

Massage Belt

Field Of The Invention

5 [0001] The invention relates to a massage belt.

Background Of The Invention

10 [0002] Several benefits of massages include relief to aches and energising
fatigued body parts.

15 [0003] Massage helps to improve blood and lymphatic circulation. This improves
a body's overall immune system and digestive system, thereby aiding weight loss
and facilitating toning of a body part.

20 [0004] Korean utility model registration no. 0345251 discloses a massage belt.
The massage belt is provided with a single vibration generator, being a single drive
motor that operates two eccentric rotors. The vibration produced by the single
vibration generator is one that traces a continuous rotational motion trajectory.

25 [0005] International application no. PCT/KR2005/002449 discloses another
massage belt. The massage belt is provided with two vibration generators, where
each vibration generator is a motor operating its own eccentric rotor. As each of the
two vibration generators is powered by its own operating motor, the two vibration
generators can operate independently from each other. When both of the vibration
generators are simultaneously operated, with each vibration generator operating at a
different intensity, the net vibration is a combination of the different elliptic
vibrations brought about by each individual vibration generator. Thus, the massage
brought about by the massage belt of international application no.
30 PCT/KR2005/002449 provides an improvement over the massage brought about by
the massage belt of Korean utility model registration no. 0345251.

[0006] There still remains a need to further improve the effectiveness of massages provided by existing massage belts, which is one objective of the massage belt of the present invention.

5

Summary Of The Invention

[0007] According to one aspect of the invention, there is provided a massage belt adapted to be wrapped around a body part, the massage belt including: at least one
10 first massager with a force imparting portion that extends towards the body part to be massaged, wherein the force imparting portion is movable along a plane in alignment with a portion of the body part to be massaged.

[0008] The massage belt may include a frame to which the at least one first
15 massager is connected.

[0009] The at least one first massager is rotatably connected to the frame.

[0010] The at least one first massager may include a plate; and the force
20 imparting portion may include at least one protrusion on the plate.

[0011] The at least one first massager may include a biasing element between the
at least one protrusion and the plate.

25 [0012] The biasing element may be a spring.

[0013] The at least one first massager may be connected to the frame such that the
at least one first massager is linearly movable with respect to the plane in alignment
with a portion of the body part to be massaged.

30

[0014] The at least one first massager may include a guide rail; and the force imparting portion may include at least one protrusion movably translational along the guide rail.

5 [0015] The force imparting portion may further include a plate upon which the at least one protrusion is disposed, wherein the plate is rotatable about the guide rail.

[0016] The at least one first massager may include a biasing element between the at least one protrusion and the plate.

10

[0017] The biasing element may be a spring.

[0018] The massage may include two first massagers, each with a force imparting portion that extends towards the body part to be massaged, wherein the force
15 imparting portion is movable along a plane in alignment with a portion of the body part to be massaged.

[0019] The two first massagers may be connected to the frame.

20 [0020] The frame may include a first arm to which one of the two first massagers is connected; a second arm to which the other of the two first massagers is connected; a hinge to which the first arm is pivotally connected to the second arm; and a biasing arrangement to bias the two first massagers towards the body part to be massaged.

25

[0021] The biasing arrangement may include a biasing element located at where each of the two first massagers is respectively connected to the first arm and the second arm.

30 [0022] The biasing arrangement may include a biasing element located between the first arm and the second arm.

[0023] The biasing element may be a spring.

5 [0024] The massage belt may further include at least one second massager adapted to vibrate.

[0025] The massage belt may further include two second massagers adapted to vibrate.

10 [0026] The two second massagers may be connected to the frame, so that one of the two second massagers is connected to the first arm, while the other of the two second massagers is connected to the second arm.

15 [0027] The second massager may be a vibration element.

Brief Description Of The Drawings

20 [0028] In the drawings, like reference characters generally refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead generally being placed upon illustrating the principles of the invention. In the following description, various embodiments of the invention are described with reference to the following drawings, in which:

25 [0029] Figure 1 is an exploded view of a massage belt according to one embodiment of the present invention.

