

June 30, 1936.

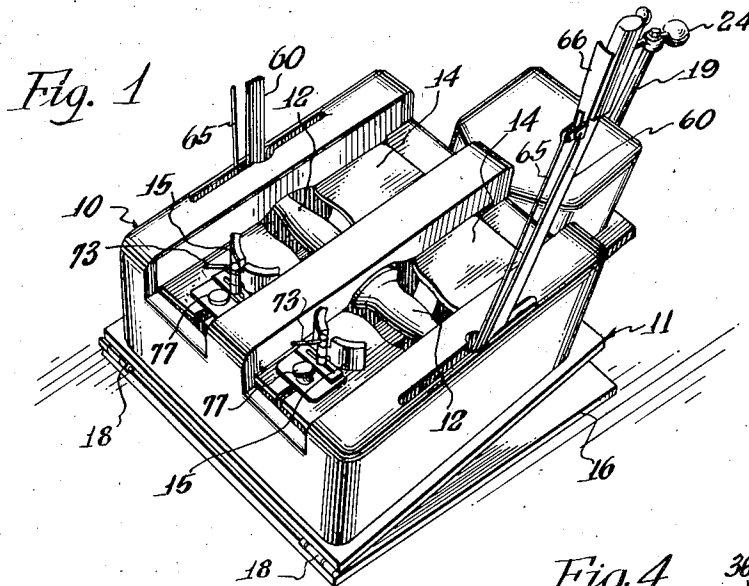
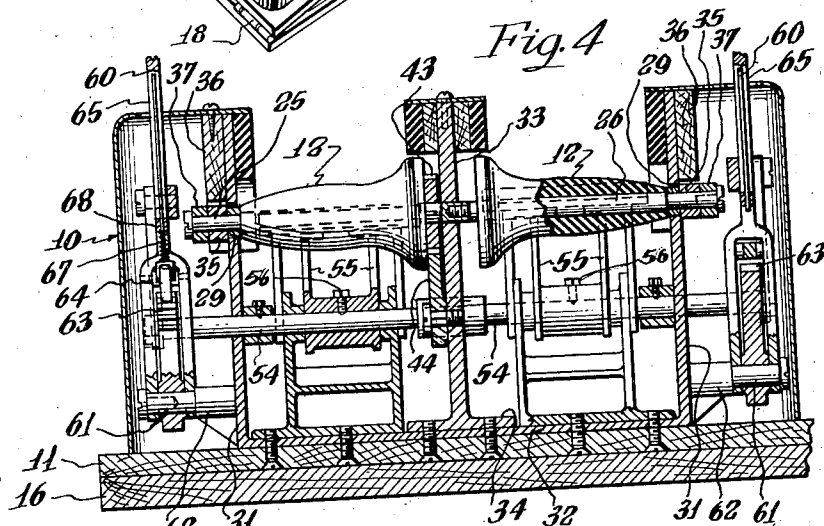
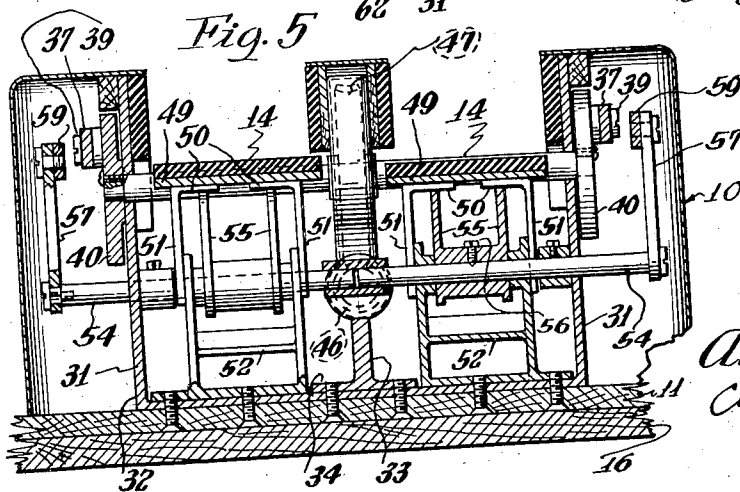
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2,045,814

