June 9, 1942. E. M. WHEELOCK 2,285,958

MEANS FOR MASSAGING THE FEET

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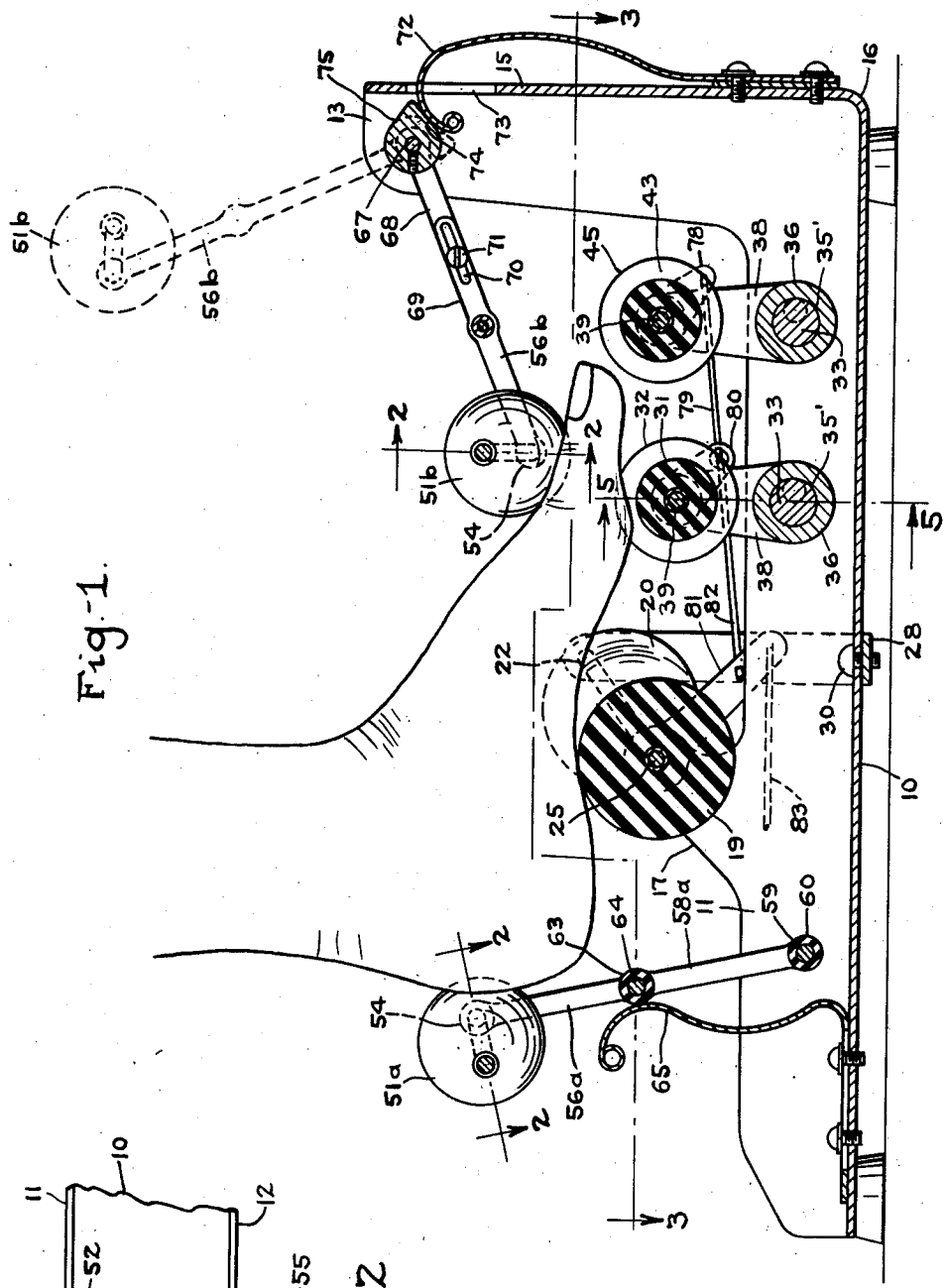


Fig. 1.

