

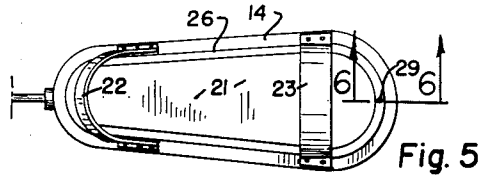
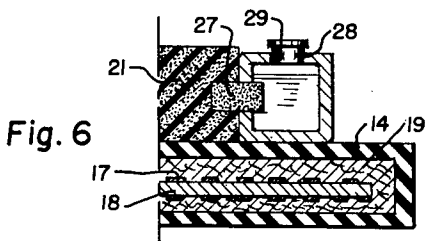
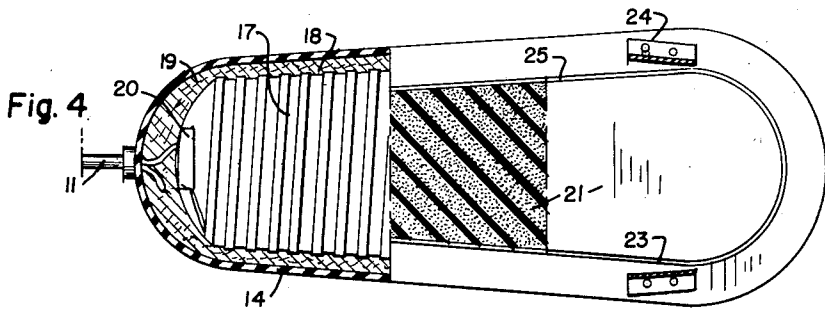
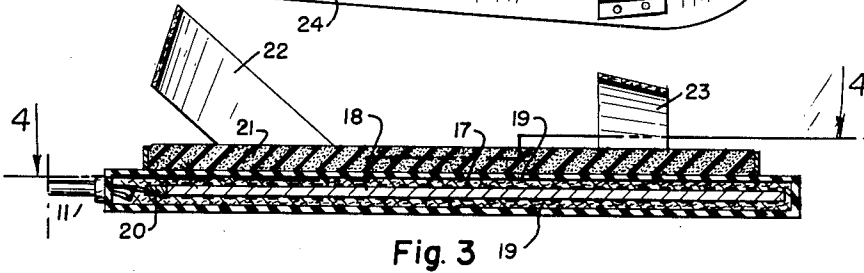
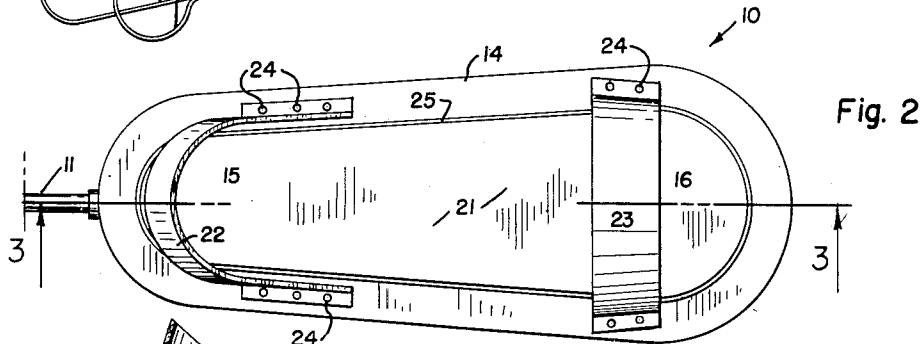
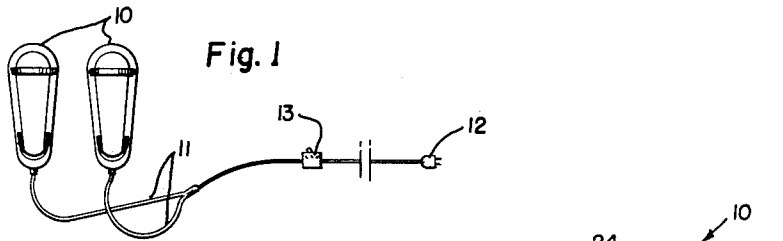
April 7, 1953

C. E. WRAY

2,633,846

THERAPEUTIC MOIST HEAT FOOT TREATMENT APPARATUS

Filed Dec. 18, 1950



INVENTOR.
CARL E. WRAY
BY WHITEHEAD & VOGL
PER *Carl Whitehead*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,633,846

THERAPEUTIC MOIST HEAT FOOT TREATMENT APPARATUS

Carl E. Wray, Englewood, Colo.