APPARATUS FOR MASSAGING AND EXERCISING THE FEET

Filed July 8, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

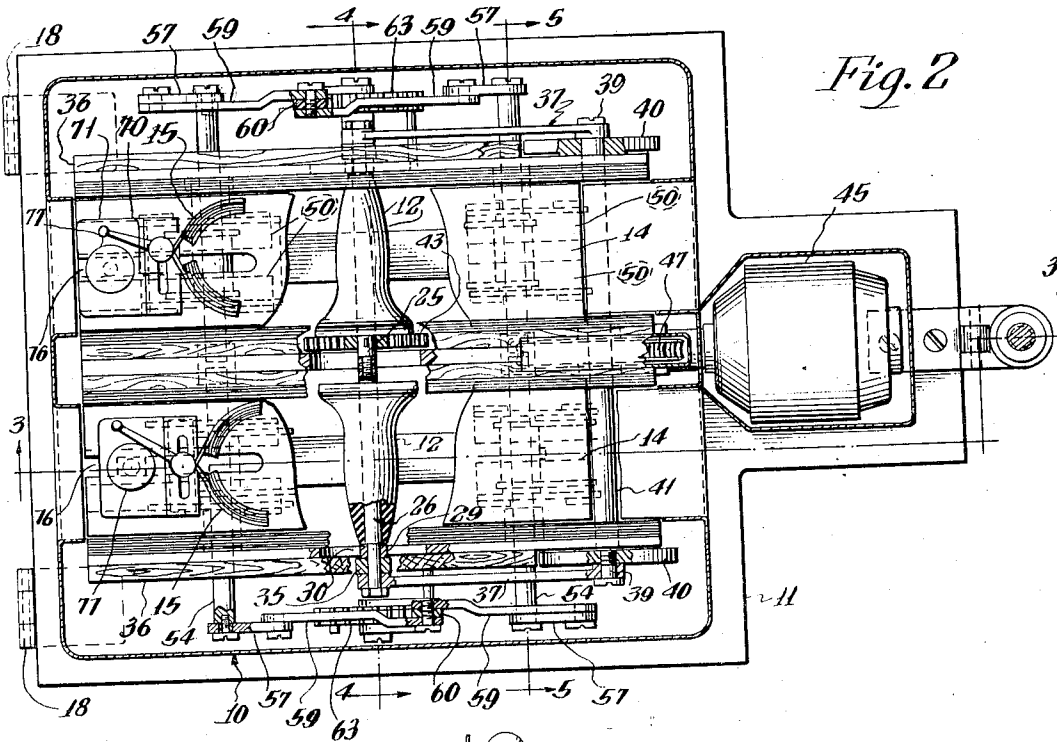


Fig. 2

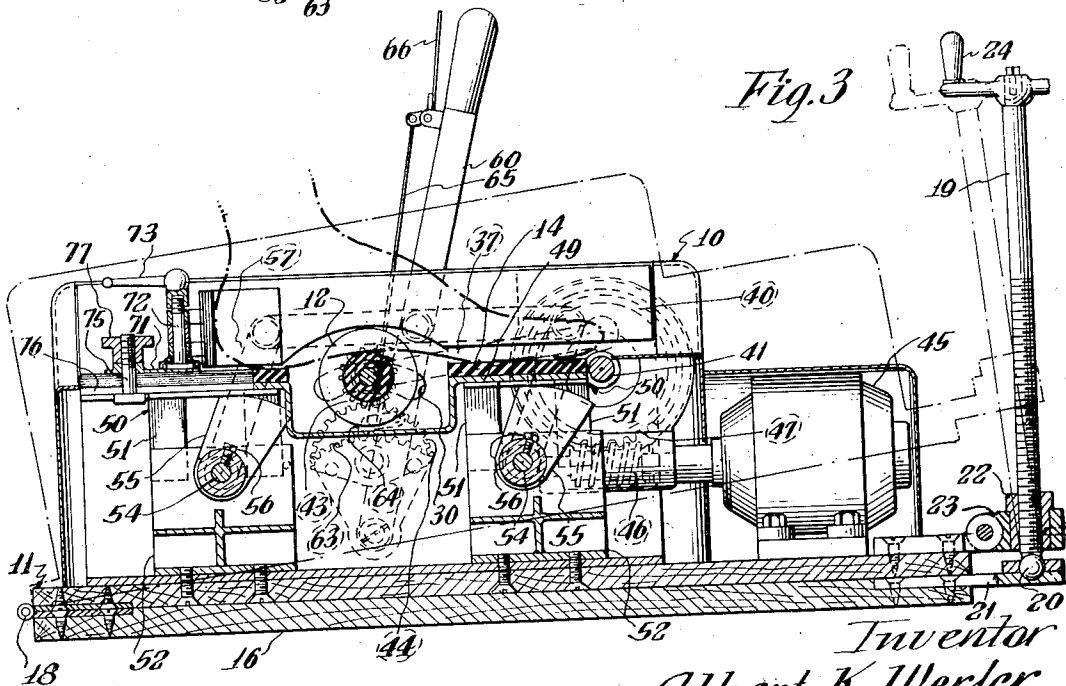


Fig. 3

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UNITED STATES PATENT OFFICE

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APPARATUS FOR MASSAGING AND EXERCISING THE FEET

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11 Claims. (Cl. 128—57)

This invention relates to improvements in apparatus for massaging and exercising the foot and more particularly to a power driven foot massaging and exercising device, especially adapted to strengthen and correct the arches of the foot.

My invention has among other objects to provide a new and improved power driven apparatus of the class described constructed in a novel manner for massaging the arch of the foot with a rolling motion by means of reciprocally driven resilient members moving in a path conforming substantially to the instep or metatarsal arch of the foot. Another object of my invention is to provide a new and improved form of massaging member which is formed to conform substantially to the transverse arch or instep of the foot. Still another object of my invention is to provide a more simplified and efficient device of the class described than formerly, which may be adjusted to efficiently operate on varying sizes and forms of feet with a varying intensity to suit the individual patient.

Other objects of my invention will appear from time to time as the following specification proceeds.

My invention may best be understood by reference to the accompanying drawings wherein:

Figure 1 is a perspective view illustrating one embodiment of my invention;

Figure 2 is an enlarged plan view of the device shown in Figure 1, with parts broken away and shown in horizontal section in order to more clearly illustrate certain details of my invention;

Figure 3 is a sectional view taken substantially along lines 3—3 of Figure 2, with several of the parts in different positions than in Figure 2;

Figure 4 is a sectional view taken substantially along lines 4—4 of Figure 2; and