[0030] Figure 2 is a perspective view of a frame of a massage belt according to one embodiment of the present invention.

30 [0031] Figure 3 is a perspective view of a frame of a massage belt according to one embodiment of the present invention.

[0032] Figure 4 is a top view of a frame of a massage belt according to one embodiment of the present invention.

5 [0033] Figure 5 is a front view of a frame of a massage belt according to one embodiment of the present invention.

[0034] Figure 6 is a side view of a frame of a massage belt according to one embodiment of the present invention.

10

[0035] Figure 7 is a rear view of a frame of a massage belt according to one embodiment of the present invention.

Detailed Description

15

[0036] While embodiments of the invention will be shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

20

[0037] It will be appreciated that common numerals, used in the relevant drawings, refer to components that serve a similar or the same purpose.

25

[0038] Figure 1 is an exploded view of a massage belt 100 according to one embodiment of the present invention.

30

[0039] The massage belt 100 has a strap 102 that allows the massage belt 100 to be adapted to be wrapped around a body part. One end 102e of the strap 102 is

provided with a fastening means such as a Velcro strip. The end 102e is adapted to secure onto another end (not shown) of the strap 102 provided with another fastening means (not shown), such as a corresponding Velcro strip. By circling the strap 102 around the body part and securing both fastening means to each other, the massage belt 100 is wrapped around the body part. The strap 102 may be made of elastic material to facilitate the massage belt 100 tightly wrapping around the body part.

[0040] The strap 102 has a mounting portion 102m which is attached to a cover 106 via two strap supports 108. Each of the strap supports 108 is disposed at opposing ends of the mounting portion 102m respectively.

[0041] A massage section 104 is connected to the mounting portion 102m of the strap 102. The massage section 104 has a frame 110 with a first surface 110f that faces the mounting portion 102m and a second surface 110s facing opposite the first surface 110f.

[0042] A urethane foam layer 112 is connected to the second surface 110s of the frame 110. A body cover 114 is connected to the foam layer 112 so that the body cover 114 extends over the frame 110 to be in contact with the perimeter edge of the mounting portion 102m of the strap 102.

[0043] The massage belt 100 has at least one first massager 116 with a force imparting portion 116a. The force imparting portion 116a extends towards the body part to be massaged, wherein the force imparting portion 116a is movable along a plane 118 in alignment with a portion 120 of the body part to be massaged. The body part may include, but is not limited to, the abdomen, the thigh, the buttocks and lumbar of a user.

[0044] The at least one first massager 116 delivers a massage in a different manner compared to known vibration motors. When known vibration motors are activated, they exhibit movement which is only a slight displacement about the

position to which they are connected, the slight displacement not being confined to any particular plane. By having the force imparting portion 116a movable along the plane 118 in alignment with a portion of the body part to be massaged, a kneading effect is created, where it has been found that this improves a body's overall immune system and digestive system, thereby aiding weight loss and facilitating toning of the body part.

[0045] The at least one first massager 116 is connected to the frame 110. In the embodiment shown in Figure 1, the at least one first massager 116 is rotatably connected to the frame 110. From Figure 1, it can be seen that the massage belt 100 has two such first massagers 116, where each first massager 116 is rotated by a respective motor 122 that is connected to the frame 110. Each of the first massager 116 is connected to a shaft 130 of the respective motor 122, the shaft 130 defining the axis of rotation of the first massager 116. The shaft 130 extends perpendicular to the mounting portion 102m of the strap 102. Thus, the first massager 116 rotates about an axis that is perpendicular to the portion 120 of the body part to be massaged.

[0046] Turning to Figure 2, each first massager 116 has a plate 116p and the force imparting portion 116a has at least one protrusion 116ai on the plate 116p. In the embodiment shown in Figure 2, the plate 116p is circular, where the force imparting portion 116a has two protrusions (116ai, 116aii) being disposed diametrically opposite to each other. Each of the two protrusions (116ai, 116aii) is positioned along a circumference edge of the circular plate. Alternatively, it will be appreciated that the two protrusions (116ai, 116aii) may be positioned anywhere on the plate 116p.