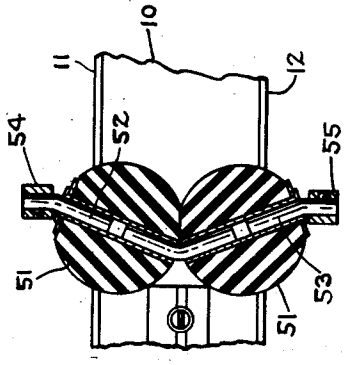


Fig. 2.

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Fig. 3

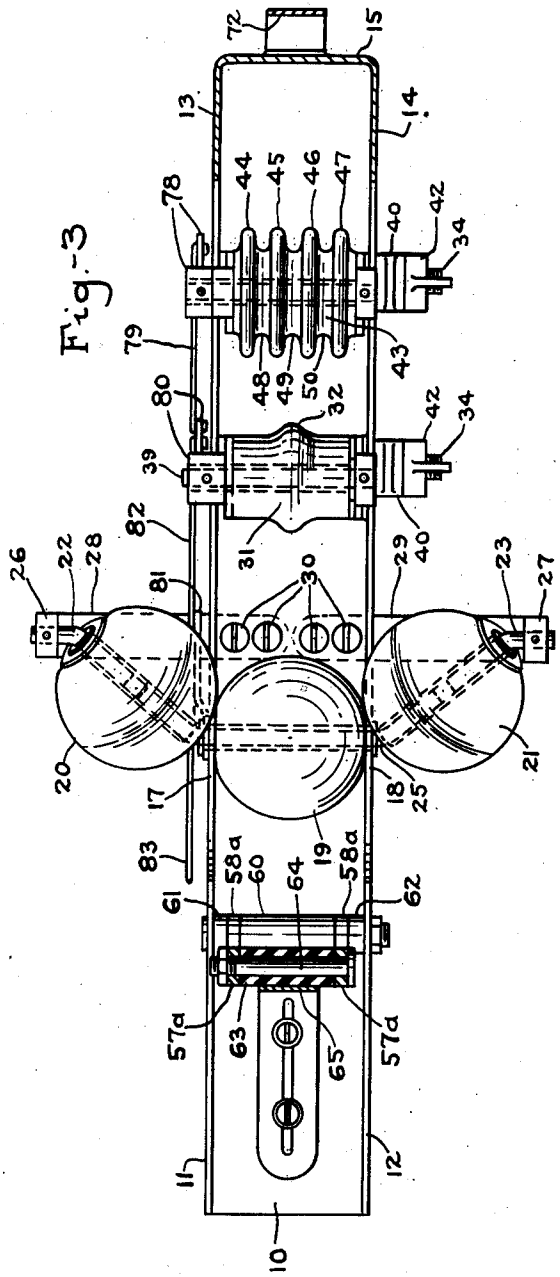


Fig. 4

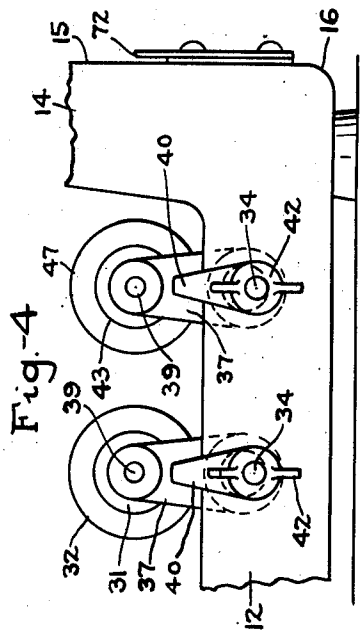
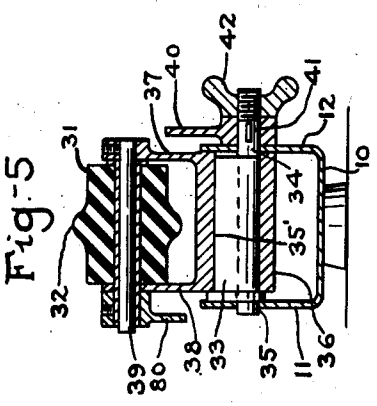


