongoing infringement of the BackLife Patents, for which Plaintiffs have no adequate remedy at law. Defendants' acts of infringement also have economically injured Plaintiffs in an amount that is presently undetermined.

55. Plaintiffs are entitled to recover damages adequate to compensate them for the infringement, but in no event less than a reasonable royalty, in an amount to be determined according to proof at trial. Plaintiffs also requests that this Court exercise its power to grant an injunction against Defendants to prevent future violations by Defendants of Plaintiffs' rights in the Back2Life Patents and Plaintiffs' rights under Section 271(a)-(c) of the Patent Laws of the United States.

SECOND CLAIM FOR RELIEF

Trademark Infringement and Counterfeiting by Plaintiff Back in Five against All Defendants (Lanham Act § 32, 15 U.S.C. § 1114)

56. Plaintiff Back in Five realleges paragraphs 1 through 49 herein above as though fully set forth herein.

57. Back in Five's '089 Registration is registered with the United States Patent and Trademark Office, is in full force and effect, is used in commerce, is nonfunctional, is inherently distinctive and has acquired substantial secondary meaning in the marketplace.

58. Despite Back in Five's prior established rights in the '089 Registration, Defendants have used, and continue to use, without Back in Five's authorization, the '089 Registration, or counterfeits, copies, reproductions, or colorable imitations thereof, in connection with the manufacture, import, distribution, offer for sale, advertisement, promotion and sale of Defendants' Imposter Device.

59. Such use of the '089 Registration, or counterfeits, copies, reproductions, or colorable imitations thereof, by Defendants has been, and

continues to be undertaken by Defendants with the intent to cause confusion, mistake and deception among consumers and the public, and to deceive the public into believing that Defendants' Imposter Device is associated with, sponsored by or approved by Back in Five, when it is not.

60. Such use of the '089 Registration, or counterfeits, copies, reproductions, or colorable imitations thereof by Defendants has in fact caused, and will continue to cause, confusion, mistake and deception among consumers and the public, and to deceive the public into believing that Defendants' Imposter Device is associated with, sponsored by or approved by Back in Five, when it is not.

61. Defendants' use, without Back in Five's authorization the '089 Registration, or counterfeits, copies, reproductions, or colorable imitations thereof, in connection with the manufacture, distributing, offering for sale, advertisement, promotion and sale of Defendants' Imposter Device, constitutes willful infringement and counterfeiting of Back in Five's exclusive rights in the '089 Registration in violation of Section 32(1)(a) of the Lanham Act, (15 U.S.C. § 1114(1)(a)).

62. Defendants' infringing acts have irreparably injured Back in Five. Such irreparable injury will continue unless Defendants are preliminarily and permanently enjoined by this Court from continuing to engage in their ongoing infringement of the '089 Registration, for which Back in Five has no adequate remedy at law. Defendants' acts of infringement also have economically injured Back in Five in an amount that is presently undetermined.

63. Back in Five is entitled to recover from Defendants statutory damages pursuant to Section 35(c) of the Lanham Act (15 U.S.C. § 1117(c)) or, alternatively, Back in Five's actual damages and Defendants' profits from infringing the '089 Registration, according to proof at trial. Back in Five also requests that this Court exercise its power to grant an injunction against Defendants to prevent future violations by Defendants of Back in Five's '089 Registration and Back in Five's rights under Section 32 of the Lanham Act.

64. Defendants' unlicensed Imposter Device bearing the '089 Registration, was manufactured, distributed, promoted, offered for sale and sold with Defendants' knowledge that the devices were counterfeit and with Defendants' intent to counterfeit products within the meaning of 15 U.S.C. § 1116(d). Accordingly, this is an exceptional case within the meaning of 15 U.S.C. § 1117(a) entitling Back in Five to treble damages and its reasonable costs, including attorneys' fees.

THIRD CLAIM FOR RELIEF

False Designation of Origin and Trade Dress Infringement by Plaintiff Back in Five against All Defendants (Lanham Act § 43(a), 15 U.S.C. § 1125(a))

65. Plaintiff Back in Five realleges paragraphs 1 through 49 herein above as though fully set forth herein.

66. Back in Five's Back2Life Trade Dress is used in commerce, is nonfunctional, is inherently distinctive and has acquired substantial secondary meaning in the marketplace.

67. Defendants' Imposter Device contains a collection of design elements and trade dress which is confusingly similar, if not identical, to Back in Five's Back2Life Trade Dress. Defendants have infringed the Back2Life Trade Dress and created a false designation of origin by manufacturing, distributing, offering for sale, selling, and/or promoting in commerce, without Back in Five's permission, their Imposter Device with the intent to unfairly compete against Back in Five, to trade upon Back in Five's reputation and goodwill by causing confusion and mistake among consumers and the public, and to deceive the public into believing that Defendants' Imposter Device is associated with, sponsored by or approved by Back in Five, when it is not.

68. Defendants' infringing acts have irreparably injured Back in Five. Such irreparable injury will continue unless Defendants are preliminarily and permanently enjoined by this Court from continuing to engage in their ongoing infringement of the BackLife Trade Dress, for which Back in Five has no adequate

remedy at law. Defendants' acts of infringement also have economically injured Back in Five in an amount that is presently undetermined.

69. Back in Five is entitled to recover from Defendants monetary damages adequate to compensate Back in Five's damages and Defendants' profits from infringing the Back2Life Trade Dress, according to proof at trial. Back in Five also requests that this Court exercise its power to grant an injunction against Defendants to prevent future violations by Defendants of Back in Five's Back2Life Trade Dress rights and Back in Five's rights under Section 43(a) of the Lanham Act.

70. Back In Five is informed and believes, and based thereon alleges, that Defendants had actual knowledge of Back in Five's ownership and prior use of its Back2Life Trade Dress, and without the consent of Back in Five have willfully violated Section 43(a) of the Lanham Act (15 U.S.C. § 1125(a)), through use of the Back2Life Trade Dress in connection with the manufacture, import, offer for sale, advertisement and sale of the Imposter Device. Accordingly, this is an exceptional case within the meaning of 15 U.S.C. § 1117(a) entitling Back in Five to treble damages and its reasonable costs, including attorneys' fees.

FOURTH CLAIM FOR RELIEF

Unfair Competition by Plaintiff Back in Five against All Defendants

(Lanham Act § 43(a), 15 U.S.C. § 1125(a))

71. Plaintiff Back in Five realleges paragraphs 1 through 49 herein above as though fully set forth herein.

72. Back in Five is the owner of the '089 Registration and the '661 Application.

73. Back in Five's use of the marks represented by the '089 Registration and the '661 Application inures to the benefit of Back in Five, which exercises quality control over the same to maintain a consistent and predictable quality for all goods and services for which the marks represented by the '089 Registration and the '661 Application are used.

74. Each of the marks and trade dress of the '089 Registration and the '661 Application is inherently distinctive and Back in Five has developed and maintained substantial secondary meaning in each of the marks.

75. Defendants have infringed and are infringing the Back2Life Trade Dress (the '089 Registration and the '661 Application) by virtue of their use of the substantially similar trade dress in connection with their directly competitive goods in the form of the Imposter Device. Such conduct has caused, and will continue to cause, consumer confusion as to Back in Five's association with, affiliation with, or sponsorship of Defendants' goods and services.

76. Defendants' conduct constitutes unfair competition pursuant to Section 43(a) of The Lanham Act (15 U.S.C. § 1125(a)). Defendants' conduct was intended to cause confusion, has caused confusion, and will continue to cause confusion unless enjoined.

77. Defendants' acts of unfair competition have irreparably injured Back in Five. Such irreparable injury will continue unless Defendants are preliminarily and permanently enjoined by this Court from continuing to engage in their ongoing acts of unfair competition, for which Back in Five has no adequate remedy at law. Defendants' acts of infringement also have economically injured Back in Five in an amount that is presently undetermined.

78. For each of Defendants' completed acts of unfair competition, Back in Five is entitled to recover its actual damages as well as Defendants' profits from such conduct. Back in Five also requests that this Court exercise its power to grant an injunction against Defendants to prevent future acts of unfair competition by Defendants and future violations by Defendants of Back in Five's rights under Section 43(a) of the Lanham Act.

79. Defendants' acts of unfair competition in violation of Section 43(a) of the Lanham Act (15 U.S.C. § 1125(a)) was willing, intentional and knowing. Accordingly, this is an exceptional case within the meaning of 15 U.S.C. § 1117(a)

entitling Back in Five to treble damages and its reasonable costs, including attorneys' fees.

FIFTH CLAIM FOR RELIEF

Common Law Trade Dress Infringement

by Back in Five against All Defendants

80. Back in Five realleges paragraphs 1 through 49 herein above as though fully set forth herein.

81. Back In Five is informed and believes, and based thereon alleges, that by virtue of the acts complained of herein, Defendants have intentionally infringed Back in Five's Back2Life Trade Dress and caused a likelihood of confusion among the consuming public, thereby committing common law trade dress infringement.

82. Back in Five is informed and believes, and based thereon alleges, that Defendants' aforementioned acts have been fraudulent, oppressive and malicious.

83. Defendants' infringing acts have irreparably injured Back in Five. Such irreparable injury will continue unless Defendants are preliminarily and permanently enjoined by this Court from continuing to engage in their ongoing infringement of the BackLife Trade Dress, for which Back in Five has no adequate remedy at law. Defendants' acts of infringement also have economically injured Back in Five in an amount that is presently undetermined.

84. Back in Five is entitled to recover from Defendants monetary damages adequate to compensate Back in Five's damages, according to proof at trial. Back in Five also requests that this Court exercise its power to grant an injunction against Defendants to prevent future violations by Defendants of Back in Five's Back2Life common law trade dress rights.

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SIXTH CLAIM FOR RELIEF

Unfair Competition (Cal. Bus. & Prof. Code § 17200)

by Plaintiffs against All Defendants

85. Plaintiffs reallege the allegations contained in each of the above paragraphs as though fully set forth herein.

86. By engaging in the above-described practices and actions, Defendants committed one or more acts of unfair competition within the meaning of California *Business and Professions Code* ("BPC") §§ 17200 *et seq*. As used in this Complaint, and in BPC § 17200, "unfair competition" means (1) an unlawful, unfair or fraudulent business act or practice; (2) unfair, deceptive, untrue or misleading advertising; and/or (3) an act prohibited by Chapter 1 (commencing with BPC § 17500) of Part 3 of Division 7 of the BPC. This conduct as alleged is actionable pursuant to BPC §§ 17200 and 17203.

87. Beginning in or about October 2010 and continuing to the present, Defendants have engaged in, and continue to engage in, such unfair competition. Defendants' acts and practices are wrongful, arbitrary, without reasonable business or commercial justification, unethical, oppressive, and have caused substantial harm and injury to Plaintiffs.

88. Defendants' acts of unfair competition are described herein and include, without limitation, Defendants' manufacture, import, distribution, offer for sale promotion, advertisement and sale of the Imposter Device in violation of the Plaintiffs' intellectual property rights.

89. Defendants' conduct, as described above, is unlawful, unfair, and deceptive, and violates BPC §§ 17200 *et seq*. and constitutes, *inter alia*, patent infringement and trade dress infringement.

90. Plaintiffs have suffered injury in fact and have lost revenue, profits, market share, business value and good will, and business opportunities as a result of Defendants' unlawful actions and practices in violation of BPC sections 17200 *et*

seq.

91. As a direct and proximate result of Defendants' unlawful conduct, Plaintiffs are entitled to restitution and disgorgement of profits in an amount according to proof at trial and Plaintiffs have suffered and will continue to suffer irreparable harm.

92. Defendants will continue to engage in such unlawful acts, unless and until restrained and enjoined by this Court. Plaintiffs' remedy at law is not by itself adequate to compensate them for the harm that has been and will be inflicted by Defendants. Plaintiffs are therefore entitled to preliminary and permanent injunctive relief restraining Defendants, their officers, directors, members, agents and employees, and all persons acting in concert with them, from engaging in any further acts in violation of Section 17200 of the California *Business and Professions Code*.

SEVENTH CLAIM FOR RELIEF

Unjust Enrichment by Plaintiffs against All Defendants

93. Plaintiffs reallege each of the paragraphs herein above as though fully set forth herein.

94. Defendants, and each of them, jointly and individually, by the wrongful acts alleged herein (specifically engaging in the sale of the Imposter Device in violation of Plaintiffs' intellectual property rights and engaging in unfair competition), have been unjustly enriched by receiving monies under false pretenses and as a result of their wrongful conduct. Defendants should be required to disgorge and pay to Plaintiffs the amount of such unjust enrichment, according to proof at trial.

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PRAYER OF RELIEF

WHEREFORE, Plaintiffs respectfully pray for a judgment as follows:

(a) Adjudging that Defendants willfully:

1. Infringed the BackLife Patents in violation of Section 271(a) of the Patent Laws of the United States (35 U.S.C. § 271(a);

2. Infringed the '089 Registration and engaged in counterfeiting of the '089 Registration in violation of Section 32 of the Lanham Act, 15 U.S.C. § 1114;

3. Violated Section 43(a) of the Lanham Act, 15 U.S.C. § 1125(a) with respect to the Back2Life Trade Dress;

4. Committed common law trade dress infringement with respect to the Back2Life Trade Dress; and

5. Violated Section 1700 of the California *Business and Professions Code*, Cal. *Bus. & Prof. Code* § 17200, by engaging in unfair business practices.

(b) Granting an injunction, pursuant to Rule 65 of the *Federal Rules of Civil Procedure*, 15 U.S.C. § 1116, 17 U.S.C. § 502, 35 U.S.C § 283 and California *Business and Professions Code* § 17200 *et seq*. preliminarily and permanently restraining and enjoining Defendants, their officers, agents, employees, and attorneys, and all those persons or entities in active concert or participation with them from:

1. Manufacturing, importing, advertising, marketing, promoting, supplying, distributing, offering for sale, and/or selling any products that infringe the BackLife Patents, infringe or bear the '089 Registration and/or the '661 Application and/or any other mark or design element substantially similar or confusing thereto, including, without limitation, the Imposter Device, and engaging in any other activity constituting an infringement of any of Plaintiffs' rights in the BackLife Patents and/or the Back2Life Trade Dress;

2. Engaging in any other activity constituting unfair competition with Plaintiffs, or acts or practices that deceive consumers, the public, and/or trade, including without limitation, the use of designations and design elements associated with Plaintiffs or the Back2Life product;

3. Requiring Defendants to recall from any suppliers, manufacturers, distributors, shippers and retailers and to deliver to Plaintiffs for destruction or other disposition all remaining inventory of all Imposter Devices or parts thereof, including all advertisements, promotional and marketing materials, as well as the means of making same; and

4. Requiring Defendants to file with this Court and to serve on Plaintiffs within 30 days after entry of the injunction a report in writing under oath setting forth in detail the manner and form in which Defendants have complied with the injunction.

(c) Awarding damages adequate to compensate Plaintiffs for Defendants' willful infringement of the BackLife Patents.

(d) Awarding statutory damages pursuant to Section 35(c) of the Lanham Act, 15 U.S.C. § 1117(c) or, alternatively, Back in Five's actual damages and Defendants' profits from infringing the '089 Registration.

(e) Awarding Back in Five's actual damages and Defendants' profits from infringing the '661 Application.

(f) Awarding treble damages for Defendants' willful and knowing infringement and counterfeiting of the '089 Registration and the '661 Application pursuant to 15 U.S.C. § 1117(a).

(g) Awarding punitive damages to which Plaintiffs are entitled under applicable Federal or State law.

(h) Awarding Plaintiffs' costs, attorney's fees, investigatory fees and expenses to the full extent provided by Section 35 of the Lanham Act, 15 U.S.C. § 1117 and 35 U.S.C. § 285.

(i) Awarding pre-judgment interest on any monetary award made part of the judgment against Defendants.

(j) Awarding such other and further relief against Defendants as this Court or a jury may deem proper.

DEMAND FOR JURY TRIAL

Plaintiffs hereby demand a trial by jury.

DATED: January 7, 2010

Respectfully submitted,

VAN ETTEN SUZUMOTO & SIPPRELLE LLP

By: _____

David B. Van Etten
Mark K Suzumoto
Joshua D. Mendelsohn
Attorneys for Plaintiffs, Back in Five LLC and BackLife Ltd.

December 9, 2010

Via Hand Delivery
Jack Hsu
Infinite International Inc.
1630 S. Grove Ave Unit A,
Ontario, CA 91761

With a copy via Overnight Delivery
Yu-Ling Linda Hsu
2035 Saleroso Drive
Rowland Heights, CA 91748

Re: Infinite - Therapeutic back massager - Your Item #IF-A1110

Dear Mr. Hsu:

I am Vice-President of Business Affairs for Back In Five, LLC. Back In Five is the exclusive rights holder for the popular Back 2 Life Therapeutic Massager that has been advertised extensively on television, the web and other marketing channels. We have become aware that your company is selling a product called Therapeutic back massager, bearing a model number #IF-A1110. This item has shown up on various web sites including Sears, Linen & Things, and Better Home & Garden. We have contacted these companies and others to inform them that you are selling them a counterfeit product in violation of the law and Back In Five's intellectual property rights. This letter is to put you on notice to immediately cease and desist selling these units, to recall all units that you have delivered and to quarantine them until we can come to a satisfactory resolution of this matter including the destruction of these knockoff/counterfeit units.

Back In Five, LLC is the exclusive licensee of all patents associated with this product. As the exclusive licensee we have the right to pursue infringers. This product also violates our trade dress rights. BackInFive, LLC is the registered owner (registration number 3,844,089) of the color trade dress and this product violates that trade dress. Back In Five, LLC has also applied for and has priority in the marketplace for the profile trade dress of this product (serial number 77/838/661) and this product violates our trade dress with respect to its shape and profile. Back In Five is also the copyright holder of certain marketing materials including a description of the product and it appears that you are also infringing on our copyrights.

As I am sure Infinite is well aware Back In Five has been successfully marketing and selling its Back2Life product through extensive promotion including ongoing television infomercial advertising and via the Internet. You are taking unfair advantage of that marketing by illegally copying and marketing this counterfeit product. This false advertising and unfair competition violates both Federal and State law.

Your sale of this knock-off/counterfeit product constitutes patent infringment, trade dress infringement, copyright infringment and false advertising, resulting in the devaluation of our Back2Life product by tarnishing its image and damaging our goodwill in violation of the U.S. Lanham Act, 15 U.S. Code, §§ 1114(1)(a), 1125(a) and common law violations, for which you may be civilly liable. Remedies for violation of the U.S. Patent Act may also include injunctive relief (35 U.S. Code § 283), the recovery of damages, interest and costs 35 U.S. Code § 284), and attorney fees 35 U.S. Code § 285). Moreover, a court may treble the damage awarded in cases of willful infringement 35 U.S. Code § 284) as well as the infringer's profits (35 U.S.

BACK IN FIVE, LLC • 11755 Wilshire Blvd, Suite 1200, Los Angeles, California 90025-1539
Tel: 310.996.7200, 310.478.0700, Fax: 310.478.0800 • www.GetBack2Life.com

EXHIBIT 1

Code § 289). We believe we will be able to demonstrate that your actions were willful.

Accordingly, BackInFive, LLC hereby demands that you immediately cease and desist from all acquisition, advertising, promotion, and sale of this product. Back In Five further demands that you immediately provide the following information:

1. The amount and location of the knock-off/counterfeit Therapeutic back massager bearing your item #IF-A1110 set forth on your web site that are in your possession and/or control.

2. The dates and quantities of each sale made by you of the knock-off/counterfeit Therapeutic back massager bearing your item #IF-A1110.

3. The identity of all sources from you obtained the knock-off/counterfeit Therapeutic back massager bearing your item #IF-A1110 advertised on your website and sold to third parties;

4. Records, including without limitation dates, selling prices and quantities, of all sales made by you of the knock-off/counterfeit Therapeutic back massager bearing your item #IF-A1110.

We shall expect a response to our demands regarding your unauthorized use of Back In Five's intellectual property by 4 p.m. December 10, 2010. We invite you to call myself or our COO Colin Sapire to discuss this matter directly.

If you ignore our demand and/or if we are unable to satisfactorily resolve this matter then we are prepared to take all steps necessary to remedy your company's unlawful actions, including the filing of an action against it in the United States Federal Court, seeking immediate injunctive relief and all damages allowable under the law. This would include obtaining all the information requested herein through litigation discovery.

Nothing in this letter shall constitute a waiver of any of Back In Five's rights in law or in equity, all of which are expressly reserved.

Very truly yours,

Alan Feldstein
V.P. Business Affairs

cc: Mark Suzumoto, Esq.

US005772612A

United States Patent [19]

Ilan

[11] Patent Number: 5,772,612

[45] Date of Patent: Jun. 30, 1998

[54] **STRETCHING METHOD FOR PREVENTING OR RELIEVING LOWER BACK PAIN**

[76] Inventor: **Daniel Ilan**, 24 Hamatmid, Even Yehuda, Israel

[21] Appl. No.: **671,120**

[22] Filed: **Jun. 17, 1996**

[51] **Int. Cl.**[6] **A61H 1/00**

[52] **U.S. Cl.** **601/23**; 601/35; 606/241; 482/131; 482/907

[58] **Field of Search** 601/5, 23, 24, 601/26, 27, 29, 31–35; 602/36; 606/241; 128/845, 878; 482/79, 80, 131, 132, 133–137, 139, 148, 907

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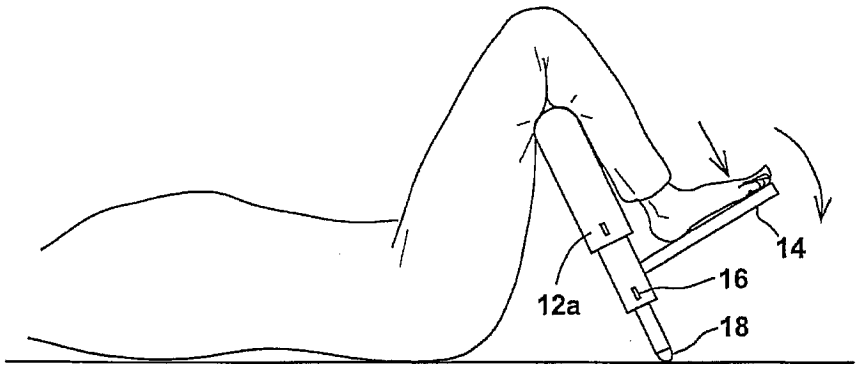
Primary Examiner—Jeanne M. Clark
Attorney, Agent, or Firm—Mark M. Friedman

[57] **ABSTRACT**

A therapeutic method, for simultaneously stretching and lifting a user's lower back while the user is lying on his back on the ground, thereby relieving and preventing lower back pain. The device includes a frame which features a horizontally extending upper cross frame for accommodating the back of the user's knees. In use, the lower end of the frame contacts the ground and serves as a fulcrum. The device further includes a foot rest for accommodating the user's feet. The foot rest is mounted to the frame at a convenient point between the cross frame and the lower end.

