

Oct. 22, 1940.

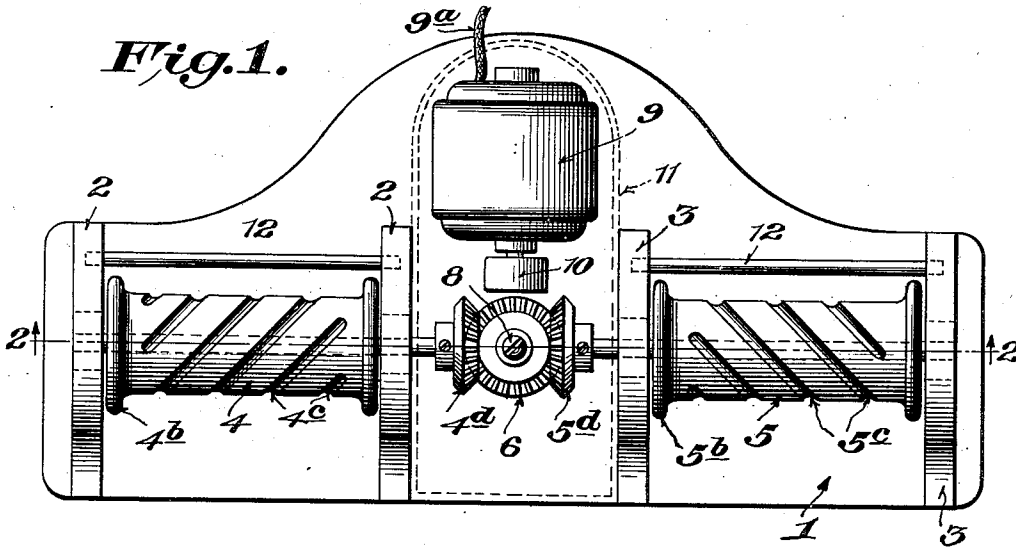
M. BROBERG

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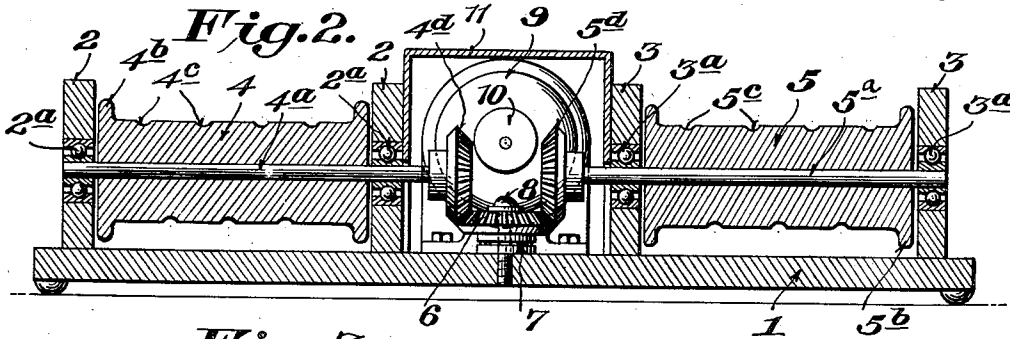
EXERCISING DEVICE

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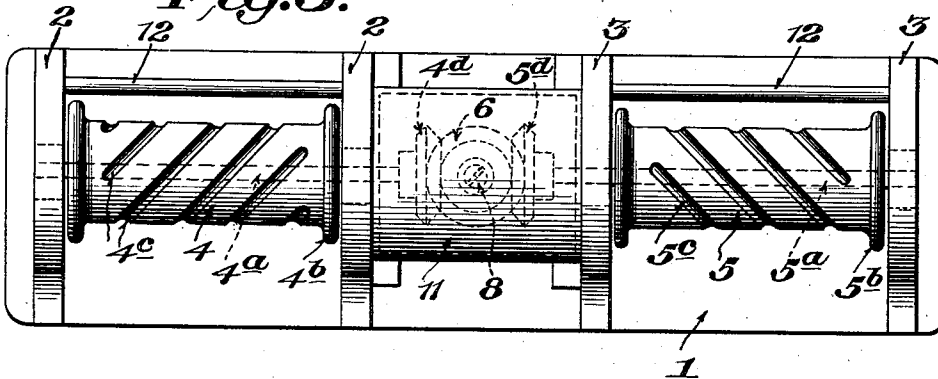
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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## UNITED STATES PATENT OFFICE

2,219,086

## EXERCISING DEVICE

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4 Claims. (Cl. 128—57)

This invention is a novel device for exercising and for physically treating patients, and the present invention is an improvement upon the device disclosed in my U. S. Letters Patent No. 2,123,765, dated July 12, 1938.

Active leg movements and foot massage, simultaneously applied, increase the circulation of blood in the arteries, capillaries and veins. By increasing the flow of blood to the lower extremities an increased nutrition is carried to that part of the body. Likewise, by increasing the venous circulation, the waste-matter resulting from changes in the tissue is collected and carried to those organs by which it is finally discharged from the body.

The principal object thereof is to provide a device specially adapted for home treatment of leg and foot ailments due to impaired circulation, weak or fallen arches, stiffness or pain in ankles, knees, or the like, whereby the patient may actively massage portions of his body while simultaneously exercising the ligaments and muscles of his lower extremities, such as his feet and legs, to improve the blood circulation in said parts, utilizing simple active massaging movements performed by the patient himself, the motive power utilized to operate the device being supplied by the patient's legs and feet.