[0047] With reference to Figure 1, the two protrusions 116ai and 116aii (being the force imparting portion) move along a circle in a plane in alignment with the portion 120 of the body part to be massaged. It will be appreciated that as the protrusions (116ai, 116aii) rotate, they impart a force through both the mounting portion 102m of

the strap 102 and the cover 106, thereby delivering a massage to the body part the massage belt 100 is wrapped around.

[0048] The at least one first massager 116 has a biasing element 210 between the at least one protrusion (116ai, 116aai) and the plate 116p. The biasing element 210 allows the force imparting portion 116a to provide a controlled resistive force against the body part 120 to be massaged, as compared to a scenario where the biasing element 210 is not present. The controlled resistive force is especially felt when the strap 102 (see Figure 1) is wrapped around the body part, so that the body part pushes against the force imparting portion 116a. The biasing element 210 improves conformity of the force imparting portion 116a to different body surfaces, as the biasing element 210 allows the force imparting portion 116a to be displaced. Displacement of the force imparting portion 116a occurs for instance when the force imparting portion 116a encounters an obstruction, like a bone, thereby prevent injury to the bone. The biasing element 210 may be a spring.

[0049] Figure 3 shows a perspective view of a section 300 of a massage belt according to one embodiment of the present invention. The massage belt is different from the massage belt 100 of Figure 1 in that a different arrangement is used for the at least one first massager 116.

[0050] The at least one first massager 116 is connected to the frame 110 such that the at least one first massager 116 is linearly movable with respect to the plane 118 in alignment with a portion 120 of the body part to be massaged.

[0051] It will be appreciated that there are two first massagers 116 in Figure 3, although only one of the two first massagers 116 is shown in its entirety. Only a portion of the other of the two first massagers 116 is shown to more clearly illustrate the components within the first massager 116. From the partial first massager 116, it can be seen that each first massager 116 has a guide rail 302. The force imparting portion of the first massager 116 has at least one protrusion 304 movably

translational along the guide rail 302. The at least one protrusion 304 is connected to a housing 310, whereby translation of the at least one protrusion 304 along an axis 308 is brought about by the housing 310 translating along the guide rail 302. The housing 310 translates along the guide rail 302 through actuation by a motor with the use of a leadscrew or suitable gear train within the frame 110. Thus, each of the at least one protrusion 304 translates along the respective guide rail 302 through the action of a motor inside the frame 110. The at least one protrusion 304 (being the force imparting portion) moves linearly in the plane 118 in alignment with the portion 120 of the body part to be massaged.

[0052] The force imparting portion may further include a plate 306 upon which the at least one protrusion 304 is disposed. The plate 306 is rotatable about the guide rail 302. The plate 306 is connected to the housing 310 through a shaft 312 of a rotary motor within the housing 310. The shaft 312 is rotatable about its own longitudinal axis 314. In this manner, the force imparting portion is movable along the plane 118 in alignment with the portion 120 of the body part to be massaged, in that the force imparting portion is capable of translating and/or rotating along the plane 118 in alignment with the portion 120 of the body part to be massaged. The at least one first massager 116 may include a biasing element (compare biasing element 210 shown in Figure 2) between the at least one protrusion 304 and the plate 306. The biasing element may be a spring.

[0053] With reference to Figure 1, it will be appreciated that as the at least one protrusion 304 translates along and/or rotates about the guide rail 302, a force will be imparted through both the mounting portion 102m of the strap 102 and the cover 106, thereby delivering a massage to the body part the massage belt 100 is wrapped around.

[0054] From Figures 2 and 3, a massage belt, according to an embodiment of the invention, therefore has two first massagers 116, each with a force imparting portion that extends towards the body part to be massaged, wherein the force imparting

portion is movable along a plane in alignment with a portion of the body part to be massaged. These two first massagers 116 are connectable to the frame of the respective massage belt.

