F. KUHN & J. A. HAND.

WEATHERPROOF ELECTRICAL HEATER.

APPLICATION FILED JUNE 15, 1918.

1,288,046. Patented Dec. 17, 1918.

Fig. 1

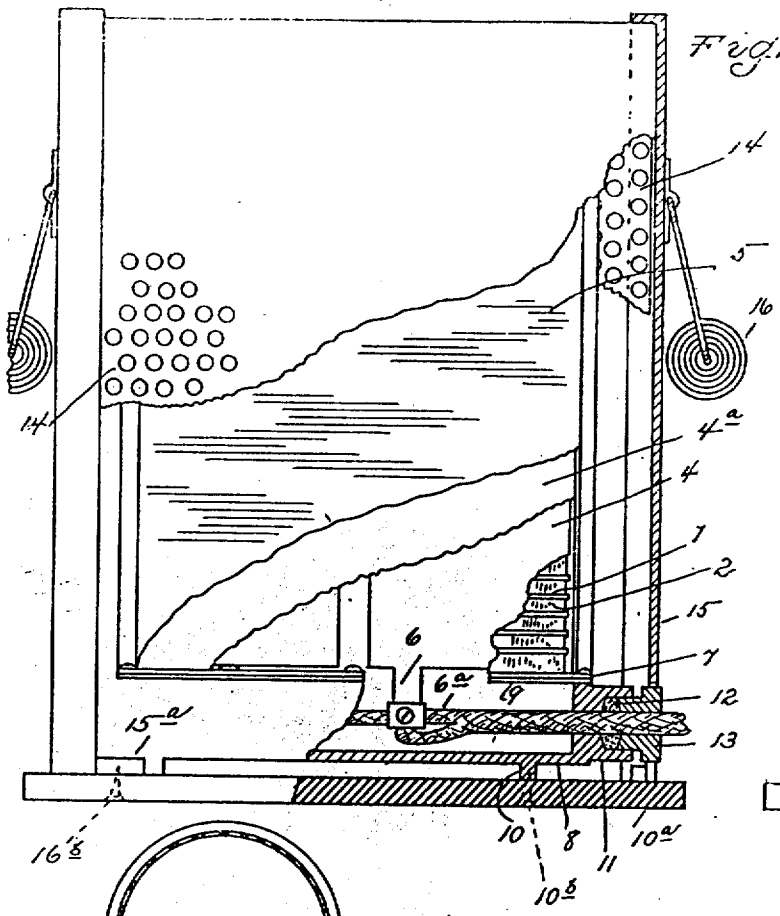


Fig. 2

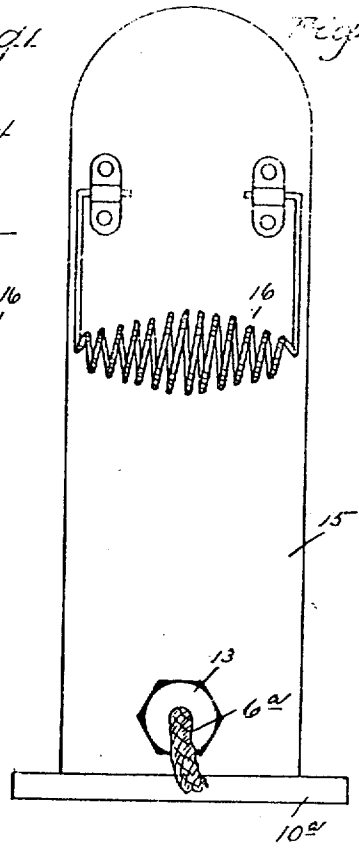
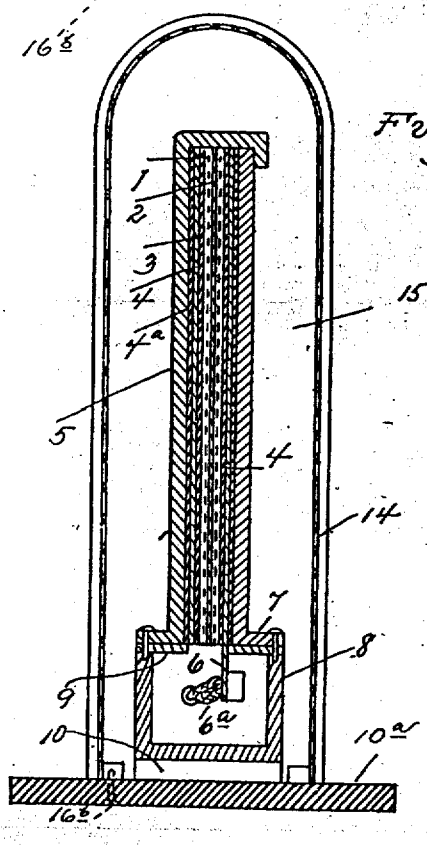


Fig. 3



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UNITED STATES PATENT OFFICE.

