



US 20080181589A1

(19) **United States**

(12) **Patent Application Publication**

Dean et al.

(10) **Pub. No.: US 2008/0181589 A1**

(43) **Pub. Date: Jul. 31, 2008**

(54) **PORTABLE HEATER AND TOOL BOX METHOD AND APPARATUS**

(73) Assignee: **Marley Engineered Products LLC**

(21) Appl. No.: **11/657,521**

(75) Inventors: **Bob Dean**, Laurinburg, NC (US); **Dennis Neibrook**, Florence, SC (US); **Bob Windmeyer**, Laurinburg, NC (US); **Lee Joyner**, Florence, SC (US); **Jeffrey A. White**, Pinehurst, NC (US); **Jim Garrigus**, Laurinburg, NC (US); **Frank L. Lockhart**, Florence, SC (US); **Colin O'Connell**, Pinehurst, NC (US); **Robert F. Deaver**, Tatum, SC (US)

(22) Filed: **Jan. 25, 2007**

Publication Classification

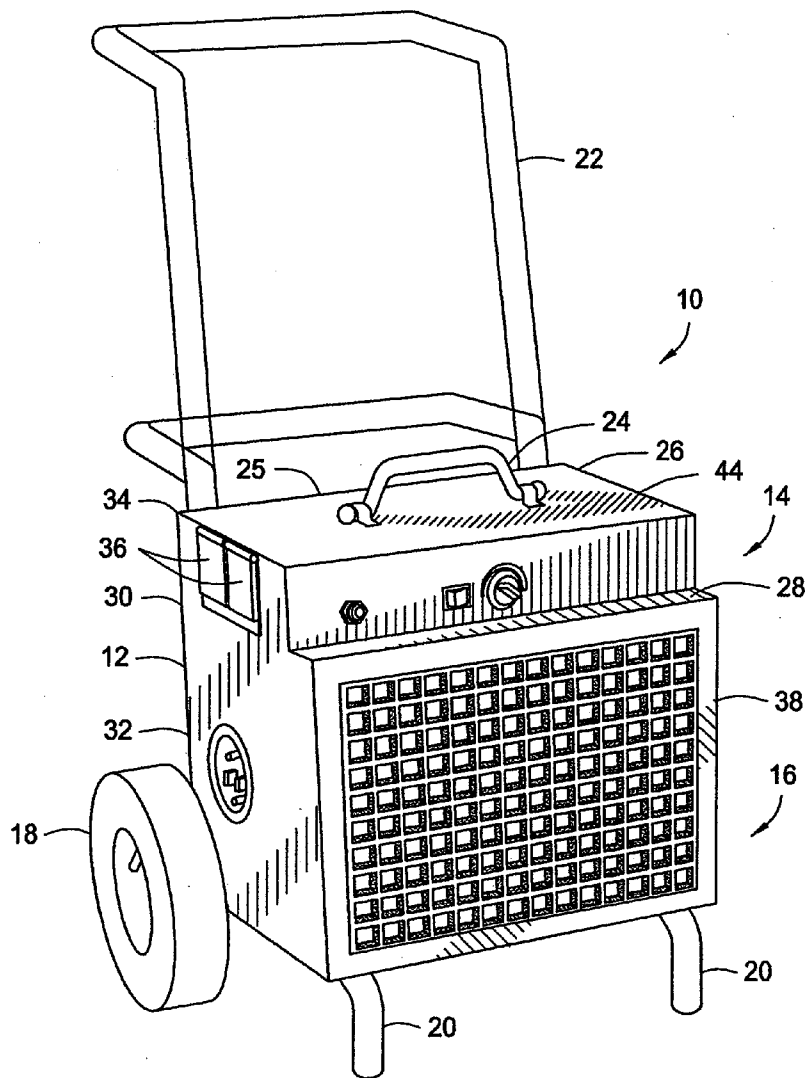
(51) **Int. Cl.**
F24H 3/00 (2006.01)
B65D 85/20 (2006.01)

(52) **U.S. Cl.** **392/373; 206/372**

(57) **ABSTRACT**

A portable heater includes a housing, a heating element incased in the housing, and a tool box comprising part of the housing. A method of providing heat and tool storage in a portable unit includes providing a heating element, housing heating element, and attaching a tool box to the housing thereby creating a unified tool box and heater housing.