5 Claims, 3 Drawing Sheets



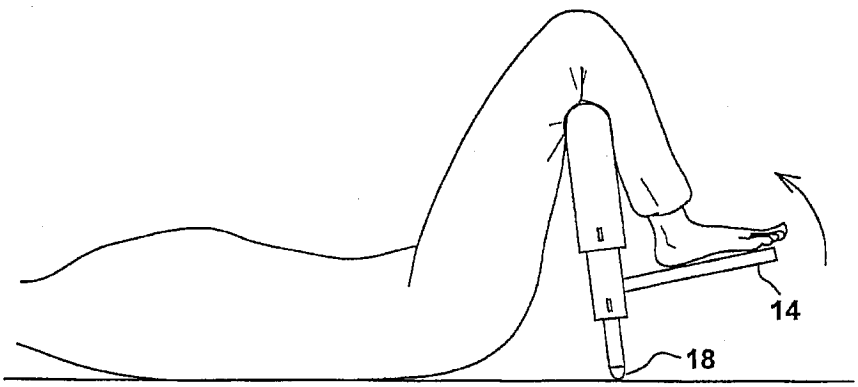
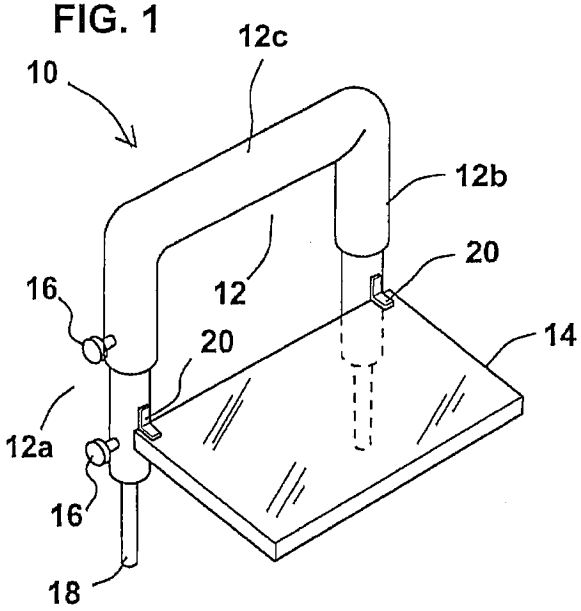


EXHIBIT 2

FIG. 1



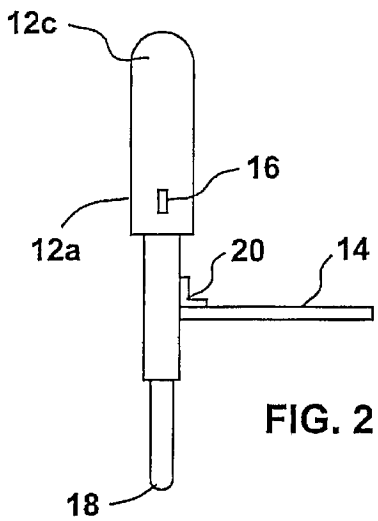


FIG. 2

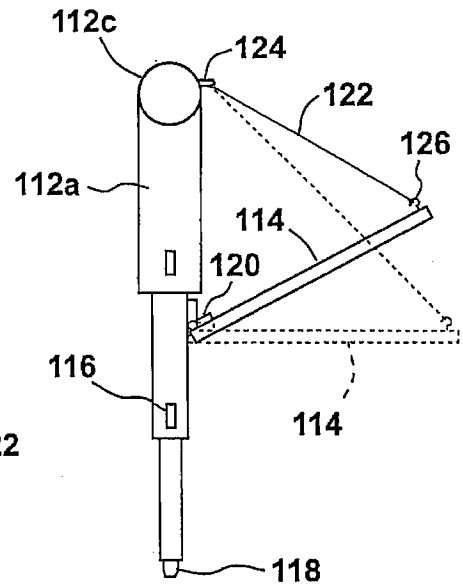


FIG. 5

FIG. 4

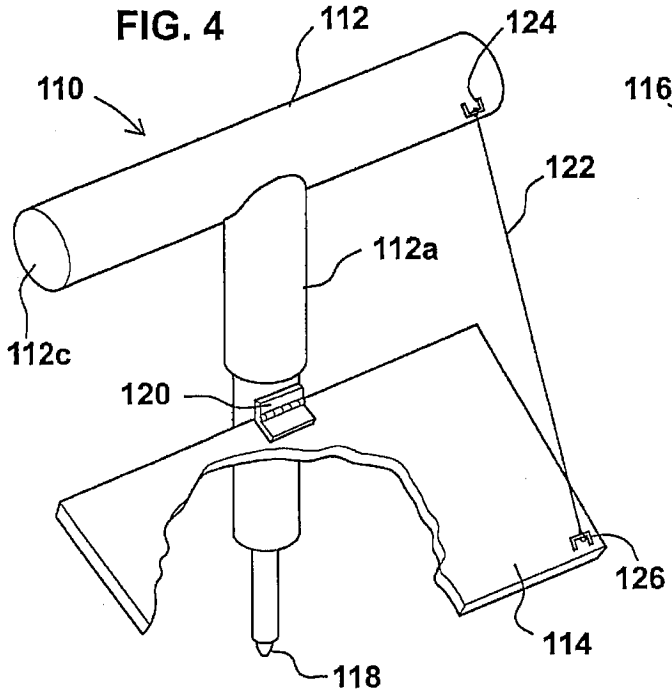


FIG. 3a

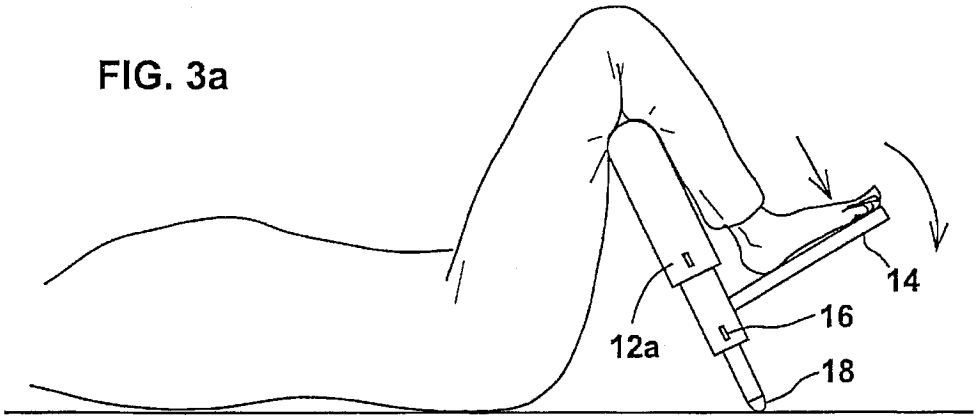


FIG. 3b

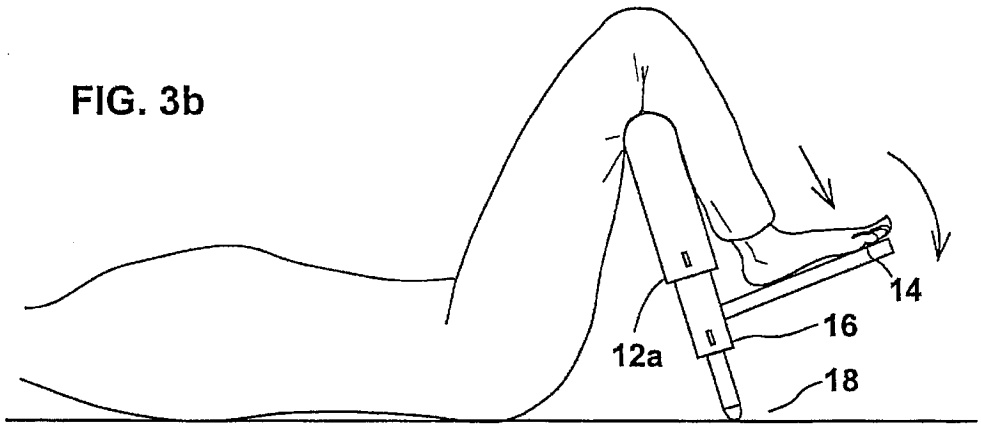


FIG. 3c

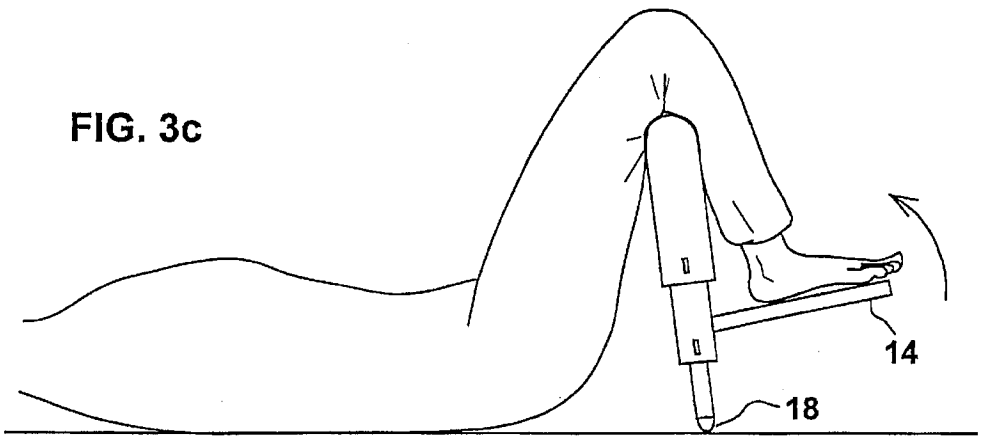
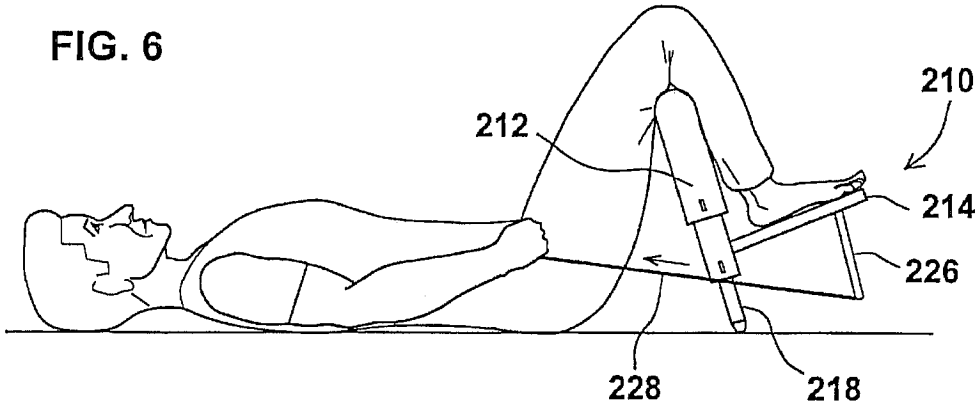


FIG. 6



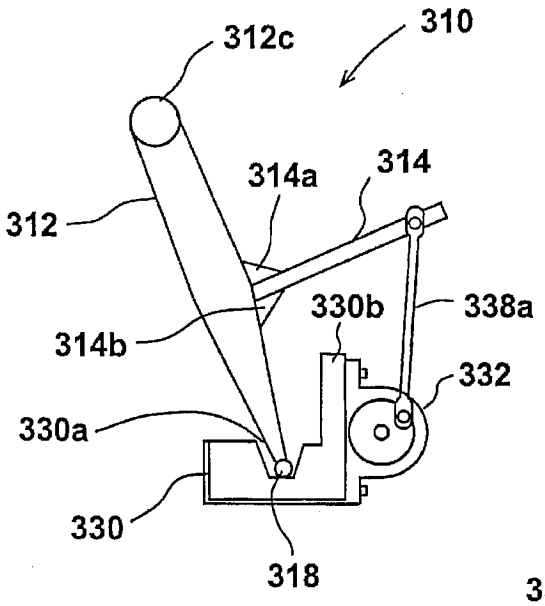


FIG. 7

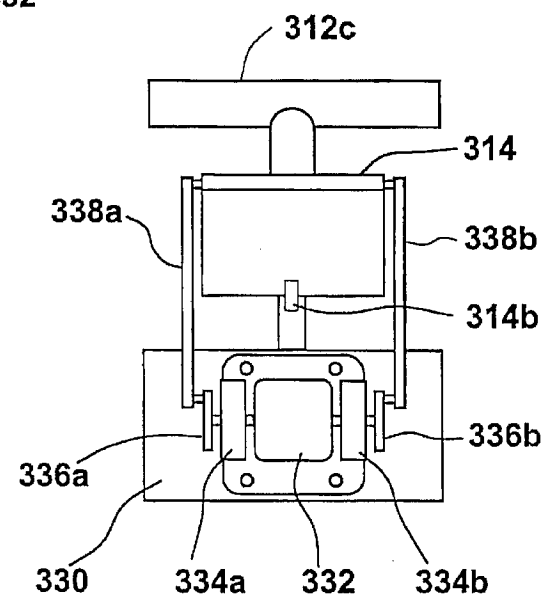


FIG. 8

STRETCHING METHOD FOR PREVENTING OR RELIEVING LOWER BACK PAIN

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to a stretching device, particularly useful for the relieving or preventing of lower back pains.

It is well known that lower back pains affect a very large portion of adults, especially middle aged adults and older. As a consequence, a great deal of suffering and disability is experienced by a large fraction of the population resulting, among other things, in a large number of lost work days and greatly diminished quality of life.

A brief physiological analysis will help illustrate the cause of back pains and give an insight as to possible remedies.

The spinal column consists of thirty three vertebrae which are joined together by cartilage tissue and ligaments. The upper twenty four vertebrae are discrete and movable while the lower nine vertebrae are fixed. Five of the lower nine vertebrae are fused together to form the sacrum while the terminal four vertebrae are normally fused to form the coccyx. The normal spinal column may be considered to have seven cervical, twelve thoraic, five lumbar, five sacral and four coccygeal vertebrae. Mobility of the vertebrae in the cervical, thoraic and lumbar regions is relatively free compared with movement of the fused vertebrae of the sacrum and coccyx which is relatively constrained.

The main causes of common back pain are the continual stresses and strains experience by the lower back region which is the major, albeit not the sole, weight supporting element of the upper body.

These stresses and strains eventually cause the damage symptomatic of back pain in that the cartilage material forming the discs separating the vertebrae is worn away over a period of time. In its extreme pathological condition, the patient may develop anchilosing spondylitis, namely, the partial, bent-down stiffening of the spinal column.

The sensation of pain is felt because the distance separating the vertebrae becomes narrower, causing pressure to be exerted on the nerve roots which extend from the spinal cord.

Due to the degenerative nature of the causes of back pain of this sort there is currently no permanent relief available, except for surgery where appropriate. There are, however, a multitude of known procedures for the relief of pain in the lumbar region of the back. These procedures involve the stretching of the lower back to achieve the separation of the discs in the affected lumbar area. However, these treatments typically require the use of weights and other mechanical equipment and must be undertaken only under close professional supervision.

There is thus a widely recognized need for, and it would be highly advantageous to have, an inexpensive and simple device for the effective relief or prevention of pain in the lumbar region of the back. The use of such a device, which will be adjustable to match the physiology of the user, will require no professional supervision, will require minimal setup and will easily fold into a space-saving shape for easy transport.

SUMMARY OF THE INVENTION

According to the present invention there is provided a therapeutic device for simultaneously stretching and lifting a user's lower back while the user is lying on his back on the ground, thereby relieving and preventing lower back pain, the device comprising: (a) a frame including an upper cross frame member for accommodating the back of the user's knees, said upper cross frame member extending substantially horizontally, said frame having a lower end for contacting the ground and serving as a fulcrum; and (b) a foot rest member for accommodating the user's feet, said foot rest member mounted to said frame at a point intermediate said upper cross frame member and said lower end.

Also according to the present invention, there is provided a method for relieving and preventing lower back pains, comprising the steps of: (a) providing a device for simultaneously stretching and lifting a user's lower back, the device including: (i) a frame including an upper cross frame member extending substantially horizontally, said frame having a lower end for contacting the ground and serving as a fulcrum; and (ii) a foot rest member mounted to said frame at a point intermediate said upper cross frame member and said lower end; (b) lying with the user's back on the ground; (c) holding said so that said lower end is on the ground while said upper cross frame member is elevated relative to the ground; (d) placing the user's legs over said device so that the user's feet rest on said foot rest member while the back of the user's knees rests substantially on said upper cross frame member; and (e) rocking said device back and forth about said lower end of said frame by periodically pushing on said foot rest member so as to simultaneously lift and stretch the user's lower back.

According to further features in preferred embodiments of the invention described below, the frame is adjustable so as to vary the height of the upper cross frame member above the ground and/or the height of said foot rest member relative to said upper cross frame member.

According to still further features in the described preferred embodiments the angle between the foot rest member and the frame is adjustable.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIG. **1** is a perspective view of the first embodiment of the invention;

FIG. **2** is a side view of the device shown in FIG. **1**;

FIGS. **3***a*–**3***c* illustrate a series of positions of the device in use during an exercising cycle;

FIG. **4** is a perspective view of the second embodiment of the invention;

FIG. **5** is a side view of the device shown in FIG. **4**;

FIG. **6** is an elevation view of a modified embodiment of the invention in use during an exercising period;

FIG. **7** is a side view of a further modified embodiment of the invention; and

FIG. **8** is a front view of the device shown in FIG. **7**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is of devices for prevention and/or relieving lower back pains.

The principles and operation of devices according to the present invention may be better understood with reference to the drawings and the accompanying description.

Referring now to the drawings, FIGS. **1** and **2** illustrates a typical embodiment of a device according to the present

invention, generally denoted **10**. Device **10** preferably includes an upright tubular inverted U-shaped frame **12** and a substantially flat footrest member **14**. Frame **12** preferably includes legs or pedestal members **12***a* and **12***b*, and a web member **12***c*.

In order to allow adjustments to be made to the configuration of device **10** when in use to meet the user's individual requirements, as will be described later, each leg **12***a* and **12***b* is preferably formed so as to be adjustable in height, for example, through use of a three-part telescopic assembly to form each leg **12***a* and **12***b*. User-adjustable setting mechanisms, such as set screws **16** may then be provided for adjusting the overall height of web member **12***c* as well as the height of foot rest member **14** above the ground and the distance between web member **12***c* and foot rest **14**. Thus, the critical dimensions of device **10** may be readily adjusted to match the physiology of the user.

Preferably, the lowermost portions of legs **12***a* and **12***b* are fitted with suitable non-slip members **18** to prevent the slipping of device **10** during use.

Web **12***c* is optionally covered with a cushioned pad to enhance the conform of the user and prevent abrasive sores on contact areas of the legs being formed by continuous and repeated use of device **10**. Foot rest member **14** is preferably connected to the pair of intermediate telescopic elements, which places it at approximately one half of the height of frame **12**. Preferably, foot rest member **14** is hingedly connected to legs **12***a* and **12***b* using suitable hinges **20**. The hinged connection is provided to allow individualized adjustment and also to facilitate more convenient stowing away of the device when not in use. Thus, the use of hinges **20** makes it possible to pivot foot rest member **14** so that it becomes substantially parallel to legs **12***a* and **12***b* so as to reduce the overall volume of device **10**.

The dimensions and location of web **12***c* and of foot rest member **14** are such that the user may comfortably place his legs side by side over device **10** so that the soles of both feet rest comfortably on foot rest member **14** while the portion of the legs immediately behind the knees is partially wrapped around web **12***c*.

FIGS. **3***a*, **3***b* and **3***c* show a series of positions of device **10** during a stretching session. Prior to commencing the stretching, the user adjusts the heights of the respective frame members as described above by means of altering the respective lengths of the telescopic elements.

The stretching session consisting of repeated back and forth rocking of the user's legs with the lowermost portions of legs **12***a* and **12***b* serving as pivots.

The starting position of a single rocking cycle is shown in FIG. **3***a*. Here, the user's upper legs are oriented substantially vertically with device **10** angled. The user then pushes device **10** back with his legs and, primarily, with his feet (FIG. **3***b*) so that the upper legs are no longer substantially vertical, causing device **10** to become more vertical. Finally, as the user continues to push device **10** back with his feet and legs, the upper legs form a substantial angle with the ground while device **10** become substantially vertical.

As will be appreciated by carefully considering the sequence of FIGS. **3***a*–**3***c*, the top of device **10** moves as an arc of a circle with a center as the bottom of legs **12***a* and **12***b* (i.e., point **18**). Hence, as device **10** moves from its position in FIG. **3***a* to its position in FIG. **3***b* and then **3***c*, the user's legs are caused to be simultaneously pulled and lifted. Without in any way limiting the scope of the present invention, it is believed that it is this combination of pulling and lifting which exerts the beneficial effect and serves to effectively reduce and/or prevent lower back pains.

For best results, adjustments should be made so that when the user's feet are placed firmly on foot rest member **14** the back of the knees are supported by resting against the top of web **12***c*, or slightly higher.