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WEATHERPROOF ELECTRICAL HEATER.

1,288,046. Specification of Letters Patent. Patented Dec. 17, 1918.

Application filed June 15, 1918. Serial No. 240,148.

To all whom it may concern:

Be it known that we, FRANK KUHN and JAY A. HAND, citizens of the United States of America residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Weatherproof Electrical Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to portable electric heaters and its object is to provide a portable electric heater employing a substantially water-proof construction that may be exposed to a considerable amount of moisture without suffering detrimental effect and, consequently, is particularly adapted for use in exposed places as, for example, on the deck of a boat.

In attaining this object the invention contemplates associating an armored heating element with a termianl box in such a manner that access of water to the electrical connections within said box, is substantially prevented.

In the accompanying drawings:

Figure 1 is a front view of the heater with portions thereof broken away to show the interior construction;

Fig. 2 is an end view of the heater;

Fig. 3 is a vertical transverse sectional view of the same.

In these views the reference character 1 designates a heating element which is wound upon an insulator core as, for example, a sheet of mica. At each side of said resistor, sheets 3 of mica or other insulating material are disposed and outside of these are arranged metallic connector plates 4 respectively having contact with the extremities of said heating element. Outside of the plates 4 another sheet of insulation 4^a is arranged, and the whole is then disposed within a metallic casing or armor 5. The connector plates 4 are respectively formed with lugs 6 projecting below the armor 5 for engagement with conductors 6^a. The armored heating element thus formed is characterized by a slight thickness as compared with its width. The side plates of the armor 5 are laterally flanged at the bottom thereof, as indicated at 7, and said flanges are secured by suitable means to the upper edges of a metal terminal box 8, forming a closure for the top of said box. Between said flanges and the terminal box there is clamped the gasket 9, which accomplishes the dual function of rendering the joint water-tight and minimizing the passage of heat from the heating element to said terminal box, the material of said gasket being selected to give the desired heat insulating effect. A pair of transverse ribs 10 are formed upon the bottom of the box 8 serving to space the box slightly above an insulatory base 10^a to which the terminal box is rigidly secured by screws 10^b passing through said base and engaging said ribs. At one end of the terminal box the same is exteriorly formed with a boss 11 through which is formed an axial passage admitting the conductors 6^a to the terminal box. Said boss is counterbored to form a recess receiving a packing ring 12 surrounding said conductors, said packing being compressed by a gland 13 having threaded engagement with the counterbore.

Said heating element and its terminal box are inclosed within a housing formed by an arched sheet of perforated metal 14 constituting the front, top and back of the housing, the sides of the housing being formed by metal plates 15 of heavier material to which the edges of the sheet 14 are rigidly secured. The members 15 have feet 15^a resting upon the base 10^a and engaged by screws 16^b passing through said base.

By employing an armored type of heating element and by using packing at the connection between said element and the terminal box and at the point of entry of the conductors into said terminal box, access of water or moisture either to the heating resistor or to the electrical connections is very positively prevented. The sides 15 of the housing have handles 16 secured respectively thereto so that the heater may be readily lifted and carried. Besides being weatherproof, the construction is sufficiently strong to withstand considerable hard usage without deterimental effect.

What we claim as our invention, is:

1. A portable electric heater comprising an armored heating unit, a terminal box upon which said unit is rigidly mounted forming a closure for said box, and a conductor entering said terminal box and connected to the unit therewithin.

2. A portable electric heater comprising an armored heating unit, a terminal box for

which said unit forms a closure, packing clamped between said heating unit and terminal box having a heat insulating nature and forming a weather-proofing joint, and a conductor entering said terminal box and having connection with the heating unit therewithin.

3. A portable electric heater comprising an armored heating unit, a terminal box upon which said unit is mounted and for which it forms a closure, a conductor entering said terminal box through an aperture therein, and means preventing the passage of moisture through said aperture.

4. A portable electric heater comprising an armored heating unit, a terminal box on which said unit is mounted and for which it forms a closure, said box being formed with an exterior boss having an axial passage therethrough, a conductor entering the terminal box through said passage and connected to the heating unit therein, a packing ring surrounding said conductor within a recess of said boss, and a packing gland engaging said boss and apertured to give passage to said conductor.

5. A portable electric heater comprising an armored heating unit, a terminal box upon which said unit is mounted, a base to which said terminal box is secured, and a housing secured to said base and inclosing said heating unit and terminal box.

6. A portable electric heater comprising an armored heating unit, a terminal box upon which said unit is mounted so as to form a closure for said box, a conductor entering said terminal box and connected to the unit therewithin, and a perforated housing spaced from and inclosing said heating unit.

In testimony whereof we affix our signatures.

FRANK KUHN.
JAY A. HAND.