July 7, 1964 S. S. GREEN 3,140,387

READILY PORTABLE LUGGAGE-TYPE ELECTRIC HEATING DEVICE

Filed Jan. 12, 1961 2 Sheets-Sheet 1

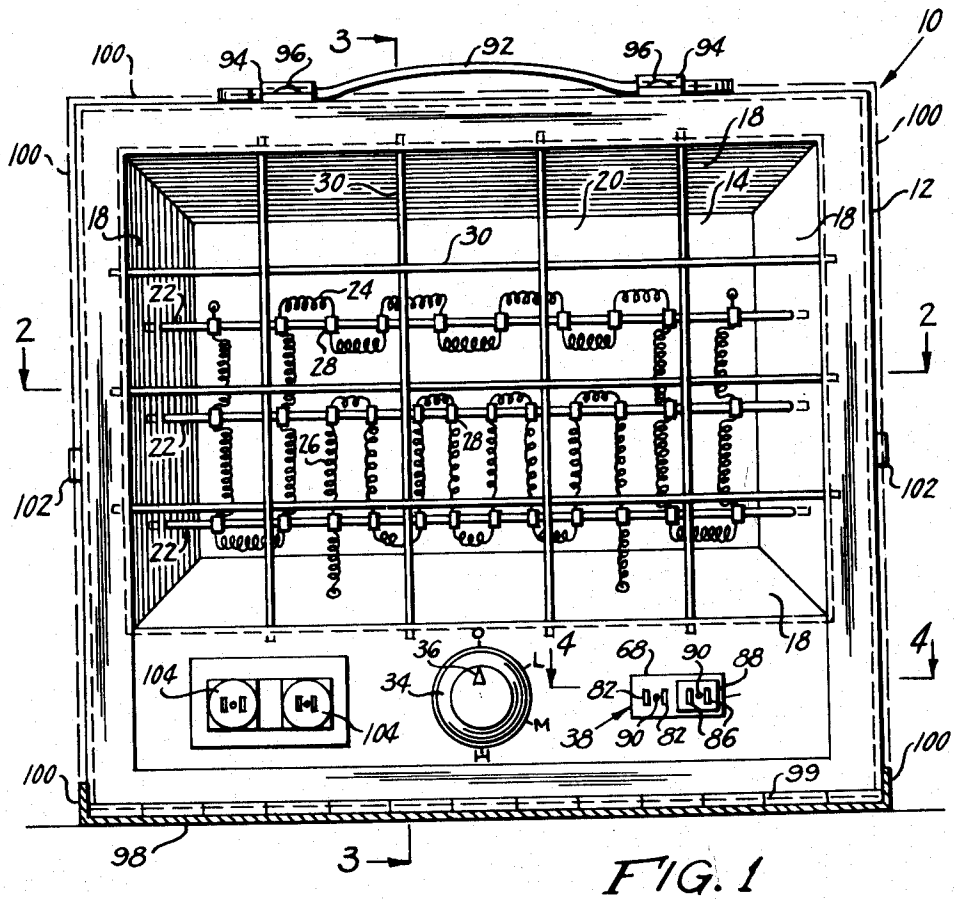


FIG. 1

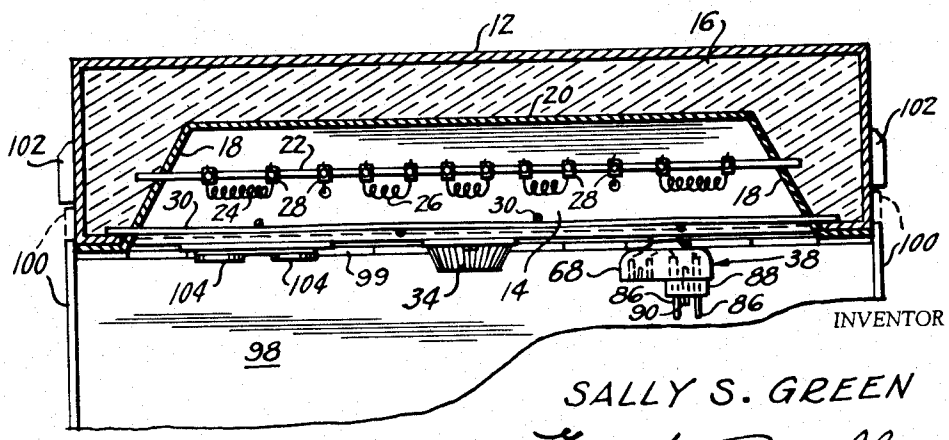


FIG. 2

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READILY PORTABLE LUGGAGE-TYPE ELECTRIC HEATING DEVICE

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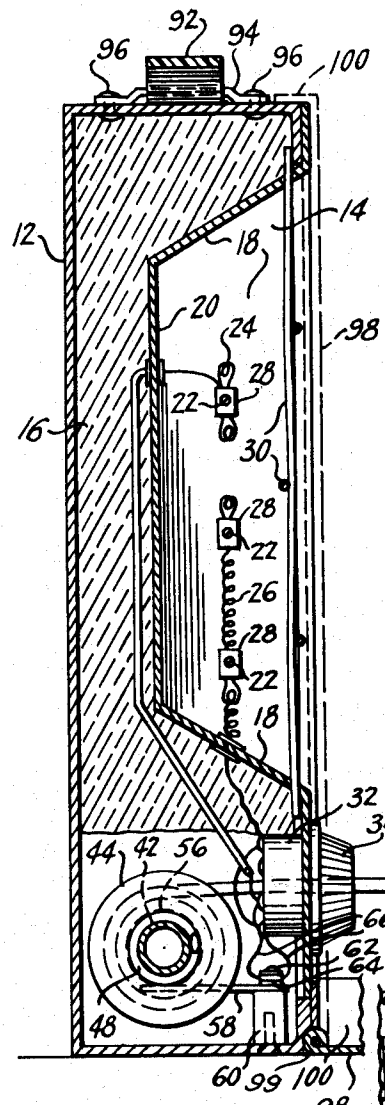


FIG. 3

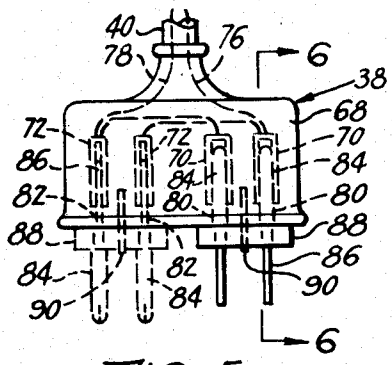


FIG. 5

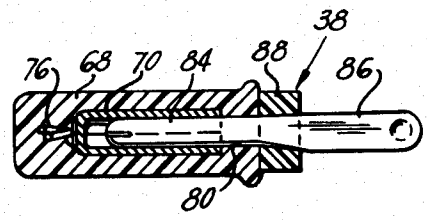


FIG. 6

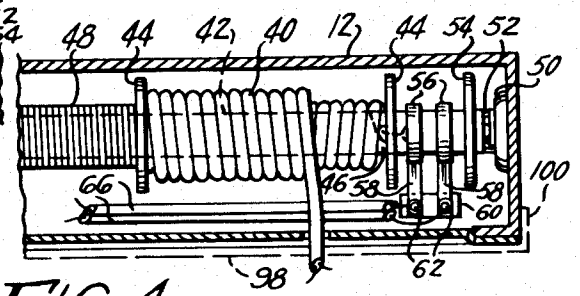


FIG. 4

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READILY PORTABLE LUGGAGE-TYPE ELECTRIC HEATING DEVICE

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Filed Jan. 12, 1961, Ser. No. 82,197
1 Claim. (Cl. 219—346)

This invention relates to a heating device, and it particularly relates to a portable type of heating device which can be easily carried about like a piece of luggage and which is adapted for use in most parts of the world.

Many travelers, especially those who must go to small, out-of-the-way towns and villages where lodging accommodations are poor, or those who travel to remote parts of the world, find that the heating facilities in these places are very meager. It would, therefore, be a great convenience or even a necessity for them to have some sort of efficient heating means available with them at all times. However, it has heretofore been difficult to provide such heating means in an adequately portable yet efficient form since, if a heating device was made sufficiently light in weight, it could not provide sufficient heat, whereas if the device was sufficiently efficient, it was too heavy to carry about. Furthermore, since the heating units are generally of an electrical nature, there constantly arose the problem of compatability of the different type electrical circuits with the heating unit; for example, in Europe, the electrical receptacles are generally constructed to receive small, round prongs on an electrical plug while in the United States, the receptacles are generally constructed to receive wider, flat prongs.

