

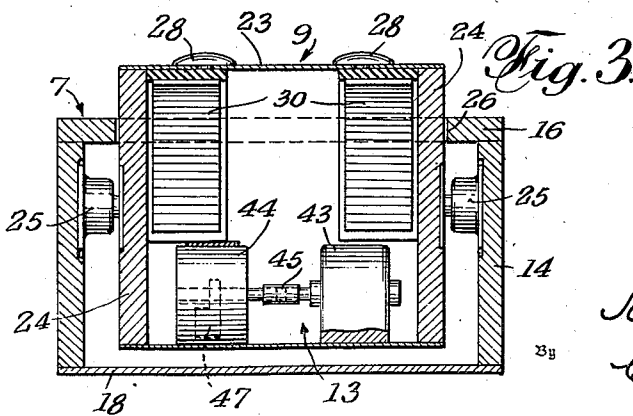
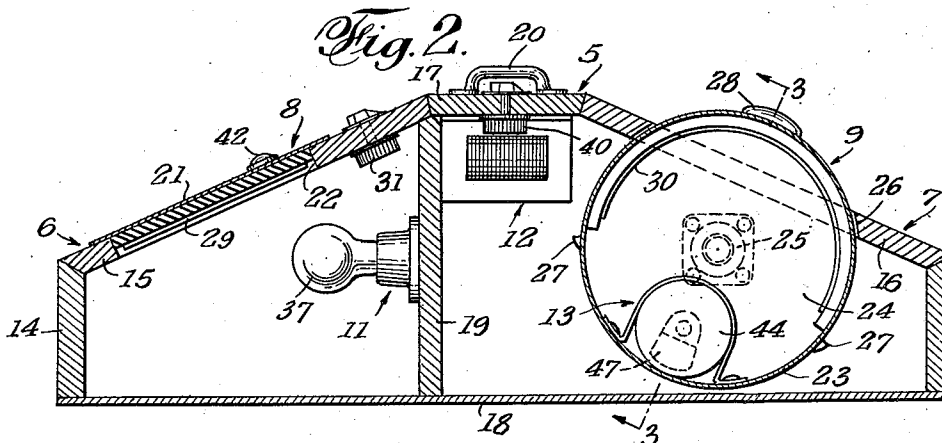
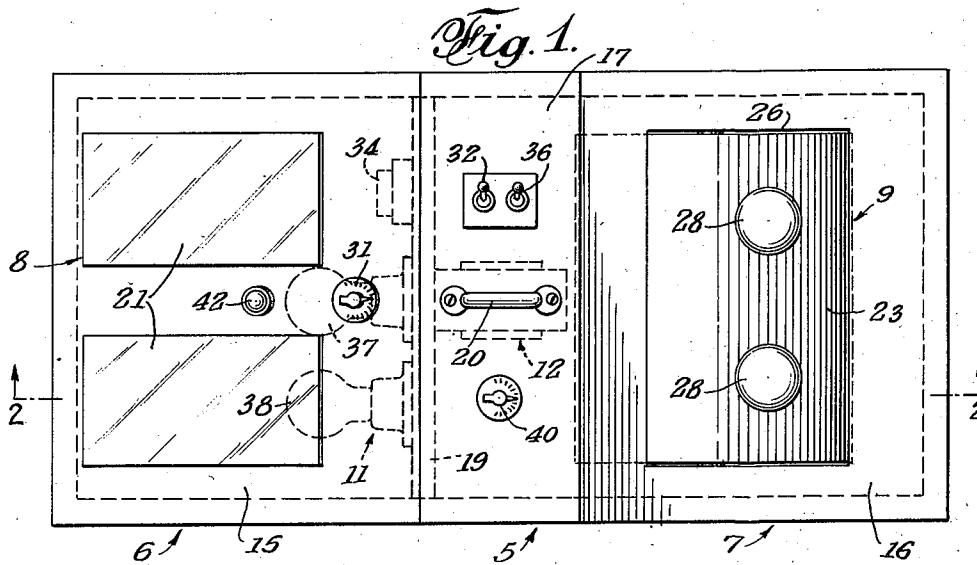
May 22, 1951

