BEST AVAILABLE COPY

E. KEEN.

ELECTRIC HEATER.

APPLICATION FILED FEB. 28, 1916.

1,220,235. Patented Mar. 27, 1917.

Fig. 1.

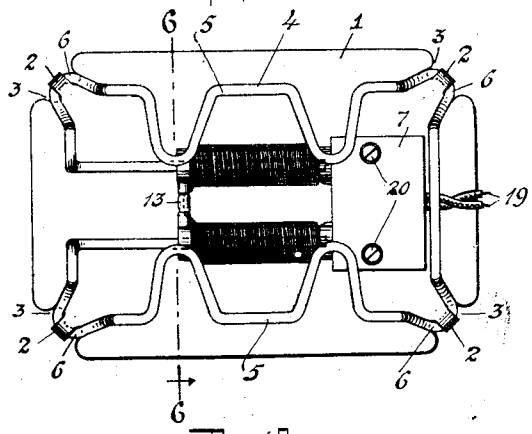


Fig. 2.

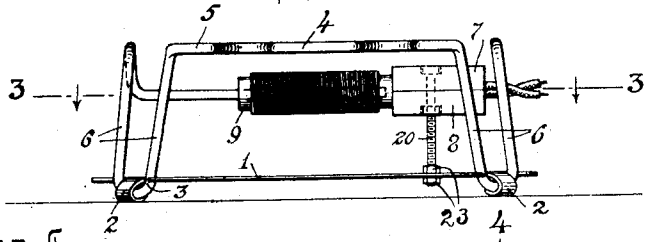


Fig. 4.

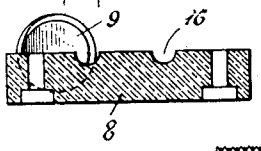


Fig. 3.

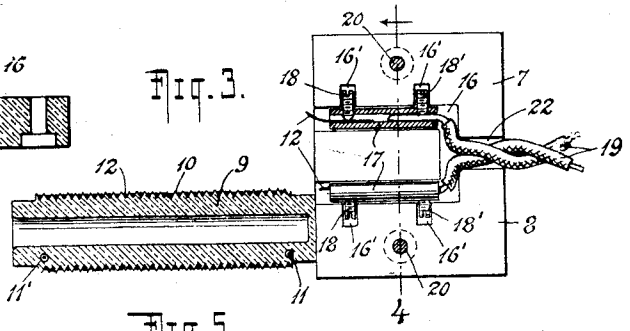


Fig. 5.

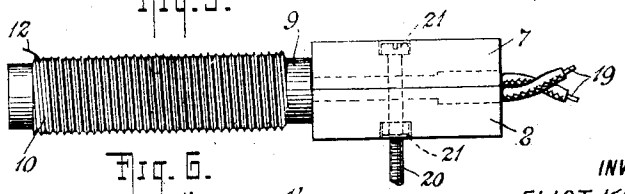
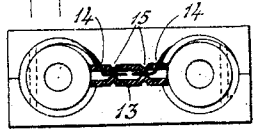


Fig. 6.



WITNESSES

G. V. Rasmussen

Elmer Strickgoung

INVENTOR

ELIOT KEEN

BY

Briesen & Schreck

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ELIOT KEEN, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE ALADDIN LAMP CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

ELECTRIC HEATER.

1,220,235. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed February 28, 1916. Serial No. 80,883.

To all whom it may concern:

Be it known that I, ELIOT KEEN, a citizen of the United States, residing in the county of Kings, borough of Brooklyn, city and State of New York, have invented a new and useful Improvement in Electric Heaters, of which the following is a specification.

My invention relates to a portable electric heater for domestic, manufacturing and like uses, such as cooking, heating water, heating glue pots and the like.

The object of my invention is to provide a simple, inexpensive, compact and durable heater of the class referred to, the parts of which are very few in number and require inexpensive materials, can be manufactured by a few very simple operations, and can be assembled very simply and quickly by cheap labor.

A further object of my invention is to provide an electric heater in which the support for the material to be heated, or for the receptacle containing such material, is also the support for the heat unit proper, the entire support comprising merely a single piece of stiff wire appropriately bent.

Still another object of my invention is to provide an electric heater having a heat unit made of two identical supporting members, each of which is independently wound with resistance wire; the necessary electrical connections for this resistance wire, including the conducting cord for connection to the operating circuit, are very simply made on each member and in such a way that when the members are united together the connections are not only concealed but are locked so that they may not be strained or pulled out.

Other objects of the invention will appear as the specification proceeds.

The invention resides in certain features of construction as will be hereinafter described and more specifically set forth in the claims.

Essentially my invention comprises a base which carries a stiff wire having a substantial part of its length bent in zigzag fashion in its own plane so as to constitute a support for the receptacle or material to be heated and its two ends bent in another plane parallel with but below the supporting plane just mentioned. The heat unit proper, when assembled, comprises a pair of parallel hollow bobbins wound with resistance wire and fixed to a common connecting bar or base from which goes the conducting cord. This pair of bobbins is slipped over the two ends of the supporting wire and fastened immovably with respect thereto. In making the bends of the wire support, as above referred to, four downwardly extended loops are provided which are engaged with suitable retaining members attached to the base.

