WALTCO WARM HAND GLOVES

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ABSTRACT
A thermal glove for providing warmth to a hand of the user includes a top section for covering a top of the thermal glove, a bottom section for covering a bottom of the thermal glove, a heating element positioned between the top section and the bottom section for heating the interior of the thermal glove, and a temperature control device to control the heating element to control the interior temperature of the thermal glove. The temperature control device may be a variable temperature control device, and the thermal glove includes a controller circuit for controlling the heating element. The thermal glove includes a battery circuit for providing power to the heating element, and the thermal glove includes a charging circuit for charging the battery circuit. The battery circuit may be connected to a knife connection device, and the battery circuit may be connected to an A/C connector device.
FIELD OF THE INVENTION

[0001] The instant invention relates generally to gloves fitted to be worn on a human hand and, more specifically, to thermal gloves having a heating element integrated with a body of the glove for improved comfort.

BACKGROUND OF THE INVENTION

[0002] A variety of thermal glove and mitten designs have been proposed which incorporate a chemical or fuel-burning heating element within the glove or mitten shell for warming the hands of the wearer. Examples of such gloves, which are generally designed for cold temperature, outdoor activities such as snow skiing, are described in U.S. Pat. No. 1,970,081 issued to Eisendrath on Aug. 14, 1934; U.S. Pat. No. 4,543,671 issued to Monk on Oct. 1, 1985; U.S. Pat. No. 4,535,482 issued to Spector et al. on Aug. 20, 1985; U.S. Pat. No. 4,742,579 issued to Dunford on May 10, 1988, and in U.S. Pat. No. 4,742,579 issued to Rinehart on Jul. 30, 1991.

[0003] Representative of these designs, Eisendrath (U.S. Pat. No. 1,970,081) discloses a thermal mitten having an inner lining and outer covering layer with a closeable pocket of waterproof material in between the inner and outer layers above the back hand portion of the glove. The pocket is designed to receive a chemical heating pocket activated by wetting to impart heat to the hand of the wearer. In a comparable design, Monk (U.S. Pat. No. 4,543,671) discloses a thermal mitten having a closeable pouch formed in a lining of the mitten at the front (finger portion) or back hand portion of the mitten, the pouch being adapted to receive a heating element. In another comparable design, Dunford (U.S. Pat. No. 4,742,579) discloses a winter sports mitten having a heater pocket between an exterior face and inner glove lining of the mitten to receive a chemical heat pack.

[0004] In yet additional related designs, Rinehart (U.S. Pat. No. 5,035,003) and Spector et al. (U.S. Pat. No. 4,535,482) disclose thermal gloves heated by a chemical pack, or fuel-burning pocket warmer, respectively, contained within a pocket formed between inner and outer lining layers of the glove. Rinehart further discloses a liquid filled bladder coextensive with the glove lining, i.e., surrounding the palm and fingers, for distributing heat or cold generated by an exothermic or endothermic, chemical heat pack from the wrist portion of the glove to the extremities of the fingers. Spector et al. disclose a comparable design which uses strips of thermally conductive material extending along the thumb and fingers to distribute heat generated by a fuel-burning hand warmer throughout the hand, particularly to the vulnerable finger extremities.

[0005] Numerous problems attend the foregoing thermal glove and mitten designs. Among these problems is a typically heavy glove construction and bulky heat pack design which is poorly adapted for different environments and activities other than cold weather sports. Thus, these bulky designs may be poorly adapted for light activities such as walking and driving, or for indoor use such as in the work place.

[0006] In addition, each of the heat packs previously disclosed for use with gloves or mittens (including chemical and fuel-burning heat packs) all produce a more or less constant and uncontrollable level of heating or cooling energy, whereby a higher or lower level of heating or cooling cannot be selected by the user for maximum comfort suited to different environments and activities. Thus, these packs are again poorly adapted for use in different environments and activities ranging from cold outdoor sporting activities, to mild weather and light activity use, to indoor use such as in the work place. In the latter case, the non-adjustable heating capacity of prior art thermal gloves and mittens is not conducive to therapeutic uses of such devices in an indoor setting, e.g., to alleviate computer strain or other technical work-related strain such as that caused by laboratory work. In addition, each of the previously disclosed heat packs fails to provide a fast, repeatable rechargeable heating source, which is desired for long-term use, e.g., for long term therapeutic use during extended technical work activities.

