June 29, 1948. A. HANDFIELD 2,444,098

ELECTRO-THERAPEUTIC APPLIANCE

Filed Jan. 19, 1944

2 Sheets-Sheet 1

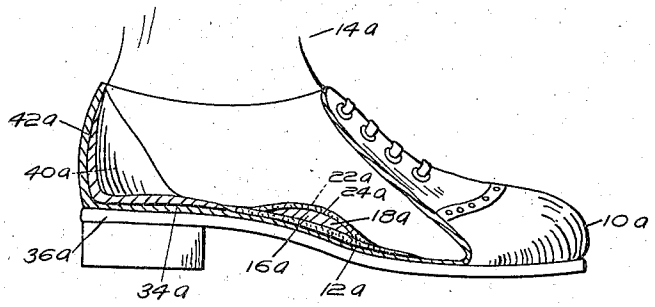


Fig. 1

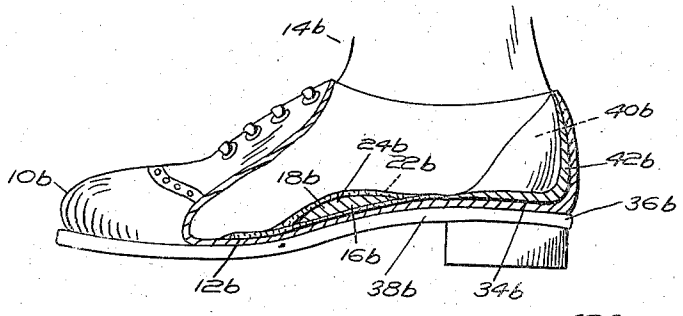


Fig. 2

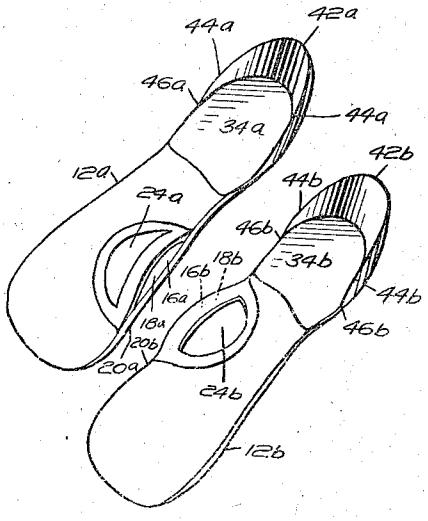


Fig. 3

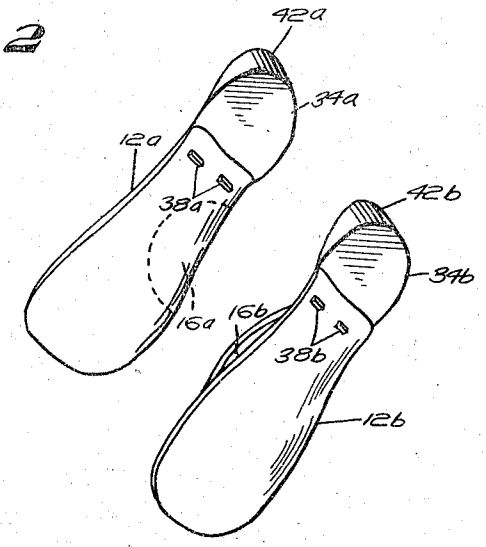


Fig. 4

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ELECTRO-THERAPEUTIC APPLIANCE