Correspondence Address:
BAKER & HOSTETLER LLP
WASHINGTON SQUARE, SUITE 1100, 1050
CONNECTICUT AVE. N.W.
WASHINGTON, DC 20036-5304



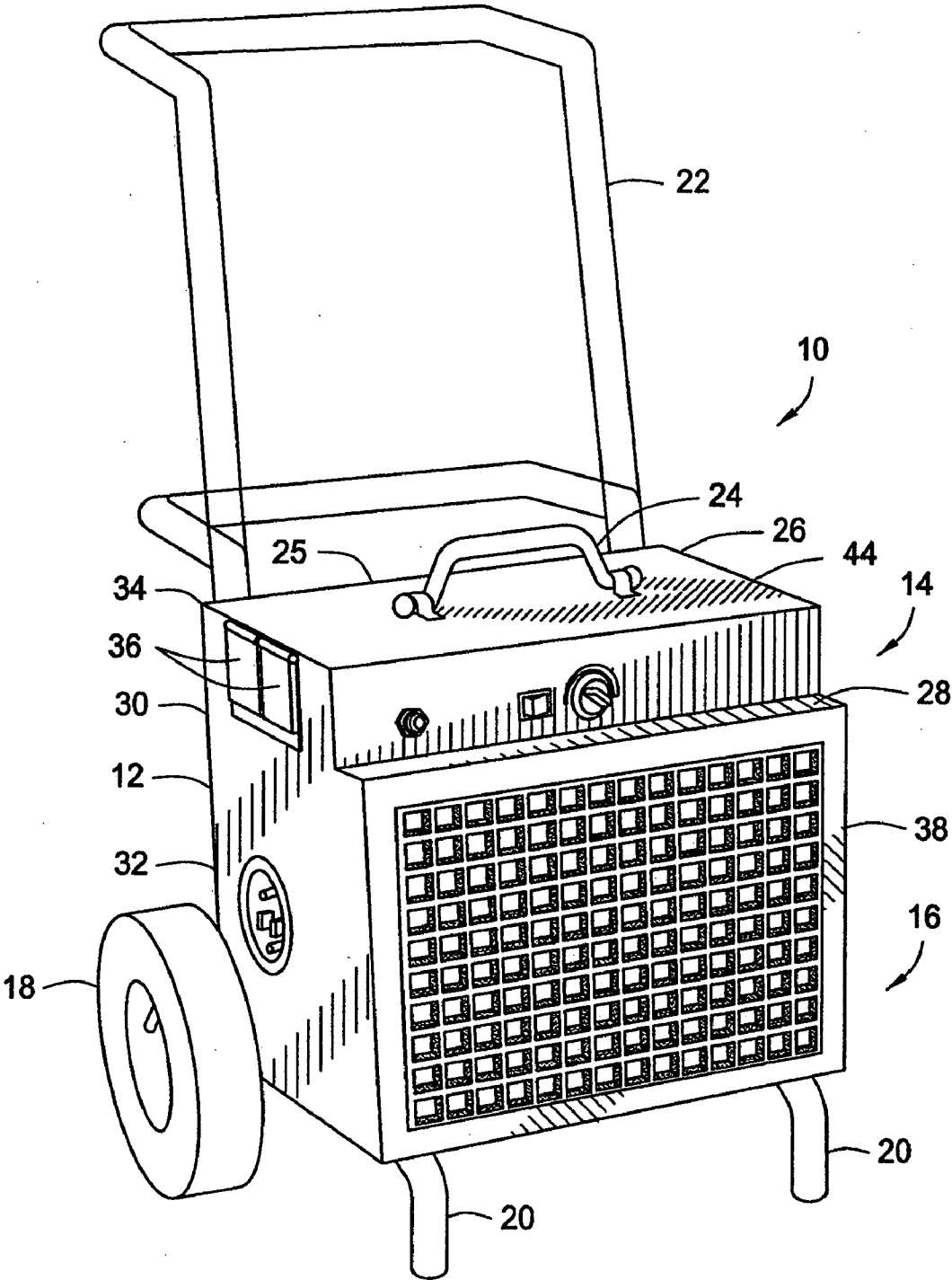


FIG. 1

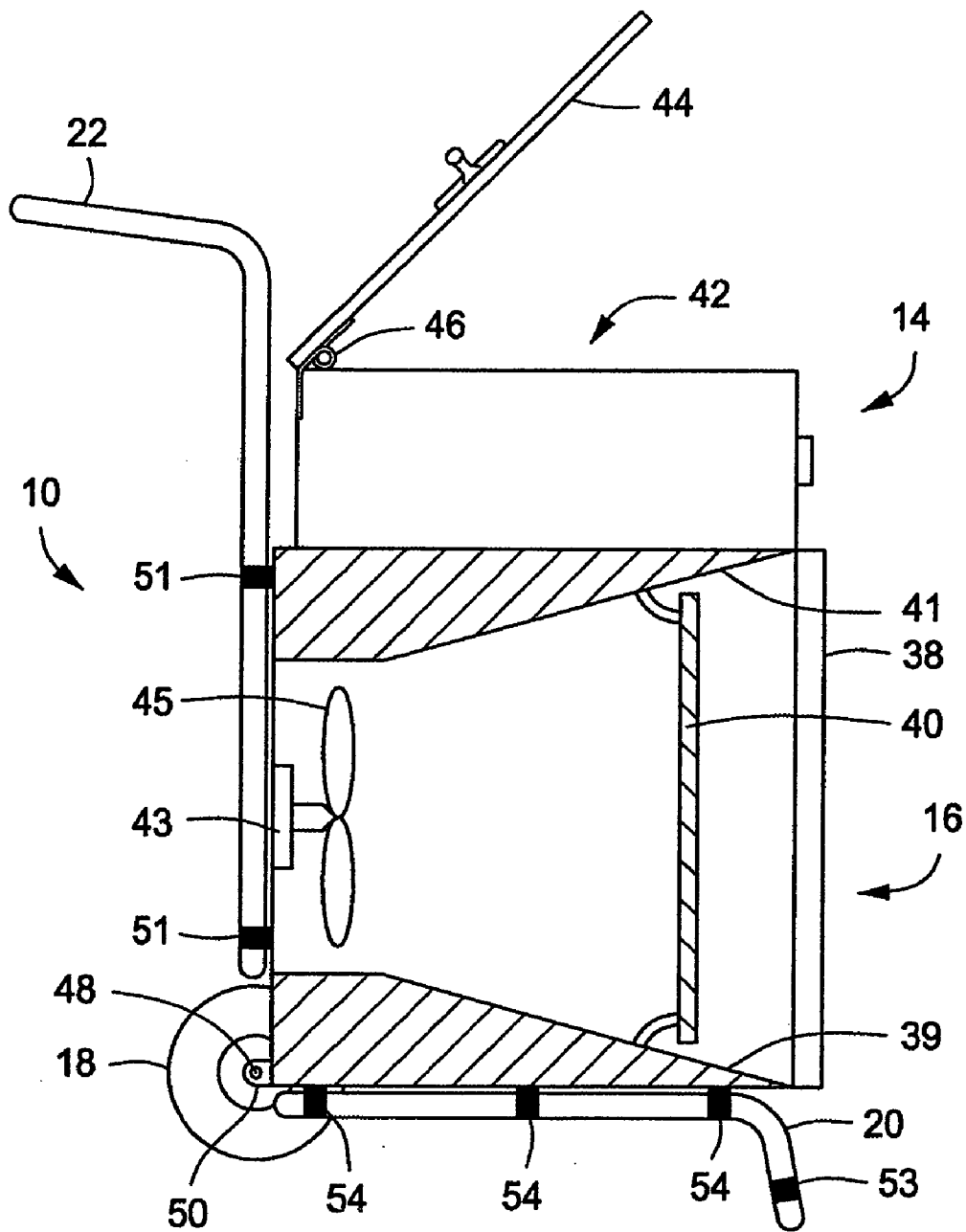


FIG. 2

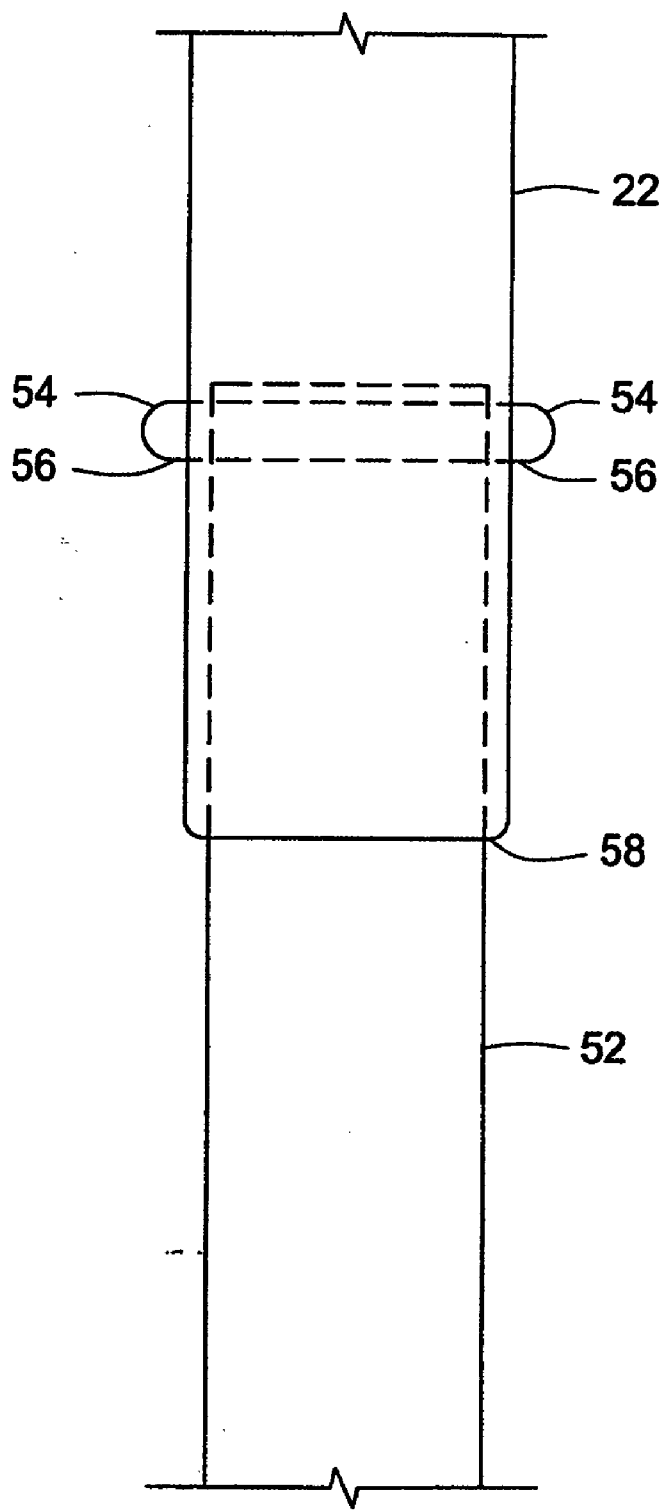


FIG. 3

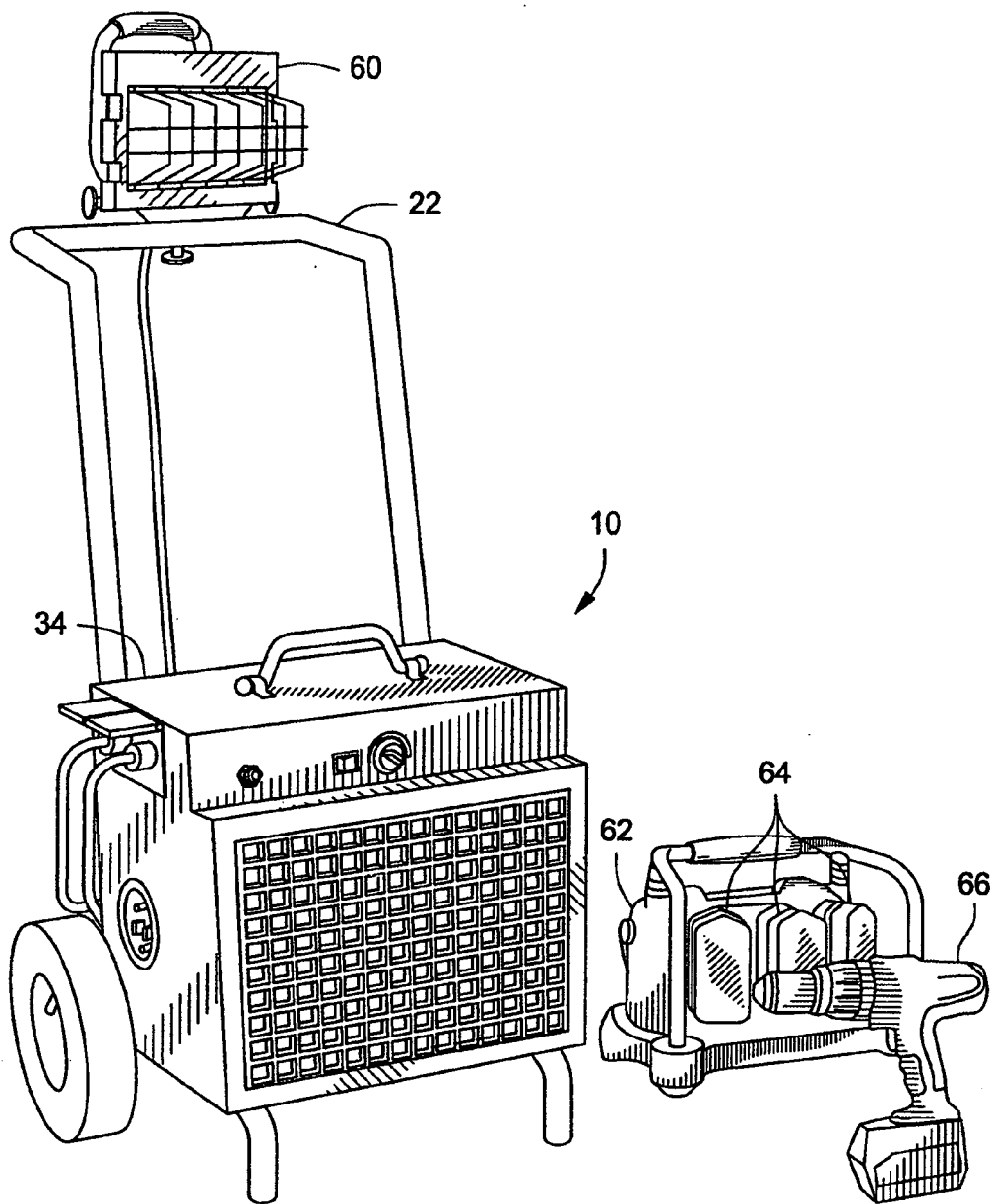


FIG. 4

**PORTABLE HEATER AND TOOL BOX
METHOD AND APPARATUS**

FIELD OF THE INVENTION

[0001] The present invention relates generally to a portable heater. More particularly, the present invention relates to a portable heater with a tool box integrated with the heater.

BACKGROUND OF THE INVENTION