It is, therefore, one object of the present invention to provide a portable heating device which can be effectively used almost anywhere in the world where electrical energy is available.

Another object of the present invention is to provide a portable heating device which is highly effective in use although it can be easily carried about like a piece of luggage.

Another object of the present invention is to provide a portable electric heating device which is simple in construction and not subject to easy damage.

Other objects of the present invention are to provide an improved heating device, of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

FIG. 1 is a front elevational view of a heater embodying the present invention.

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1.

FIG. 3 is a sectional view taken on line 3—3 of FIG. 1.

FIG. 4 is a fragmentary view, partly in section and partly in elevation, taken on line 4—4 of FIG. 1.

FIG. 5 is an enlarged, elevational view of the electrical plug forming part of the device of FIG. 1 and embodying the present invention.

FIG. 6 is a sectional view taken on line 6—6 of FIG. 5.

Referring now in greater detail to the drawings wherein similar reference characters refer to similar parts, there is shown a heating device, geneally designated **10**, comprising a housing **12** of generally square or rectangular shape on the front face of which is provided a rectangular recess **14**. The recess **14** is defined by inwardly-inclined side walls **18** ending in a rear wall **20**. The housing **12** may be made of any desired material such as plastic, aluminum and the like, while the walls **18** and **20** are constructed of a heat-reflecting material such as aluminum, iron, steel or similar metal. Preferably, the housing **12** is of hollow construction and is filled with a light-weight heat insulating material **16** such as asbestos, fiber glass, mineral wool or the like, in the ordinary manner.

Extending across the face of the recess **14** are three vertically-spaced rods **22**, each of which is connected at its ends to opposite side walls **18** (as best shown in FIG. 1). These rods **22** support a pair of heating coils **24** and **26** by means of insulating members **28**; the coil **24** being a low resistance coil while the coil **26** is a medium resistance coil. When both coils **24** and **26** are actuated, the heating unit is at high.

A safety grid **30** is provided over the open face of the recess **14** as a protective guard against accidental contact with the heating coils.

The coils **24** and **26** are connected to a three-way switch shown generally at **32**, this switch being actuated by a dial **34** having an indicating mark **36** movable from the O or "off" position through the L or "low" position at which only the coil **24** is actuated, the M or "medium" position at which only the coil **26** is actuated, and the H or "high" position at which both the coils **24** and **26** are actuated.

Connected to the housing **12** across its bottom is a retractable plug **38** mounted at one end of an electrical cable **40**. The cable **40** is adapted to be normally held coiled around a spool **42** formed by a pair of discs or flanges **44** fixed on a shaft **46**. A torsion spring **48** surrounds the shaft **46** at one end and is connected both to the shaft **46** and to the housing **12** whereby the spring **48** acts to rotatably bias the shaft **46** in a direction to wind the cable **40** around the spool **42** to which the inner end of the cable **40** is attached.

The shaft **46** is journalled in ball-bearing mountings **50** at each end, these mountings **50** being connected to the inner surface of the housing **12**. At that end of the shaft **46** which is opposite the end on which is mounted the torsion spring **48**, there is provided a ratchet means **52** similar to that generally used on window shades or the like. This ratchet means **52** is positioned on the shaft **46** just outwardly of the corresponding ball-bearing mounting **50** (as best shown in FIG. 4).

Between the right hand flange **44** (as viewed in FIG. 4) and the ratchet means **52** there is provided on shaft **46** another disc or flange **54**. Between the flange **54** and the adjacent flange **44**, the shaft **46** has mounted thereon a pair of spaced brass rings **56** adapted to rotatably contact corresponding spring steel fingers **58** mounted on a block **60** by means of screws, rivets, or the like shown at **62**. The screws **62** also mount contact rings **64** which are, in turn, connected to switch **32** by wires **66**. In this manner, the shaft **46** and, therefore, the cable **40**, is always electrically connected to switch **32** throughout the rotation of shaft **46** and, consequently, in all retracted or extended positions of the cable **40**.

The plug **38** comprises an insulating body **68** made of plastic or the like. Within the body **68** are two pairs of bores, one pair consisting of relatively wide, flat bores **70** while the other pair consists of relatively narrow, round bores **72**. Each of these bores **70** and **72** are coated with an electrically conductive material indicated at **74** in FIG. 6. The bores **70** and **72** are each respectively connected to electrical lead lines **76** and **78** extending through the cable **40** (as best shown in FIG. 5).

