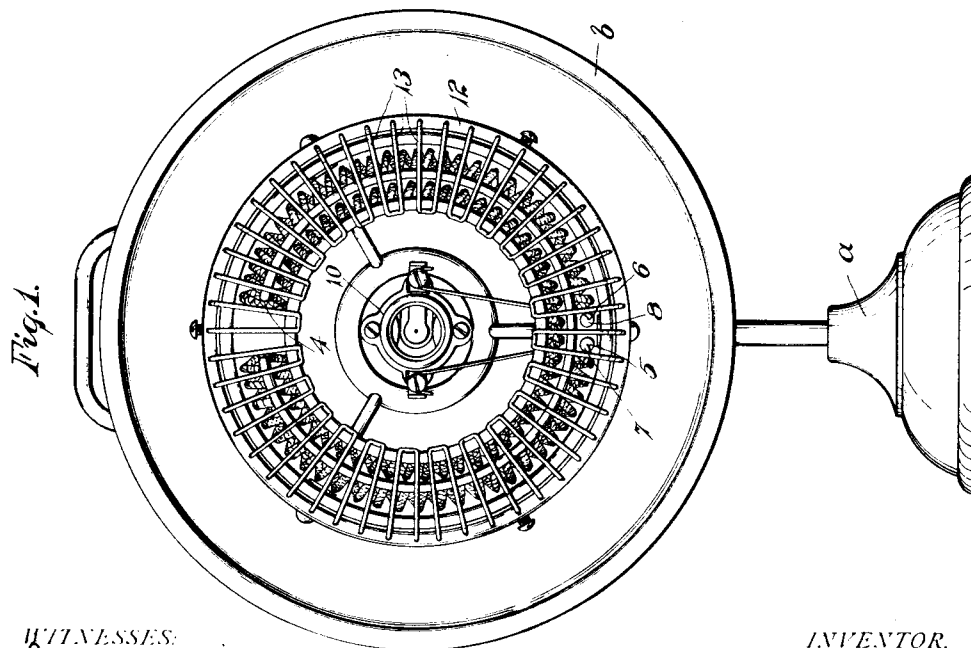
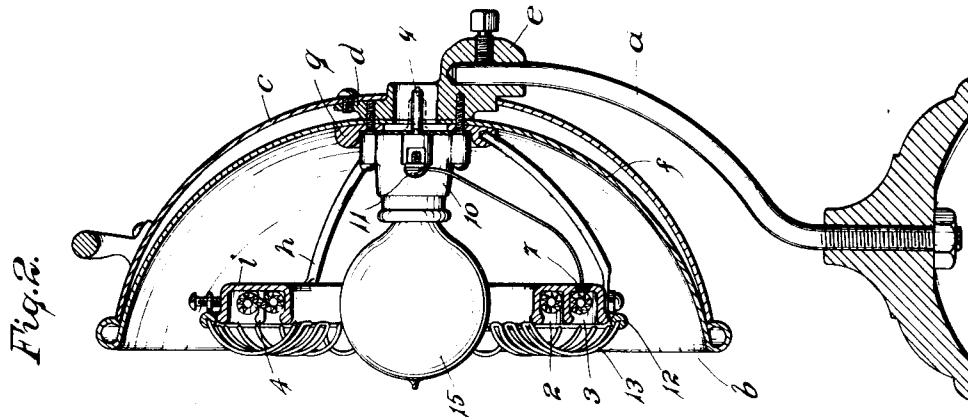


A. A. WARNER.
ELECTRIC HEATER.
APPLICATION FILED AUG. 7, 1913.

1,120,003.

Patented Dec. 8, 1914.



WITNESSES:
Alonzo A. Warner
Lucas Lucera

INVENTOR.
Alonzo A. Warner.
BY *A. E. Hart*
his ATTORNEY.

UNITED STATES PATENT OFFICE.

ALONZO A. WARNER, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO LANDERS, FRARY & CLARK, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC HEATER.

1,120,003.

Specification of Letters Patent.

Patented Dec. 8, 1914.

Application filed August 7, 1913. Serial No. 783,489.

To all whom it may concern:

Be it known that I, ALONZO A. WARNER, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

The object of this invention is to produce a device of the character described having features of novelty and advantage.

In the drawings, Figure 1 is a front view of a device made in accordance with my invention. Fig. 2 is a sectional side elevation thereof.