[0002] Often workers who are working on a construction project, such as building a new building, have to work in an environment where the air is not conditioned. For example, when constructing a new home or commercial building, the heating system may not be installed and the environment may be very cold for the workers. One solution to this problem is to bring small portable heaters into the area where the workers are working to provide heat. One problem with some portable heaters is that they may be bulky and hard to move from one space to another.

[0003] An additional problem faced by workers, is that they often require using many different tools. While tool belts are one way to permit the workers to easily carry several different tools, some workers may require more tools that can be fit on a tool belt. Workers may have tool boxes in order to store all the tools they may require. Additionally, tool boxes provide a small measure of security to store tools. Additionally, tool boxes provide a means for transporting tools from one place to another. One problem with tool boxes that they may be bulky and heavy thus awkward to move to place to place as workers finish one area and move on to another area.

[0004] In addition to heaters and tools, workers may also require lights, ladders, and other pieces of equipment in order perform their job. Often when work is finished for the day, at end of a week, or other time period, in order to minimize tools lost to theft or corrosion due being exposed to the elements, workers pack up their equipment and take them with them when they leave the work area.

[0005] Because there are so many different pieces of equipment, many which may be heavy, awkward, and bulky, a substantial amount of time is spent moving, packing and unpacking equipment. This time could have been spent working.

[0006] Accordingly, it is desirable to provide an apparatus that and method that performs several functions desired by workers. Such an apparatus and method may provide heating to a space, tool storage, and a means of tool transportation in a easy to move and manipulate manner. Such a method or apparatus can reduce the amount of pieces of equipment that need to be moved.