J. F. SCHWEBEL, SR
FOOT TREATING DEVICE

2,553,873

Filed April 9, 1949

2 Sheets-Sheet 1



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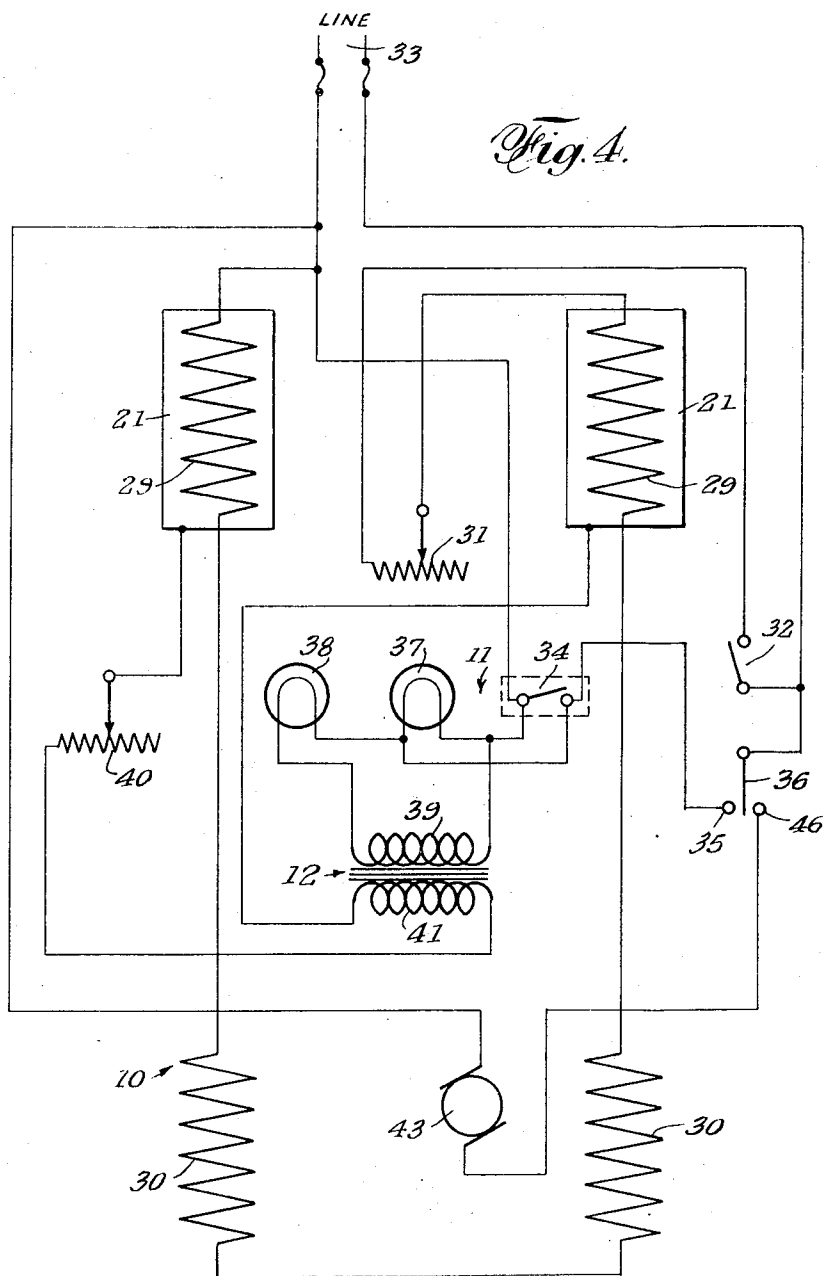
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UNITED STATES PATENT OFFICE

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FOOT TREATING DEVICE

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2 Claims. (Cl. 128—24.3)

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This invention relates to a foot-treating device and to a method for treating and thereby alleviating the aches and pains attending blood-circulating deficiencies in the pedal extremities.