[0007] In addition to the foregoing deficiencies, the construction of previously known thermal gloves and mittens is generally designed for manual shielding and thermal protection only. Moreover, the bulky designs of previously known thermal gloves and mittens are ill-adapted for use in conjunction with such technical activities, which typically require unimpeded dexterity and tactile sensitivity.

[0008] Beyond the field of thermal gloves and mittens designed for cold outdoor sporting activities, a variety of therapeutic devices are known in the medical arts which feature a heating or cooling element, such as thermal gel-packs adapted to warm or cool injured portions of a patient's body. Thus, Stout (U.S. Pat. No. 4,671,267, issued Jun. 9, 1987) discloses an orthopedic therapy device featuring a body of thermal gel which can be heated or refrigerated to provide appropriate thermal treatment to an injured portion of a patient's body, e.g., an elbow, hand, or ankle. In one embodiment, Stout depicts an orthopedic wrap formed of stretch fabric with securing ties which encases a body of thermal gel, which wrap is designed for thermal treatment of body parts such as ankles, elbows and other joints. Alternatively, Stout discloses a thermal mitt for treatment of an injured hand, which mitt is bulky and features upper and lower, hand-shaped thermal gel bodies for warming or cooling the injured hand. The mitt is heated or cooled and then placed over a fabric glove which is pre-fitted onto the patient's hand. In a comparable disclosure, V.S. Pat. No. 5,050,596, issued to Walasek et al. on Sep. 24, 1991, teaches a bulky thermal mitt adapted to surround a patient's hand and provide heat or cold treatment thereto. Like Stout, Walasek et al. features a large gel body, coextensive with the outline of the palms and fingers.

[0009] U.S. Pat. No. 6,141,801 discloses a thermal glove fitted to a human hand having integrated with a body of the glove a thermal, gel-filled pack. The gel pack includes a sealed bladder constructed of flexible, durable material resistant to heat and rupture. The bladder encloses a thermal gel adapted for repeated heating and cooling, such as by microwave exposure or refrigeration. The gel retains and transmits heat energy or cold to the hand of a wearer and is repeatable rechargeable. In preferred aspects of the invention, the gel pack is removable placed within a pocket integrated with the body of glove and adapted to removable receive the gel pack. The pocket may include a closure to secure the pack within the pocket. In other preferred aspects of the invention, a technical glove is provided incorporating a thermal gel pack and further providing a support cuff extending up the forearm of the wearer for comfort, prosthetic and/or injury preventive use by technical workers, such as computer users and laboratory workers.

[0010] As in the case of the outdoor thermal gloves and mittens, discussed above, numerous problems also attend the
foregoing designs for therapeutic heat compresses and mitts, particularly in the context of activities other than immobilized patient therapy. Again, the problem of heavy mitt construction and bulky heat pack design render these devices poorly adapted for different environments and activities other than treating injuries of an immobilized body part. In fact, these designs are poorly adapted for any active use, particularly any active use requiring unimpeded dexterity and tactile sensitivity such as computer use, assembly manipulation, and laboratory work.

SUMMARY

[0011] It is therefore an object of the present invention to provide a thermal glove which is well adapted for different environments and activities, including cold weather sports, light activities such as walking and driving, and indoor use such as for manual manipulative work.

[0012] It is an additional object of the invention to satisfy the above object in a thermal glove having a controllable level of heating energy, whereby a higher or lower level of heating can be selected by the user for maximum comfort suited to different environments and activities.

[0013] It is a further object that the electric storage device incorporated within the thermal glove be adapted for fast, safe, and repeatable recharging suitable for long-term use.

[0014] It is still a further object of the invention to satisfy the foregoing objects in a thermal glove adapted for use in technical activities which require unimpeded dexterity and tactile sensitivity, such as computer use and laboratory work.

[0015] It is therefore an object of the present invention to provide a thermal glove which is well adapted for different environments and activities, including cold weather sports, light activities such as walking and driving, and indoor use such as for manual manipulative work.