SUMMARY OF THE INVENTION

[0007] The foregoing needs are met, to a great extent, by the present invention, wherein in one aspect an apparatus and method is provided that in some embodiments provide tool storage and heat in a portable and easy to move around piece of equipment. By combining both tool boxes and the heater, two large bulky pieces are consolidated into one and by equipping the apparatus with wheels it may be easily manipulated and moved from place to place.

[0008] In accordance with one embodiment of the present invention, a portable-heater is provided. The portable heater includes a housing; a heating element encased in the housing; and a tool box comprising part of the housing.

[0009] In accordance with another embodiment of the present invention,

[0010] a portable heater is provided. The portable heater may include means for housing; means for creating heat encased in the housing means; and means for storing tools comprising part of the housing means.

[0011] In accordance with yet another embodiment of the present invention, a method of providing heat and tool storage in a portable unit is provided. The method includes providing a heating element; housing the heating element; and attaching a tool box to the housing thereby creating a unified tool box and heater housing.

[0012] There has thus been outlined, rather broadly, certain embodiments of the invention in order that the detailed description thereof herein may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional embodiments of the invention that will be described below and which will form the subject matter of the claims appended hereto.

[0013] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of embodiments in addition to those described and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein, as well as the abstract, are for the purpose of description and should not be regarded as limiting.

[0014] As such, those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a perspective view illustrating the portable heater and tool box according one embodiment of the invention.

[0016] FIG. 2 is a cutaway side view of the tool box heater of FIG. 1.

[0017] FIG. 3 is a partial view of the mechanism that permits locking of the handle when the handle is extended to an extended position.

[0018] FIG. 4 is a perspective view of the portable heater with accessories.

DETAILED DESCRIPTION

[0019] The invention will now be described with reference to the drawing figures, in which like reference numerals refer to like parts throughout. An embodiment in accordance with the present invention provides a portable heater and tool box combined together into a single unit

[0020] FIG. 1 is a perspective view illustrating a portable heater 10 in accordance with the invention. A portable heater 10 has a housing 12. The housing 12 includes a tool box portion 14 located above a heater portion 16. The tool box portion 14 and heater portion 16 share a common housing 12.

[0021] In some embodiments of the invention the housing 12 may be metal. In other embodiments the housing 12 may be plastic. The portable heater 10 is equipped with wheels 18. While only one wheel 18 is shown in the view illustrated in FIG. 1, a second wheel is provided but is hidden by the heater portion 16.

[0022] Two feet 20 are attached to the housing 12 of the heater portion 16. The feet 20 permit the portable heater 10 to remain stationary when the heater 10 is left on substantially horizontal surfaces. In other words, if a floor has a minor incline, the heater 10 will not roll as the feet 20 will provide friction between the heater 10 and the floor.

[0023] The heater 10 is equipped with a handle 22. The handle 22 in some embodiments of the invention can be retracted between an extended position as shown in solid lines in FIG. 1, and retracted position as shown in broken lines in FIG. 1. In other embodiments in the invention, the handle 22 is fixed and remains in the extended position.

[0024] A tool box handle 24 is mounted to the tool box lid 44 via the handle brackets 25.

[0025] Several controls for the heater are mounted on the tool box portion 14. For example, an on/off switch 26, thermostat 28 and a warning light and/or reset button 30 are mounted on the tool box portion 14 of the housing 12.

[0026] The on/off switch 26 in some embodiments of the invention may be a simple toggle switch for supplying or denying power to the heating element 40 (see FIG. 2). The thermostat 28 in some of the embodiments of the invention and as shown in FIG. 1, may be a rotating knob that can vary the intensity of heat out put from the heating element 40 (see FIG. 2).

[0027] The warning light 30 and/or reset button 30 may be illuminated when power is supplied to the heating element 40 (see FIG. 2). Some embodiments of the invention may be equipped with a safety device such as a tip switch.

[0028] The tip switch will shut off the heating element 40 (see FIG. 2), when an undesirable condition is detected such as the heater 10 being tipped at an unacceptable angle. In such instances the tip switch will cut off power to the heating element 40 (see FIG. 2). Such embodiments may be equipped with a reset button 30 where an operator can push the reset button 30, once the undesirable condition has been eliminated and restore power to the heating element 40 (see FIG. 2).