Application December 18, 1950, Serial No. 201,401

3 Claims. (Cl. 128—256)

1

This invention relates to therapeutic devices, and more particularly to apparatus for the treatment of feet.

An object of the invention is to provide an apparatus for therapeutic treatment of the feet wherein the foot is subjected to warmth; wherein the feet may also be subjected to the combination of warmth and moisture and wherein such treatment is restricted to the soles of the feet, permitting the upper portions to remain in a natural condition.

Yet another object of this invention is to provide an apparatus for treatment of the feet which is simple in construction and operation, economical in construction and use and adapted for use under various conditions.

With these and other objects in view, all of which more fully hereinafter appear, my invention includes certain new and novel arrangements and combinations of parts as hereinafter described and as defined in the appended claims and illustrated, in preferred embodiment, in the accompanying drawing, in which:

Figure 1 is an illustration of two units of my invention joined in a common electrical connection to provide a pair of units for treating both feet of a person simultaneously.

Figure 2 is a plan of one of the units shown at Fig. 1 and on a greatly enlarged scale.

Figure 3 is a section as taken on the indicated line 3—3 at Fig. 2.

Figure 4 is a section as taken on the offset-indicated line 4—4 at Fig. 3 to better illustrate certain constructions of the unit illustrated at Fig. 2.

Figure 5 is similar to Fig. 2 but shown on a considerably reduced scale and illustrating an alternate embodiment of my invention.

Figure 6 is a fragmentary section as taken on the indicated line 6—6 at Fig. 5.

The necessity of treatment of the feet has led to the development of a large number of therapeutic devices, one class being apparatus which applies warmth to the feet, some of which may incorporate the use of moisture thereto to soften callouses, corns and other such growths, thereby permitting relief of discomfort from such ailments. The conventional apparatus which relies upon moisture and the combination of warmth and moisture is formed as a sweat boot wherein the foot is placed or enclosed. In such construction, moisture is generally supplied, at least in part, by sweating the foot. However, in therapeutic treatment through the soles of the feet, such devices have been found unsatisfactory, for

2

it is often desirable to apply a warm, moist treatment to the soles of the feet and yet permit the skin on the upper parts of the feet to remain in natural state, because that skin is considerably softer and more delicate than the skin of the soles of the feet and may be injured by excessive leeching of the natural oils therefrom, resulting in shriveling.

With this problem in view, the present invention was conceived and developed and comprises, in essence, an open foot-warming pad wherein the warming element is held against the soles of the feet, with an absorbent, moisture-retaining layer interposed between the warming element and the feet soles and adapted to direct warm vapors against the soles of the feet.

In preferred construction, each one of a pair of my improved foot-treatment units 10 is joined to one of the furcations of an electrical cord 11, as clearly illustrated at Fig. 1, which cord includes a conventional plug 12 for application to any common outlet and a regulator switch 13, of conventional construction, which contains within it a plurality of resistance stops to regulate the current into the units 10 and thereby provide a selection of heat flow and temperature rates from the units.

A unit 10 is formed with an elongated base 14 containing a heel section generally indicated at 15 and a toe section as at 16. In the construction shown at Fig. 2, such unit may be longitudinally symmetrical to receive either a right or left foot. When formed as pairs, the units thereof may respectively assume the conventional symmetry of the right or left foot.