Figure 5 is a sectional view taken substantially along lines 5—5 of Figure 2.

In the drawings, the embodiment of my invention illustrated is preferably shown as being enclosed in a casing 10 mounted on a tilting platform 11 for adjustment to conform to the position of the feet upon which it is to operate and includes generally a pair of massaging rollers 12, 12 reciprocally movable in an arcuate path conforming substantially to the contour of the metatarsal arch of the foot. Said rollers taper from a greater diameter towards the inner ends thereof to a smaller diameter towards the outer ends thereof and are of a contour which substantially-

ly conforms to a transverse section taken through the instep or metatarsal arch of the average foot. Foot rests 14, 14 are provided to support each of the patient's feet. Said foot rests have a transverse opening in the center thereof within which said massaging rollers are mounted to reciprocally move. Said foot rests are vertically adjustable in a manner which will hereinafter be more fully described to vary the intensity of the massaging action or permit the device to be adjusted to varying sizes of feet and are provided with adjustable heel rests 15, 15 against which the back of the heel is adapted to rest.

Referring now in particular to the details of my invention as shown in the drawings, the tilting platform 11 is mounted on a base 16, herein preferably shown as being made from wood, by means of a pair of hinges 18, 18 so the entire mechanism may be tilted about a transverse horizontal axis as is best illustrated in Figures 1 and 3.

Suitable means are provided for tilting said tilting frame and holding it in an adjusted position, which as herein shown includes an upstanding threaded shaft 19. Said shaft has a ball 20 formed integral with its lower end which is journaled in a ball-shaped socket formed in a member 21 extending forwardly from the base 16, and said shaft is threaded within a threaded sleeve 22 secured to a hinged member 23 extending forwardly from the tilting platform 11. A handle 24 is suitably secured to the upper end of said shaft so that said shaft may readily be rotated for tilting said tilting platform.