[0029] In embodiments of the invention where the portable heater 10 is an electric heater, the heater 10 may be equipped with a power inlet 32. The power inlet 32 may be a high voltage inlet configured to receive a high voltage power line such as a 220 volt line. Also mounting on heater 10, as shown in FIG. 1, some embodiments of the invention may also be equipped with power outlets 34. The power outlets 34 may be protected by outlet covers 36 as illustrated in FIG. 1. The power outlets 34 may be a standard power outlet delivering household voltage such as 120 voltage. In other embodiments of the invention, the voltages and outlets may be modified to conform with whatever power standards are used in the location where the portable heater 10 will be used.

[0030] The examples stated above as the high voltage inlet being 240 and the standard being 120 volts, are merely mentioned as these are standard voltages for the United States. However, other voltages may be used in accordance of the invention.

[0031] Located within the housing 10, are wiring configurations to permit the power outlets 34 to be wired to the power inlet 32 in such a manner as to supply the voltages described

above from power inleted to the power inlet 32. Power obtained from the power inlet 32 in some embodiments of the invention, is also used to supply power to the heating element 40 (FIG. 40). Thus, the power inlet 32 is operably connected to both the heating element 40 (see FIG. 2) and the power outlet 34. In embodiments of the invention where the warning light 30 is illuminated to indicate that power is being supplied to the heater 10, the warning light 30 is also operatively connected to the power inlet 32 in order to supply the appropriate amount of power to the warning light 30.

[0032] The portable heater 10 is equipped with a grill 38 which protects the heating element 40 (see FIG. 2), while at the same time allows air to pass in and out of the housing 12.

[0033] Turning now to FIG. 2, a cutaway side view of the portable heater 10 is shown. FIG. 2 illustrates the tool box lid 44 in an open position exposing the interior portion 42 of the tool box 14. The lid 44 secured to the toolbox 14 with a hinge 46. The hinge 46 may be any suitable hinge capable of securing the lid 44 to the tool box 14 and permitting the lid 44 to be raised and lowered as desired. The tools will be stored in the interior portion 42 of the tool box 14.

[0034] The heater portion 16 of the portable heater 10 includes a heating element 40. The heating element 40, as shown in FIG. 2, is a tubular shaped electric heating element. A reflector 39 is configured to provide a conduit for air to flow through the heater 10 and to, in some embodiments, reflect the heat through the grill 38 and out into the environment in which the heater 10 is located. In some embodiments of the invention and as shown FIG. 2, insulation 41 may be located behind the reflector 39 providing insulation between the heater portion 16 and the tool box portion 14. The insulation 41 may also be configured to permit the housing 12 to be cool enough as to avoid burning objects that come in contact with the housing 12.

[0035] In embodiments of the invention where the electric heater 10 is a forced air heater, a fan motor 43 and fan 45 are mounted in the heater 10 and configured to cause air to flow through the heater, the electric heating element 40 and through the grill 38.

[0036] The wheel 18 is connected to the heater 10 via an axle 48. The axle 48 is in turn connected to the heater 10 by a series of brackets 50. The handle 22 is attached to the portable heater 10 via brackets 51. The heater 10 may be moved from place to place by a user grasping the handle 22, pivoting the heater 10 about the axle 48 to lift the feet 20 to no longer be in contact with a floor and then wheeling the heater 10 to a desired location on the wheels 18.

[0037] When the heater 10 is in the desired location, the heater 10 may be rotated about the axle 48 until the feet 20 are again in contact with the floor. The feet 20 may be equipped on their ends with a rubber or plastic cup 53 that provides a skid-resistance surface to help keep the heater 10 in place once the feet 20 are in contact with the floor. The feet 20 are connected to the heater 10 via brackets 54 in some embodiments of the invention. In other embodiments of the invention, the feet 20 may be attached to the heater 10 in any suitable manner.

[0038] In the embodiments of the invention where the handle 22 can be in a raised extended position or a lower retracted position as illustrated in FIG. 1, the raising and lowering of the handle 22 may be accomplished by a telescoping portion of the handle 22 as illustrated in FIG. 3. FIG. 3 shows a larger diameter portion 58 of the handle tube 22. A smaller diameter portion 52 of the handle fits inside the larger

diameter portion 58 of the handle 22. The difference in diameter permits the smaller diameter portion 52 to telescope within the larger diameter portion 22. In order to secure the smaller diameter portion 52, in a particular place within the larger diameter portion 22, the small diameter portion 52 is equipped with spring loaded buttons 54.