Filed Jan. 19, 1944 2 Sheets-Sheet 2

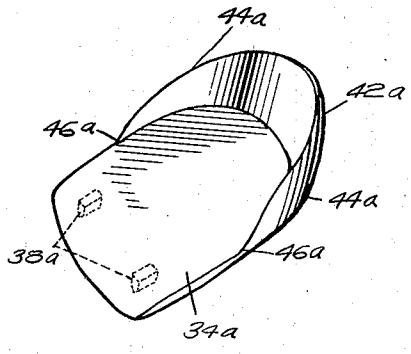


Fig. 5

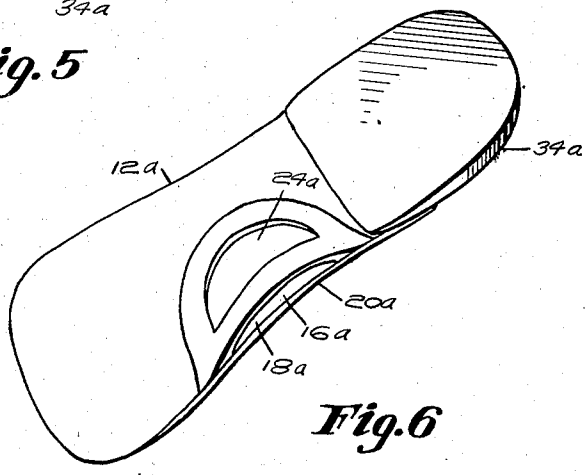


Fig. 6

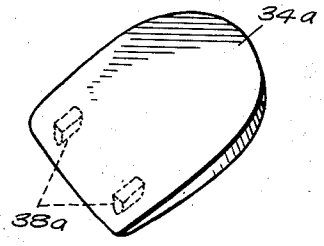


Fig. 7

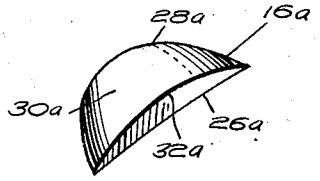


Fig. 8

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UNITED STATES PATENT OFFICE

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ELECTROTHERAPEUTIC APPLIANCE

Arthur Handfield, Woonsocket, R. I.

Application January 19, 1944, Serial No. 519,086.

2 Claims. (Cl. 128—383)

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My invention relates to improvements in electro-therapeutic appliances, particularly of the type adapted to be worn on the foot of the wearer. It has been known for a long time that a pair of metallic plate means each constructed of a respectively different metal to be of different polarity if worn adjacent to the skin of the wearer function somehow with the body of the wearer to form a galvanic cell. I am aware that others have used such devices. So far as I am aware, in most instances there either has been a direct ground from the plate means to the ground or the plate means of different polarity have been worn in close association or almost in contact with each other. My invention comprises plate means of different polarity not grounded and worn by the wearer in contact with the skin at a relative distance from one another, such as plate means of one polarity in one shoe and one of a different polarity in the other shoe. My invention produces electro-therapeutic effects.

My invention specifically relates to the construction of different types of galvanic plate means that I may employ in each shoe of the wearer. I have additionally found that said plate means tend to keep the feet warn and tend to dissipate disagreeable saline odors from the feet of the wearer.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of the accompanying drawings, which illustrate an embodiment thereof and various sub-combinations thereof.

In the drawings,

Fig. 1 is a side elevational view partly broken away showing my invention in use in one shoe of a pair worn by a wearer;

Fig. 2 is a similar side elevational view showing my invention in use in the opposite shoe of the pair;

Fig. 3 is a top perspective view of a pair of insoles modified to provide the preferred embodiment of my invention;

Fig. 4 is a rear perspective view of the pair of insoles shown in Fig. 3;

Fig. 5 is a rear perspective view of a heel plate shown in Figs. 1–4 and constructed in accordance with my invention;

Fig. 6 is a reverse plan view of such a heel plate attached to an insole otherwise equipped with my invention with the rear wall of the heel plate omitted;

Fig. 7 is a perspective view of a heel plate constructed in accordance with my invention, detached from the insole; and

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Fig. 8 is a perspective view of the combination arch supporting and galvanic plate I may employ in the embodiments of my invention shown in Figs. 1–3 and 6.

In the drawings, wherein like characters of reference indicate like parts throughout, 10*a* and 10*b* generally indicate a pair of shoes equipped with my invention in use, associated with the insoles 12*a* and 12*b* abutting the feet 14*a* and 14*b*, respectively, of the wearer. Broadly, my invention comprises, in combination, a pair of shoes 10*a* and 10*b* having respective insoles 12*a* and 12*b* and respective galvanic plate means overlying each respective insole 12*a* and 12*b*, said galvanic plate means being of different shape to fit into the pair of shoes and of different polarity in each shoe to form an electric cell with the body of the wearer.

I have shown in Figs. 1–4, my preferred type of galvanic plate means overlying each insole, although it is apparent that various parts thereof may be employed without the others. In my preferred embodiment, I employ a combination arch supporting and galvanic plate 16*a* and 16*b* respectively for each shoe; for this purpose I modify the respective insoles 12*a* and 12*b* to contain said respective combination arch supporting and galvanic plates 16*a* and 16*b*. In this instance each insole 12*a* and 12*b* is provided with a semi-circular pocket 18*a* or 18*b* respectively facing the inner edge 20*a* or 20*b* thereof, respectively, below the arch 22*a* or 22*b* of the foot, said pocket 18*a* or 18*b* being provided with a central substantially semi-circular open portion 24*a* or 24*b* contacting the arch 22*a* or 22*b* of the foot. Said pocket 18*a* or 18*b* may be formed by splitting the insole or by a separate piece of material, cut to a shape to provide the pocket and having the open portion 24*a* or 24*b*, cemented, sewed or otherwise affixed to the insole. Each combination arch supporting and galvanic plate 16*a* or 16*b* as shown more particularly in Fig. 8, is preferably of semi-circular shape having a diametric edge 26*a* and a semi-circular edge 28*a* and has an upper wall 30*a* radially convexed up to a center high point 32*a*. Said plate 16*a* or 16*b* is contained in said pocket 18*a* or 18*b* with the diametric edge 26*a* or 26*b* thereof respectively outermost as shown in Figs. 3 and 6.