Fig. 5



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Patented June 9, 1942

2,285,958

UNITED STATES PATENT OFFICE

2,285,958

MEANS FOR MASSAGING THE FEET

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Application August 28, 1939, Serial No. 292,274

7 Claims. (Cl. 128—57)

My invention relates to means for massaging the feet and has for its object generally to provide a device adapted to receive the foot of an individual, with parts engageable with certain parts of said foot, so that movement of the foot along its length, either by muscular action or by automatic means that may be provided in the machine, will cause definite types of rolling and frictional pressure on different parts of the foot to effect proper massaging action on muscles, tissues and joints and proper pressure action on bones of the feet that may need it.

Under modern conditions the feet of people encased in shoes are subjected to various types of pressure strains, which produce compression of the muscles and tissues and not infrequently displacement of bones. The results of this unnatural confinement of the feet are found in skin thickening growth such as bunions and corns and in deformations, either temporary or in some cases permanent, which produce grave discomfort and often make walking and other use of the feet both painful and difficult. I have discovered that one of the most frequent difficulties resulting from the wearing of shoe casings confining the feet comes from a displacement of the second metatarsal bone, as well as general tendency toward displacement of any or all of the metatarsal bones and resulting affections of joints between the metatarsal bones and the phalanges, and in the phalanges.

The confining effect of shoes prevents the normal spreading action of the bones and free movement of the joints in natural walking and has the effect of preventing complete and natural exercising of the muscles of the feet.

I have discovered that if means are provided to bring about this exercising of the feet artificially with, of course, the shoes removed, and at the same time to bring the bones of the feet and particularly the second metatarsal bone into normal relative position, satisfactory relief is obtained tending to restore the feet to normal free acting condition. It is therefore a principal object of my invention to provide a device embodying a system of contact members, preferably rotary in character, which, when the foot is placed in position in relation to such contact members, will contact several portions of the foot and, when the foot is moved backward and forward in engagement with these contact members or there is relative movement between them, which will, at the same time, produce massaging effect upon muscles, tendons, ligaments and joints and pressure effect upon bones particularly the second metatarsal bone, and consequently will effect massaging stimulation and restoration of the bones to normal position.

It is a further object of my invention to provide in connection with some of said contact members, means for moving them, say if said contact members are in the form of balls means for rotating one or more said balls, while the foot is resting upon it or them, said means being either manually or automatically operative.

It is a further object of my invention to provide a plurality of members in line engageable with the center and near the ball of the foot with means for simultaneously oscillating said members to move the foot resting upon them forward and back and provide means whereby the extent of movement of said oscillating means where contacting the foot will be relatively greater in one of said means than in the other, so as to produce a frictional movement of the foot across the means which is being slowly operated.

It is a further object of my invention to provide, in connection with massaging means consisting of contact members engageable with the bottom of the foot, other members held in predetermined spring-pressed engagement with the heel portion and upon the front portion of the foot, which at the same time tends to hold the foot positioned on the members contacting the bottom thereof and operate to produce a massaging action upon the portion of the foot engaged by such said spring-pressed members.

It is a further object of my invention to provide a movable member, preferably either rotary or oscillating, which shall engage toward the front of the bottom of the foot and which shall have a relatively narrow raised portion coming against the second metatarsal bone for lifting said bone and bringing it into normal relation with the other bones of the feet.

It is a further object of my invention to provide in combination with other means for supporting and massaging the foot, a movable member preferably rotary or oscillatory, adapted to engage the toes of the foot as the foot is moved relatively back and forth, having portions separated one from the other adapted to enter the spaces between the toes whereby the toes at the same time are bent upwardly and caused to spread or separate from adjacent toes. In carrying out this object I also provide an instep massager which at the same time massages the surface of the top of the foot and at the end of the back stroke of the foot or the forward movement of the masseur under the foot gathers the toe

inwardly and downwardly and supplies a predetermined pressure downward at each side of the foot to meet the upward thrust of the lower roller 31 which is positioned in the center of the foot and back of the instep masseur.