As is well known, in such a position the lower back region tends to becomes more flattened, that is, the lower back region is able to achieve a close contact with the surface on which the user is lying. It is, however, desired, and is achieved after prolonged and regular use of device **10**, that the lower back attain a certain arched shape (FIG. **3***a*).

As described above, the movements required to effect the relief of back pains consist of a slow rocking or to-and-fro oscillations of device **10**. These movements are obtained primarily by the alternating pressing and releasing of the pressure of the balls of the feet on foot rest member **14**. The amplitude of such oscillations is optimally in the range of 10 to 15 centimeters about the intermediate position shown in FIG. **3***b*. The pivoting of device **10** about the fulcrum (**18**) brings about the simultaneous virtually effortless, painless and relaxing stretching and lifting of the lumbar region which results in a slight flattening of the lower back (FIG. **10** **3***c*).

The pressing action of the feet is maintained until device **10** reaches the position shown in FIG. **3***c*. When the pressure is released, device gradually reverts back to its starting position (FIG. **3***a*). The rate of the oscillations and the number of oscillation, or session duration, will depend on the relief required and the condition of the user's back. Typically, the relief of lower back pains might require two daily session of about 15 minutes each. The session may be utilized to watch television, listen to the radio or read.

Another embodiment of a device according to the represent invention is shown in FIGS. **4** and **5**. Here, device **110** the upright legs supporting frame member are replaced by a corkscrew-shaped frame **112** whose principal features largely are as previously described with reference to the inverted U-shaped frame **12** (FIGS. **1** and **2**).

Several differences between the embodiment of FIGS. **4** and **5** and that of FIGS. **1** and **2** should be noted. First, frame **112**, which is adjustable, as before, through use of telescoping elements locked, for example, using set screws **116**, includes a single leg **112***a* which supports web **112***c*. The use of a single leg **112***a*, and hence a single fulcrum (**118**) allows the user to twist device **110** laterally in addition to the back-and-forth movements described above with reference to the embodiment of FIGS. **1** and **2**. This additional degree of freedom may enhance the value of device **110** for certain users.

A second difference, independent of the first, is the use in device **110** of additional means for adjusting the angle of foot rest member **114** with respect to column **112***a* through rotation about hinge **120**. The adjusting means depicted in FIGS. **4** and **5** includes a wire **122** of adjustable effective length which is connected by eyelets **124** and **126**, located on frame **112** and foot rest member **114**, respectively. The adjustment means allows the user to adjust the inclination of foot rest member **114** relative to frame **112** to suit his personal convenience.

Another embodiment of a device according to the present invention is depicted in FIG. **6**. Here, device **210** includes means for amplifying the moment of rotation of device **210** through the addition of a pulling force of the user's arms to the force exerted by the user's legs.

To this end, foot rest member **214** of device **210** is provided with a pair of depending cantilever arms **226** affixed at substantially right angles at the front or free ends thereof.

A pair of wires **228** are attached to arms **226** which allows the user to pull on device **210** using his arms to supplement the clockwise moment of rotation of frame **212** about the fulcrum (**218**) supplied by the user's feet and legs.

Depicted in FIGS. **7** and **8** is a motor-driven version of a device **310** according to the present invention. Device **310** primarily includes frame **312**, as previously described, with reference to FIGS. **4** and **5**. In contrast with the previously described embodiment, foot rest member **314** is rigidly affixed to frame **312** using corner pieces **314***a* and **314***b*.

A base unit **330** is provided at its top side with a cavity **330***a* for nesting the fulcrum support **318** of frame **312**. Onto a front facing surface **330***b* of base unit **330** there is mounted an electric motor **332**, coupled to or built-in with a pair of reduction gear transmission boxes **334***a* and **334***b*. Gear boxes **334***a* and **334***b* rotate wheels **336***a* and **336***b*, respectively, to which crank arms **338***a* and **338***b* are eccentrically coupled. The other ends of the cranks are each journalled to the front corners of foot rest member **314**.

During the operation of device **310**, output wheels **336***a* and **336***b* are rotated by motor **332** and by means of crank arms **338***a* and **338***b* generate the oscillating action of frame **312**.

It will be noted that since base unit **330** supports the weight of the user's legs and of motor **332** and its associated parts, a counterbalance, stabilizing force is available sufficient to allow the apparatus to be used without the need for any external means to restrain device **310** and prevent it from toppling over.

Motor **332** is designed to be of simple construction and will be powered by house current or, preferably, by rechargeable batteries, so as to allow device **310** to be used where suitable house current is not available. The preferred frequency of the oscillating motions should be in the range of about 5–15 rpm, according to the user's preference.

While the invention has been described with respect to a limited number of embodiments, it will be appreciated that many variations, modifications and other applications of the invention may be made.

What is claimed is:

1. A method for relieving and preventing lower back pains, comprising the steps of:

(a) providing a device for simultaneously stretching and lifting a user's lower back, the device including:

(i) a frame including an upper cross frame member extending substantially horizontally, said frame having a lower end for contacting the ground and serving as a fulcrum; and

(ii) a foot rest member mounted to said frame at a point intermediate said upper cross frame member and said lower end;

(b) lying with the user's back on the ground;

(c) holding said device so that said lower end is on the ground while said upper cross frame member is elevated relative to the ground;

(d) placing the user's legs over said device so that the user's feet rest on said foot rest member while the back of the user's knees rests substantially on said upper cross frame member; and

(e) rocking said device back and forth about said lower end of said frame by periodically pushing on said foot rest member so as to simultaneously lift and stretch the user's lower back.

2. The method of claim **1**, wherein said device includes means for adjusting the height of said upper cross frame member and further comprising adjusting the height of said upper cross frame member above the ground after the step of providing said device.

3. The method of claim **1**, wherein said device includes means for adjusting the height of said foot rest member and further comprising adjusting the height of said foot rest member relative to said upper cross frame member after the step of providing said device.

4. The method of claim **1**, wherein said device includes means for adjusting the angle between said foot rest and said frame and further comprising adjusting the angle between said foot rest member and said frame after the step of providing said device.

5. The method of claim **1**, wherein said device further includes a pair of wires connected to said foot rest member and further comprising pulling said wires during said rocking of said device.

* * * * *

US006443916B1

(12) **United States Patent**
Ilan

(10) **Patent No.: US 6,443,916 B1**
(45) **Date of Patent: Sep. 3, 2002**

(54) **DEVICE FOR PREVENTING OR RELIEVING PAIN IN THE LOWER BACK**

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(73) Assignee: **B. To B. Ltd.**, Tel Aviv (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/479,661**

(22) Filed: **Jan. 10, 2000**

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(52) **U.S. Cl.** **601/26**; 601/23; 601/34
(58) **Field of Search** 606/237, 240–245; 601/23–26, 33–34, 27, 35; 602/32, 33, 34, 35; 482/901

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Primary Examiner—Justine R. Yu
(74) *Attorney, Agent, or Firm*—G. E. Ehrlich Ltd.

(57) **ABSTRACT**

A device for preventing or relieving pain in the lower back of a human subject includes a body-engaging element configured for engaging a region of the subject's body inferior to the lumbar vertebrae while the subject lies in a supine position. A drive mechanism is configured to move the body-engaging element through a repetitive cyclic motion which includes an operative motion along a first path including a primarily vertical lifting motion followed by a primarily horizontal tensioning motion, and a return motion along a second path, the second path lying generally below the first path. The body-engaging element preferably includes at least one surface configured for engaging a rear surface of both of the subject's legs from the knees downwards.