5 **[0055]** Returning to Figure 2, the frame 110 has a first arm 202 to which one of the two first massagers 116 is connected. The frame 110 also has a second arm 204 to which the other of the two first massagers 116 is connected. The frame 110 has a hinge 240, which pivotally connects the first arm 202 to the second arm 204. Further, the frame 110 has a biasing arrangement to bias the two first massagers 116
10 in the direction of the body part to be massaged.

[0056] The hinge 240 allows the frame 110 to pivot, thereby providing the frame 110 with at least one degree of movement. Thus, the hinge 240 allows the frame 110 to pivot and accommodate contours on the body part to be massaged. The hinge 240,
15 in conjunction with the biasing arrangement, ensures that the force imparting portion 116a of the first massagers 116 extends towards the body part to be massaged.

[0057] The biasing arrangement may include a biasing element 206 located at where each of the two first massagers 116 is respectively connected to the first arm
20 202 and the second arm 204. The biasing element 206 may be positioned adjacent or around the shaft 130 that connects each of the first massagers 116 to the respective arms 202 and 204.

[0058] The biasing arrangement may include a biasing element 208 located
25 between the first arm 202 and the second arm 204. For instance, the biasing element 208 may be located at the hinge 240. The biasing element 208, in conjunction with the hinge 240, ensures that the first arm 202 and the second arm 204 are biased towards the body part to be massaged, providing the massage belt 100 (see Figure 1) with a more snug fit to the body part to be massaged.

30 **[0059]** Each of the biasing elements 206 and 208 may be a spring.

[0060] The massage belt 100 (see Figure 1) may include at least one second massager 124. The second massager 124 is adapted to vibrate. It can be seen that the massage belt 100 includes two of such second massagers 124 that are adapted to vibrate.

[0061] The two second massagers 124 are connected to the frame 110. One of the two second massagers 124 is connected to the first arm 202. The other of the two second massagers 124 is connected to the second arm 204.

[0062] As the second massagers 124 are adapted to vibrate, their movement is different from that exhibited by the first massager 116. The difference in movement between the first massager 116 and the second massager 124 is further illustrated from the composition of the second massager 124.

[0063] Each of the second massager 124 has a motor 124a and an eccentric load 124b. The eccentric load 124b has an eccentric weight fixed to a shaft. The motor 124a is mechanically coupled to the eccentric load 124b via a timing belt (not shown for simplicity purposes). When the motor 124a is activated, the shaft will rotate, causing the eccentric load 124b to spin about the shaft rotational axis. Thus, the second massager 124 acts a vibration element.

[0064] When the first massager 116 is activated, the body part that is massaged experiences a kneading effect. On the other hand, when the second massager 124 is activated, the body part that is massaged experiences a throbbing effect. Thus, the massaging effect brought about by the first massager 116 compliments the massaging effect brought about by the second massager 124. The combined effect of kneading and vibration helps to improve blood and lymphatic circulation more effectively.

5 [0065] Each of the motors (122, 124a) may be individually controlled, so that at any instant only one of the massagers (116, 124) is operable. On the other hand, the first massagers 116 may be operated simultaneously or the second massagers 124 may be operated simultaneously. It is also possible to have all the first and second massagers (116, 124) operate simultaneously.

10 [0066] The massage belt 100 (see Figure 1) further includes a remote controller 150 that is adapted to control operation of the first and the second massagers (116, 124). The remote controller 150 is electrically coupled to the first and the second massagers (116, 124) and adapted to send activation signals to the first and the second massagers (116, 124) in accordance to one of several programs stored in the remote controller 150.

