United States Patent

[11] 3,621,191

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[54] **ELECTRICALLY HEATED FOOTWEAR AND HANDWEAR**
1 Claim, 7 Drawing Figs.

[52] **U.S. Cl.** **219/211,** 36/2.6, 128/381, 128/402
[51] **Int. Cl.** **H05b 1/00**
[50] **Field of Search** 219/211, 527, 529, 538, 549; 36/2.6; 128/379, 381–383, 402

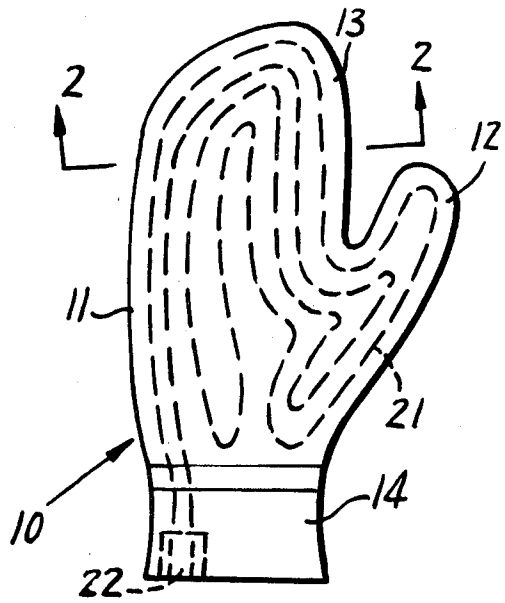
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ABSTRACT: Electrically heated footwear and handwear is disclosed in which an ionomer plastic insulating layer is fitted into a shoe or other footwear and a mitten or other handwear of conventional construction. A long stranded heating wire is embedded in a heat-conducting plastic member which is positioned beneath the insole of the footwear and within the insulating plastic cover of the mitten. The wires are connected to a source of low-voltage electricity for resistance heating in order to maintain the footwear and handwear at a comfortable temperature.