8 Claims, 11 Drawing Sheets

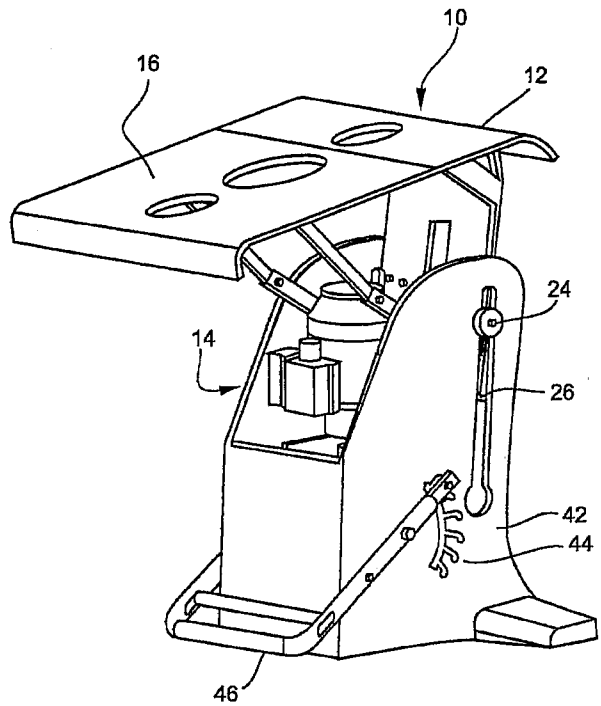

EXHIBIT 3

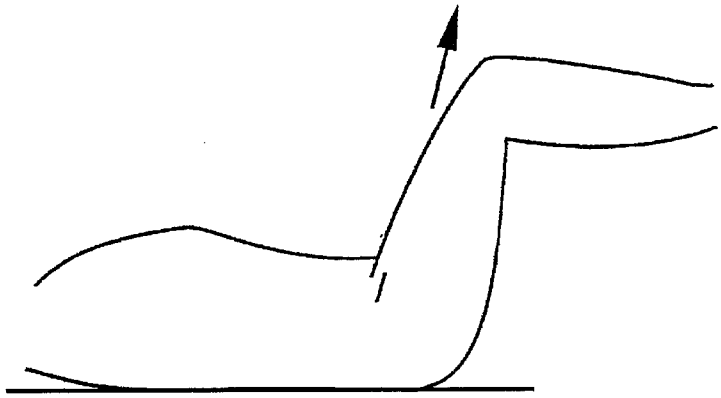

Fig. 1a

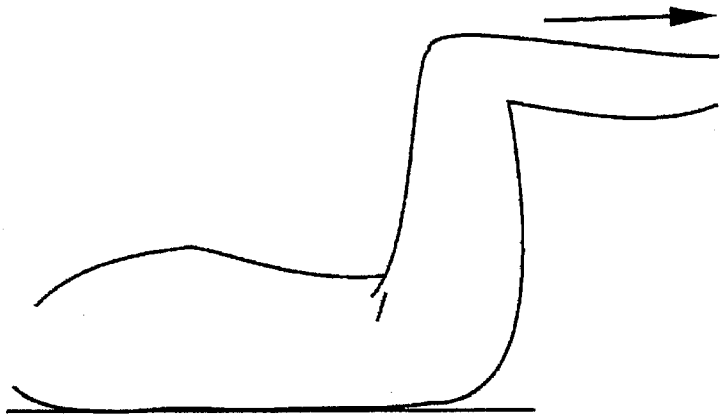

Fig. 1b

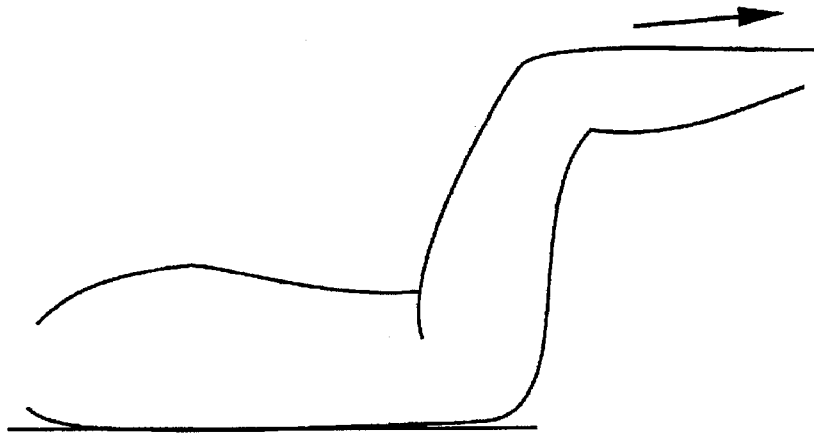

Fig. 1c

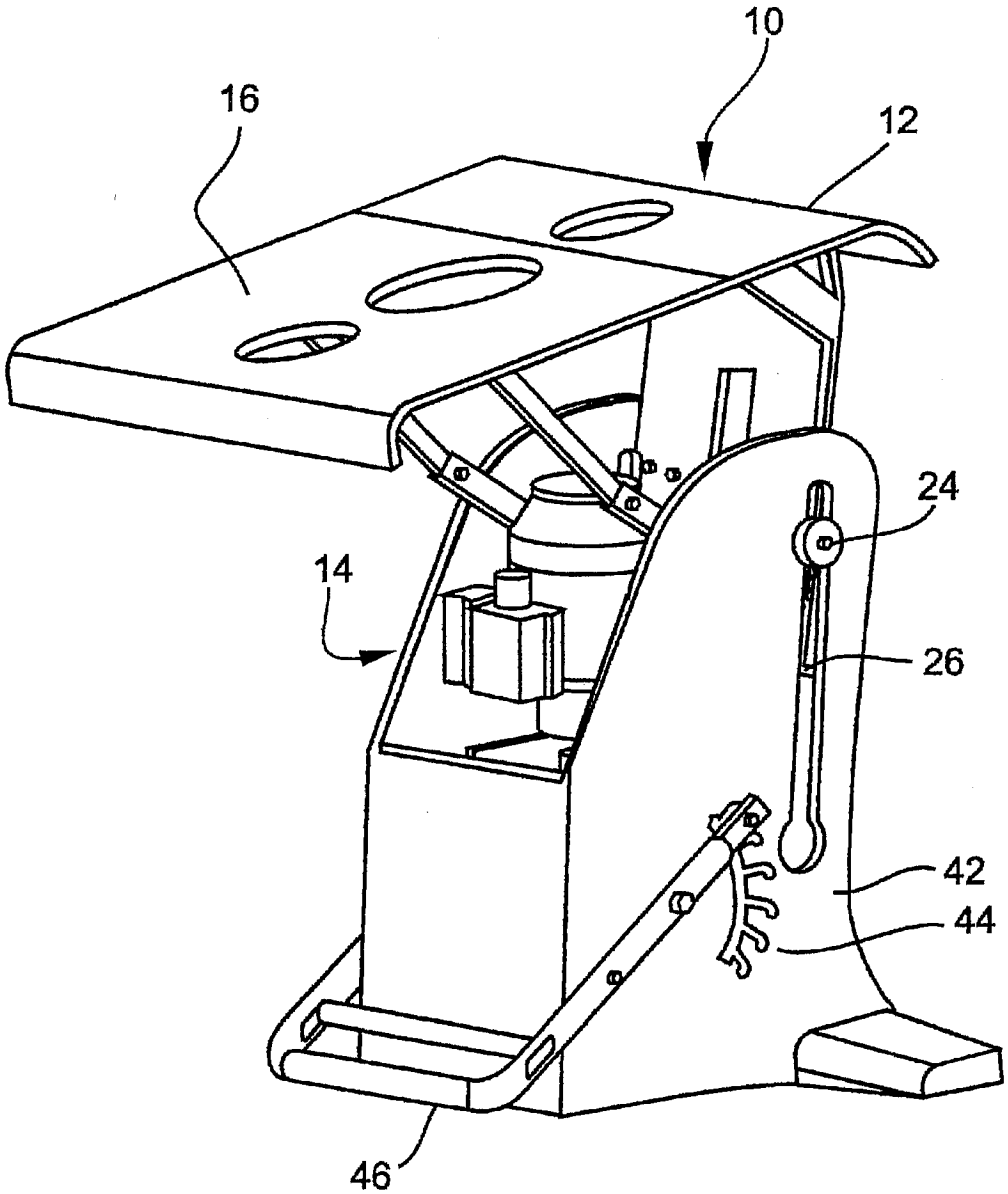

Fig. 2

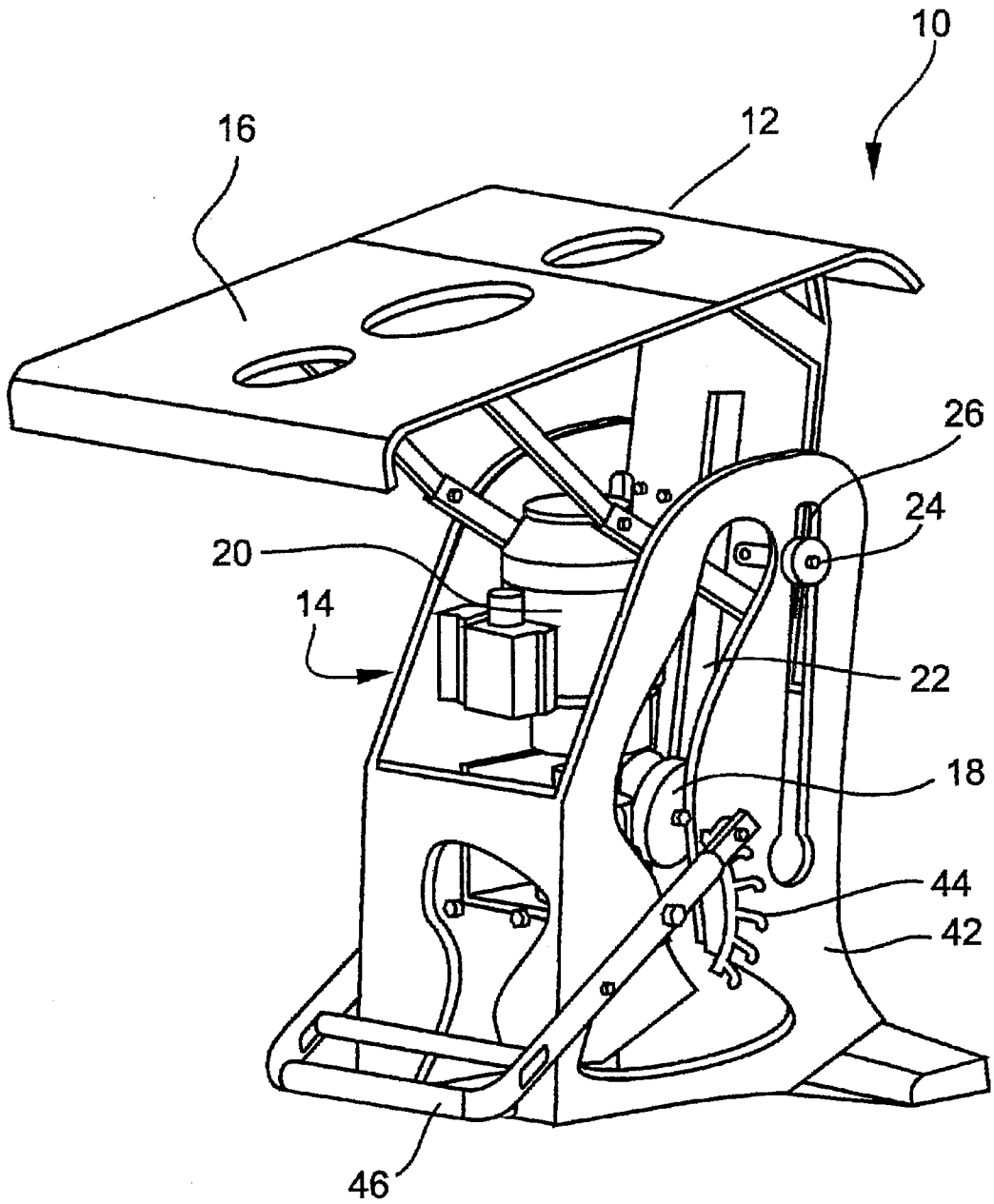

Fig. 3

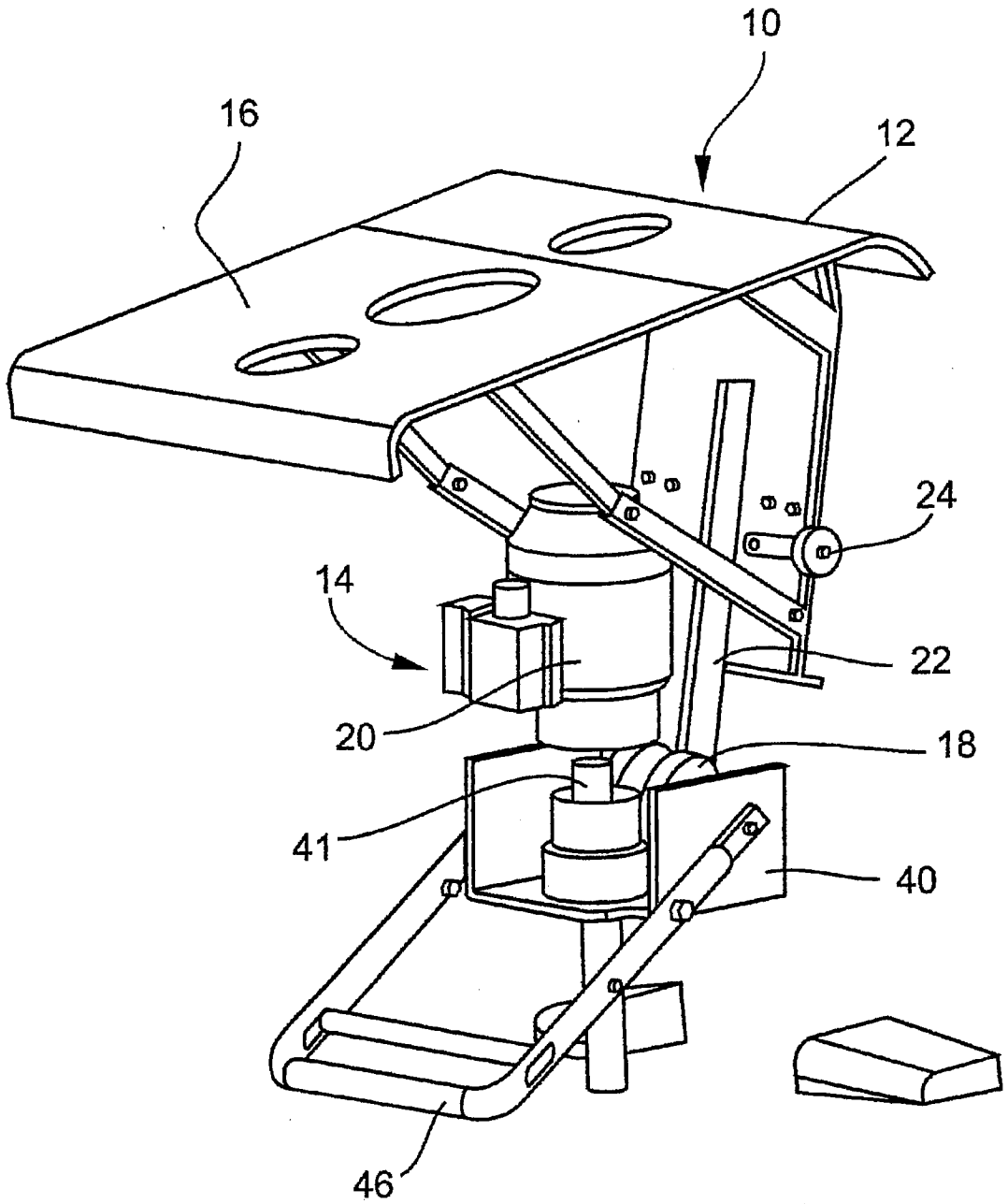

Fig. 4

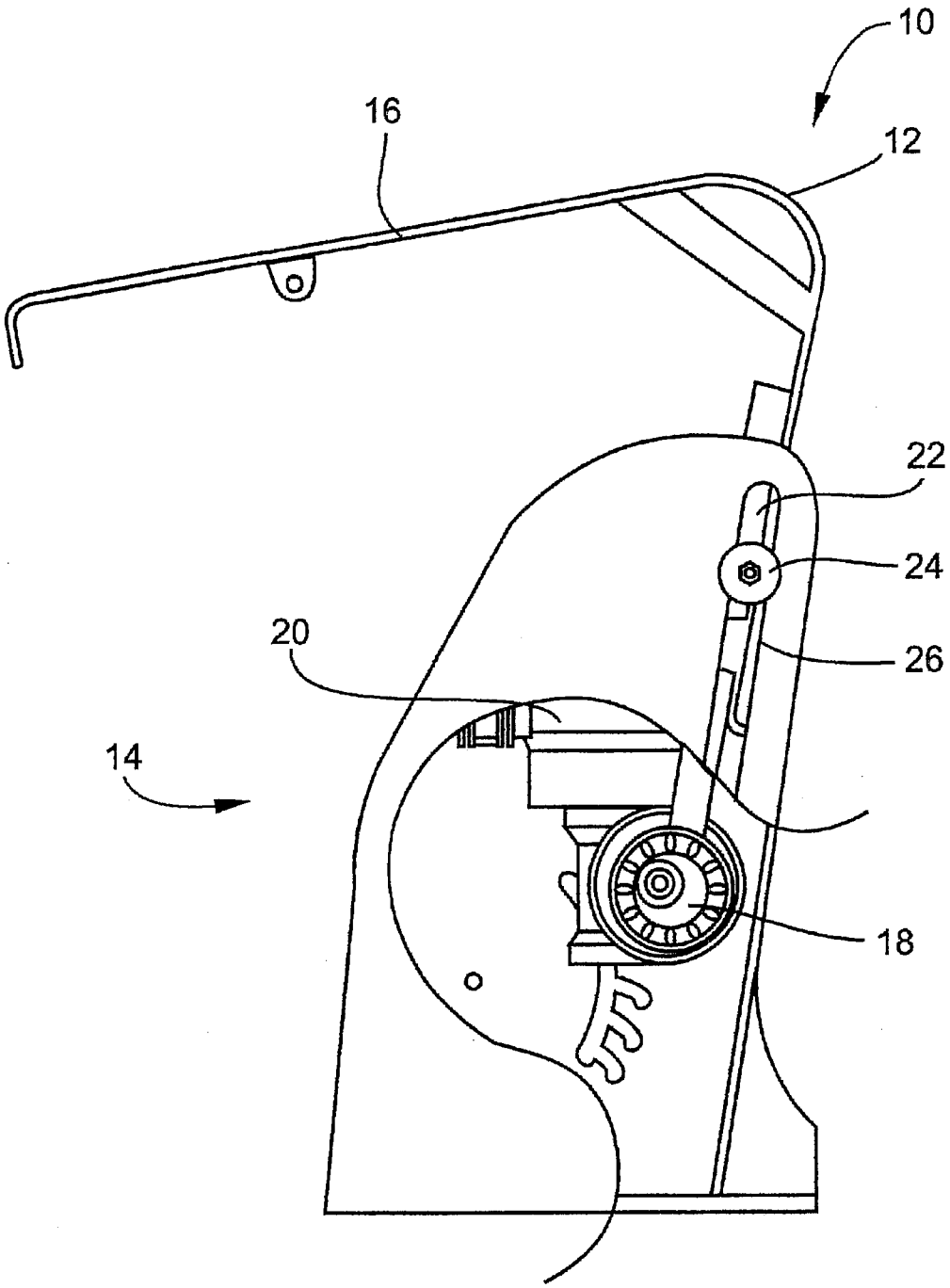

Fig. 5

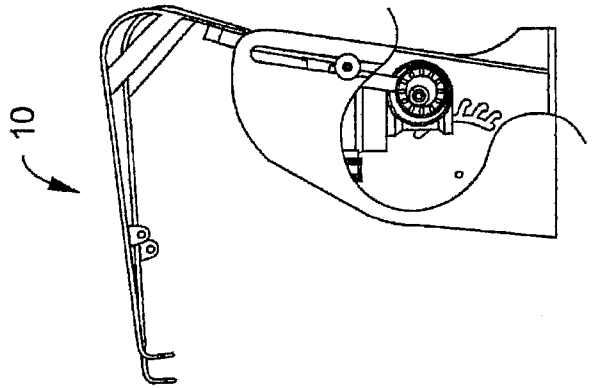

Fig. 6d

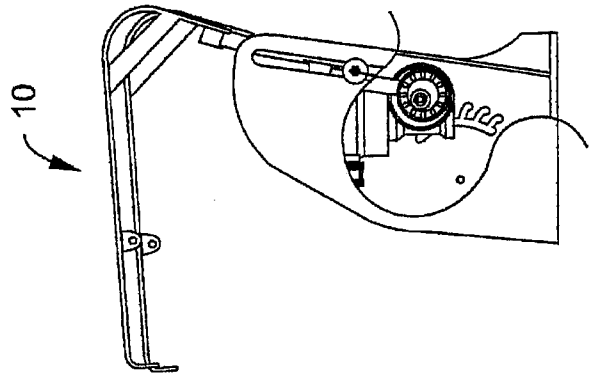

Fig. 6c

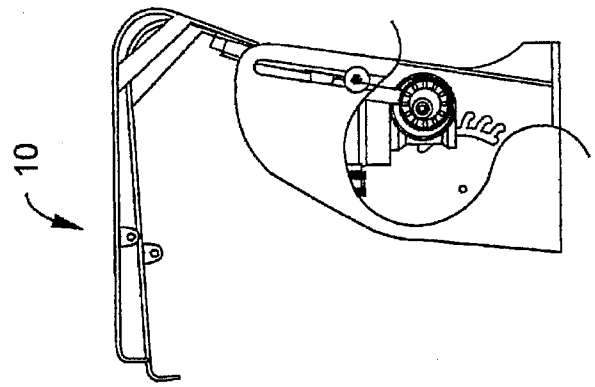

Fig. 6b

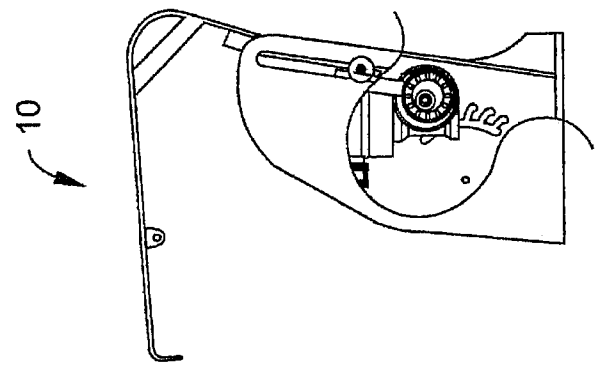

Fig. 6a

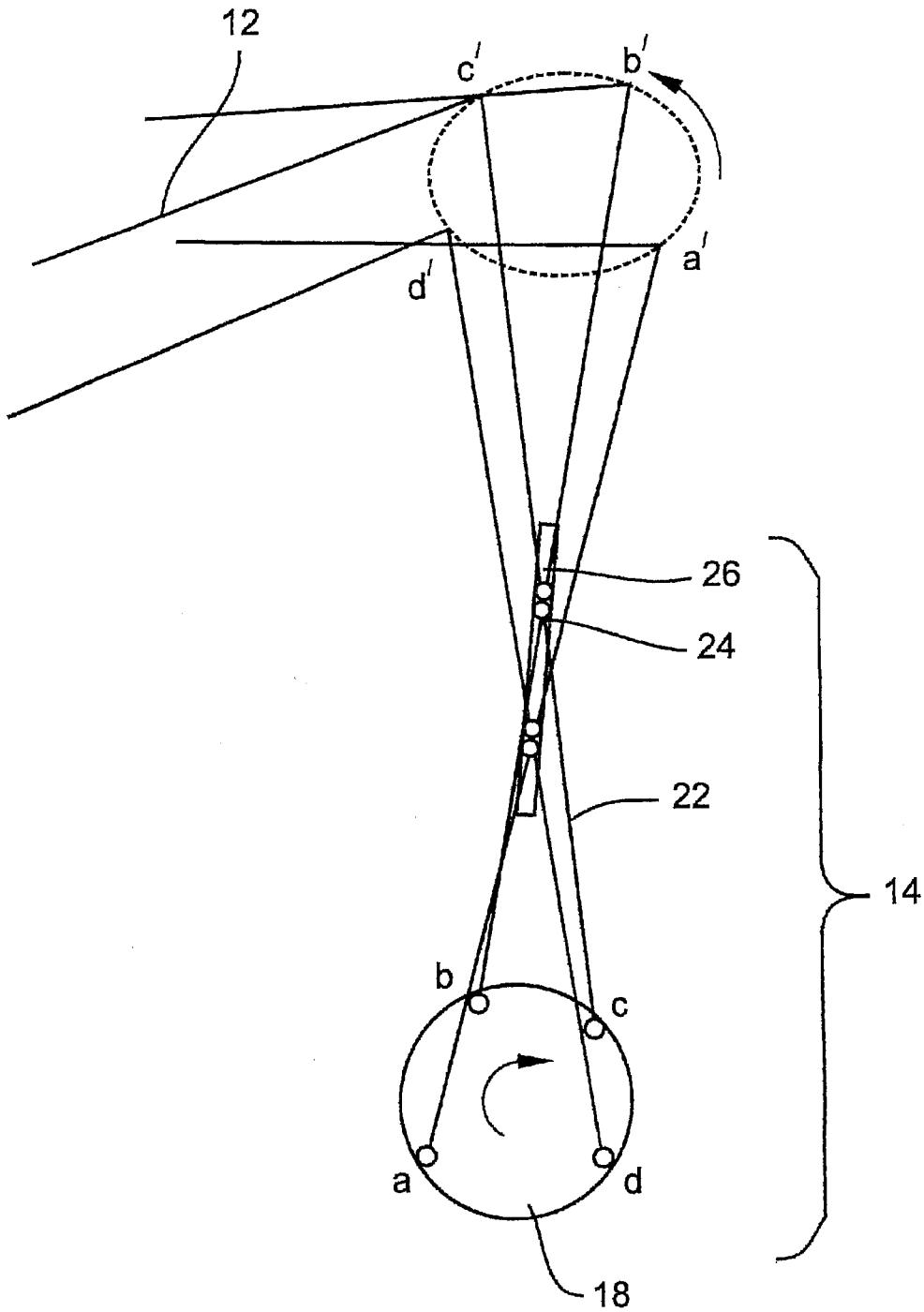

Fig. 7

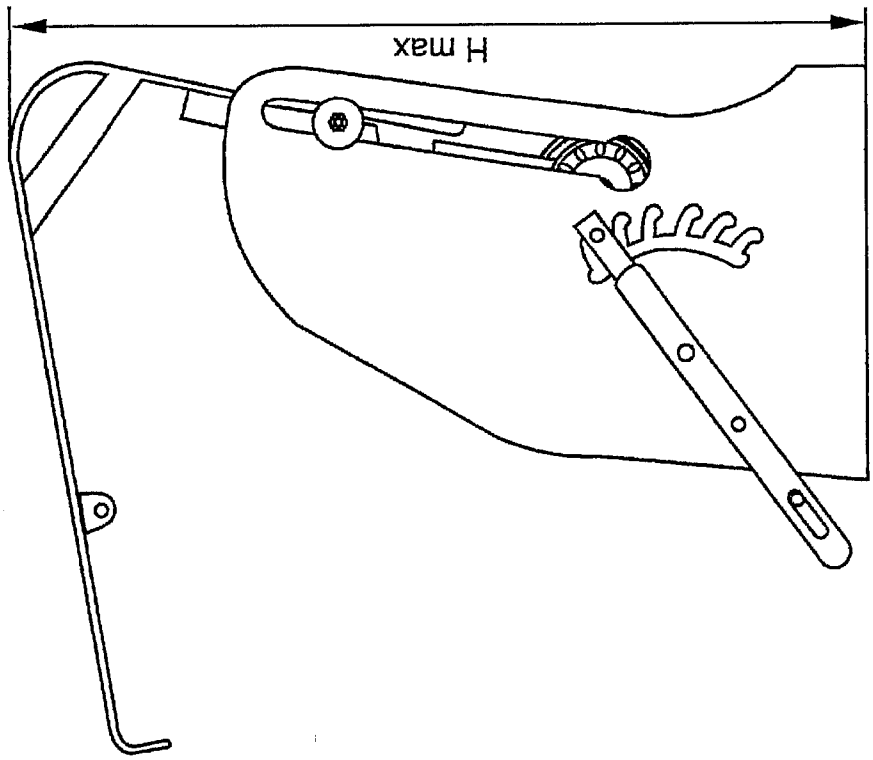

Fig. 8b

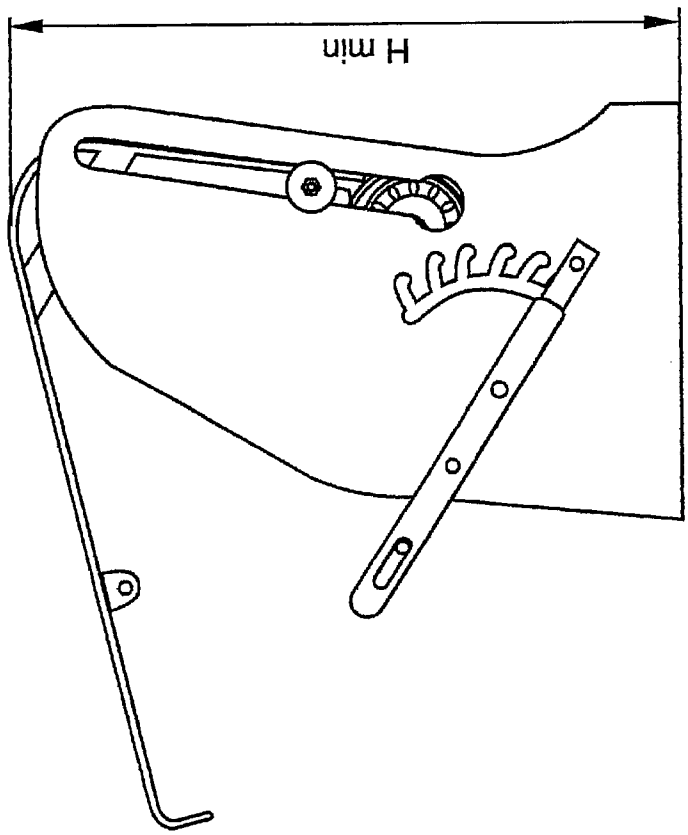

Fig. 8a

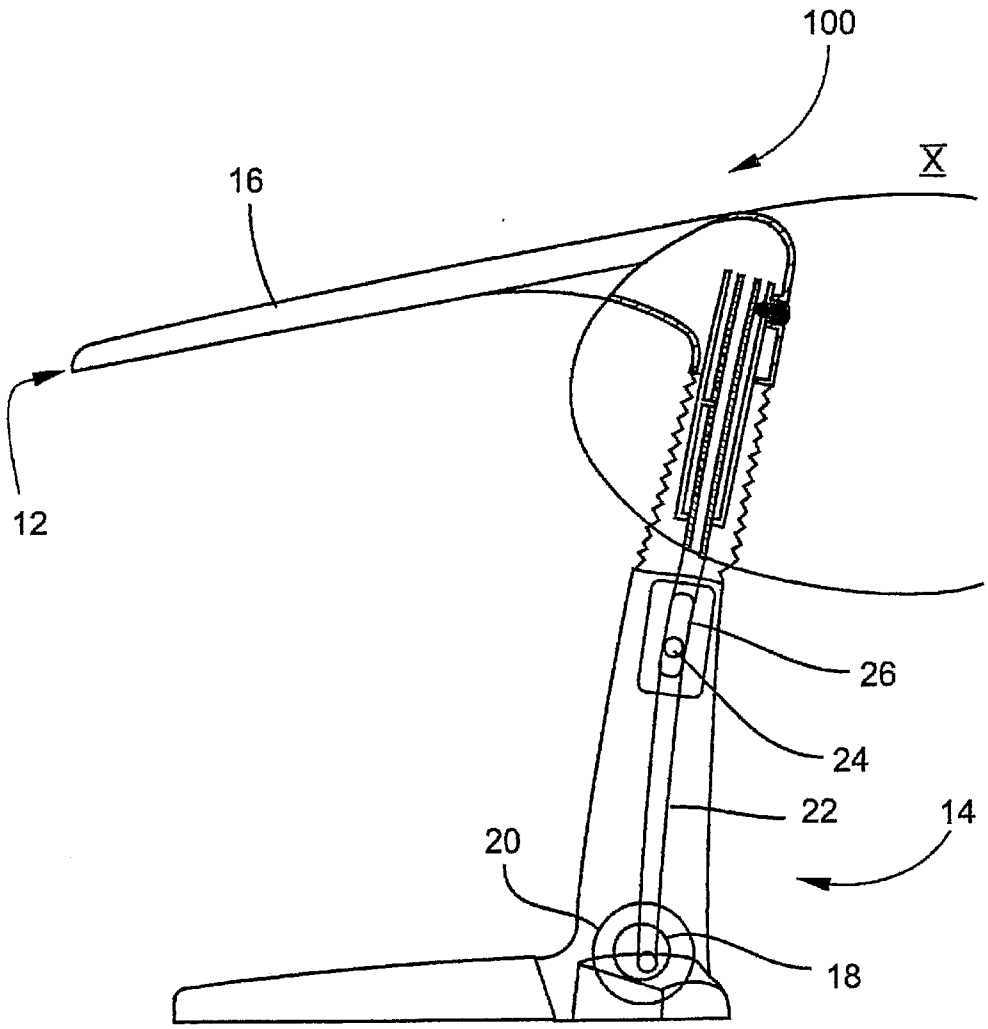

Fig. 9

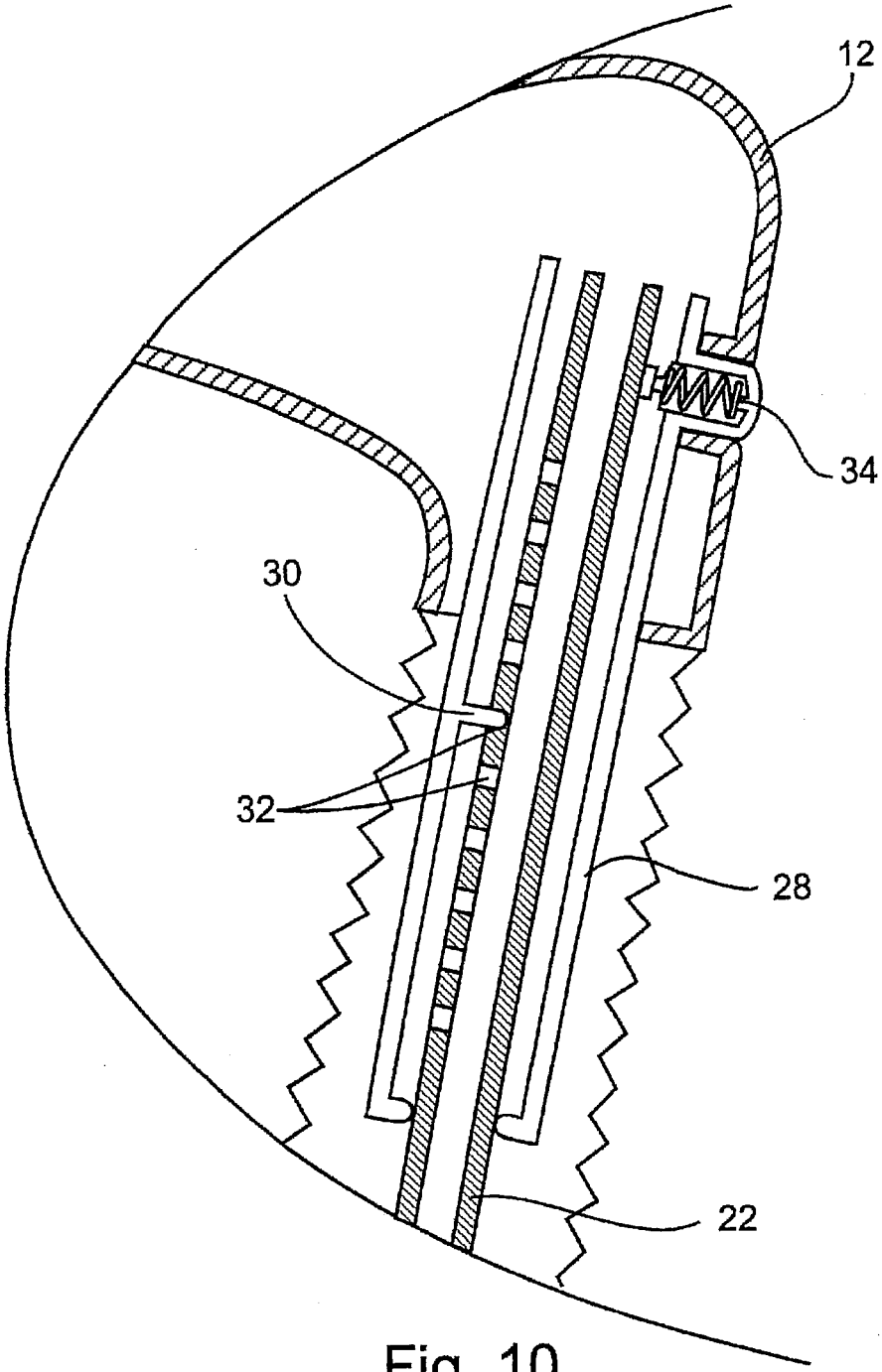

Fig. 10

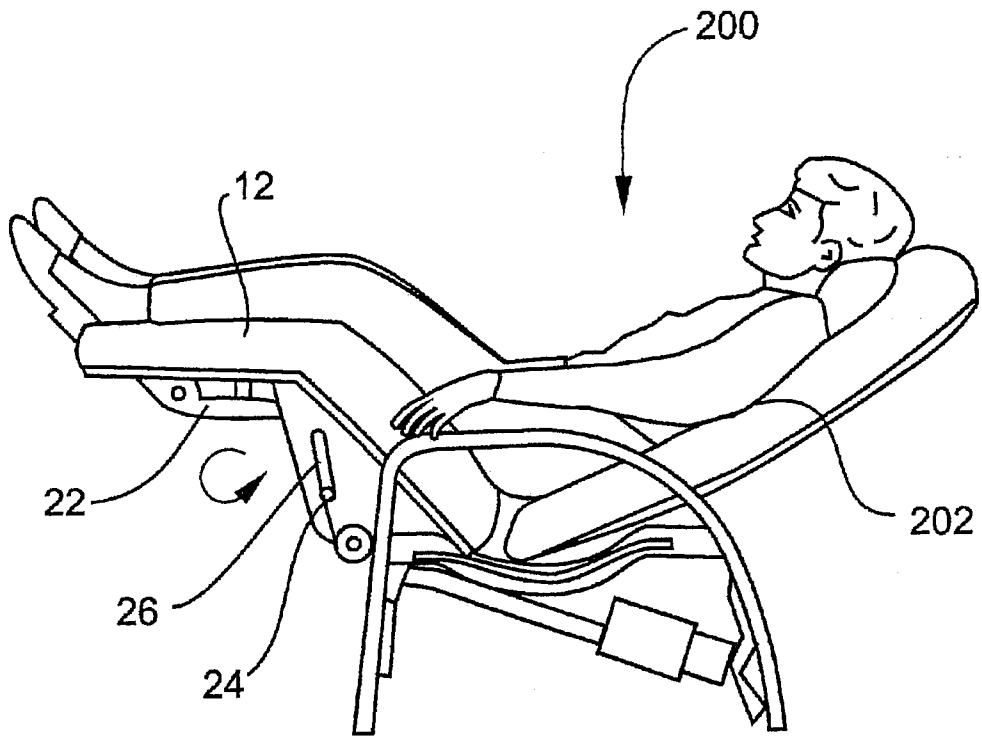

Fig. 11

DEVICE FOR PREVENTING OR RELIEVING PAIN IN THE LOWER BACK

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to a stretching device, particularly useful for the relieving or preventing of lower back pains.

It is well known that lower back pains affect a very large proportion of adults, especially middle aged adults and older. As a consequence, a great deal of suffering and disability is experienced by a large fraction of the population resulting, among other things, in a large number of lost work days and greatly diminished quality of life.

A brief physiological analysis will help illustrate the cause of back pains and give an insight as to possible remedies.

The spinal column consists of thirty three vertebrae which are joined together by cartilage tissue and ligaments. The upper twenty four vertebrae are discrete and movable while the lower nine vertebrae are fixed. Five of the lower nine vertebrae are fused together to form the sacrum while the terminal four vertebrae are normally fused to form the coccyx. The normal spinal column may be considered to have seven cervical, twelve thoracic, five lumbar, five sacral and four coccygeal vertebrae. Mobility of the vertebrae in the cervical, thoracic and lumbar regions is relatively free compared with movement of the fused vertebrae of the sacrum and coccyx which is relatively constrained.

The main causes of common back pain are the continual stresses and strains experience by the lower back region which is the major, albeit not the sole, weight supporting element of the upper body.

These stresses and strains eventually cause the damage symptomatic of back pain in that the cartilage material forming the discs separating the vertebrae is worn away over a period of time. In its extreme pathological condition, the patient may develop anchilosing spondylitis, namely, the partial, bent-down stiffening of the spinal column.

The sensation of pain is felt because the distance separating the vertebrae becomes narrower, causing pressure to be exerted on the nerve roots which extend from the spinal cord.

Due to the degenerative nature of the causes of back pain of this sort there is currently no permanent relief available, except for surgery where appropriate. There are, however, a multitude of known procedures for the relief of pain in the lumbar region of the back. These procedures involve the stretching of the lower back to achieve the separation of the discs in the affected lumbar area. However, these treatments typically require the use of weights and other mechanical equipment and must be undertaken only under close professional supervision.

U.S. Pat. No. 5,772,612 to Daniel Ilan, hereby incorporated by reference, proposes a device suitable for home use in which a user lies on an underlying surface with his or her knees over a frame and feet against a foot rest. The lower end of the device contacts the underlying surface, acting as a fulcrum. When the user pushes against the device, the device pivots so as to tend to lift the user's legs along a slightly arched path. A motor-driven version of the device is also proposed.

The device of the aforementioned patent represents a useful attempt to provide a device for relieving lower-back pain suitable for home use. It has been noted, however, that the resulting motion, namely, a slightly arched reciprocating motion, differs considerably from the sequence of motion performed by a trained physiotherapist. Specifically, with reference to FIGS. 1A–1C, a trained physiotherapist typically performs an initial lifting movement by raising the subject's legs from the position of FIG. 1A to that of FIG. 1B so as to neutralize the arched concavity of the back. This is followed by a primarily horizontal pulling motion (FIG. 1C), thereby applying tension tending to relieve pressure between the lumber vertebrae. The tension is then released, thereby allowing the body to return under the action of gravity to a resting position.

There is therefore a need for a device for preventing or relieving pain in the lower back of a human subject which would more closely emulate the aforementioned therapeutic movement used by trained physiotherapists.

SUMMARY OF THE INVENTION

The present invention is a device for preventing or relieving pain in the lower back of a human subject.

According to one aspect of the present invention, there is provided a device for preventing or relieving pain in the lower back of a human subject for use while the subject lies in a supine position on an underlying surface, the device comprising: (a) a body-engaging element configured for engaging the two legs of the subject inferior to the subject's lumbar vertebrae; and (b) a drive mechanism mechanically linked to the body-engaging element, the drive mechanism being configured to move the body-engaging element through a repetitive cyclic motion including: (i) an operative motion along a first path operative to move both legs of the subject engaged by the body-engaging element together through the first path such as to apply tension to the lower back of the subject, and (ii) a return motion along a second path, the second path being different from, and lying generally below, the first path.

According to a further feature of the present invention, the body-engaging element includes a surface configured for engaging a rear surface of both knees of the subject.

According to a further feature of the present invention, the first path includes a primarily vertical lifting motion followed by a primarily horizontal tensioning motion.

According to a further feature of the present invention, the second path includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

According to a further feature of the present invention, the first and second paths together form a closed curve lying substantially in a vertical plane. The closed curve preferably approximates to the form of an ellipse.

According to a further feature of the present invention, the drive mechanism includes at least one rotating element, the repetitive cyclic motion being generated at least in part by an off-axis linkage, i.e., a link coupled to the rotating element and eccentric to the rotary axis of the rotating element.

According to another aspect of the present invention, there is provided a device for preventing or relieving pain in the lower back of a human subject, the device being configured for use while the subject lies in a supine position on an underlying surface, the device comprising: (a) a body-engaging element configured for engaging a body part of the subject inferior to the subject's hip joint joining the thigh to the hip; and (b) a rotary drive for driving the body engaging element, the rotary drive including a pivot pin pivotally mounting the body engaging element and slidable within a slot during the rotation of the rotary drive such as to drive the body-engaging element, and the body part when engaged

thereby, from an initial position through repetitive closed-loop cycles each including: (i) a forward stroke path having a vertical lifting component for lifting the engaged body part such as to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component for tensioning the engaged body part, and the subject's thigh, such as to relieve pressure in the subject's lumber vertebrae; and (ii) a return stroke path, different from and underlying, the forward stroke path, for returning the engaged body part to its initial position.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIGS. **1A–1C** are schematic representations of a sequence of positions occurring during manual physiotherapy for lower back pain;

FIG. **2** is an isometric view of a first embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject;

FIG. **3** is a partially cut-away view similar to FIG. **2** showing the main internal components of the device;

FIG. **4** is a view similar to FIG. **2** with the walls of the device removed;

FIG. **5** is a partially cut-away side view of the device of FIG. **2**;

FIGS. **6A–6D** are schematic views similar to FIG. **3** showing successive positions during operation of the device (somewhat exaggerated for clarity of presentation);

FIG. **7** is a schematic representation of the drive mechanism of the device of FIG. **2** showing the form of motion produced thereby;

FIGS. **8A** and **8B** are side views of the device of FIG. **2** showing a preferred range of adjustment;

FIG. **9** is a partially cut-away side view of a second embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject;

FIG. **10** is an enlargement of the region of FIG. **9** designated X; and

FIG. **11** is a schematic side view of a third embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject, the device being implemented as part of a chair.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is a device for preventing or relieving pain in the lower back of a human subject.

The principles and operation of devices according to the present invention may be better understood with reference to the drawings and the accompanying description.

Referring now to the drawings, FIGS. **2-8** show a device, generally designated **10**, constructed and operative according to the teachings of the present invention. Device **10**, configured for use while lying in a supine position, is helpful for preventing or relieving pain in the lower back of a human subject.

Generally speaking, device **10** provides at least one body-engaging element **12** configured for engaging at least one region of the body of the subject inferior to the subject's lumbar vertebrae, and a drive mechanism **14**, mechanically linked to body-engaging element **12**. It is a particular feature of the present invention that drive mechanism **14** is configured to move at least part of body-engaging element **12** through a repetitive cyclic motion which includes an operative motion along a first path operative to apply tension to the lower back of the subject, and a return motion along a second path, the second path lying generally below the first path.

The second path is described as "lying generally lower than" the first path. In other words, the path followed by at least part of body-engaging element **12** as viewed from the side circumscribes a non-zero area. This property preferably results from the preferred form of one or both of the first and second paths. Specifically, the operative motion along the first path preferably includes a primarily vertical lifting motion followed by a primarily horizontal tensioning motion. Furthermore, the return motion along the second path preferably includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

It will be immediately apparent that this cyclic motion provides a much better emulation of the aforementioned therapeutic movement used by trained physiotherapists than is offered by the prior art devices. Specifically, the preferred form of the operative motion along the first path closely parallels the sequence described above with reference to FIGS. **1A–1C**. Furthermore, the preferred form of the return motion serves to first lower the body back into full contact with the underlying surface before releasing the horizontal tension, thereby tending to retain a proportion of the stretching effect at the end of each cycle. Without in any way limiting the scope of the present invention, it is thought that this residual stretching effect from each cycle gives rise to a cumulative stretching effect which may be responsible for the highly effective pain relief which has been experienced by users of the device during preliminary trials.