Regardless of the cause of impaired circulation in the extremities of the body, it is recognized that massage and/or diathermy will aid, at least, to ease the pains attending the same. Other physiological or anatomical conditions may result in the need of the body extremities, particularly the feet, for such treatment to alleviate pain. I have found that by treating the feet with a combination of heat, mild electric shock administered in pulsations rather than continuously, and vibration, material improvement of the condition thereof will result.

Accordingly, an object of the present invention is to provide a device for treating abnormal circulation conditions in the feet by providing heat and pulsating or intermittent electric shock simultaneously to the soles of the feet and then subsequently providing heat and vibration simultaneously.

Another object of the invention is to provide a foot treating device for applying heat and vibration to successively different portions of the soles of the feet.

Another object of the invention is to provide, in a device of the type indicated, novel means for producing a pulsating electric shock and to isolate the circuit thereof from the current source for the safety of the patient.

A further object of the invention is to provide a novel foot-treating unit that incorporates both heat- and vibration-producing means and which is movable by the soles of the feet to engage with successively different portions of said soles.

A further object of the invention is to provide the mentioned foot-treating unit with pads or buttons that engage the metatarsus to treat the same while heat is being applied to the soles of the feet.

A still further object of the invention is to provide a novel foot-treating method wherein heat, pulsating electric shock and vibration are employed.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully ap-

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pear in the course of the following description. However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a top plan view of a foot-treating device according to the present invention.

Fig. 2 is a longitudinal sectional view as taken on line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional view as taken on line 3—3 of Fig. 2.

Fig. 4 is a wiring diagram of the electrical components of the device.

The foot-treating device that is illustrated comprises, generally, a housing 5 divided into two symmetrically arranged foot-treating sections 6 and 7, generally flat immovable foot-engageable means 8 mounted on section 6, cylindrical and rotational foot-engageable means 9 mounted in section 7, means 10 for heating of both the means 8 and 9, means 11 for passing an intermittent or pulsating electric current through the means 8, means 12 for isolating said pulsating current from the line or source of electric current, and means 13 housed within the means 9 for vibrating the latter.

The housing 5 comprises a generally rectangular box 14 that has a top which includes opposite sloping walls 15 and 16 that are connected at the middle of the top by a horizontal wall 17. The walls 15 and 16 slope downward from wall 17 toward the respective opposite ends of the box, the wall 15 defining the top of section 6 and the wall 16 defining the top of section 7. A bottom closure plate 18 is provided for the box. The interior of the latter may be divided by a partition 19 which may be heat insulated as may also be the other walls of the box. For convenience of handling, the wall 17 may bear a handle 20 by means of which the device may be positioned relative to a patient.

The means 8 comprises a pair of metal plates 21 that are mounted, side-by-side, on wall 15 and of a size to receive the soles of the feet of a patient. An opening 22 is provided in wall 15 beneath each plate 21 substantially as shown.

The means 9 comprises a metal drum or cylinder 23 that is closed by end plates 24. Shock mounts 25 or the like, mount the cylinder to the side walls of box 14 so that the upper portion thereof extends through an opening 26 provided in wall 16. Said shock mounts are conventional items that mount the cylinder for rotation and

also for limited vibratory movement. Said shock mounts may be rubber- or spring-cushioned. Rotation of the cylinder is limited to approximately three-fifths of a full revolution by providing suitably placed projections 27 on the cylinder, the same being adapted to engage under face of wall 16. It will be evident that by placing the soles of the feet on that portion of the cylinder which extends above wall 16 and by moving the feet in a forward and backward oscillatory movement, said cylinder will be oscillated and successively different portions of the soles will be in engagement with the surface of the cylinder.