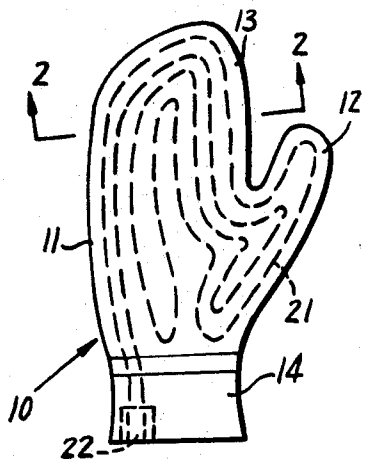


FIG. 1

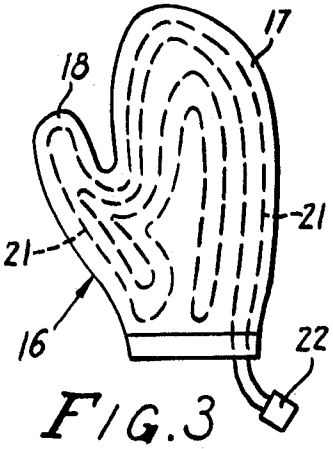


FIG. 3

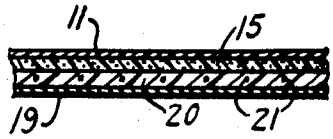


FIG. 2

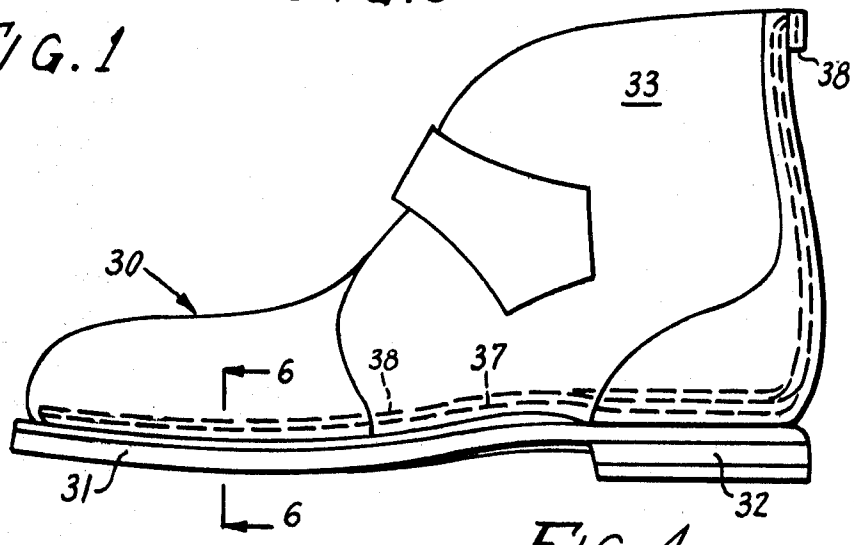


FIG. 4

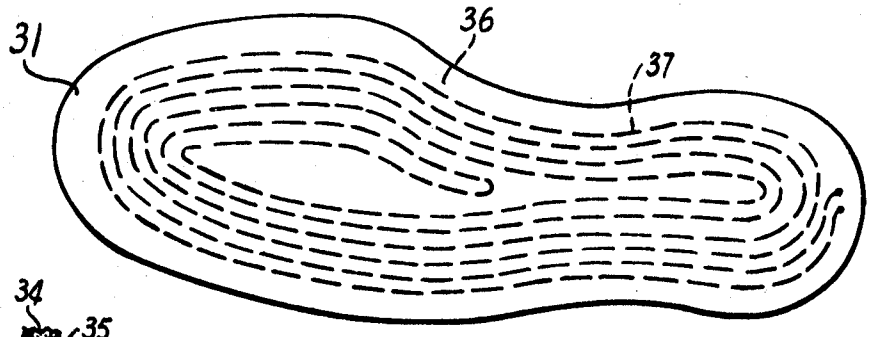


FIG. 5

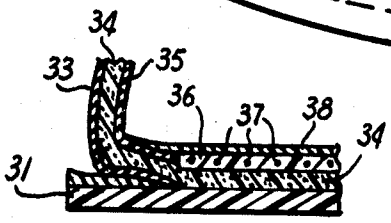


FIG. 6



FIG. 7

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ELECTRICALLY HEATED FOOTWEAR AND HANDWEAR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to heated footwear such as shoes and boots and heated handwear such as mittens and gloves.

2. Description of the Prior Art

Prior art electrically heated footwear and handwear utilized solid short lengths of wire for low-voltage heating or used high voltage for heating longer lengths of stranded wire.

SUMMARY OF THE INVENTION

The present invention is directed to the heating of mittens and shoes and like handwear and footwear by providing an insulating layer of ionomer plastic within which, in the case of the handwear, is a layer of heat-conducting plastic having a stranded heating wire embedded therein. In the case of the footwear the heating wire layer is provided on the sole only of the shoe.

The primary object of the invention is to provide electrically heated handwear and footwear which maintains a uniform temperature on the feet and hands of the user.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevation of a complete mitten constructed in accordance with the invention;

FIG. **2** is an enlarged fragmentary transverse cross section taken along the line **2—2** of FIG. **1** looking in the direction of the arrows;

FIG. **3** is a rear elevation of the heating insert for the mitten of FIG. **1**;

FIG. **4** is a side elevation of a shoe constructed in accordance with the invention;

FIG. **5** is a top plan view of the heating insole of the shoe illustrated in FIG. **4**;

FIG. **6** is an enlarged fragmentary transverse sectional view taken along the line **6–6** of FIG. **4** looking in the direction of the arrows; and

FIG. **7** is an enlarged fragmentary vertical sectional view of the heating insole.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail wherein like

reference characters indicate like parts throughout the several figures the reference numeral **10** indicates generally a mitten constructed in accordance with the invention.

The mitten **10** includes an outer covering **11** having a thumb portion **12** and a finger portion **13** both integrally joined to a wrist portion **14**. The outer covering **11** is completely lined with a relatively thin layer of ionomer foam plastic **15** to serve as insulation for the mitten **10**.

A heating insert **16** includes a finger portion **17** having a thumb portion **18** integrally connected thereto. The insert **16** has an inner surface **19** to contact the hand within the mitten **10** and a layer **20** of heat-conducting plastic within which stranded heating wires **21** are molded. The heating wires **21** extend throughout the insert **16** and terminate in a plug **22** which can be connected to a source of low-voltage electricity. The insert **16** is a hot pad which can be worn either in contact with the back or the front of the hand to suit the wearer.

Referring now to FIGS. **4** through **7** the reference numeral **30** indicates generally a shoe incorporating another embodiment of the invention.

The shoe **30** includes a sole **31**, heel **32** and an upper **33**, all formed of conventional material. The sole **31** and upper **33** are completely lined with an ionomer foam plastic layer **34** to insulate the shoe **30**. An inner lining **35** protects the foam plastic layer **34** and provides a smooth inner surface for contact with the foot of the wearer.

A pad **36** formed of heat-conducting plastic is shaped to the sole of the shoe **30** and has a stranded heating wire **37** molded therein. The wire **37** is connected to a plug **38** mounted on the upper **33** for connection to a source of low-voltage electricity.

The pad **36** is fitted into the shoe **30** beneath the insole **38** as can be seen in FIG. **6**. It should be understood however that the pad **36** can also be inserted in a shoe on top of the insole **38** should this be desired.

The mitten and shoes of the present invention maintain a uniform heat on the hands and feet of the wearer without undue electric power requirements.

Having thus described the preferred embodiments of the invention it should be understood that numerous structural modifications and adaptions may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. A mitten comprising a hand-encompassing cover, an ionomer foam plastic liner for said cover, an electrically heated pad insert removably positioned within said cover for contact directly with the back or palm of the hand of the user, said pad including a stranded electric heating wire embedded in a relatively thin sheet of heat-conducting plastic.

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