Turning now to the features of device **10** in more detail, it should be noted that body-engaging element **12** may engage any part of the body inferior to the subject's lumbar vertebrae in order to apply appropriate tension on the lumbar region of the subject's back. In the non-limiting preferred examples described herein, body-engaging element **12** includes at least one portion for engaging the rear surface of each of the user's knees. Optionally, although not necessarily, element **12** may also be provided with at least one surface **16** configured for supporting the rear side of the subject's legs below the knees for added comfort. In this case, the subject lies on the underlying surface in a supine position with his or her legs resting on surface **16**. Preferably, surface **16** is angled downwardly-away from the user's body so that the user's knees effectively lock around the surface **16** to enable exertion of tension along the upper leg away from the body. A preferred angle of inclination relative to the underlying surface is between about 5° and about 70°. For compact storage, all or part of surface **16** may be hinged or otherwise foldable to a stowed position when not in use. If desired, additional mechanical body-engaging elements such as foot straps (not shown) or the like may be provided to engage the body to the device more securely. In most cases, however, such additional elements have not been found necessary.

As mentioned before, the repetitive cyclic motion generated by drive mechanism **14** includes an operative motion along a first path and a return motion along a second path, the second path lying generally below the first path. In other words, the motion of at least one, and typically all, points on surface **16** undergo cyclic motion along a closed path which

encloses a non-zero area. Preferably, in order to avoid percussive motion, the first and second paths are chosen to together form a closed curve lying substantially in a vertical plane. Most preferably, the closed path approximates to the form of an ellipse. Optionally, although not necessarily, at least one point on surface **16** may follow a substantially circular path (a circle being a special case of an ellipse).

The dimensions of the path followed depend of the type of treatment required and the state of health of the subject. In most cases, the maximum dimension of the closed curve is less than about 10 cm, and in most preferred cases, falls within the range from about 2 cm to about 6 cm. Optionally, a user-operable adjustment may be provided to allow selection of the magnitude of the motion as desired.

In structural terms, FIGS. **3–6** illustrate one particularly simple implementation of drive mechanism **14** for producing elliptical motion. Specifically, drive mechanism **14** as shown includes at least one rotating element, typically a drive wheel **18** driven by an electric motor **20** with a suitable step down gear arrangement. By way of a non-limiting example, a typical implementation employs an 80W AC motor operating at about 1400 rpm with step-down gears etc. bringing the final motion down to a speed of roughly 30 rpm. Suitable motors with external and/or built-in gear arrangements are commercially widely available. The repetitive cyclic motion of body-engaging element **12** is then generated, at least in part, by a mechanical linkage **22** which links element **12** to an off-axis point on the rotating element i.e., to a point eccentric to the rotary axis of the rotating element. In the implementation shown, a second part of linkage **22** is pivotally mounted via pivot pins **24** slidable within inclined slots **26** formed in the fixed side walls **42** of the frame enclosing the drive mechanism **14**.

The motion resulting from this structure is illustrated schematically in FIG. **7**. As the point of attachment of linkage **22** moves with turning of drive wheel **18** through positions a, b, c and d, the uppermost portion of surface **16** follows an elliptical path through positions a', b', c' and d', respectively. This corresponds to the required primarily vertical lifting motion (a' to b') and primarily horizontal tensioning motion (b' to c'), together making up the first path, and the return motion (c' via d' back to a') along a lower second path. A similar motion is represented by the sequence of FIGS. **6A–6D**, the initial position being shown for reference in each Figure by a dashed outline.

It will be noted that the smoothly curved form of the motion provides gradual transitions between the various "primarily vertical" and "primarily horizontal" movements. As a result, the specific points identified by the symbols a', b', c' and d' are not necessarily uniquely and unambiguously defined. Nevertheless, it is clear that an elliptical motion in a vertical plane inherently includes portions in which the vertical component of the motion is significantly greater than the horizontal component and vice versa, paths including such portions being referred to as "primarily vertical" and "primarily horizontal" movements, respectively.

The body parts engaged by the body-engaging element **12** should be inferior to the subject's hip joint joining the thigh to the hip; in this case, as described above, it is the underside of both knees of the subject. Thus, the forward stroke path of each closed-loop cycle has a vertical lifting component for lifting the knees, and thereby the thigh, such as to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component for tensioning the thigh such as to relieve pressure in the subject's lumber vertebrae. The return stroke path underlies the forward stroke path and, as described above with respect to FIG. **7**, maintains tension in the thigh and lumber vertebrae while lowering the knees before completing the return to their initial position.

In order to facilitate use of device **10** for subjects of different sizes, an adjustment mechanism is preferably provided for varying the height of body-engaging element **12** above the underlying surface. This adjustment mechanism may be implemented in a range of ways, including, but not limited to, varying the length of linkage **22**, either above or below sliding pivots **24**, or by raising or lowering the entirety of drive mechanism **14**.

In the embodiment of FIGS. **2–8B**, adjustment is achieved by mounting the entirety of drive mechanism **14** in a cradle **40** (see FIG. **4**) which can be raised and lowered along a vertical alignment rod **41** relative to a housing of the device. Specifically, as seen in FIGS. **2, 3, 8A** and **8B**, side walls **42** of the housing feature a set of adjustment slots **44** within which a lever arm **46** may be locked. Lever arm **46** is pivotally linked to cradle **40** to that adjustment of lever arm **46** raises or lowers adjustment mechanism **14**, and hence body-engaging element **12** between the lowered position of FIG. **8A** and the raised position of FIG. **8B**. Slots **26** are made sufficiently long to accommodate both the range of adjustment and the range of motion during operation in each of the extreme positions. The range of adjustment may extend from about 30 cm up to about 65 cm as measured to the highest part of surface **16** above the underlying surface. In practice, a range from about 40 cm to about 55 cm is sufficient to accommodate most adult users.

It should be noted that this is just one exemplary implementation of an adjustment mechanism. Clearly, many alternative implementations of such mechanisms are within the ability of one ordinarily skilled in the art. One further example will be illustrated below with reference to FIGS. **9** and **10**.

Turning now to FIGS. **9** and **10**, there is shown a second embodiment of a device, generally designated **100**, constructed and operative according to the teachings of the present invention. Device **100** is generally similar to device **10**, equivalent elements being designated similarly. Device **100** differs primarily in the implementation of the adjustment mechanism used.

Specifically, FIG. **10** illustrates schematically a further possible implementation of an adjustment mechanism in which the length of linkage **22** is adjustable above pivots **24**. This is achieved by use of a lockable telescopic connection in which the main support element of linkage **22** is slidably engaged within a sleeve **28** attached to body-engaging element **12**. Sleeve **28** features a pin **30** which engages one of a row of recesses **32** in the support element. A spring element **34** urges the support element into against pin **30** tending to maintain engagement between pin **30** and one of recesses **32**. To adjust the height, the elements are twisted so as to compress spring element **34** and free pin **30** from engagement with its initial recess **32**. Body-engaging element **12** can then be raised or lowered telescopically relative to the support element and pin **30** brought into engagement with an appropriate recess **32** to maintain the desired height.

Finally, with reference to FIG. **11**, it should be appreciated that the device of the present invention may be integrated with various other devices and structures. By way of one particular preferred example, FIG. **11** shows an implementation of the device of the present invention, generally designated **200**, in which body-engaging element **12** is implemented as at least one body-supporting surface of a chair. The "underlying surface" which supports the back of

the user is, in this case, the back rest **202** of the chair. Parenthetically, as will be noted from this example, the "underlying surface" of the present invention is not necessarily horizontal. In other respects, device **200** is similar in structure and operation to device **10** described above, equivalent elements being labeled similarly.

It will be appreciated that the above descriptions are intended only to serve as examples, and that many other embodiments are possible within the spirit and the scope of the present invention.

What is claimed is:

1. A device for preventing or relieving pain in the lower back of a human subject, the device being configured for use while the subject lies in a supine position on an underlying surface, the device comprising:

(a) a body-engaging element configured for engaging a body part of the subject inferior to the subject's hip joint joining the thigh to the hip; and

(b) a rotary drive for driving the body engaging element, said rotary drive including a pivot pin pivotally mounting the body engaging element and slidable during the rotation of said rotary drive to drive the body-engaging element, and the body part when engaged thereby, from an initial position through repetitive closed-loop cycles each including:

(i) a forward stroke path having a vertical lifting component for lifting the engaged body part to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component for tensioning the engaged body part, and the subject's thigh to relieve pressure in the subject's lumber vertebrae; and

(ii) a return stroke path, different from and underlying the forward stroke path, for returning the engaged body part to its initial position;

wherein said drive is enclosed within a frame, said frame includes a slot, and said slot in which said pivot pin is slidable is formed at an incline in said frame.

2. The device of claim **1**, wherein said return stroke maintains tension on the engaged body part while lowering it before completing the return of the engaged body part to its initial position.

3. The device of claim **1**, wherein said body-engaging element is configured to engage the underside of both knees of the subject.

4. The device of claim **3**, wherein said body-engaging elements includes a supporting panel configured to support both lower legs of the subject.

5. The device of claim **4**, wherein said supporting panel is vertically adjustable with respect to said underlying surface to accommodate subjects of different sizes.

6. The device of claim **1**, wherein said repetitive closed-looped cycles are of elliptical configuration.

7. The device of claim **1**, wherein said body-engaging element is configured for use with a chair to support the subject in a supine position.

8. The device according to claim **1**, wherein said drive includes:

a rotary element rotatable about a rotary axis; and a link coupled at one end to said rotary element eccentrically with respect to its rotary axis, and coupled at its opposite end to said body engaging element; said pivot pin being carried by said link between its opposite ends and slideable in said slot by the rotation of said one end of the link by said rotary element to cause said opposite end of the link, and said body-engaging element coupled thereto, to be driven through said closed-loop cycles.

* * * * *

US007179237B2

(12) **United States Patent**
Elan

(10) **Patent No.: US 7,179,237 B2**
(45) **Date of Patent: *Feb. 20, 2007**

(54) **DEVICE FOR PREVENTING OR RELIEVING PAIN IN THE LOWER BACK**

(75) Inventor: **Ori Elan**, Tel Aviv (IL)

(73) Assignee: **Backlife Ltd.**, Or Yehuda (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 590 days.

This patent is subject to a terminal disclaimer.