The rollers 12, 12 are mounted for reciprocable movement in an arcuate path extending longitudinally of the platform 11 on a pair of aligned shafts 25 and 26, the end of one of which shafts is threaded within the end of the other for assembly purposes. A suitable pin (not shown) is provided to hold said shafts from rotation with respect to each other during operation of the device.

The shafts 25 and 26 are provided with suitable bushing members 29, 29 adjacent the outer ends of the rollers 12, 12 which ride in arcuate-shaped guides or slots 30, 30 formed in upstanding side walls 31, 31 of a channel-shaped member 32 secured to the tilting platform 11 in a suitable manner. Said arcuate-shaped guides are formed so that said rollers may move in a path substantially conforming to the instep or metatarsal arch.

The shafts 25 and 26 are supported intermediate their ends in a suitable arcuate slot formed

in an upstanding stem 33 of a T-iron 34 secured to the bottom of the channel-shaped member 32 intermediate the sides thereof.

Guide rollers 35, 35 are mounted on the shafts 25 and 26 outwardly of the bushing members 29, 29 and abut suitable guides formed in members 36, 36 extending along the outer sides of the side walls 31, 31 and depending from the top of the casing 10 in order to cut down vibration and noise in the apparatus. Said guide rollers are abutted by suitable links 37, 37 which, in turn, abut suitable heads formed on the outer ends of said shafts. Said links extend forwardly of said shafts and their outer ends are journaled on aligned crank pins 39, 39 which are herein shown as being cap screws threaded in the aligned disks 40, 40 eccentric of the center thereof. Said disks are secured to the outer ends of a transverse shaft 41 so that rotation thereof will rotate said disks and reciprocally move the shafts 25 and 26 in the arcuate guides 30, 30.

Means are provided for rotating the rollers 12, 12 as they are being reciprocally driven in the arcuate guides 30, 30 by the links 37, 37, which as herein shown, comprises a spur gear 43 keyed on the shaft 25 and meshing with a gear sector 44 secured to one side of the stem 33 of the T-iron 34.

It should herein be noted that the rollers 12, 12 are mounted to rotate with the shafts 25 and 26 and that while said rollers may be made from any suitable material they are herein preferably shown as being made from a resilient material such as rubber so formed that the inner sides thereof engage the instep, as has hereinbefore been described.

The shaft 41 and disks 40, 40 are rotatably driven by means of a suitable motor 45, herein preferably shown as being an electric motor. Said motor is secured to the forward portion of the tilting frame 16 in a suitable manner and has a worm 46 secured to its motor shaft, which drives a worm gear 47 keyed to the shaft 41.

Referring now in particular to the details of the foot rests 14, 14 and the means under control of the patient for vertically adjusting them to vary the intensity of the massaging action of the rollers 12, 12 and adjust the device to conform to varying sizes of feet, each of said foot rests being similar, one only will herein be described in detail. The foot rest 14 includes a member 49 having relatively flat forward and rearward ends with a channeled depression in the center thereof of less lateral dimensions than the forward and rearward ends of said member. The channeled depression of the member 49 extends beneath the roller 12 and forms an opening within which said roller moves and the inside of said member adjacent said channeled depression is of greater width than the outer side thereof to permit said roller to freely move therein. A suitable resilient material, such as rubber, is provided on upper faces of the forward and rearward ends of said member to provide a comfortable non-slippable rest for the foot.

A pair of parallel spaced guide members 50, 50 is secured to opposite sides of the forward and rearward ends of the member 49. Said guide members have depending spaced legs 51, 51 which engage the outer face of a pair of parallel spaced frames 52, 52 secured to and extending upwardly from the channel shaped member 32 in spaced relation with respect to each other, so that one of said frames is in alignment with the rearward portion of the member 49 and the other

of said frames is in alignment with the forward portion of said member. Thus, a slidable guide is formed for the foot rest 14 for guiding said foot rest in a vertical direction and preventing lateral displacement thereof.