Another object of the invention is to provide a device of the above character comprising a pair of novel rotatable massaging rollers adapted to be engaged by the patient's feet and embodying means for causing simultaneous rotation of the rollers in opposite directions whereby a forward foot movement on the top of one roller will rotate said roller in one direction, while automatically causing the other roller to rotate in the opposite direction. The use of two rollers conforms with the basic principle that alternating muscular contraction and relaxation increases the circulation of blood in the arteries, capillaries, and veins, and provides an increase in nutrition whether it be muscular, ligamentous, or bony tissue. Muscular irritability and fatigue is lessened by increase in blood circulation, and the muscles, ligaments, nerves and bones become stronger and more elastic. The alternating contraction and relaxation in my device is accomplished by forward movement by the patient's foot over one roller, and relaxation of the patient's other foot and leg while its related roller in engagement therewith is being rotated in the opposite direction.

A further object is to provide said rollers with spirally disposed grooves adapted, when the rollers

are rotating, to facilitate removal of tissue waste from the feet and to thus increase the circulation of blood which is the main object of any massage treatment.

A still further object of the invention is to provide a device of the above character with vibrating means to further increase blood circulation.

I will explain the invention with reference to the accompanying drawing, which illustrates one practical embodiment thereof, to enable others to adopt and use the same; and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawing:

Fig. 1 is a top plan view of my exercising device equipped with a vibrator.

Fig. 2 is a transverse vertical section on the line 2—2, Fig. 1.

Fig. 3 is a top plan view of a modified form of device, with the vibrator omitted.

My novel exercising device, shown in Figs. 1 and 2, comprises a base 1 of general rectangular shape having two pairs of parallel walls 2—2 and 3—3 mounted on the upper surface thereof, the pairs of walls being disposed adjacent opposite sides of the base with a space therebetween, for the purpose hereinafter explained.

Mounted between the walls 2—2 and 3—3 are axially aligned rollers 4 and 5 respectively of any desired size and shape, same preferably comprising molded rubber collars fixedly mounted upon metal shafts 4a, 5a, respectively, journaled in ball bearings 2a, 3a respectively in openings in the walls 2 and 3, rollers 4 and 5 having annular enlargements 4b, 5b respectively at their ends, and having spirally disposed grooves 4c, 5c respectively therein, whereby as the rollers are rotated the grooves 4c, 5c will exert a massaging action on the heels, arches or balls of the patient's feet, to assist in removing waste tissue and to increase blood circulation.

Shafts 4a, 5a of the rollers carry beveled pinions 4d, 5d respectively at their inner ends meshing with a bevel pinion 6 journaled on a ball bearing 7 mounted on base 1 between the pinions 4d, 5d, whereby rotation of one roller will impart rotation to the other roller in the opposite direction. Pinion 6 is held in place on bearing 7 by a screw 8, and the tension on the rollers 4 and 5 may be regulated by adjusting screw 8.

A vibrator is preferably mounted on base 1 comprising an electric motor 9 secured to the base and carrying on its shaft an eccentric weight 10 disposed adjacent gears 4d, 5d, whereby as the

motor is actuated, the entire device will be vibrated to further increase blood circulation.

A cover member 11 is provided over the pinions 4d, 4d, also over the motor 9 and weight 10, said cover member comprising a plate having flanges at its sides adapted to frictionally engage the inner walls 2 and 3, and having flanges at its ends extending downwardly to meet the base 1, suitable slots being provided in the flanges for the shafts 4a, 5a, and for the electric lead wire 9a of the motor 9, whereby the cover may be readily lifted from the base 1 to give access to the underlying parts.

Rods 12 are provided between the pairs of walls 2 and 3 at the front of the base, disposed horizontally at the approximate height of the tops of rollers 4 and 5, to act as guards to prevent the heels of the patient's feet from slipping off the rollers.

In Fig. 3 a modification is shown in which the device is similar in all respect to that shown in Figs. 1-2, except that the vibrator 9-10 is omitted from base 1, and cover 11 is made correspondingly smaller so as to cover only the gears 4d, 5d and 6; also no provision is made in the shape of the base for mounting the vibrator motor thereon.

In operation, the patient first adjusts the seat of his chair with respect to the device so that one leg is at right angles with the thigh, and with his toes resting on one roller; the other foot with leg extended resting with the heel on the opposite roller. Then, with a firm pressure on the top of the rollers, the patient rotates alternately each roller forwardly, covering the full length of the related foot, while the foot on the opposite roller is perfectly relaxed; and the alternate contraction and relaxation of the muscles constitute the exercise by which the flow of blood through the

arteries and veins is increased, thus normalizing circulation, and eliminating tissue waste.

I claim:

1. In a device for actively massaging the ligaments and muscles of a patient's feet and legs; a base, a pair of rollers rotatably mounted thereon and adapted to be engaged by the patient's feet; a pinion rotatably mounted on the base; and pinions carried by the rollers intermeshing with the first mentioned pinion, whereby when one roller is being rotated by the patient's foot in one direction another roller will be simultaneously rotated in another direction.

2. In combination with a device as set forth in claim 1, means on the base substantially level with the tops of the rollers for holding the patient's heels engaged with the rollers.

3. In a device for actively massaging the ligaments and muscles of a patient's feet and legs; a base having aligned pairs of spaced walls; a pair of axially aligned rollers rotatably mounted in the respective pairs of walls and adapted to be engaged by the patient's feet; a pinion rotatably mounted on the base between the inner walls of the pairs; pinions carried by the rollers intermeshing with the first mentioned pinion, whereby when one roller is being rotated by the patient's foot in one direction the other roller will be simultaneously rotated in the other direction; and a removable cover over the pinions interfitted between the inner walls of the pairs.

4. In combination with a device as set forth in claim 3, bars extending between the walls of each pair substantially level with the tops of the rollers for holding the patient's heels engaged with the rollers.

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