[0039] The spring loaded buttons 54, when they are aligned with holes 56 located in the larger diameter portion 58 of the handle 22, extend through the holes 56 the buttons 54 extending through the holes 56 secure the small diameter portion 52 within the larger diameter portion 58 of the handle 22. When it is desired to collapse the handle 22, an operator may push in the spring loaded buttons 54 in through the holes 56. Once the spring loaded buttons 54 have retreated inside the large diameter portion 58, the small diameter portion 52 may telescope and move inside the large diameter portion 58 allowing the handle 22 to move to a retracted position.

[0040] Other suitable means for allowing the handle 22 to move between an extended and retracted position, may also be done in accordance with the invention. The larger diameter portion 22 may also be equipped with several sets of holes 56 permitting the small diameter portion 52 to be secured within the large diameter portion 58 of the handle 22 at multitude of different positions as selected by a user.

[0041] FIG. 4 shows a heater 10 with optional attachments 60-66. A light 60 is mounted to the handle 22 and is plugged into the power outlet 34. A battery charger 62 is also plugged into the power outlet 34. The battery charger 62 can charge battery 64 for tools such as a cordless drill 66 or other tools. The power outlets 34 can be used for any other desired attachments in accordance with the invention. Attachments may include but are not limited to fans, blowers, saws, vacuums, drills, radios or any other electric device.

[0042] The many features and advantages of the invention are apparent from the detailed specification, and thus, it is intended by the appended claims to cover all such features and advantages of the invention which fall within the true spirit and scope of the invention. Further, since numerous modifications and variations will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation illustrated and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed is:

- 1. A portable heater comprising:
 - a housing;
 - a heating element encased in the housing; and
 - a tool box mounted to the portable heater.
- 2. The portable heater of claim 1, further comprising a grill configured to let heated air heated by the heating element vent out of the housing and protect the heating element.
- 3. The portable heater of claim 1, further comprising a handle attached to the portable heater and configured to move the heater when the handle is manipulated by a user.
- 4. The portable heater of claim 3, wherein the handle is collapsible attached to the portable heater such that the handle can achieve:

an extended position where the handle is locked in place and can move the portable heater when manipulated by a user; and

an unlocked position where the handle can collapse and be moved to an out of the way position.

5. The portable heater of claim 3, further comprising a wheel mounted proximate to an edge of the housing and secured to the portable heater sufficiently to bear at least part of the weight of the heater and roll when the handle is urged in a direction by the user.

6. The portable heater of claim 1, further comprising a foot mounted to the portable heater and configured to bear at least some of the weight of the heater.

7. The portable heater of claim 1, wherein controls for the heating element are located on the tool box.

8. The portable heater of claim 7, further comprising at least one of either: a 240 volt connection mounted to the housing and electrically connected to the heating element to provide a voltage to the heating element when a 240 volt source is connected to the volt connection, or a 120 volt outlet connected to the housing and configured to provide about 120 volts to a conductor connected to the outlet.

9. The portable heater of claim 8, further including attachments configured to plug into the outlet.

10. The portable heater of claim 1, further comprising a control connected to the housing and configured to control the heating element.

11. The portable heater of claim 1, further comprising a lid mounted to the tool box, the lid configured to open and expose an interior portion of the tool box.

12. The portable heater of claim 11, further comprising a tool box handle connected to the lid.

13. A portable heater comprising:

means for housing;

means for creating heat encased in the housing means; and

means for storing tools comprising part of the housing means.

14. A method of providing heat and tool storage in a portable unit comprising:

providing a heating element;

housing the heating element; and

attaching a tool box to the housing thereby creating a unified tool box and heater housing.

15. The method of claim 14, further comprising:

protecting the heating element with a grill.

16. The method of claim 14, further comprising:

moving the portable heater on wheels fastened to the portable heater.

17. The method of claim 14, further comprising connecting the portable heater to a voltage source.

18. The method of claim 14, further comprising connecting conductors to electric power outlets on the portable heater.

19. The method of claim 14, further comprising moving a handle mounted to the portable heater from an extended position to a retracted position.

20. The method of claim 14, further comprising controlling the heating element with controls mounted on the tool box.

* * * * *