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(2), (4) Date: **Dec. 27, 2002**

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PCT Pub. Date: **Jul. 19, 2001**

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A61H 1/02 (2006.01)

(52) **U.S. Cl.** **601/35**; 606/241; 601/5

(58) **Field of Classification Search** 606/237, 606/240–242; 601/5, 33–35, 85–87, 89, 601/90, 93
See application file for complete search history.

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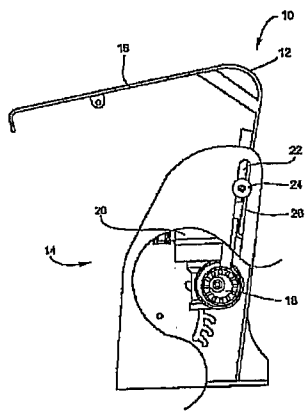
Primary Examiner—Danton DeMille
Assistant Examiner—Manuj Agarwal

(57) **ABSTRACT**

A device for preventing or relieving pain in the lower back of a human subject includes a body-engaging element configured for engaging a region of the subject's body inferior to the lumbar vertebrae while the subject lies in a supine position. A drive mechanism is configured to move the body-engaging element through a repetitive cyclic motion which includes an operative motion along a first path including a primarily vertical lifting motion followed by a primarily horizontal tensioning motion, and a return motion along a second path, the second path lying generally below the first path. The body-engaging element preferably includes at least one surface configured for engaging a rear surface of both of the subject's legs from the knees downwards.

26 Claims, 11 Drawing Sheets



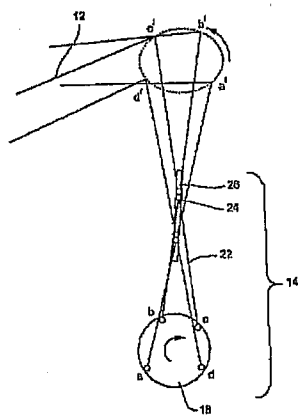


EXHIBIT 4

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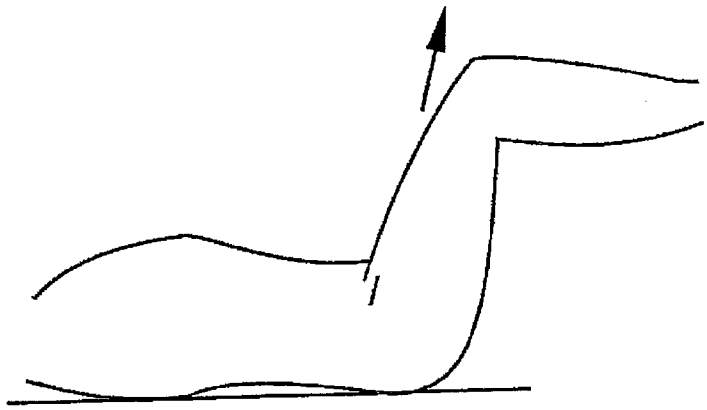