15 [0067] The remote controller 150 may be provided with a processor and a memory unit. The memory unit stores data of the several programs. Upon input from a user, the processor retrieves the selected program from the memory unit. The first and the second massagers (116, 124) are then activated in a sequence as determined by the selected program. In this manner, a massage is delivered to the body part. Parameters such as the duration and intensity of the massage may be varied through the remote controller 150. For instance, the intensity of the massage may be varied as follows:

- 20 a) By changing the speed of rotation of the first massager 116, when the first massager 116 is in the arrangement (see Figure 2) of the plate 116p with protrusions (116ai and 116aii).
- 25 b) By changing the speed at which the first massager 116 translates, when the first massager 116 is in the arrangement (see Figure 3) of the roller 304 connected to the guide rail 302.
- c) By changing the speed at which the motor 124a rotates. This varies the strength of the vibration of the second massager 124.

30

[0068] Figure 4 is a top view of the frame 110 of the massage belt 100. The hinge 240 allows the frame 110 to have a degree of flexibility, wherein the second arm 204 is allowed to pivot towards 404 the body and away 406 from the body. The pivot angle spans a range of from around -14° to around 15 ° relative to the first arm 202.

[0069] Figure 5 is a front view of the frame 110 of the massage belt 110, while Figure 6 is a side view of the frame 110 of the massage belt 110. Figure 7 is a rear view of the frame 110 of the massage belt 110.

[0070] The following materials can be used to manufacture the massage belt shown in Figures 1 to 6. Rigid plastic can be used for the frame 110. Plastic can be used for the plate 116p and its protrusions 116a. Similarly, plastic can be used for the guide rail 302 and a body of the roller 304. The surface of the roller may have a coat of rubber. Synthetic fabric can be used for the body cover 114 and the cover 106.

CLAIMS

- 5 1. A massage belt adapted to be wrapped around a body part, the massage belt comprising:
- at least one first massager with a force imparting portion that extends towards the body part to be massaged, wherein the force imparting portion is movable along a plane in alignment with a portion of the body part to be massaged;
- 10 a frame; and
- a motor connected to the frame, the motor comprising a shaft, the at least one first massager connected to the shaft, the motor connected to rotate the at least one first massager via the shaft, wherein the frame comprises
- a first arm to which the at least one first massager is connected;
- 15 a second arm to which another of the at least one first massager is connected;
- a hinge to which the first arm is pivotally connected to the second arm; and
- a biasing arrangement to bias the two first massagers towards the body part to be massaged.
- 20 2. The massage belt of claim 1, wherein the at least one first massager comprises a plate; and the force imparting portion comprises at least one protrusion on the plate.
3. The massage belt of claim 2, wherein the at least one first massager comprises a biasing element between the at least one protrusion and the plate.
- 25 4. The massage belt of claim 3, wherein the biasing element is a spring.
5. The massage belt of claims 1 to 4, wherein the at least one first massager is connected to the frame such that the at least one first massager is linearly movable with
- 30 respect to the plane in alignment with a portion of the body part to be massaged.

6. The massage belt of claim 5, wherein the at least one first massager comprises a guide rail; and the force imparting portion comprises at least one protrusion movably translational along the guide rail.
- 5 7. The massage belt of claim 6, wherein the force imparting portion further comprises a plate upon which the at least one protrusion is disposed, wherein the plate is rotatable about the guide rail.
8. The massage belt of claim 7, wherein the at least one first massager comprises a
10 biasing element between the at least one protrusion and the plate.
9. The massage belt of claim 8, wherein the biasing element is a spring.
10. The massage belt of any one of the preceding claims, wherein the biasing
15 arrangement comprises a biasing element located at where each of the two first massagers is respectively connected to the first arm and the second arm.
11. The massage belt of any one of the preceding claims, wherein the biasing
20 arrangement comprises a biasing element located between the first arm and the second arm.
12. The massage belt of claims 10 or 11, wherein the biasing element is a spring.
13. The massage belt of any one of the preceding claims, further comprising at least
25 one second massager adapted to vibrate.
14. The massage belt of any one of the preceding claims, further comprising two second massagers adapted to vibrate.

15. The massage belt of claim 14, wherein the two second massagers are connected to the frame, so that one of the two second massagers is connected to the first arm, while the other of the two second massagers is connected to the second arm.
- 5 16. The massage belt of any of claims 13 to 15, wherein the second massager is a vibration element.