To provide a greater contact with the foot of the wearer I preferably also employ a galvanic heel plate 34*a* or 34*b* covering the heel 36*a* or 36*b* of each shoe respectively, each preferably having spaced prong means 38*a* or 38*b* projecting downwardly therefrom, adjacent the front end thereof, piercing the insole 12*a* or 12*b* respectively to

rigidly mount the heel plate **34***a* or **34***b* in the heel of the shoe in contact with the heel **40***a* or **40***b* of the wearer. In the preferred embodiment shown in Figs. 1–5 said heel plate also has a rear wall **42***a* or **42***b* extending vertically upwardly therefrom of substantially one-half the length thereof and having the ends **44***a* or **44***b* thereof tapering downwardly and forwardly around the edges of the wearer's heels **40***a* or **40***b* to substantially the mid portions **46***a* or **46***b* of the edge walls of said heel plates.

It is thus apparent that all the galvanic plate means, including the combination arch supporting and galvanic plates **16***a* and **16***b* and the heel plates **34***a* and **34***b* may be employed together as in the embodiment shown in Figs. 1–4 or they may be employed separately as indicated in Figs. 5 and 6 and also, if desired, the rear walls **42***a*, **42***b* of the heel plates **34***a* and **34***b* may be dispensed with.

It is obvious that said galvanic plate means are of different shape to fit into a pair of shoes and in accordance with the teachings of my invention are of a different polarity in each shoe to form an electric cell with the body of the wearer. In the embodiment shown all the plate means employed in one shoe are constructed of metal of one polarity, such as copper providing an anode, and all the galvanic plate means of the other shoe are constructed of metal of a different polarity, such as zinc, to provide a cathode to set up a galvanic current with the body of the wearer.

As shown my improved invention may be sold attached to the insole as shown in Figs. 3, 4 and 6 or may be sold as individual pieces as shown in Figs. 5, 7 and 8.

It is apparent, therefore, that I have provided a novel type of electro-therapeutic device with the advantages described above.

It is understood that my invention is not limited to the specific embodiments shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. An electro-therapeutic appliance, comprising, in combination, a pair of inner soles each having a semi-circular pocket facing the inner edge thereof below the arch of the foot and having a central substantially semi-circular open portion for contacting the arch of the foot and galvanic plate means adapted to overlie each inner sole, comprising for each foot, a semi-circular combination arch supporting and galvanic plate having a radially convexed upper wall contained in said pocket diametric edge outermost, and a galvanic flat heel plate having spaced prong means projecting downwardly adjacent the front end thereof, piercing the inner sole, adapted to cover the heel of each shoe in contact with the heel of the wearer, said heel plate also having a rear wall extending vertically upwardly therefrom, said galvanic plate means being of different shape to fit in a pair of shoes and of different polarity in each shoe to form an electric cell with the body of the wearer.

2. An electro-therapeutic appliance, comprising, in combination, a pair of inner soles each having a semi-circular pocket facing the inner edge thereof below the arch of the foot and having a central substantially semi-circular open portion for contacting the arch of the foot and galvanic plate means adapted to overlie each inner sole, comprising for each foot, a semi-circular combination arch supporting and galvanic plate having a radially convexed upper wall contained in said pocket diametric edge outermost, and a galvanic flat heel plate having spaced prong means projecting downwardly adjacent the front end thereof, piercing the inner sole, adapted to cover the heel of each shoe in contact with the heel of the wearer, said galvanic plate means being of different shape to fit in a pair of shoes and of different polarity in each shoe to form an electric cell with the body of the wearer.

ARTHUR HANDFIELD.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
187,105	Craw	Feb. 6, 1877
556,161	Quarrie	Mar. 10, 1896
571,488	Madden	Nov. 17, 1896
730,545	Lee	June 19, 1903
1,288,045	Kuhn et al.	Dec. 17, 1908
1,797,143	Havey	Mar. 17, 1931

FOREIGN PATENTS

Number	Country	Date
209,556	Great Britain	Jan. 17, 1924
852,011	France	Jan. 22, 1940