The full operation and advantages of my invention will appear in the detailed description thereof and the features of novelty present in the invention whereby the advantageous results claimed for it are obtained, will be particularly pointed out in the claims.

In the drawings, illustrations and application of my invention in one form,

Fig. 1 is a side elevation view of my massaging appliance with some portions in section showing the position of a foot as it would be when the machine is set to operate upon it.

Fig. 2 is a sectional view taken on lines 2—2 of Fig. 1, 2 places.

Fig. 3 is a part sectional plan view taken on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary side elevation view of the parts shown in plan in Fig. 3.

Fig. 5 is a sectional elevation view taken on line 5—5 of Fig. 1.

As illustrated I provide a supporting frame member which consists of a bottom plate 10, a pair of upstanding side plates 11 and 12 which are extended upwardly at the forward end in vertical side plates 13 and 14, united to a similarly upstanding front end plate 15 which also is united with the bottom plate 10 as indicated at 16 in Figs. 1 and 4. Upon ears 17 and 18 formed integrally upon side plates 11 and 12, is journaled a rotary or oscillating member preferably in the form of a ball 19, which member is thus very strongly supported upon the entire frame member formed of plates 10, 11 and 12. This ball as particularly shown in Fig. 3 is centrally positioned relatively to two other balls 20 and 21, which are rotatably journaled upon shaft members 22 and 23 shown in Figs. 1 and 3 and which balls as there shown have their axes angularly disposed to the axis of ball 19, both forwardly and upwardly. Preferably the shafts 22 and 23 may be formed continuous with the shaft 25, through ball 19, and be supported at their inner ends by the ears 17 and 18 and at their outer ends by bracket arms 26 and 27 formed at the ends of transverse bars 28 and 29 secured to bottom plate 10 by screws 30 as indicated in Figs. 1 and 3.

With this arrangement it will be apparent that the roller or ball 19 is so supported by the bracket ear 17 as to be readily capable of supporting any desired weight or pressure which may be put upon it by the foot which is being massaged. Angularly disposed balls 20 and 21 as here related to the ball 19, are also rotatably supported to sustain any desired pressure so that when the foot is resting upon ball 19 and engaging with its sides the balls 20 and 21 and the foot is moved back and forth between these balls, it will have the effect of ironing and drawing together and drawing out the muscles and tissues of the part of the foot engaging these three balls.

Immediately in front of the group of balls 19, 20 and 21 I mount a special contact member 31 which is preferably cylindrical and provided with an annular rib 32 so positioned transversely that when the foot is held by rotary balls 19, 20 and 21, the rib 32 will be brought substantially under the second metatarsal bone so as to exercise pressure through the soft parts of the foot and cause it to be pushed back into normal position relative to the other bones of the foot.

The mounting of the rotary oscillatory member 31 is shown in Figs. 1 and 5. This mounting comprises a roller 33 Fig. 5 having eccentric bearings 34 and 35 in the side plate 11. The roller 33 comes within a central cylindrical bearing 35 in a hub portion 36 which has integrally formed thereon arms 37 and 38 in which is rigidly mounted a bearing shaft 39. The bearing shaft 39 has mounted to rotate or oscillate thereon the contact member 31. A finger 40 in Figs. 4 and 5 is pinned onto an extension 41 of eccentric bearing 34, whereby the roller 33 may be rotated. This will have the effect of raising or lowering the bearing of contact member 31. Also the contact member 31 on the assemblage 35, 37 and 38 may be oscillated on the bearing roller or drum 33 so as to adjust it to a forward or back position. This arrangement is important to bring the contact member 31 to a position so the rib 32 thereon is in the proper position to have the desired effect upon the particular type of foot to be massaged. After adjustment of roller 31 by the means above described, the parts are held in fixed adjusted position by means of a thumb nut 42 threaded on extension 41 of eccentric bearing 34.

