May 31, 1932. E. W. JOHNSON 1,860,420

ELECTRIC FOOT WARMER

Filed Sept. 15, 1930

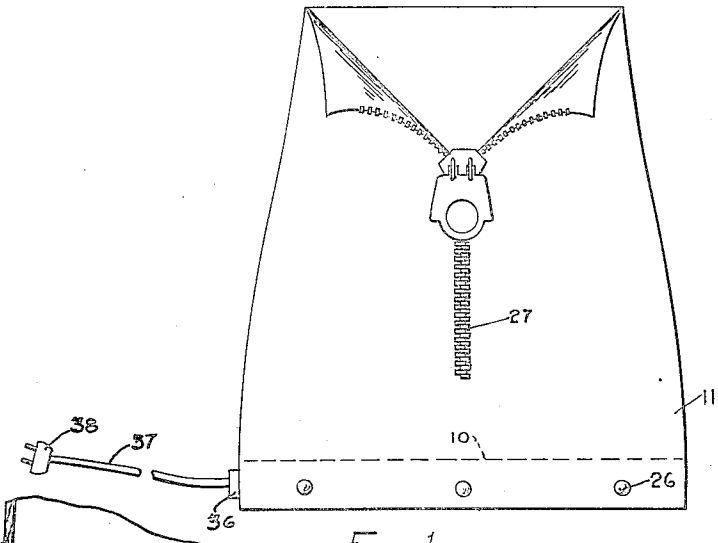


FIG 1

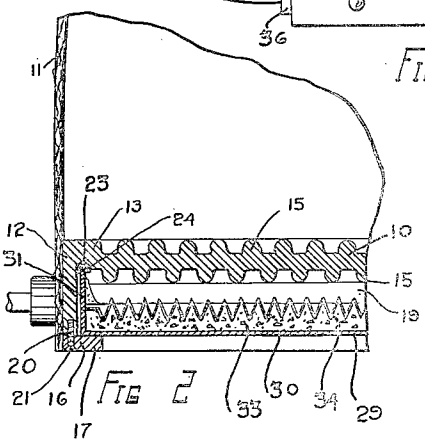


FIG 2

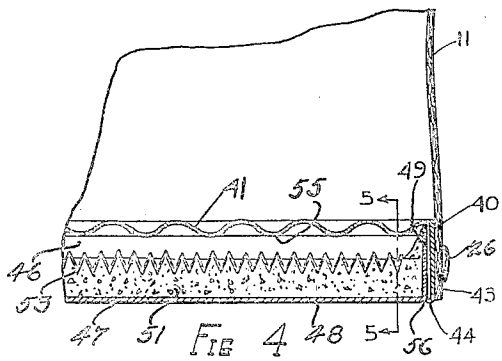


FIG 4

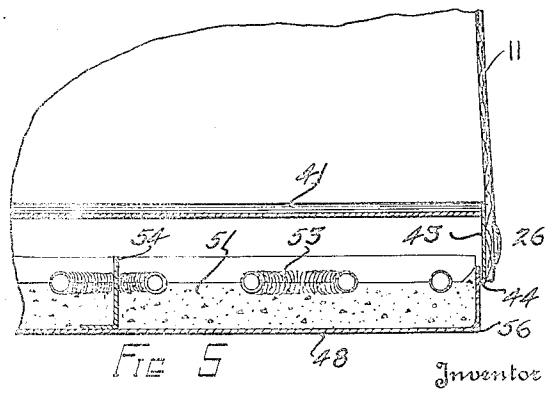


FIG 5

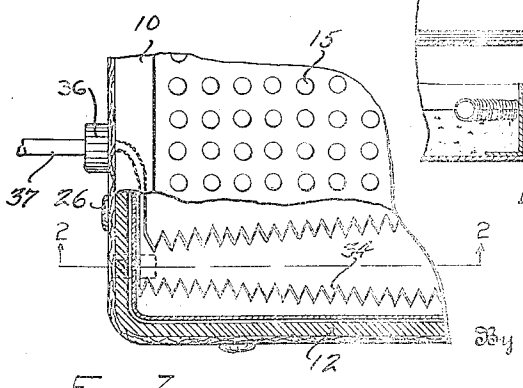


FIG 3

Inventor

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Patented May 31, 1932

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UNITED STATES PATENT OFFICE

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ELECTRIC FOOT WARMER

Application filed September 15, 1930. Serial No. 481,849.

This invention relates to an improvement in electric foot warmers and more particularly to those adapted for use out of doors.

In its preferred embodiment, the device is adapted to be used to protect both feet and ankles from the cold through the use of an electric heating unit from which the heat is directed upwardly into an open sack.

The principal object of the invention is to provide a portable foot warming device which is strong enough to support the weight of a person.

Another object of the invention is to provide a device in which substantially all the available heat is directed to the upper radiating surface directly above the heating unit.

A further object of the invention lies in the provision of an open top sack enclosing the heating unit and adapted to confine the generated heat to the area directly above said unit.

Other and further objects of the invention may be more clearly understood from a consideration of the following specification which is taken in conjunction with the accompanying drawings and in which

Fig. 1 is a front elevation of one modification of this invention;

Fig. 2 is a fragmentary vertical sectional view taken on the line 2—2 of Figure 3;

Fig. 3 is a fragmentary plan view of the structure shown in Figure 1, parts being broken away to show the arrangement of the heating unit;

Fig. 4 is a vertical sectional view of a modification of the structure shown in Figure 1, in which the heating element is removable; and

Fig. 5 is a sectional view of the structure in Figure 4 with the heating element partially removed from its casing.