The bores **70** each mate with inlet openings **80** while the bores **72** each mate with inlet openings **82**. The inlet openings **80** and bores **70** are adapted to receive relatively wide, flat prongs **84** of the United States type while the bores **72** and openings **82** are adapted to receive the relatively narrow, round prongs **86** of the European type. Both types of prongs **84** and **86** are positioned on a plug body or prong holder **88** made of the

usual insulating material such as plastic, rubber, etc. The prongs **84** and **86** are integral with each other, the prongs **84** extending from the body **88** in one direction and the prongs **86** extending in the other direction (as best shown in FIG. 6). In this manner, the same prong unit can be used for either the United States or European type of connection by merely reversing the prong unit and applying it to the proper openings **80** or **82**.

In order to hold the prong unit in fixed position in the plug body **68**, spring clips **90** extend from the body **88** to which they are releasably connected into the body **68** where they are molded in place, to releasably but firmly hold the bodies **68** and **88** together and prevent the prongs from being pulled out of the plug body **68** during use.

The housing **12** is preferably constructed to simulate a piece of luggage and is provided with a handle grip **92** connected to the housing **12** by straps **94** which are, in turn, connected to the housing **12** by rivets or the like shown at **96**. There is also provided an operable case cover **98**, preferably of the same material and thickness as the housing **12**. The cover **98** is hinged at **99** to the case and is provided with a flanged portion **100** adapted to snugly embrace the front edge of the housing **12**. When the cover is in closed position, it is adapted to be held firmly in place by a pair of clamps **102** fastened to the housing **12**, one on each side. These clamps have small metal loops that fit over a corresponding catch on the cover **98**. When a small lever attached to the clamp **102** is pressed down, the loop over the catch on the cover **98** is tightened, making it impossible for the cover **98** to fall off or be removed until the lever of the clamp **102** is pressed up. If desired, any other type of cover means may be used.

The device **10**, in addition to serving as a heating unit, may also serve to provide additional electrical current outlets for other electrical appliances, such as toasters, electric razors, electric blankets, coffee makers, etc. For this purpose, there are provided a plurality of sockets **104** on the front face of the housing **12**. These sockets **104** may be connected directly to the contact fingers **58** by means of contact rings similar to those shown at **64**, or they may be connected to the switch **32**. In this manner, the entire unit **10** acts as an adaptor whereby an American type of appliance having an American type of plug can be connected to an European type of receptacle.

In addition to its use as a space heater for warming a room or similar area, the device **10** may also be used as an electric stove or hot plate for cooking anything that does not require an oven.

By providing a low and medium range heating coil which may be operated individually or together by a switch, the voltage is controlled without the use of a voltage regulator.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of the invention, what is claimed is:

A readily portable luggage-type electric heating device comprising a parallelepiped-shaped carrying case, insulating material having a substantially rectangular recessed heat radiation face filling the major portion of said case above its bottom, said recessed face being defined by inwardly inclined reflecting side walls ending in a reflecting rear face, supporting rods extending through two opposite side walls, heating coils insulatedly mounted on said supporting rods in front of said radiation face, at least one of said coils having a greater heating action with the same electrical current than the other of the coils, switch means on said case for selectively actuating said coils individually and together, electrical connecting means for connecting said switch means to a source of electrical energy, auxiliary electrical sockets provided on said case, said auxiliary sockets being electrically connected through said electrical connecting means to the source of electrical energy, said electrical connecting means comprising a shaft extending across the bottom of said case beneath said radiant face and journaled on bearings mounted on opposite side walls of said case, a spool mounted on said shaft, a cable having an electrical contact plug at one end and connected to contact rings on said shaft at its other end, spring contact fingers contacting said contact rings and connected to conduits to said switch means, spring means resiliently and rotatably urging said shaft to wind said cable on said spool and retract said plug to a position adjacent said case, ratchet means for holding said shaft with said cable in extended position, auxiliary electrical sockets in said case connected to said conduits from said spring contact fingers, said switch means and auxiliary sockets also being located beneath said radiant face, and a luggage-type cover detachably mounted on said open-face case to protect said radiation face when not in use.

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