[0016] In today's society, health and comfort reign supreme, and the Walco Warm Hands Glove referred to herein below as a thermal glove provides both elements. The thermal glove of the present invention provides hand warmth for outdoor workers, such as construction workers, city workers, groundkeepers, telephone and utilities workers, air traffic controllers, parcel workers, couriers, truckers, soldiers/military personnel—whose duties often keep them outside—summer and winter. Cyclists, warehouse and industrial workers—whose jobs subjects them to ice, sleet, snow and freezing temperatures that can affect circulation and cause frostbite also can benefit from Walco Warm Hands Gloves. These gloves also provide hand warmth to everyday commutes that travel to and fro, whose hands are sensitive to cold temperatures in the civilian communities. There are also health benefits to these gloves which can provide heat therapy for individuals who have been stricken with arthritis, carpal tunnel syndrome, joint disease in the hands, swelling in the hands, sprains, strains, or individuals who have had various types of orthopedic surgical procedures on their hands and other ailments that affect the hands and often require heat applications for heat therapy. The gloves can also be used by athletes for heat therapy to their hands which is a very valuable asset to their careers. The Walco Warm Hand Gloves can come in various styles, sizes, materials, textures, colors, thicknesses, lengths, and cosmetic designs. These gloves are designed with heating elements within the inner lining of the gloves' top, sides, palms, and/or wrist section and an outer lining of heat deflecting material within the glove. These gloves have a temperature control device, which can be housed within the gloves or separate from the gloves, either analog or digital, which control the temperature of the gloves. The temperature control device can be battery powered and/or rechargeable via wall socket (AC/DC), car cigarette lighter, or an external battery charging device, which can provide recharging the glove convenient for the end user, whether they are at home or traveling abroad. The outer glove can be constructed of leather, nylon, rayon polyester, or any other man made and or natural material. The wrist section of the gloves can have elastic type bands to assist in keeping the heat from escaping. The gloves can benefit people from all walks of life and all areas of professions—athletically, medically, everyday wear, or those who are exposed to the outdoor elements, during their on the job assignments, such as soldiers.

[0017] A thermal glove for providing warmth to a hand of the user includes a top section for covering a top of the thermal glove, a bottom section for covering a bottom of the thermal glove, a heating element positioned between the top section and the bottom section for heating the interior of the thermal glove, and a temperature control device to control the heating element to control the interior temperature of the thermal glove.

[0018] The temperature control device may be a variable temperature control device, and the thermal glove includes a controller circuit for controlling the heating element.

[0019] The thermal glove includes a battery circuit for providing power to the heating element, and the thermal glove includes a charging circuit for charging the battery circuit.

[0020] The battery circuit is connected to a knife connection device, and the battery circuit is connected to an A/C connector device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The invention may be understood by reference to the following description taken in conjunction with the accompanying drawings, in which, like reference numerals identify like elements, and in which:

[0022] FIG. 1 illustrates a cross-sectional view of the top of the thermal glove of the present invention;

[0023] FIG. 2 illustrates a cross-sectional view of the bottom of the thermal glove of the present invention;

[0024] FIG. 3 illustrates a cross-sectional view of the side of the thermal glove of the present invention;

[0025] FIG. 4 illustrates a circuit diagram of the thermal glove of the present invention.

DETAILED DESCRIPTION

[0026] FIG. 1 illustrates a top of the thermal glove 100 of the present invention. The thermal glove 100 includes a finger section 102, a thumb section 104 and a central hand section 106. FIG. 1 additionally illustrates a heating element 108 which follows a path from the controller contact 110 and crosses the central hand section 106 and follows the thumb section 104 and reenters the central hand section 106. From the central hand section 106, the path exits the finger section 102 and exits the finger section 102 to reenter the central hand section 106. The path exits the central hand section 106, enters the other finger section 102, exits the finger section 102 and enters the central hand section 106 repeatedly for each finger section 102. Finally, the path crosses the central hand section 106 and terminates at another controller terminal 110. The controller terminal 110 connects to an input port.
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112 for the controller circuit 114. The controller housing 124 houses the controller circuit 114 and includes a heating element control device 118 which allows the user to change the amount of heat flowing to the user’s hand and includes a thermometric window 120 to allow the user to see the temperature of the thermal glove 100. A power cord 126 connects a plug 128 to the internal battery 250 of the controller circuit 114. The plug 128 removably connects into a knife connector device 130 which can be used to connect into a power supply such as found in an automobile so that the internal battery 250 can be charged while driving in the automobile, or the plug 128 may removably connect into A/C connector device 132 which is adapted to be connected into a household output device to receive standard A/C power.