Referring to the drawings, *a* denotes the standard which may be of any desired or convenient shape. The heater comprises a double-walled reflector *b* of concavo-convex form inclosing a dead-air insulating space; the rear wall *c* of the body is fastened to a central supporting member *d* having a recessed lug *e*, to fit on the standard *a*. The inner wall *f* of the body is positioned against the front of the support *d* and against it is located a plate *g* which is secured to the support *d* in any convenient manner as by screws which pass through the inner wall *f* of the body to securely position these parts. Arms *h* which are secured to the plate *g* have attached to their outer ends a holder *i* which is of electrical insulating material or is lined with insulating material. As shown this holder has two concentric grooves 2, 3, the dividing wall of which is notched as at 4. An electrical resistance unit preferably in the form of a closely coiled compound helix is wound into the inner groove 3, and then stretched around the ends of the notch 4 and reversely wound in the outer groove 2, the terminals 5, 6, of the coil being carried through insulating bushings 7, 8, and connected with the plugs 9 which project from the rear of the socket 10 which is secured to the front of the plate *g* as by the screws 11. By utilizing a closely wound compound helix, which constitutes a pliable self-supporting structure, it is possible to provide a very large amount of resistance material within a very small compass, and to install the unit in various and irregular shapes to meet the necessities of any given case. Substantially all the surface of the resistance wire is open to contact with the air, producing a structure in which the heating effect

has the greatest possible efficiency, with the result that the device as a whole, though in a small and readily portable form, is capable of readily heating large volumes of air, making it particularly useful for the heating of rooms. A guard is provided for the exposed parts of the unit in the form of a ring 12, which is fastened to the holder and has curved fingers 13 projecting from the face of the holder. The socket 10 is provided to receive a light bulb 15, but if desired this can be omitted and the terminals 5, 6, carried directly to the plugs 9. The support is transversely apertured in order that a connection piece run from an ordinary lamp socket may be engaged with the plugs 9.

It will be understood that the structure is susceptible of various modifications which come within the invention as set out in the appended claims, and that the shape and arrangement of the several parts here illustrated and described may be varied without departing from the spirit of the invention.

I claim as my invention:

1. In a portable device of the character described, a standard, a reflector mounted thereon, an insulating holder supported by said standard within the reflector and spaced therefrom, an electrical resistance unit mounted in the holder, and electrical connections therefor.

2. In a portable device of the character described, a standard, a concavo-convex reflector mounted on the standard, an annular holder supported by the standard and located within the reflector and spaced therefrom, an electrical resistance unit located on the front of the holder, and electrical connections therefor.

3. In a device of the character described, a standard, a support secured thereto, a concavo-convex reflector secured to said support and having double walls inclosing an air space, outwardly branching arms carried by said support, an annular holder secured to the ends of said arms within said reflector and spaced therefrom, said holder being grooved in its front wall, an electrical resistance unit mounted in said groove, and electrical connections therefor.

4. In a device of the character described, a standard, a concavo-convex reflector, an annular holder supported within said re-

flector just back of the plane of the front edge thereof and spaced from the reflector, a plurality of concentric grooves in the front face of the holder, the dividing wall between said grooves being notched, a continuous pliable resistance unit located in said grooves and stretched over the ends of said notch, and electrical connections for said unit.

10 5. In a device of the character described, a standard, a support secured thereto centrally apertured, a concavo-convex reflector provided with double walls located against the front and back of said support, a plate
15 located inside said reflector and secured to said support, outwardly branching arms on said plate, a holder secured to the ends of said arms within said reflector and spaced therefrom, a socket secured to said plate,
20 terminal plugs projecting from the rear of said socket through the aperture in the support, an electrical resistance unit located on said holder, and electrical connections between said unit, socket and plugs.

25 6. In a device of the character described, a standard, a concavo-convex reflector mounted thereon, a holder supported within the reflector and spaced therefrom, an elec-

trical resistance unit in the form of a pliable compound helix mounted on said holder, 30 and electrical connections for said unit.

7. In a device of the character described, a standard, a support mounted thereon, a reflector comprising a concavo-convex rear wall secured at its center to the back of said 35 support, and a concavo-convex front wall secured at its center to the front of said support, said walls being in contact along their front edges and inclosing an air space, a holder located within the reflector, and an 40 electrical resistance unit mounted on the front of the holder.

8. In a device of the character described, a standard, a concavo-convex reflector mounted thereon, a lamp socket located cen- 45 trally within the reflector, an annular holder located within the reflector and spaced therefrom, an electrical resistance unit mounted in the front of the holder, contact plugs projecting from the rear of 50 said socket, and an electrical circuit including said unit, socket and plugs.

ALONZO A. WARNER.

Witnesses:

C. A. LAPPAN,
HENRY FAGAN.