Forward of contact roller 31 is mounted a second roller 43 provided with annular ribs 45, 46 and 47 and intervening valleys 48, 49 and 50. These ribs and valleys, Fig. 3 are shown alike, but in practice may be varied in character to adapt the ribs better to enter between adjacent pairs of toes of the foot being massaged. Also the ribs may be formed otherwise than circular, as, for example, with a cam-like projection at one side, so that as the foot is moved back and forth over contact member 43 the annular ribs 44, 45, 46 and 47 will enter between the toes to cause at the same time a lifting and spreading of the toes, the lifting action being accentuated where the cam-shaped projecting ribs are employed. This will have a highly beneficial massaging and bone straightening effect. The mounting and adjustability of roller 43 is in all respects identical with the mounting and adjustability of roller 31 and, as far as shown, carries similar reference numerals on the drawings.

An assemblage of ball rollers is shown in Fig. 2 which are identical with the two sets of rollers 51*a* engageable with the heel of the foot as shown at the left of Fig. 1 and rollers 51*b* engageable with the toe of the foot as shown at the right of Fig. 1. These contact members 51*a* and 51*b* are designated simply as 51 in Fig. 2. They are shown mounted with angularly disposed bearing axes 52 and 53 supported on end pieces 54 and 55 as shown at the rear of Figs. 1 and 3. The head pieces 54 and 55 are mounted on the ends of the arms 56*a*, Fig. 1 left, or 56*b*, Fig. 1 right. These arms 56*a* are bent to narrow the distance between them as indicated at 57*a*, in Fig. 3, from which the arms go down through portions 58*a* to a bearing on a rod 59, carrying spacers 60, 61 and 62 as shown in Fig. 3. A spacer roller 63 on a transverse bearing rod 64 is engaged by a compression spring 65 of desired form and exerting a suitable force, whereby, when the foot is in position as shown in Fig. 1, the roller balls will engage the sides of the heel and will be forced against it with the desired pressure so that if the foot is rocked on supporting ball 19, the balls 51*a* will grip and massage the heel. The balls 51*b* mounted between

arms 56b are similarly carried, the arms being journaled as indicated at 67 between upstanding frame portions 13 and 14. Arm portions 68 and 69 in this arrangement are mounted for lengthening or shortening adjustments by means of slot 70 and screw pin 71. A strong pressure spring 72 extending through a slot 73 in end wall 15 engages a bearing surface 74 on a heel piece 75 fast and the shaft 67 which journals the arms 68, 56b carrying balls 51a.

The operations and advantages of my invention have been quite clearly indicated in the foregoing specification. As pointed out there the massaging effectiveness is brought about by relative movement of the foot in relation to the massaging elements embodied in the apparatus. This movement may be of the foot by the individual or may be effected automatically by oscillation of a connected lever system indicated on Fig. 1, as lever system 80, 81 and 82 running to a motor-driven member of any desired form and connected thereto as indicated by dotted lines on 83. Or if under some conditions such a method of operation would be deemed desirable the foot may be held stationary and the entire apparatus moved relative to the foot.

Considering the operation from the rear to the front of the foot, the heel massagers are gently spring-pressed against the heel of the foot and for that reason follows its movement which is to some extent a rocking movement upon the central supporting ball 19. The central ball 19 is the supporting and operating member by which the movements of the foot are controlled for the highly important functions of the massagers and bone adjusters at the front of the foot. The two balls at the side of the central ball 19 also have a valuable use in connection with the massaging of the instep of the foot.