[0027] FIG. 2 illustrates the bottom of the thermal glove 100 which includes the finger section 102, the thumb section 104 and the central hand section 106. FIG. 2 illustrates at the bottom of the thermal glove 100 is without the heating element 108. In another embodiment, the bottom of the thermal glove 100 could include the heating element 108 which could generally mirror the path of the heating element 108 illustrated in the top of the thermal glove 100 in FIG. 1. FIG. 3 illustrates a cross-section of the thermal glove 100 and could be a cross-section of one of the finger section 102, the thumb section 104 and the central hand section 106. FIG. 3 illustrates a top section 306 and a bottom section 308. The top section 306 and the bottom section 308 includes an exterior surface 302 which is distal to the hand of the user and may be formed from heat reflective material or heat insulating material and an interior surface 304 which is proximate to the hand of the user and may be formed from material that transfers heat so that heat can be transferred from the heating element of 108. The exterior surface 302 may be formed from leather, nylon, rayon, polyester or any other man-made or natural material. The interior surface 304 may be formed from cotton, nylon, wool, polypropylene or other suitable natural or synthetic fibers. Optionally, the top section 306 and the bottom section 308 may include insulating layer 310 to provide insulation to help prevent heat loss. The insulating layer 310 may be waterproof to protect the heating element 108. The principles of the present invention are applicable to a mitten.

[0028] FIG. 4 illustrates a controller circuit 402 which is connected to the battery circuit 404 and which is connected to the battery charging circuit 406. The battery circuit 404 controls the power to the input port 112 and consequently controls the heat emitted from the heating element 108. The variable temperature control device 122 is connected to the controller circuit 402 and should provide an indication to the controller circuit 402 from the user on how warm or cool the thermal glove 100 should be. The controller circuit 402 controls the battery circuit 404 to either increase or decrease or maintain the electric current to the heating element 108 based on the variable temperature control device 122. Consequently, the user can control how warm or cold the thermal glove 100 is. As the ambient temperature drops, the battery circuit 404 can increase the amount of current to the heating element 108 to maintain the temperature or if the user desires a different temperature, the battery circuit 404 can increase or decrease the power to the heating element 108 in order to reach the desired temperature. The heating element 108 should be formed from flexible material and should not fatigue due to bending. Additionally, the controller circuit 402 controls the charging circuit 406 to control the rate of charging for the battery circuit 404. The charging circuit 406 is connected to the power cord 136.

[0029] While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and are herein described in detail. It should be understood, however, that the description herein of specific embodiments is not intended to limit the invention to the particular forms disclosed.

1) A thermal glove for providing warmth to a hand of the user, comprising:
   a top section for covering a top of the thermal glove;
   a bottom section for covering a bottom of the thermal glove;
   a heating element positioned between the top section and the bottom section for heating the interior of the thermal glove;
   a temperature control device to control the heating element to control the interior temperature of the thermal glove.

2) A thermal glove for providing warmth to a hand of the user as in claim 1,
   wherein the temperature control device is a variable temperature control device.

3) A thermal glove for providing warmth to a hand of the user as in claim 1,
   wherein the thermal glove includes a controller circuit for controlling the heating element.

4) A thermal glove for providing warmth to a hand of the user as in claim 1,
   wherein the thermal glove includes a battery circuit for providing power to the heating element.

5) A thermal glove for providing warmth to a hand of the user as in claim 4,
   wherein the thermal glove includes a battery circuit for providing power to the heating element.

6) A thermal glove for providing warmth to a hand of the user as in claim 4,
   wherein the battery circuit is connected to a knife connection device.

7) A thermal glove for providing warmth to a hand of the user as in claim 4,
   wherein the battery circuit is connected to an A/C connector device.

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