Fig. 1a

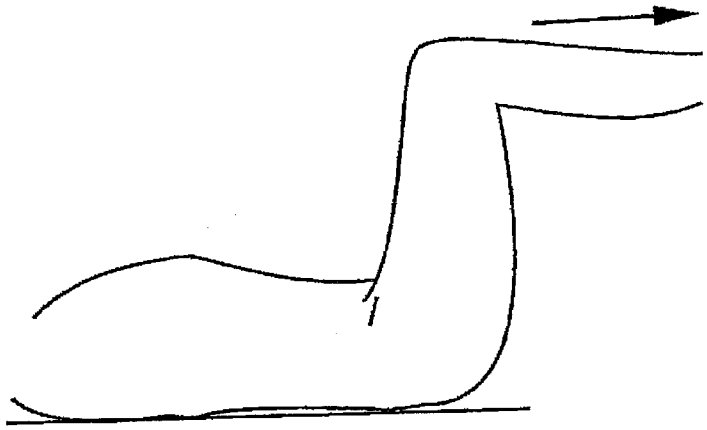

Fig. 1b

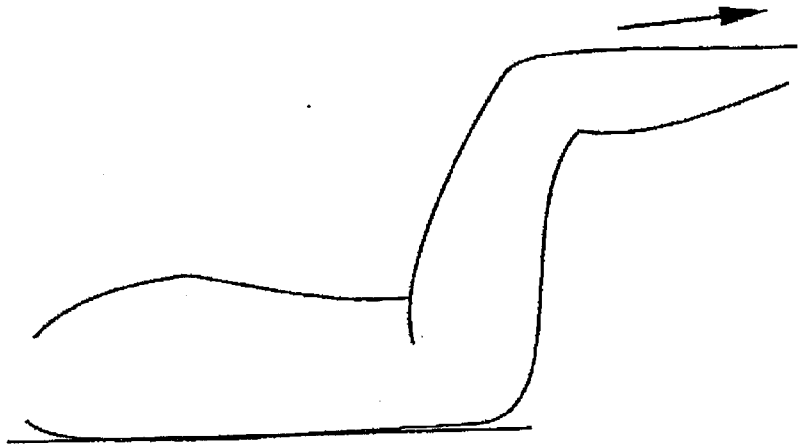

Fig. 1c

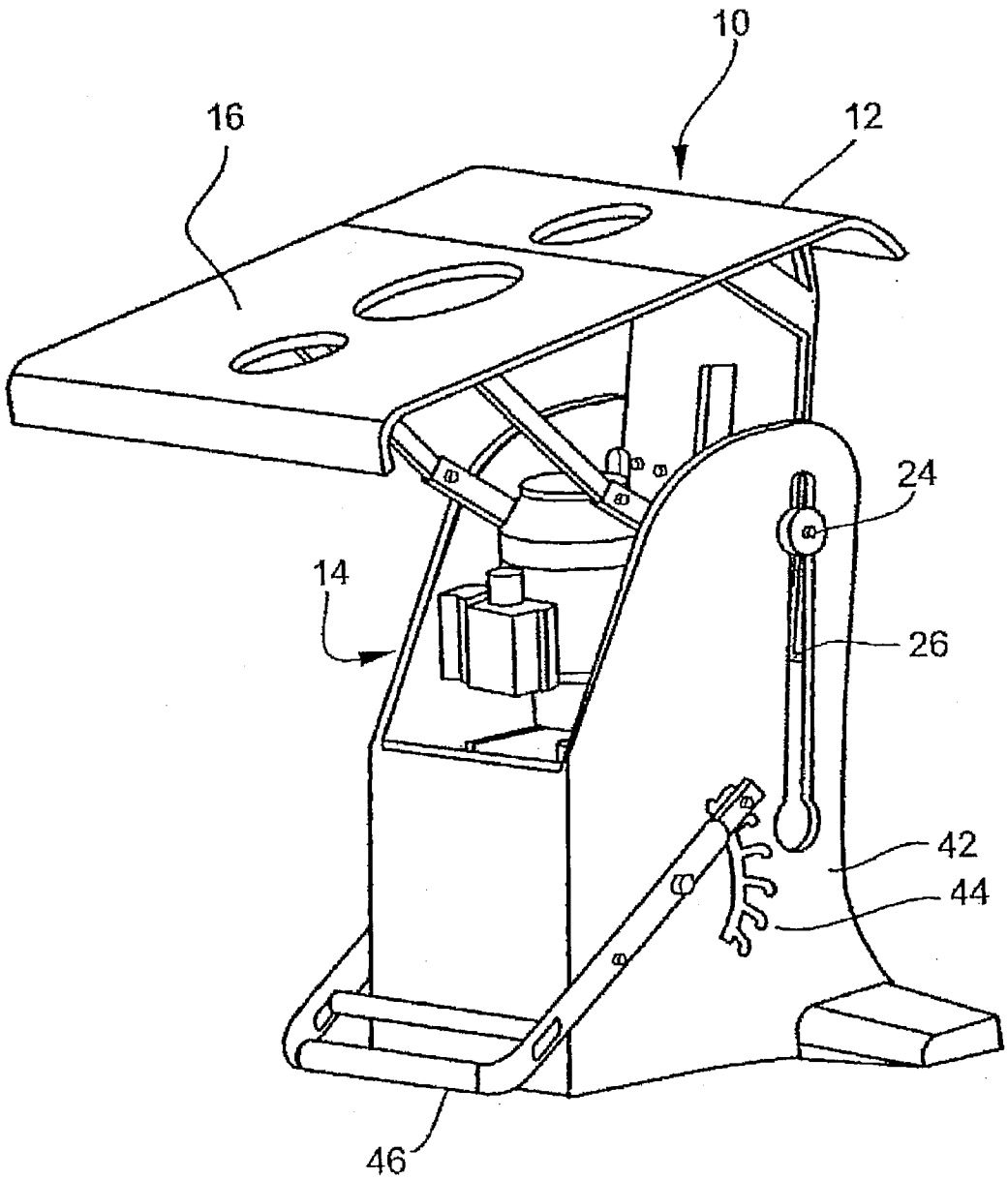

Fig. 2

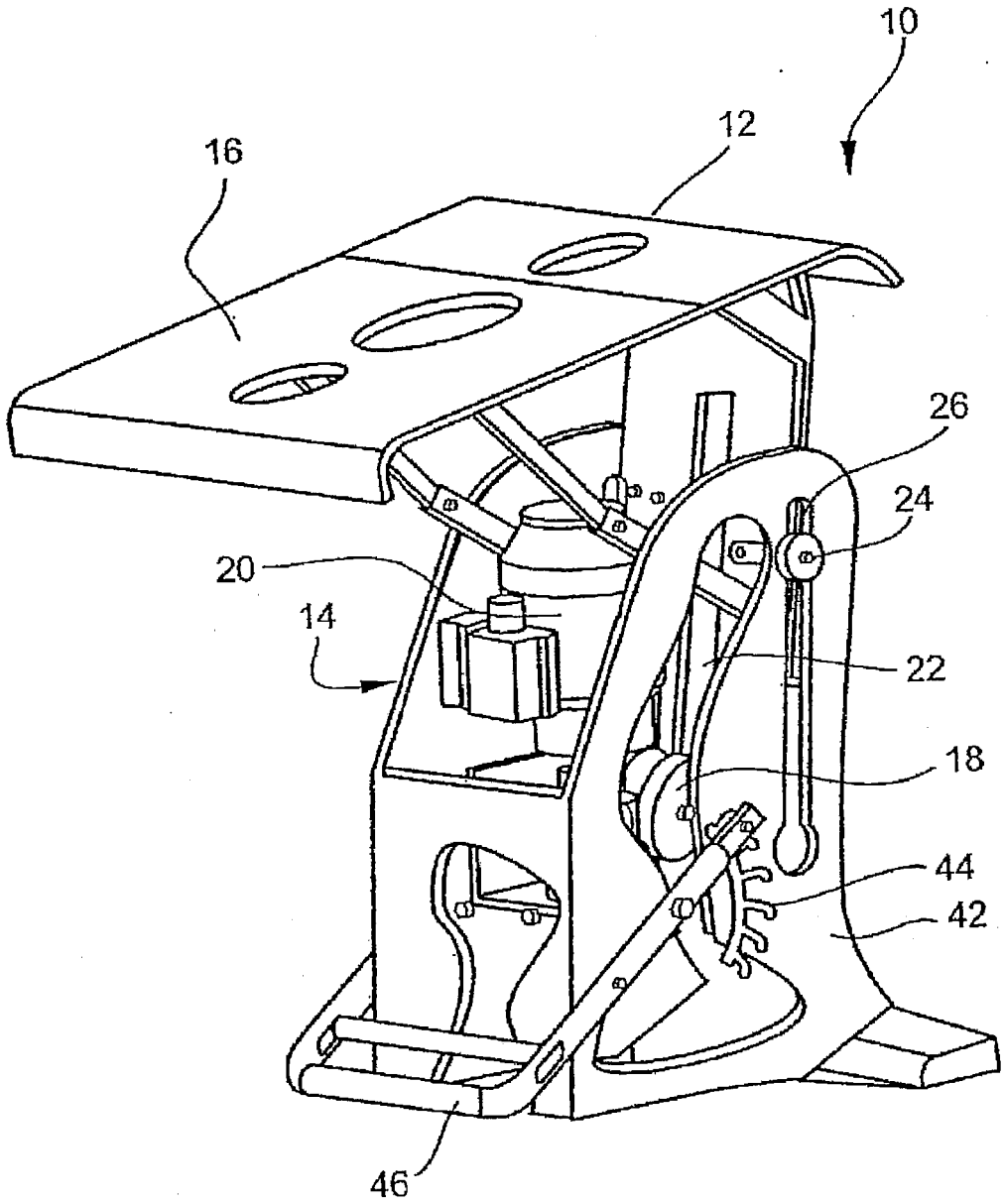

Fig. 3

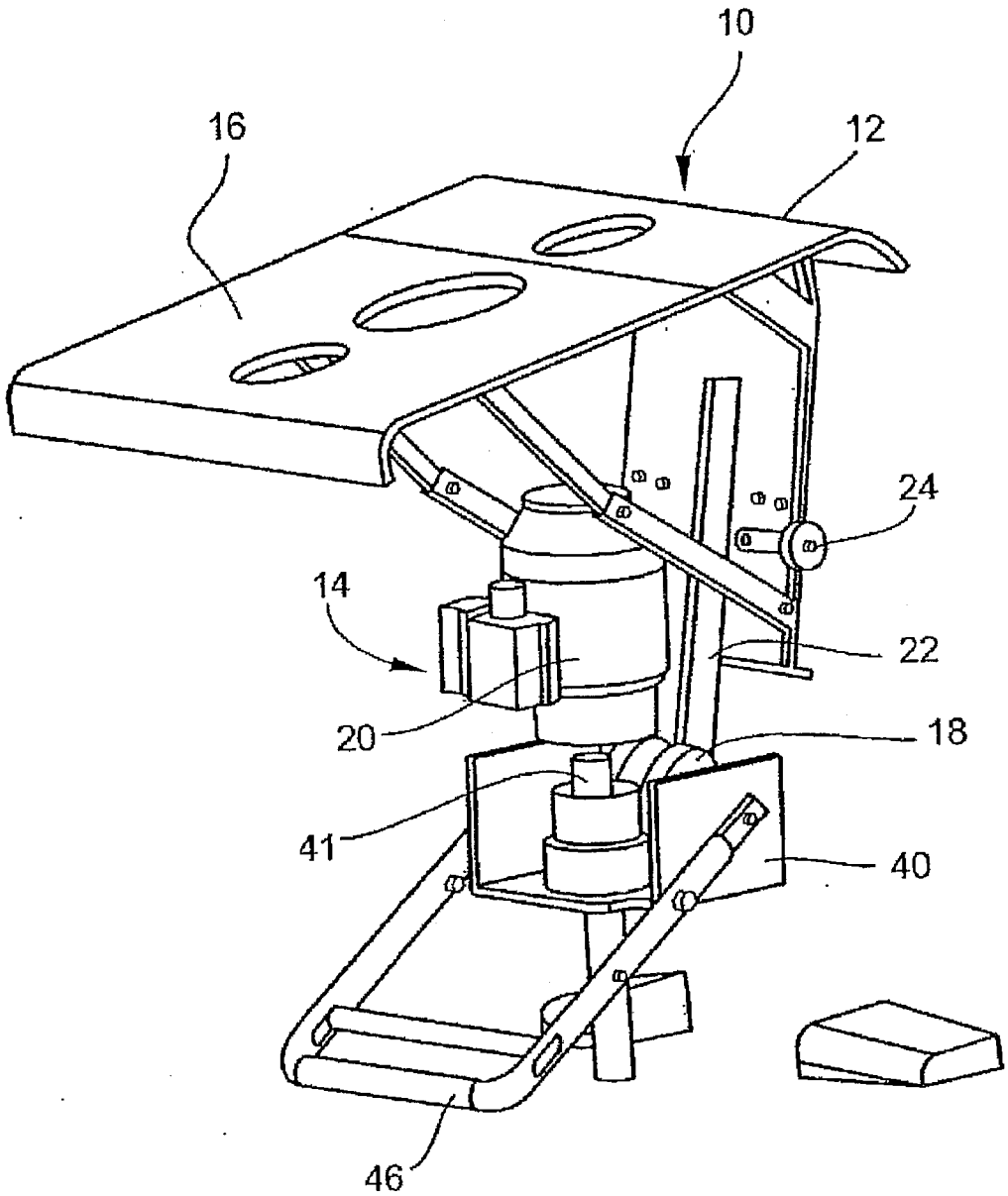

Fig. 4

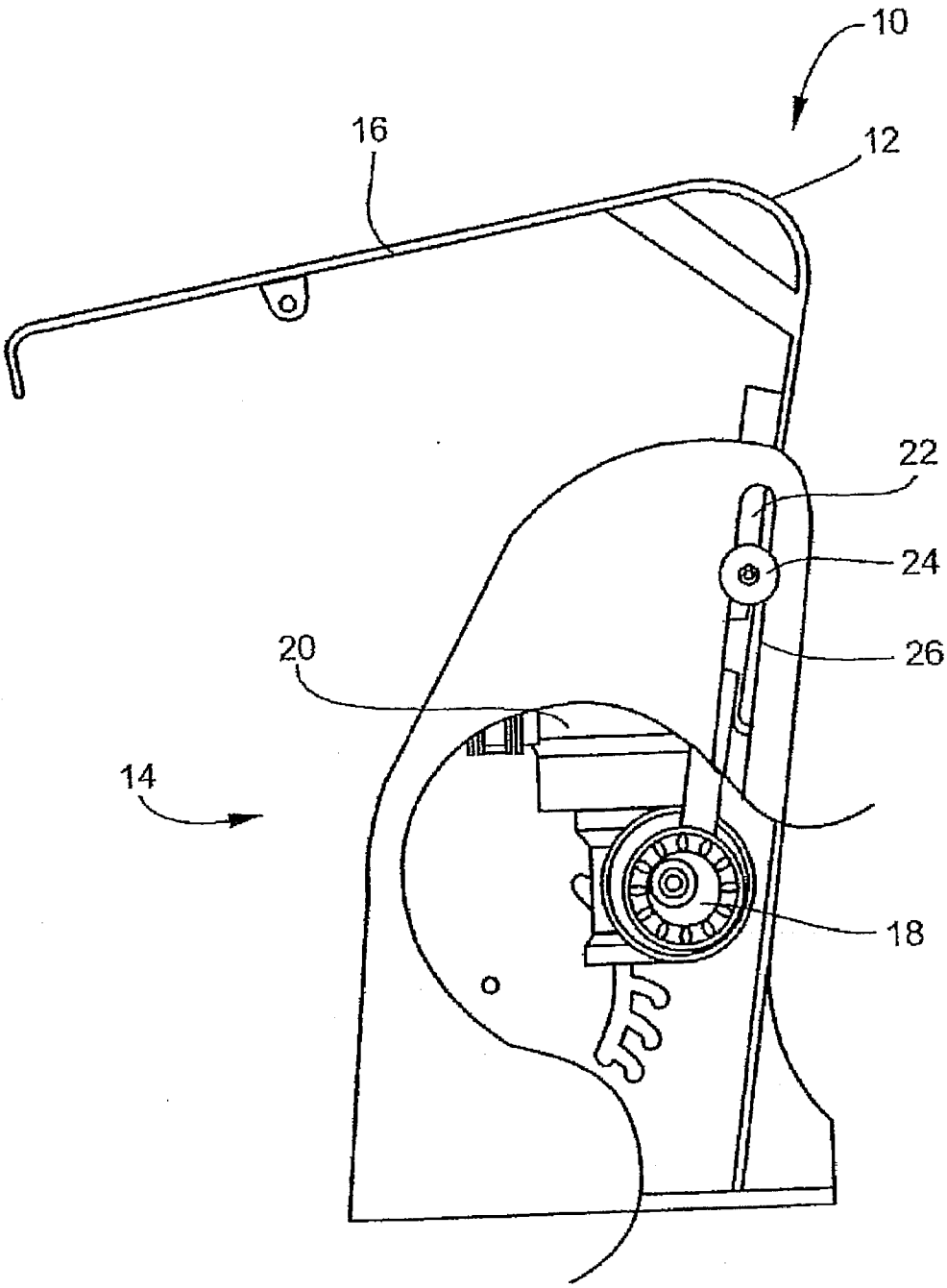

Fig. 5

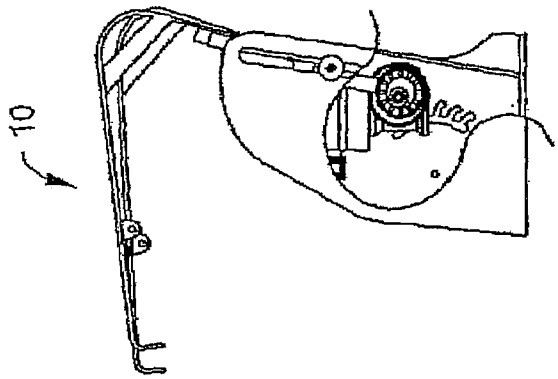

Fig. 6d

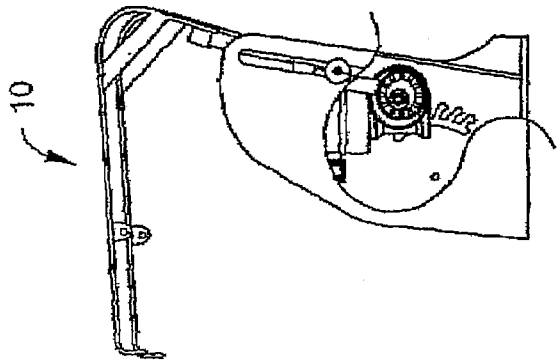

Fig. 6c

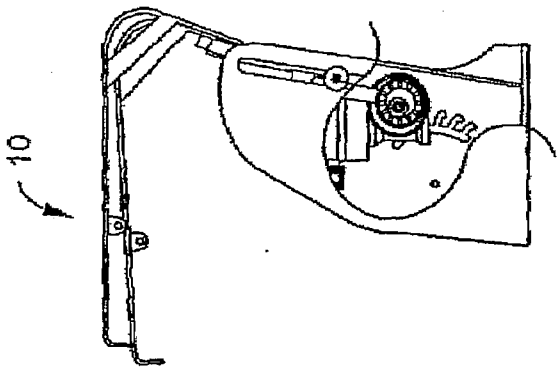

Fig. 6b

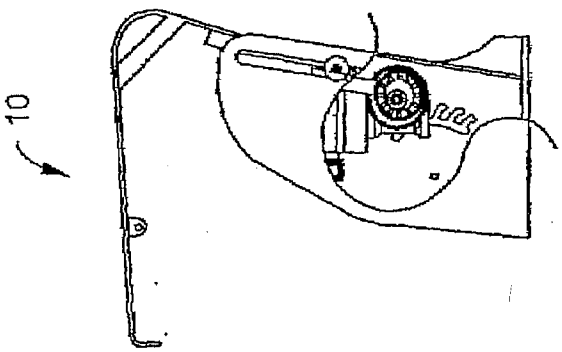

Fig. 6a

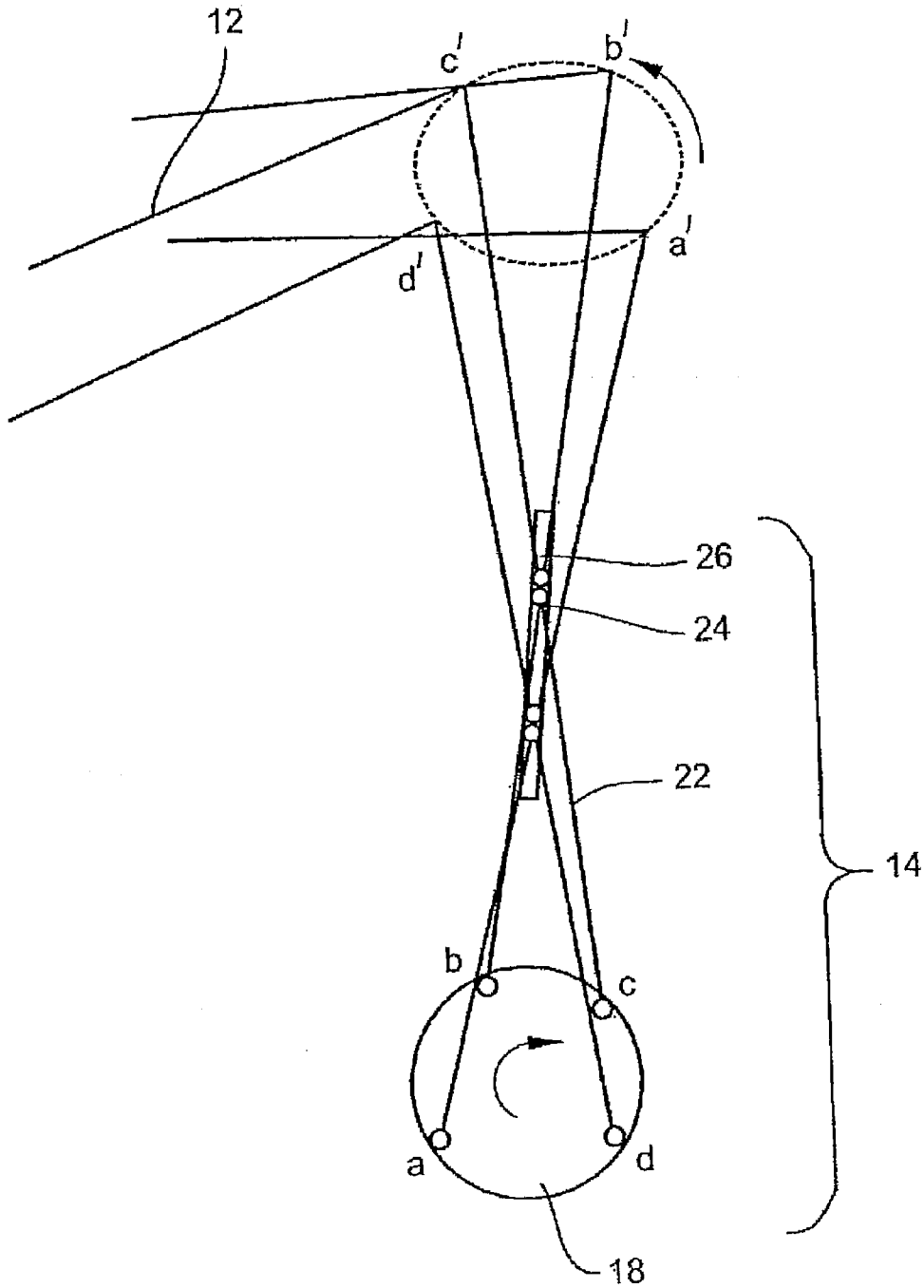

Fig. 7

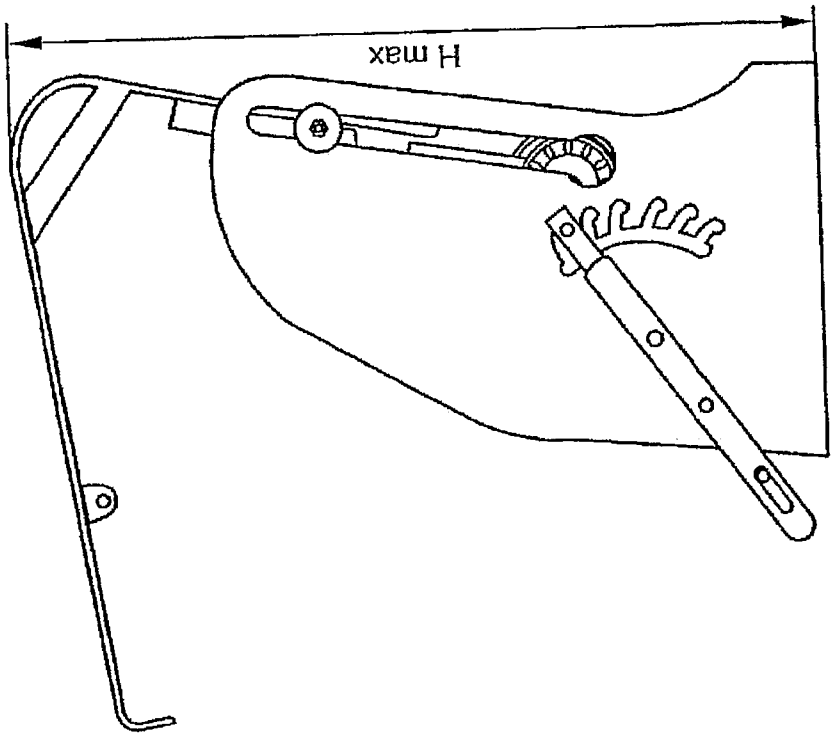

Fig. 8b

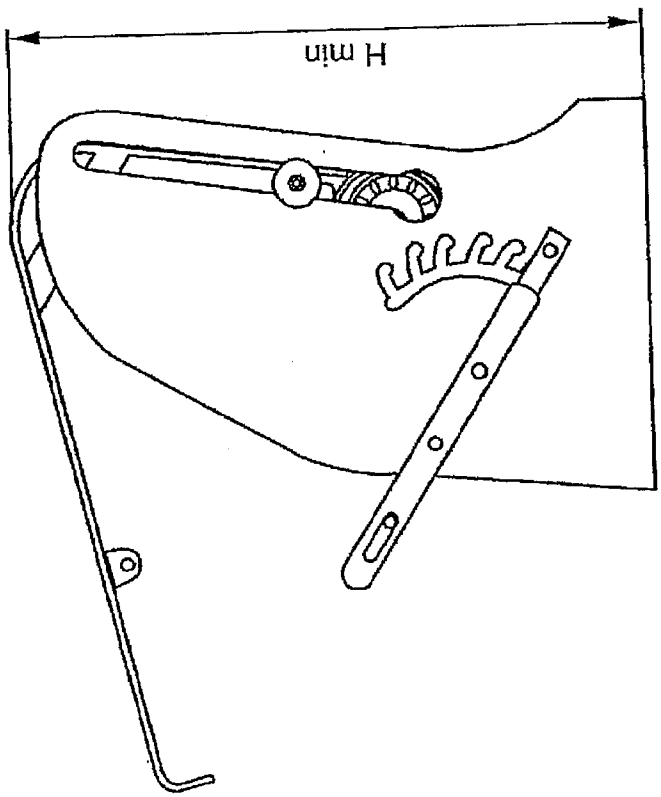

Fig. 8a

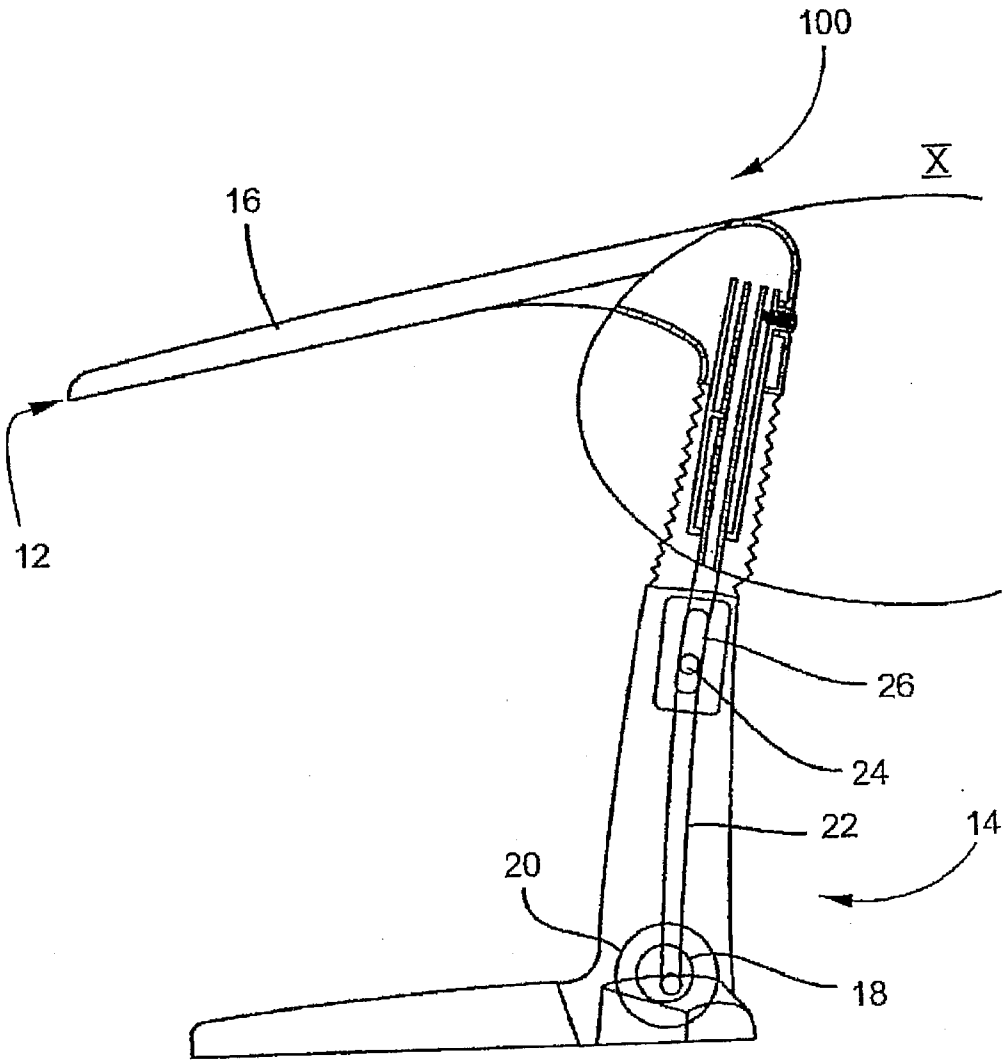

Fig. 9

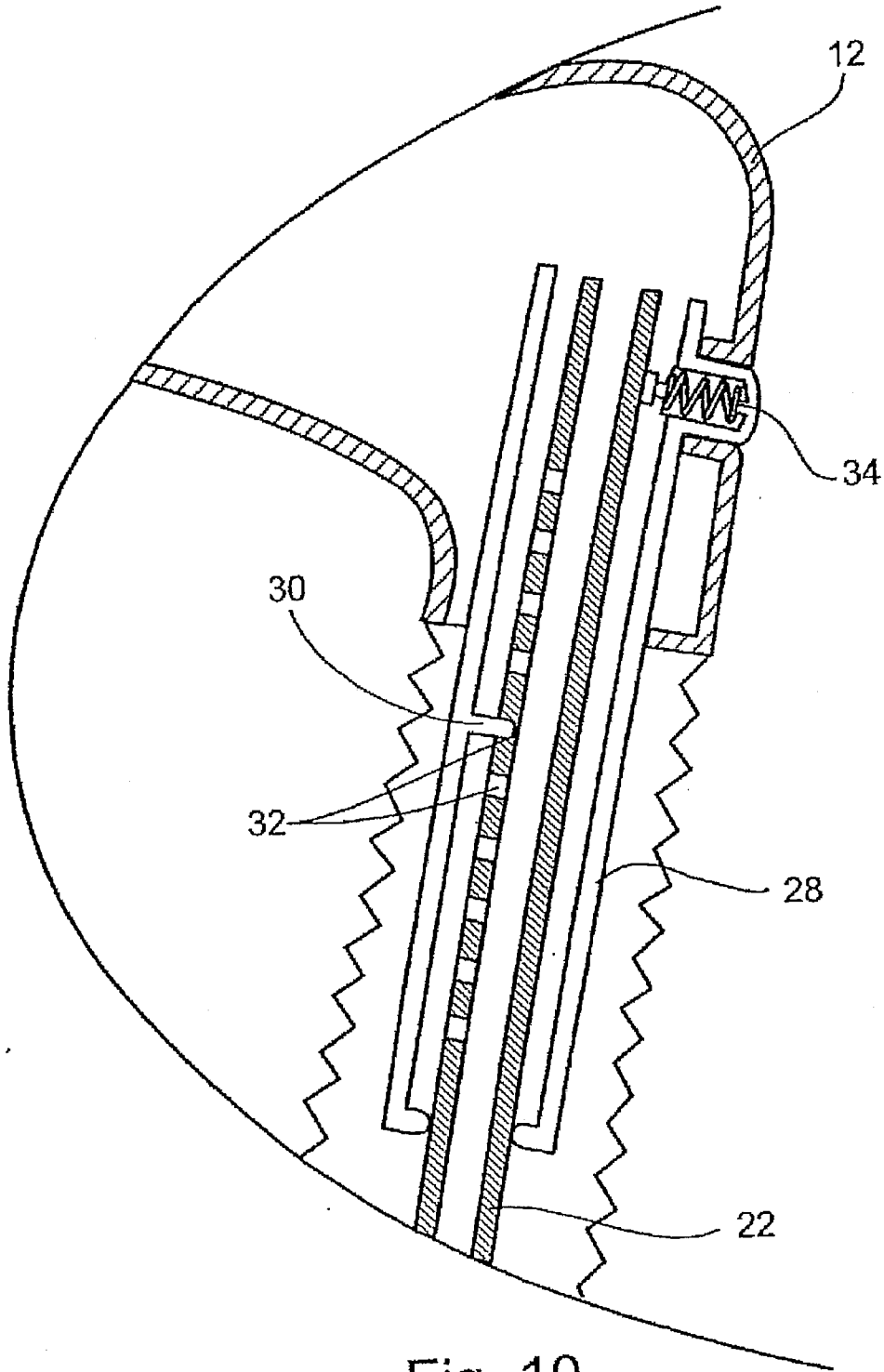

Fig. 10

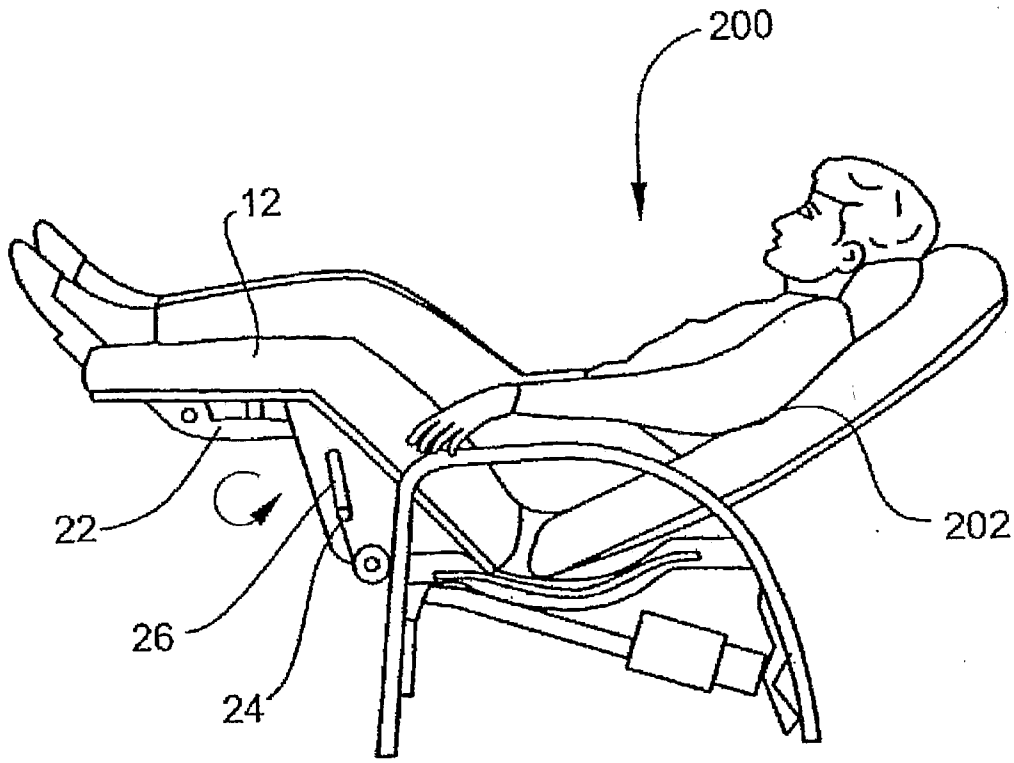

Fig. 11

DEVICE FOR PREVENTING OR RELIEVING PAIN IN THE LOWER BACK

RELATED PATENT APPLICATIONS

This application is a National Phase Entry of PCT/IL00/00836 filed 14 Dec. 2000, which claims priority from U.S. patent application Ser. No. 09/479,661 filed 10 Jan. 2000 now U.S. Pat No. 6,443,916.

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to a stretching device, particularly useful for the relieving or preventing of lower back pains.

It is well known that lower back pains affect a very large proportion of adults, especially middle aged adults and older. As a consequence, a great deal of suffering and disability is experienced by a large fraction of the population resulting, among other things, in a large number of lost work days and greatly diminished quality of life.

A brief physiological analysis will help illustrate the cause of back pains and give an insight as to possible remedies.

The spinal column consists of thirty three vertebrae which are joined together by cartilage tissue and ligaments. The upper twenty four vertebrae are discrete and movable while the lower nine vertebrae are fixed. Five of the lower nine vertebrae are fused together to form the sacrum while the terminal four vertebrae are normally fused to form the coccyx. The normal spinal column may be considered to have seven cervical, twelve thoracic, five lumbar, five sacral and four coccygeal vertebrae. Mobility of the vertebrae in the cervical, thoracic and lumbar regions is relatively free compared with movement of the fused vertebrae of the sacrum and coccyx which is relatively constrained.

The main causes of common back pain are the continual stresses and strains experience by the lower back region which is the major, albeit not the sole, weight supporting element of the upper body.

These stresses and strains eventually cause the damage symptomatic of back pain in that the cartilage material forming the discs separating the vertebrae is worn away over a period of time. In its extreme pathological condition, the patient may develop anchilosing spondylitis, namely, the partial, bent-down stiffening of the spinal column.

The sensation of pain is felt because the distance separating the vertebrae becomes narrower, causing pressure to be exerted on the nerve roots which extend from the spinal cord.

Due to the degenerative nature of the causes of back pain of this sort there is currently no permanent relief available, except for surgery where appropriate. There are, however, a multitude of known procedures for the relief of pain in the lumbar region of the back. These procedures involve the stretching of the lower back to achieve the separation of the discs in the affected lumbar area. However, these treatments typically require the use of weights and other mechanical equipment and must be undertaken only under close professional supervision.

U.S. Pat. No. 5,772,612 to Daniel Ilan, hereby incorporated by reference, proposes a device suitable for home use in which a user lies on an underlying surface with his or her knees over a frame and feet against a foot rest. The lower end of the device contacts the underlying surface, acting as a fulcrum. When the user pushes against the device, the device pivots so as to tend to lift the user's legs along a slightly arched path. A motor-driven version of the device is also proposed.

The device of the aforementioned patent represents a useful attempt to provide a device for relieving lower-back pain suitable for home use. It has been noted, however, that the resulting motion, namely, a slightly arched reciprocating motion, differs considerably from the sequence of motion performed by a trained physiotherapist. Specifically, with reference to FIGS. 1A–1C, a trained physiotherapist typically performs an initial lifting movement by raising the subject's legs from the position of FIG. 1A to that of FIG. 1B so as to neutralize the arched concavity of the back. This is followed by a primarily horizontal pulling motion (FIG. 1C), thereby applying tension tending to relieve pressure between the lumber vertebrae. The tension is then released, thereby allowing the body to return under the action of gravity to a resting position.

There is therefore a need for a device for preventing or relieving pain in the lower back of a human subject which would more closely emulate the aforementioned therapeutic movement used by trained physiotherapists.

SUMMARY OF THE INVENTION

The present invention relates to a device for preventing or relieving pain in the lower back of a human subject.

According to one aspect of the present invention, there is provided a device for preventing or relieving pain in the lower back of a human subject while the subject lies in a supine position on an underlying surface, the device comprising: (i) a body-engaging element configured for engaging the rear surfaces of both knees of the subject; and (ii) a drive mechanism mechanically linked to said body-engaging element, said drive mechanism being configured to move said body-engaging element through a repetitive cyclic motion including (a) an operative motion along a first path operative to move both upper legs together in the outward direction substantially parallel to their longitudinal axes to apply tension to the lumbar vertebrae in the lower back of the subject, and (b) a return motion along a second path, said second path lying generally below said first path.