Referring to the drawings and particularly to Figures 1 and 2 thereof, the invention is shown to be comprised of a base generally indicated by the reference numeral 10 in which is mounted a heating element and to which is secured a boot 11.

The base 10, in the present modification, is formed with downwardly directed side flanges 12 connected with or integrally joined to a foot supporting plate 13. In both upper and lower faces of the plate 13 are produced a plurality of heat absorbing and radiating projections 15, the projections on the under face of the plate being adapted to absorb heat from the coil therebeneath and the projections on the upper face of the plate to give off heat within the area enclosed by the sack 11. Centrally of each of the under edges of the flanges 12 is a slot or recess 16 in which is mounted a block 17. The outer edge of each block is flush with the flange and the inner edge thereof projects into the compartment 19 in which a heating element is located. In the base of the recess 16 a drilled and tapped opening 20 is made. A corresponding opening is provided in the block 17 and a screw 21 removably joins the block to the base of the flange. At the jointure of the flange 12 with the plate 13, a recess 23 is made in which is located an asbestos or other suitable pad 24, the purpose of which will later be set forth.

The sack 11 is removably attached to all four flanges 12 by a fastener 26 of any conventional design. The sack projects upwardly from the base, being cut to provide an opening in one side thereof. In the present modification the opening is shown to be closed by a fastener 27 of the hookless fastener type.

The heating unit 29, which is mounted in the opening 19, consists of a rectangular member 30 having upstanding walls 31. This structure virtually constitutes a pan into which is poured and distributed to an even layer an insulating material 33. Before the material 33 sets, the heating coil 34 is partially embedded therein. When this material sets, the coil is protected against loosening or breaking. The coil may be made to assume any desired shape but is found preferable to lay it zigzag in a manner similar to that of many other heating elements. As may be seen in Figure 3, the ends of the heating element are carried out through a housing 36 from which extends the usual cord 37 and connection plug 38.

The heating unit 29 is mounted in the opening 19, being moved upwardly to a point

where the side flanges strike the pads 24. Blocks 17 are now inserted in the recesses 16 and, when the screws 21 are engaged with the flanges 12, said blocks are drawn into contact with and adapted to firmly secure the heating element in place.

It is obviously desirable to project heat from the coils 34 upwardly into contact with the projection 15 and not permit the radiation of heat to the flanges 12 through the inner flanges 31. Consequently, the insulating material 33 is built up along the flanges 31 and, since the upper edge of each of these flanges closely engages the insulating pad 24, practically no heat transference occurs through these flanges from the heating element to the exterior of the device.

The modification in Figures 4 and 5 of the drawings shows a device formed entirely from a suitable sheet metal in contradistinction to the above described device which combines a sheet metal heating unit with a cast base. The base 40 is formed with a ribbed foot supporting portion 41, the edges of which project downwardly forming flanges 43. The bottom edges 44 of two oppositely disposed flanges 43 are bent inwardly for a purpose later to be described. The sack 11 is attached to the flanges 43 of the base by means of fasteners 26.

The flanges 43 and portion 41 form a rectangular recess or opening 46 into which a heating unit 47 is placed. This unit is a rectangular pan-like element, having bottom and side walls 48 and 49 respectively. A suitable insulating material 51 is placed in the bottom wall 48, being built up along the edges of the side walls 49. This material, as above stated, is a form of cement in which the coil 53 is set prior to the hardening thereof. Once the material is hard, the coil is firmly secured and there is little likelihood of breakage. By reason of the fact that the ribs of the portion 41 extend in but one direction across the base, it is contemplated to provide an angularly disposed support 54 to prevent undue strain on the structure. The support 54 is rigidly attached to the bottom wall 48 of the heating unit 47, being substantially midway between the two parallel walls 49. When the heating unit is mounted in the opening 46, the upper edge of the support 54 abuts the depending curved portions 55 of the portion 41.

The jointure of the bottom and side walls 48 and 49 occurs through a slightly curved portion 56 and, when the heating unit is mounted in the opening 46, the curved edges 44 of the flanges 43, which have been sprung outwardly during the assembly, spring into place engaging the curved portions of the heating unit 56, thus preventing inadvertent disassembly of the device. When it is desired to remove the heating unit, the flanges 43 are sprung outwardly and said unit may be readily withdrawn.

While applicant has shown and described but two modifications of his invention, it is obvious to those skilled in the art that other modifications or adaptations may be made without departing from the spirit and scope of the invention as set forth and defined in the hereunto annexed claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. A device of the class described comprising a base for supporting the weight of a person, a heating element in said base, a sack joined to and projecting upwardly from said base to form a heat compartment for the feet and legs and means for drawing the upper portion of the sack about the legs of the user of the device.

2. A device of the class described comprising a base for withstanding the weight of a person, a removable heating element mounted in said base, a sack joined to and enclosing said base, said sack being projected upwardly from said base to form a heat compartment for the feet and legs and means for drawing the upper portion of said sack about the legs of the user of the device.

3. A device of the class described comprising a base having a portion for withstanding the weight of a person and a cavity therebeneath, a heating element mounted in said cavity, a sack enclosing said base, fastening means joining said sack to said base, said sack being projected upwardly from said base to form a heat compartment for the feet and legs directly above the portion of said base, and means for drawing the upper portion of said sack about the legs of the user of the device.

In testimony whereof I have affixed my signature.

ELLIS W. JOHNSON.