If treatment of the metatarsus of the feet is desired, a pair of button-like pads 23 are mounted, side-by-side, on the cylinder—one to engage the metatarsus of each foot with somewhat more pressure than the pressure on the remainder of the soles.

The heating means 10 comprises an electrical heating unit 29 beneath each plate 21 and within opening 22, a similar heating unit 30 at each side of cylinder 23 and lining the inside thereof, a heat-controlling potentiometer 31, and a switch 32. An electric circuit from a current source represented by the line 33 connects said units 29 and 30, said potentiometer 31 and said switch 32 in series as indicated in Fig. 4. If desired, an independent switch may be provided for units 30 so that these or units 29 may be separately or simultaneously connected into the circuit to line 33.

The means 11 for passing a pulsating or intermittent current through plates 21 includes the isolating means 12, in this case, a one-to-one transformer, for purposes of absorbing any overload on line 33 for the safety of a patient having his feet engaged with said plates. Said means 11 comprises a current interrupter device 34 that is connected to line 33 through one pole 35 of a single-pole double-throw switch 36, a flasher lamp 37 connected across said interrupter device, a resistance, such as lamp 38 in series with lamp 37 and the primary winding 39 of transformer 12 and both connected across lamp 37, and a series circuit, including a shock-controlling potentiometer 40, connecting the secondary winding 41 of transformer 12 and plates 29.

The interrupter, which may be a conventional thermostatically controlled flasher device, when closed, shorts across lamps 37 and 38 and across primary 39. Line current passing through the interrupter will cause the same to open so that said current will then pass through the lamps and primary. Opening and closing of the interrupter is periodic to cause flashing of lamp 37 and intermittent energization of primary 39. Thus, the induced current conveyed to plates 21, as controlled by potentiometer 40, is intermittent rather than continuous. Since the patient bridges and, thereby, closes the circuit across plates 21, the soles of the feet on said plates 21 are, therefore, subjected to a series of mild electric shocks of a pulsating nature that have been found to be more beneficial than continuously applied shock current. The flashes of lamp 37 may be seen through tell-tale 42 to indicate whether or not the operation is proper.

The vibrating means 13 comprises an electric

motor 43 mounted within cylinder 23, and a vibrator unit 44, also mounted within said cylinder, and driven by the motor through a flexible coupling 45. The motor is connected in a circuit to the line 33 through the other pole 46 of switch 36.

The vibrator unit 44 has an eccentric weight 47 therein that is rotated by the motor and, due to its eccentricity, imparts vibration to cylinder 23. Such vibration is, thereby, transmitted to the soles of feet resting upon the outer surface of said cylinder.

A preferred foot-treating method is to first subject the soles of the feet to heat and to intermittent or pulsating electric shocks for a suitable period of time. The time will vary for different patients. The amount of heat provided will be varied as also will the intensity of the current. Then, after a suitable interval, the soles are subjected to heat and vibration, but, rather than to the entire soles, to successive portions thereof. Finally, should the metatarsus also require treatment, a suitable heat and vibration treatment may be performed by providing increased and more localized pressure at these points of the foot.

While the invention that has been illustrated and described is now regarded as the preferred embodiment, the construction is, of course, subject to modifications without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a foot-treating device, a hollow drum mounted for oscillation by the soles of the feet of a patient engaged with the outer surface of said drum, resilient mounts for the drum, heating means within the drum to heat said foot-engaging surface, and a vibrator within the drum for vibrating the same on its resilient mounts while the feet of the patient are oscillating the drum.

2. In a foot-treating device, a hollow drum mounted for oscillation by the soles of the feet of a patient engaged with the outer surface of said drum, resilient mounts for the drum; heating means within the drum to heat said foot-engaging surface, a vibrator within the drum for vibrating the same on its resilient mounts while the feet of the patient are oscillating the drum, and a pair of pads mounted side-by-side on the outer drum surface for pressing on the metatarsi of the feet engaging the drum.

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