According to another aspect of the present invention, there is provided a device for preventing or relieving pain in the lower back of a human subject, the device being configured for use while the subject lies in a supine position on an underlying surface, the device comprising: (a) a body-engaging element configured for engaging the rear surfaces of both knees of the subject; and (b) a rotary drive for driving said body engaging element, said rotary drive including a pivot pin pivotally mounting the body engaging element and slidable within a slot during the rotation of said rotary drive such as to drive the body-engaging element, and both knees when engaged thereby, from an initial position through repetitive closed-loop cycles each including: (i) a forward stroke path having a vertical lifting component for lifting the engaged rear surfaces of both knees together such as to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component for tensioning the engaged rear surfaces of both knees such as to relieve pressure in the subject's lumber vertebrae; and (ii) a return stroke path, different from and underlying the forward stroke path, for returning the engaged rear surfaces of both knees to their initial positions.

According to further features in the described preferred embodiment of the present invention, the first path includes a primarily vertical lifting motion followed by a primarily

horizontal tensioning motion; and the second path includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIGS. 1*a*–1*c* are schematic representations of a sequence of movements occurring during manual physiotherapy for lower back pain and closely emulated by devices in accordance with the present invention,

FIG. 2 is an isometric view of a first embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject;

FIG. 3 is a partially cut-way view similar to FIG. 2 showing the main internal components of the device;

FIG. 4 is a view similar to FIG. 2 with the walls of the device removed;

FIG. 5 is a partially cut-away side view of the device of FIG. 2;

FIGS. 6*a*–6*d* are schematic views similar to FIG. 3 showing successive positions during operation of the device (somewhat exaggerated for clarity of presentation);

FIG. 7 is a schematic representation of the drive mechanism of the device of FIG. 2 showing the form of motion produced thereby;

FIGS. 8*a* and 8*b* are side views of the device of FIG. 2 showing a preferred range of adjustment;

FIG. 9 is a partially cut-away side view of a second embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject;

FIG. 10 is an enlargement of the region of FIG. 9 designated X; and

FIG. 11 is a schematic side view of a third embodiment of a device, constructed and operative according to the teachings of the present invention, for preventing or relieving pain in the lower back of a human subject, the device being implemented as part of a chair.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is a device for preventing or relieving pain in the lower back of a human subject.

The principles and operation of devices according to the present invention may be better understood with reference to the drawings and the accompanying description.

Referring now to the drawings, FIGS. 2–8 show a device, generally designated **10**, constructed and operative according to the teachings of the present invention. Device **10**, configured for use while lying in a supine position, is helpful for preventing or relieving pain in the lower back of a human subject.

Generally speaking, device **10** provides at least one body-engaging element **12** configured for engaging at least one region of the body of the subject inferior to the subject's lumbar vertebrae, and a drive mechanism **14**, mechanically linked to body-engaging element **12**. It is a particular feature of the present invention that drive mechanism **14** is configured to move at least part of body-engaging element **12** through a repetitive cyclic motion which includes an operative motion along a first path operative to apply tension to the lower back of the subject, and a return motion along a second path, the second path lying generally below the first path.

The second path is described as "lying generally lower than" the first path. In other words, the path followed by at least part of body-engaging element **12** as viewed from the side circumscribes a non-zero area. This property preferably results from the preferred form of one or both of the first and second paths. Specifically, the operative motion along the first path preferably includes a primarily vertical lifting motion followed by a primarily horizontal tensioning motion. Furthermore, the return motion along the second path preferably includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

It will be immediately apparent that this cyclic motion provides a much better emulation of the aforementioned therapeutic movement used by trained physiotherapists than is offered by the prior art devices. Specifically, the preferred form of the operative motion along the first path closely parallels the sequence described above with reference to FIGS. 1A-1C. Furthermore, the preferred form of the return motion serves to first lower the body back into full contact with the underlying surface before releasing the horizontal tension, thereby tending to retain a proportion of the stretching effect at the end of each cycle. Without in any way limiting the scope of the present invention, it is thought that this residual stretching effect from each cycle gives rise to a cumulative stretching effect which may be responsible for the highly effective pain relief which has been experienced by users of the device during preliminary trials.

Turning now to the features of device **10** in more detail, it should be noted that body-engaging element **12** may engage any part of the body inferior to the subject's lumbar vertebrae in order to apply appropriate tension on the lumbar region of the subject's back. In the non-limiting preferred examples described herein, body-engaging element **12** includes at least one portion for engaging the rear surface of each of the user's knees. Optionally, although not necessarily, element **12** may also be provided with at least one surface **16** configured for supporting the rear side of the subject's legs below the knees for added comfort. In this case, the subject lies on the underlying surface in a supine position with his or her legs resting on surface **16**. Preferably, surface **16** is angled downwardly-away from the user's body so that the user's knees effectively lock around the surface **16** to enable exertion of tension along the upper leg away from the body. A preferred angle of inclination relative to the underlying surface is between about 5° and about 70°. For compact storage, all or part of surface **16** may be hinged or otherwise foldable to a stowed position when not in use. If desired, additional mechanical body-engaging elements such as foot straps (not shown) or the like may be provided to engage the body to the device more securely. In most cases, however, such additional elements have not been found necessary.

As mentioned before, the repetitive cyclic motion generated by drive mechanism **14** includes an operative motion along a first path and a return motion along a second path, the second path lying generally below the first path. In other words, the motion of at least one, and typically all, points on surface **16** undergo cyclic motion along a closed path which encloses a non-zero area. Preferably, in order to avoid percussive motion, the first and second paths are chosen to together form a closed curve lying substantially in a vertical plane. Most preferably, the closed path approximates to the form of an ellipse. Optionally, although not necessarily, at

least one point on surface 16 may follow a substantially circular path (a circle being a special case of an ellipse).

The dimensions of the path followed depend of the type of treatment required and the state of health of the subject. In most cases, the maximum dimension of the closed curve is less than about 10 cm, and in most preferred cases, falls within the range from about 2 cm to about 6 cm. Optionally, a user-operable adjustment may be provided to allow selection of the magnitude of the motion as desired.

In structural terms, FIGS. 3–6 illustrate one particularly simple implementation of drive mechanism 14 for producing elliptical motion. Specifically, drive mechanism 14 as shown includes at least one rotating element, typically a drive wheel 18 driven by an electric motor 20 with a suitable step down gear arrangement. By way of a non-limiting example, a typical implementation employs an 80 W AC motor operating at about 1400 rpm with step-down gears etc. bringing the final motion down to a frequency of roughly 30 rpm. Suitable motors with external and/or built-in gear arrangements are commercially widely available. The repetitive cyclic motion of body-engaging element 12 is then generated, at least in part, by a mechanical linkage 22 which links element 12 to an off-axis point on the rotating element. In the implementation shown, a second part of linkage 22 is mounted via one or more sliding pivots 24 within slots 26.

The motion resulting from this structure is illustrated schematically in FIG. 7. As the point of attachment of linkage 22 moves with turning of drive wheel 18 through positions a, b, c and d, the uppermost portion of surface 16 follows an elliptical path through positions a', b', c' and d', respectively. This corresponds to the required primarily vertical lifting motion (a' to b') and primarily horizontal tensioning motion (b' to c'), together making up the first path, and the return motion (c' via d' back to a') along a lower second path. A similar motion is represented by the sequence of FIGS. 6A–6D, the initial position being shown for reference in each Figure by a dashed outline.

It will be noted that the smoothly curved form of the motion provides gradual transitions between the various "primarily vertical" and "primarily horizontal" movements. As a result, the specific points identified by the symbols a', b', c' and d' are not necessarily uniquely and unambiguously defined. Nevertheless, it is clear that an elliptical motion in a vertical plane inherently includes portions in which the vertical component of the motion is significantly greater than the horizontal component and vice versa, paths including such portions being referred to as "primarily vertical" and "primarily horizontal" movements, respectively.

In order to facilitate use of device 10 for subjects of different sizes, an adjustment mechanism is preferably provided for varying the height of body-engaging element 12 above the underlying surface. This adjustment mechanism may be implemented in a range of ways, including, but not limited to, varying the length of linkage 22, either above or below sliding pivots 24, or by raising or lowering the entirety of drive mechanism 14.

In the embodiment of FIGS. 2–8B, adjustment is achieved by mounting the entirety of drive mechanism 14 in a cradle 40 (see FIG. 4) which can be raised and lowered along a vertical alignment rod 41 relative to a housing of the device. Specifically, as seen in FIGS. 2, 3, 8A and 8B, side walls 42 of the housing feature a set of adjustment slots 44 within which a lever arm 46 may be locked. Lever arm 46 is pivotally linked to cradle 40 to that adjustment of lever arm 46 raises or lowers adjustment mechanism 14, and hence body-engaging element 12 between the lowered position of FIG. 8A and the raised position of FIG. 8B. Slots 26 are made sufficiently long to accommodate both the range of adjustment and the range of motion during operation in each of the extreme positions. The range of adjustment may extend from about 30 cm up to about 65 cm as measured to the highest part of surface 16 above the underlying surface. In practice, a range from about 40 cm to about 55 cm is sufficient to accommodate most adult users.

It should be noted that this is just one exemplary implementation of an adjustment mechanism. Clearly, many alternative implementations of such mechanisms are within the ability of one ordinarily skilled in the art. One further example will be illustrated below with reference to FIGS. 9 and 10.

Turning now to FIGS. 9 and 10, there is shown a second embodiment of a device, generally designated 100, constructed and operative according to the teachings of the present invention. Device 100 is generally similar to device 10, equivalent elements being designated similarly. Device 100 differs primarily in the implementation of the adjustment mechanism used.

Specifically, FIG. 10 illustrates schematically a further possible implementation of an adjustment mechanism in which the length of linkage 22 is adjustable above pivots 24. This is achieved by use of a lockable telescopic connection in which the main support element of linkage 22 is slidably engaged within a sleeve 28 attached to body-engaging element 12. Sleeve 28 features a pin 30 which engages one of a row of recesses 32 in the support element. A spring element 34 urges the support element into against pin 30 tending to maintain engagement between pin 30 and one of recesses 32. To adjust the height, the elements are twisted so as to compress spring element 34 and free pin 30 from engagement with its initial recess 32. Body-engaging element 12 can then be raised or lowered telescopically relative to the support element and pin 30 brought into engagement with an appropriate recess 32 to maintain the desired height.

Finally, with reference to FIG. 11, it should be appreciated that the device of the present invention may be integrated with various other devices and structures. By way of one particular preferred example, FIG. 11 shows an implementation of the device of the present invention, generally designated 200, in which body-engaging element 12 is implemented as at least one body-supporting surface of a chair. The "underlying surface" which supports the back of the user is, in this case, the back rest 202 of the chair. Parenthetically, as will be noted from this example, the "underlying surface" of the present invention is not necessarily horizontal. In other respects, device 200 is similar in structure and operation to device 10 described above, equivalent elements being labeled similarly.

It will be appreciated that the above descriptions are intended only to serve as examples, and that many other embodiments are possible within the spirit and the scope of the present invention.

What is claimed is:

1. A device for preventing or relieving pain in the lower back of a human subject while the subject lies in a supine position on an underlying surface, the device comprising:

(a) a body-engaging element configured for engaging the two legs of the subject inferior to the subject's lumbar vertebrae while the subject lies in a supine position on the underlying surface; and

(b) a drive mechanism mechanically linked to said body-engaging element, said drive mechanism being configured to move said body-engaging element through a repetitive cyclic motion including:

(a) an operative motion along a first path in a direction parallel to the subject's legs operative to move both legs of the subject engaged by said body-engaging element together through said first path parallel to the subject's legs to apply tension to the lower back of the subject, and

(b) a return motion along a second path, said second path being different from, and lying generally below, said first path.

2. The device of claim 1, wherein said body-engaging element includes a surface configured for engaging a rear surface of both knees of the subject.

3. The device of claim 1, wherein said first path includes a primarily vertical lifting motion followed by a primarily horizontal tensioning motion.

4. The device of claim 1, wherein said second path includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

5. The device of claim 1, wherein said first and second paths together form a closed curve lying substantially in a vertical plane.

6. The device of claim 5, wherein a maximum dimension of said closed curve is no greater than about 10 cm.

7. The device of claim 1, wherein said first and second paths together approximate the form of an ellipse.

8. The device of claim 7, wherein a maximum dimension of said ellipse is no greater than about 10 cm.

9. The device of claim 7, wherein said ellipse is a circle.

10. The device of claim 1, wherein said drive mechanism includes at least one rotating element, said repetitive cyclic motion being generated at least in part by a link coupled to said rotating element and eccentric to the rotary axis of said rotating element.

11. The device of claim 1, further comprising a housing configured for supporting said drive mechanism above the underlying surface, wherein said drive mechanism is adjustably mounted relative to said housing to allow adjustment of a height of said drive mechanism, and hence also of said body-engaging element, above the underlying surface.

12. The device of claim 1, wherein said body-engaging element is linked to said drive mechanism via an adjustable linkage configured to allow adjustment of a height of said body-engaging element relative to said drive mechanism.

13. The device of claim 1, wherein said body-engaging element is a body-supporting surface of a chair.

14. A device for preventing or relieving pain in the lower back of a human subject, the device being configured for use while the subject lies in a supine position on an underlying surface, the device comprising:

(a) a body-engaging element configured for engaging a body part of the subject inferior to the subject's hip joint joining the thigh to the hip while the subject lies in a supine position on the underlying surface; and

(b) a rotary drive for driving the body engaging element, said rotary drive including a pivot pin pivotally mounting the body engaging element and slidable within a slot during the rotation of said rotary drive such as to drive the body-engaging element, and the body part when engaged thereby, from an initial position through repetitive closed-loop cycles each including:

(i) a forward stroke path having a vertical lifting component for lifting the engaged body part such as to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component in a direction parallel to the axis of the subject's lumber vertebrae for tensioning the engaged body part, and the subject's thigh to relieve pressure in the subject's lumber vertebrae; and

(ii) a return stroke path, different from and underlying the forward stroke path, for returning the engaged body part to its initial position.

15. The device according to claim 14, wherein said drive includes:

a rotary element rotatable about a rotary axis; and a link coupled at one end to said rotary element eccentrically with respect to its rotary axis, and coupled at its opposite end to said body engaging element; said pivot pin being carried by said link between its opposite ends and slideable in said slot by the rotation of said one end of the link by said rotary element to cause said opposite end of the link, and said body-engaging element coupled thereto, to be driven through said closed-loop cycles.

16. A device for preventing or relieving pain in the lower back of a human subject while the subject lies in a supine position on an underlying surface, the device comprising:

(a) a body-engaging element configured for engaging the rear surfaces of both knees of the subject; and

(b) a drive mechanism mechanically linked to said body-engaging element, said drive mechanism being configured to move said body-engaging element through a repetitive cyclic motion including:

(i) an operative motion along a first path operative to move both upper legs together in the outward direction substantially parallel to their longitudinal axes to apply tension to the lumbar vertebrae in the lower back of the subject, and

(ii) a return motion along a second path, said second path lying generally below said first path.

17. The device of claim 16, wherein said first path includes a primarily vertical lifting motion followed by a primarily horizontal tensioning motion.

18. The device of claim 16, wherein said second path includes a primarily vertical lowering motion followed by a primarily horizontal return motion.

19. The device of claim 16, wherein said first and second paths together approximate an ellipse.

20. The device of claim 16, wherein said drive mechanism includes at least one rotating element, said repetitive cyclic motion being generated at least in part by a link eccentrically coupled to said rotating element.

21. The device of claim 16, wherein said body-engaging element is linked to said drive mechanism via an adjustable linkage configured to allow adjustment of the height of said body-engaging element relative to said drive mechanism.

22. A device for preventing or relieving pain in the lower back of a human subject, the device being configured for use while the subject lies in a supine position on an underlying surface, the device comprising:

(a) a body-engaging element configured for engaging the rear surfaces of both knees of the subject; and

(b) a rotary drive for driving said body engaging element, said rotary drive including a pivot pin pivotally mounting the body engaging element and slidable within a slot during the rotation of said rotary drive such as to drive the body-engaging element, and both knees when engaged thereby, from an initial position through repetitive closed-loop cycles each including:

(i) a forward stroke path having a vertical lifting component for lifting the engaged rear surfaces of

both knees together such as to neutralize the natural arched concavity of the subject's back, and a horizontal pulling component in a direction parallel to the subject's lees for tensioning the engaged rear surfaces of both knees such as to relieve pressure in the subject's lumber vertebrae; and

(ii) a return stroke path, different from and underlying the forward stroke path, for returning the engaged rear surfaces of both knees to their initial positions.

23. The device of claim 22, wherein said drive includes: a rotary element rotatable about a rotary axis; and a link coupled at one end to said rotary element eccentrically with respect to its rotary axis, and coupled at its opposite end to said body engaging element; said pivot pin being carried by said link between its opposite ends and slidable in said slot by the rotation of said one end of the link by said rotary element to cause said opposite end of the link, and said body-engaging element coupled thereto, to be driven through said closed-loop cycles.

24. The device of claim 22, wherein said body-engaging element includes a supporting panel configured to support both lower legs of the subject, said panel being inclined downwardly towards the end thereof to face the subject's feet.

25. The device of claim 24, wherein said supporting panel is vertically adjustable with respect to said underlying surface to accommodate subjects of different sizes.

26. The device of claim 22, wherein said repetitive closed-looped cycles are of elliptical configuration.

* * * * *

United States of America

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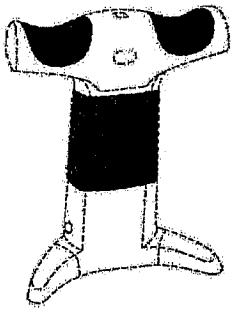


Reg. No. 3,844,089

Registered Sep. 7, 2010

Int. Cl.: 10

TRADEMARK

PRINCIPAL REGISTER

BACK IN FIVE, LLC (CALIFORNIA LIMITED LIABILITY COMPANY)
11755 WILSHIRE BOULEVARD, SUITE 1150
LOS ANGELES, CA 90025

FOR: A DEVICE FOR PREVENTING OR RELIEVING PAIN IN THE LOWER BACK, NAMELY, EQUIPMENT FOR MOVEMENT AND STRETCHING OF THE LOWER BACK FOR MEDICAL AND/OR THERAPEUTIC PURPOSES, IN CLASS 10 (U.S. CLS. 26, 39 AND 44).

FIRST USE 11-30-2002; IN COMMERCE 12-1-2007.

THE MARK CONSISTS SOLELY OF THE COLOR COMBINATION OF WHITE AND BLUE AS APPLIED TO THE ENTIRE SURFACE OF A MEDICAL DEVICE FOR RELIEF OF BACK PAIN COMPRISING A GENERALLY T-SHAPED BODY, WHEREIN A LOWER PORTION IS WHITE, A CENTRAL PORTION IS ENTIRELY BLUE, AND THE UPPER PORTION COMPRISING THE CROSSING ARM OF THE "T" IS WHITE HAVING TWO DISCREET ISLANDS OF BLUE SYMMETRICALLY PLACED ON THE ARM. THE DOTTED OUTLINE SHOWING THE GOODS IS INTENDED TO SHOW THE POSITION OF THE COLOR COMBINATION ON THE GOODS AND NEITHER THE BROKEN LINES NOR THE CONFIGURATION OF THE GOODS IS CLAIMED AS A FEATURE OF THE MARK.

THE COLOR(S) BLUE AND WHITE IS/ARE CLAIMED AS A FEATURE OF THE MARK.

SEC. 2(F).

SER. NO. 77-838,637, FILED 9-30-2009.

HANNO RITTNER, EXAMINING ATTORNEY

UNITED STATES PATENT AND TRADEMARK OFFICE · DEPARTMENT OF COMMERCE

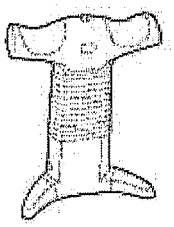
David J. Kappos

Director of the United States Patent and Trademark Office

EXHIBIT 5

TESS was last updated on Wed Jan 5 04:05:45 EST 2011

Record 1 out of 1



Goods and Services	IC 010. US 026 039 044. G & S: A device for preventing or relieving pain in the lower back, namely, equipment for movement and stretching of the lower back for medical and/or therapeutic purposes. FIRST USE: 20021101. FIRST USE IN COMMERCE: 20071201
Mark Drawing Code	(2) DESIGN ONLY
Design Search Code	10.07.25 - Bed pans; Blood pressure apparatus; Braces (neck, back, teeth, leg, etc.); Caps, surgical; Clamps, medical; Eye droppers; Face Masks, surgical; Gloves, surgical; Hearing aids; Heating pads; Hot water bottles; Inhalers (medical); Intravenous devices; Masks, surgical; Mirrors, dental; Pans, bed; Scrubs (surgical); Surgical caps; Surgical gowns; X-ray apparatus
Serial Number	**77838661**
Filing Date	September 30, 2009
Current Filing Basis	1A
Original Filing Basis	1A
Owner	(APPLICANT) Back in Five, LLC LIMITED LIABILITY COMPANY CALIFORNIA 11755 Wilshire Boulevard, Suite 1150 Los Angeles CALIFORNIA 90025
Attorney of Record	Daniel M. Cislo, Esq.
Description of Mark	Color is not claimed as a feature of the mark. The mark consists solely of the configuration of a device for relief of back pain consisting of a generally T-shaped body, comprising a rounded base with two stylized curved extensions on either side of the exerciser, a rectangular middle section the upper part of which contains a rolled design, and a T shaped top portion with two indentations on the top of the device. The dotted lines in the drawing are not part of the mark.
Type of Mark	TRADEMARK
Register	PRINCIPAL-2(F)

EXHIBIT 6

Live/Dead Indicator LIVE