The top forward massage rollers 51b exert a pressure somewhat opposed to the pressure of the rear massage balls 51a. The most important function of the top front massager, however, is its effect, in relation to the fulcrum furnished the foot by ball 19, of pushing downward on the foot as the ball of the foot passes the roller 31 with the annular rib 32 applied to the third metatarsal bone, and the toes move into the valleys 48, 49, 50 between the ridges 44, 45, 46 and 47 and are turned up and spread. On the backward stroke the top rollers have the effect of gathering the bones and the toes together and producing massaging and compression action along the sides of the bones and at the same time bending the toes downwardly at their joints. This results, in the forward and backward stroke of the massager, however effected, relatively to the foot, in spreading and replacing to normal position the forward bones of the foot and at the same time massaging the outer surfaces and working the joints of the bones. The result is improvement of the impaired circulation, release of bone pressure from unnormal positions of the bones and the general toning up of the entire organization of the foot. It produces much the same effect as would result from walking barefoot over surfaces that do not injure the tissues of the feet. It brings relief from pain and excessive weariness of the foot muscles and, if followed with a degree of regularity, will bring the feet to normal health and comfort, and keep them in that condition.

It will be noted that the various parts of the device are interchangeable with different sizes of similar parts, and also that there are adjustments provided for the highly important cylindrical massagers 31 and 47. It will therefore be a simple matter to get the machine in form and adjustment to adapt itself to the particular size and form of the foot to be massaged.

I claim:

1. A device for massaging the foot, comprising a central movable support adapted to engage the bottom of the foot and permit it to be moved longitudinally thereon, and a movable cylindrical member located forward of the support and adapted to engage under the metatarsal bones of the foot, said cylinder having an annular rib positioned and adapted to engage beneath the second metatarsal bone.

2. A device for massaging the foot, comprising a central support mounted for oscillation and adapted to engage the bottom of the foot and permit it to be moved longitudinally thereon, and a cylindrical member located forward of the support and mounted for oscillation and adapted to engage under the metatarsal bones of the foot, the radius of oscillation of the cylinder member being substantially less than the radius of oscillation of the support.

3. A device for massaging the feet, comprising a centrally positioned support circular in cross section mounted to oscillate about the axis of said cross sectional circle and adapted to be engaged by the bottom of the foot and permit it to be moved longitudinally thereon, a second support located forward of the first support and being circular in cross section and mounted to oscillate about the axial center of said cross sectional circle and adapted to engage under the metatarsal bones of the foot, the diameter of the cross section of said second support being substantially less than the diameter of the cross section of the first support, and means simultaneously to oscillate the said supports through arcs of the same degree.

4. A device for massaging the feet, comprising a centrally positioned support and a second support spaced therefrom each adapted to be engaged by a part of the foot and each adapted to be oscillated through predetermined relative arcs, means to simultaneously oscillate said supports through said arcs, and a third member in front of the second support adapted to be engaged by the toes of a subject as the foot is moved back and forth by said oscillations, said engagement causing the toes to be bent relatively to the second support.

5. A device for massaging the feet, comprising a centrally positioned support and a second support spaced therefrom each adapted to be engaged by a part of the foot and each adapted to be oscillated through predetermined relative arcs, means to simultaneously oscillate said supports through said arcs, a third member in front of the second support adapted to be engaged by the toes of a subject as the foot is moved back and forth by said oscillations, said engagement causing the toes to be bent relatively to the second support, and means yieldingly mounted to engage the upper part of the toes of the subject and tending to bend said toes down.

6. A device for massaging the feet, comprising a centrally positioned support and a second support spaced therefrom each adapted to be engaged by a part of the foot and each adapted to be oscillated through predetermined relative arcs, means to simultaneously oscillate said supports through said arcs, a third member in front of the second

support adapted to be engaged by the toes of a subject as the foot is moved back and forth by said oscillations, and a member yieldingly engageable with the rear of the foot to effect a stabilizing action upon the foot as it is moved back and forth upon said supports by said oscillations.

7. A device for massaging the foot comprising a central movable support adapted to engage the bottom of the foot and permit it to be moved longitudinally thereon, a movable member located forward of the support and adapted to engage under the metatarsal bones of the foot, a second movable member forward of the first-named movable member adapted to be engaged by the toes in the forward movement of the foot, and means for simultaneously oscillating said support and said two movable members through arcs of the same degree.

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