The base 14 is formed of a flattened envelope of insulating material such as rubber or plastic having both dielectric and moisture-resisting characteristics and sufficient rigidity and toughness to withstand the strains and abuse that would result from the wearer using the unit to walk in. Within this base, there is provided an electrical resistance coil 17, suitably wound about a resilient insulating pad 18 of a shape similar to the shape of the base 14 and lodged therein. Between the coil 17 and the base material 14, there is provided a thin layer of thermo-resistive materials, such as asbestos fibers 19, to separate the coil 17 from the base material. The resistance of the coil 17 is such that it will provide a pre-determined heat flow therefrom and through the base material, depending upon the setting of the switch 13. However, to prevent overheating, a thermostat control 20 is suitably provided within the base in series with the coil 17.

A pad 21 of sponge-like liquid absorptive material is secured to the upper face of the base and the shape of this pad is similar to that of the base, and in use, the foot rests directly upon such pad. To hold the foot in place, a heel strap 22 and a toe strap 23 are provided and conveniently secured to the base at its edges in any conventional manner as by rivets 24. As the pad 21 is of resilient, yieldable material, its peripheral edge may be enclosed within a semi-rigid fencing strip 25 formed in any convenient manner and cemented to the base upper face. Since this unit 10 is constructed in such a manner that the wearer may walk in it, the material forming the pad 21 must be of such rigidity that the wearer will not squeeze out the liquids absorbed therein, and the thickness and rigidity must be such that only the sole of the foot will be depressed into the pad.

In use, the pad 21 may be moistened or saturated with water or with any therapeutic solution desired and upon heating of the coil 17, the heat flow therefrom passing into the pad tends to warm the water and cause vapors to issue from the pad 21 and against the soles of the feet. It follows that with such treatment, the soles of the feet may become warmed and moistened and sweat profusely while the upper portions of the feet remain in natural state. The advantages of such treatment are many and obvious, as for example, when an individual has been on his feet for an extended period, it is the soles of the feet which need treatment rather than the upper sides.

Alternate constructions of my invention are possible and, as illustrated in Figs. 5 and 6, the moistening of the pad 21 may be continuous and accomplished by means of a reservoir 25 which surrounds the pad 21 periphery in place of the fencing strip 25. Communicating from this reservoir and to the absorbent pad 21 is a plurality of porous plugs 27 which permit capillary flow from the reservoir into the absorbent pad 21. The reservoir may be refilled with liquid in any conventional manner as through an orifice 28 normally enclosed by a cap 29.

While I have illustrated and herein described many details of construction of my invention, alternatives and equivalents, which are within the spirit and scope of my invention, will occur to those skilled in the art, and hence it is my desire that I be limited in my protection only by the proper scope of the appended claims.

I claim:

1. A therapeutic apparatus for treatment of the soles of the feet, adapted to be worn as a sandal, comprising a foot-shaped base formed as an envelope of moisture-impervious material of sufficient rigidity and resilience to withstand the weight, yet yield to movements, of a wearer, a resilient liquid-absorptive pad seated upon the envelope, said pad being of such thickness and depressibility that it will support the weight of a man without depressing the pad further than to form contact with the sole of the foot and without squeezing the absorbed liquid from the pad, heating means within said base adapted to heat and vaporize liquid within said pad, a peripheral fencing strip about said pad adapted to prevent the lateral flow of liquid therefrom, and a heel strap and toe strap upstanding the pad, adapted to fasten the pad upon a foot.

2. A therapeutic apparatus for treatment of the soles of the feet, adapted to be worn as a sandal, comprising a foot-shaped base formed as an envelope of moisture-impervious material of sufficient rigidity and resilience to withstand the weight, and yield to movements, of a wearer, a resilient liquid-absorptive pad seated upon the envelope, said pad being of such thickness and depressibility that it will support the weight of a man without depressing the pad further than to form contact with the sole of the foot and without squeezing the absorbed liquid from the pad, heating means within said base adapted to heat and vaporize liquid within said pad, a peripheral reservoir about said pad and provided with porous plugs communicating with the pad and which are adapted to permit a slow capillary flow of liquid from the reservoir to the pad.

3. The apparatus defined in claim 2, including heel and toe straps adapted to hold the pad to a foot.

CARL E. WRAY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,754,763	Nunnally	Apr. 15, 1930
1,992,648	Browne	Feb. 26, 1935
2,339,409	Joy	Jan. 13, 1944
2,451,906	Berman	Oct. 19, 1948