My invention will be better understood by referring to the accompanying drawing in which Figure 1 represents a plan view of a preferred form of electric heater according to my invention; Fig. 2 represents a side elevation of Fig. 1; and Figs. 3 to 6 inclusive, represent views, on a scale double that of Figs. 1 and 2; Fig. 3 being a horizontal section along the line 3—3 of Fig. 2; Fig. 4 being a transverse section along the line 4—4 of Fig. 3; Fig. 5 being a side elevation of the completed heat unit; and Fig. 6 a transverse section taken along the line 6—6 of Fig. 1.

In the drawing a substantially rectangular base 1 is formed, preferably by stamping, from sheet metal; at each corner this base is provided with a strip like extension 2 having reëntrant slots 3 on each side thereof. These strips 2 are bent downwardly, inwardly and upwardly so as to constitute feet by means of which the base is supported spaced from the table. The ends of the feet do not completely close against the under side of the base so that each foot also constitutes a centrally turned hook.

A suitable length of stiff wire 4 is bent, in zigzag fashion, back and forth in its own plane so as to constitute a support 5 for the receptacle or material to be heated. In thus bending this wire 4, downwardly and outwardly extended loops 6 are formed and these loops, being pressed centrally against the resiliency of the material may be entered into slots 3, slipping under the feet 2, and then permitted to slip into the hooks which said feet constitute. In this way the support is simply and strongly locked to the base.

The ends of wire 4 are bent downwardly and then into a plane parallel to the plane of the support 5 and lying symmetrically on each side of the center line of the heater.

The heat unit proper comprises two identical porcelain blocks 7. Each of these

blocks consists of a connecting bar or base 8 having at one side thereof a bobbin 9 provided with a spiral groove 10 in which is laid the resistance wire. The bobbin 9 is offset with reference to the block 8 so that its central longitudinal section lies in the same plane as the top of the block.

Two holes 11, 11′ are pierced through each bobbin adjacent to the ends of the spiral groove. In winding the wire 12 upon the bobbin the one end is first inserted through hole 11 and then bent sharply back upon itself against the outside of the bobbin, whereby this end becomes firmly anchored. The other end of the wire is similarly passed through hole 11′ and similarly bent. The outer ends of the two wires are connected together (Figs. 1 and 6) by means of a thin walled tubular connector 13 having lateral openings 14 near one end. This tube is just long enough to fit between the ends of the bobbins and the ends of the two wires are passed through holes 14. With a suitable tool the connector 13 is then crushed at two points 15 so as to firmly grip the two ends of the wire.

The block 8 is provided with a U-shaped recess 16, of semicircular section, having its ends opening symmetrically on each side of the center. Each slot has a pair of lateral recesses 16′ opening therein. A tubular connector 17 having a pair of set screws 18—18′ passing through the walls thereof is fitted to each leg of slot 16. The inner end of each resistance wire 12 is connected to one end of the connector while the other end of each connector receives a terminal of the conducting cord 19. The two porcelain blocks 7 are then placed one over the other, with slots 16 in registry, and fastened together by screws 20 and nuts 21. Set screws 18, 18′ will then be clamped in the recesses 16′; in this way the tubular connectors 17 are fixedly held and no strain in the conducting cord can be transmitted to the resistance wire 12.

When thus assembled the terminals of the resistance wire as also of the conducting cord of the heat unit are not only perfectly insulated but also firmly anchored. Any strain or pull upon the conducting cord 19 is not likely to be transmitted to the point of contact between set screw 18′ and the end of the conducting cord, because of the fact that each separate conductor of the conducting cord, as it passes from the connector 17, leaves the connecting bar by a central opening 22 so that it must be sharply bent through 90° around a corner of the porcelain and this corner will, therefore, prevent any slip of the cord and take up all strain.

The screws 20 are prolonged downwardly and each is provided with a shoulder and a reduced threaded portion which is passed through a suitably located hole in base 1. Nuts 23 are then applied to the reduced portions on the lower side of the base thus locking the heat unit proper and the base firmly together.

Modifications of the structure herein disclosed may be made within the spirit of the invention as defined by the following claims.

I claim:

1. An electric heater comprising a wire having portions bent in two parallel planes, a heat unit attached to one of said portions and entirely to one side of the plane of the other portion, and a support for said wire.

2. An electric heater comprising a wire having portions bent in two parallel planes arranged one below the other, a heat unit lying entirely below the upper plane and attached to the portion having the lower plane, the heat unit having an air space on its under side, and a support for said wire.

3. An electric heater comprising a wire one part of which has a plurality of bends in a single plane so as to constitute a support for that which is to be heated while another part lies in a plane parallel to but beneath the first plane, and a heat unit supported by said second part entirely outside the plane of the first part, other parts of the wire being bent downwardly so as to constitute feet.

4. An electric heater comprising a wire having portions bent to and fro in one plane to constitute a support for that which is to be heated, other portions bent downwardly as loops, and parallel end portions lying in a plane beneath the first named plane, a heat unit having parallel hollow bobbins into which said ends project, a base beneath the heat unit with which the bottoms of the loops are engaged, and means for fastening the heat unit and the base together.

5. An electric heater comprising a base, a pair of spaced parallel supporting wires carried by said base and a heat unit comprising parallel hollow bobbins wound with conducting wire and fixed to one side of a connecting block the terminals of said conducting wire passing into the connecting block and being there joined to cord terminals and the cord being anchored in the block, the hollow bobbins being threaded upon the supporting wires and held in a predetermined position thereupon.

In testimony whereof I have hereunto set my hand.

ELIOT KEEN.

Witnesses:
ELMER G. WILLYOUNG,
G. V. RASMUSSEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."