The means for vertically moving said foot rest in said guides includes a pair of parallel spaced shafts 54, 54 journaled in the side walls 31 and 33 and the support frames 52, 52. One of said shafts is journaled beneath the forward portion of the foot rest 14 while the other of said shafts is journaled beneath the rearward portion of the under surface of said foot rest, and each of said shafts have an upstanding cam member 55 mounted thereon between the side walls of the support frame 52. As herein shown, said cam members have parallel spaced arcuate engaging surfaces which engage the under portion of the guide members 50, 50 at a substantial distance from the longitudinal center of said foot rest. Each of said cam members is held from movement with respect to said shaft by means of a set screw 56 so that pivotal movement of said shafts and cam members will cause vertical movement of the foot rest 14.

The shafts 54, 54 are simultaneously pivoted for pivoting the cam members 55, 55 in parallel relation with respect to each other by means of a pair of parallel links 57, 57, each of which links is secured to an outer end of said shafts. Said parallel links are in turn connected together by means of a pair of links 59, 59 which are pivotally connected at their free ends to an operating lever 60 disposed intermediate said parallel links.

The operating lever 60 is provided with a bifurcated lower end which is pivotally mounted on a pin 61 extending from a boss 62 extending outwardly from the side wall 31. A gear sector 63 is mounted on the pin 61 between the prongs of the bifurcated portion of said lever arm and is secured to the side wall 31 by means of suitable pins which act as stops for said operating lever. Said gear sector forms a ratchet which is adapted to be engaged by a spring pressed pawl 64 pivoted to said lever arm. Said pawl is controlled by means of a rod 65 pivoted at its upper end to one lever arm of a release lever 66 which release lever is in turn pivoted to the lever arm 60 adjacent the upper portion thereof. The pawl 64 is yieldably engaged with the desired tooth in the gear sector 63 by means of a compression spring 67 encircling the rod 65 and abutting said pawl at one of its ends and a fixed abutment 68 extending from said lever arm at its opposite end (see Figure 4).

It may now be seen that the foot rests 14, 14 may be elevated or lowered in a simplified manner and held in various desired positions of adjustment during the massaging operation. It should be noted that inasmuch as each shaft 54 extends to the center of the apparatus only, as is best shown in Figure 5, that said foot rests may be adjusted independently of each other.

Each heel rest 15 is of such a form that it may conform to the back of the heel and is mounted for adjustment both longitudinally and transversely of the foot rest 14. Said heel rest is mounted at its rearward end on a member 71 by means of a pin 72 mounted in a slot 70 extending transversely of said member. Said pin is provided with a head which engages the under surface of said member. The upper end of said pin is threaded and has a clamping lever 73 which is adapted to engage a rearward projection from said heel rest, through which the pin 72 passes, 75

with the member 71. Thus, said heel rest may be transversely adjusted with respect to the foot rest 14 and held in an adjusted position with respect thereto by means of the clamping lever 73.

The member 71 is mounted on the upper end of a bolt 75. Said bolt is mounted in a longitudinal slot 76 formed in the member 49 and its head engages the under surface of the member 49 and the insides of the guide members 50, 50 which form a longitudinal guide therefor. A thumb screw 77 is threaded on the opposite end of said bolt for holding the member 71 and heel rest 15 in a longitudinally adjusted position with respect to said foot rest.

It will be seen from the foregoing description that the apparatus forming the subject matter of my invention is so arranged as to massage the metatarsal arch of the foot with a rolling reciprocatory motion by means of power driven resilient rollers conforming substantially to a transverse section taken through the arch of the foot. It will also be seen that the apparatus may be adjusted to varying forms and sizes of feet; that the intensity of the massaging action may be adjusted by vertically adjusting the foot rests 14; and that while the patient may stand on the apparatus during the massaging operation, if desired, the apparatus is adjustable so that the patient may comfortably rest in a sitting position.

While I have shown and described one form in which my invention may be embodied, it will be understood that the construction and arrangement of the various parts may be changed or altered without departing from the spirit or scope thereof. Furthermore, I do not wish to be construed as limiting myself to the precise construction illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. An apparatus for massaging the foot comprising a foot support, a roller disposed intermediate the ends of said foot support and extending above the top thereof, means for guiding said roller in an arcuate path disposed in a vertical plane and conforming substantially to a longitudinal section taken through the metatarsal arch of the foot, and power driven means for rotating said roller and simultaneously reciprocably moving said roller in said arcuate path.

2. A foot massaging apparatus in accordance with claim 1, wherein the roller is shaped to conform substantially to the metatarsal arch of the foot and wherein the foot support is vertically adjustable to conform to varying sizes of feet and vary the intensity of the massaging action on the foot.

3. In a foot massaging and exercising apparatus, a frame, a foot support mounted thereon for adjustable movement with respect thereto in a vertical direction, said foot support having a transverse opening intermediate the ends thereof, and a massaging roller guided in said frame for reciprocable movement with respect thereto in an arcuate path disposed within said opening and conforming substantially to the arch of the foot.

4. In a foot massaging apparatus, a frame, a foot support mounted thereon for adjustable movement with respect thereto in a vertical direction, said foot support having a depression intermediate the ends thereof equal substantially to the length of the metatarsal arch of the foot, a motor, a massaging roller guided in said frame and disposed within the longitudinal limits of said depression, means driven by said motor for re-

ciprocably moving said roller, and the path of said roller being formed to conform substantially to the metatarsal arch of the foot.

5. A foot massaging apparatus in accordance with claim 4, wherein the massaging roller is formed to conform substantially to the metatarsal arch of the foot and wherein said roller is positively rotated while being reciprocably driven by said motor.

6. A foot massaging apparatus in accordance with claim 4, wherein the massaging roller is formed to conform substantially to the metatarsal arch of the foot, wherein said roller is positively rotated while being reciprocably driven by said motor, and wherein the means for rotating said roller comprises a gear coaxial with said roller for rotating said roller, and a gear sector fixed to said frame and meshing with said gear.

7. A foot massaging and exercising apparatus comprising a frame, a pair of parallel spaced foot supports mounted thereon and having openings therein, a roller disposed in said openings in each of said foot supports and mounted for reciprocable arcuate and rotational movement with respect thereto in a longitudinally extending arcuate path, power driven means for reciprocably moving said rollers, and aligned vertically disposed arcuate guides for guiding said rollers in said longitudinally extending arcuate paths which are arranged to conform substantially to a longitudinal section taken through the metatarsal arch of the foot.

8. A foot massaging and exercising apparatus comprising a frame, a pair of parallel spaced foot supports mounted thereon and having openings therein, a roller disposed in said openings in each of said foot supports and mounted for reciprocable arcuate and rotational movement with respect thereto in a longitudinally extending arcuate path, power driven means for reciprocably moving said rollers, and aligned vertically disposed arcuate guides for guiding said rollers in said longitudinally extending arcuate paths which are arranged to conform substantially to a longitudinal section taken through the metatarsal arch of the foot, and means for varying the intensity of the massaging action of said rollers comprising means for vertically adjusting said foot supports.

9. A foot massaging and exercising device comprising a frame, a foot rest mounted on said frame, a tilting platform forming a support means for said frame and adapted to tilt about an axis disposed transversely to said foot rest and disposed beneath and rearwardly of the rearward end thereof to adjust said foot rest for varying positions of the foot while the patient is in a sitting position, a pair of aligned arcuate guides in said frame conforming substantially to the metatarsal arch of the foot, a roller guided for movement in said guides in the central portion of said foot rest and adapted to extend above said foot rest, and power driven means for reciprocably moving said roller in said guides.

10. A foot massaging and exercising device comprising a frame, a foot rest mounted on said frame, a tilting platform forming a support means for said frame and adapted to tilt about an axis disposed transversely of said foot rest and disposed beneath and rearwardly of the rearward end thereof to adjust said foot rest for varying positions of the foot while the patient is in a sitting position, a pair of aligned arcuate guides in said frame conforming substantially to

the metatarsal arch of the foot, a roller guided for movement in said guides in the central portion of said foot rest and adapted to extend above said foot rest, power driven means for reciprocably moving said roller in said guides, and means for varying the intensity of the massaging action of said roller comprising means for vertically adjusting said foot rest.

10 11. An apparatus for massaging the foot comprising a foot support vertically adjustable to vary the intensity of the massaging action on the

foot and adapt the apparatus to conform to varying sizes of feet, a roller shaped to conform substantially to the transverse arch of the foot, means for guiding said roller for reciprocable movement in an arcuate path conforming substantially to a longitudinal section taken through the metatarsal arch, and means for rotating said roller and simultaneously moving said roller in said arcuate path. 5

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