F. KUHN.

ELECTRIC HEATER.

APPLICATION FILED MAR. 29, 1912.

1,096,928.

Patented May 19, 1914.

Fig. 3.

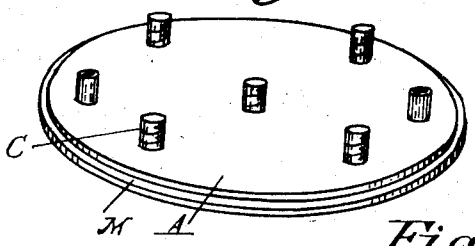



Fig. 1.

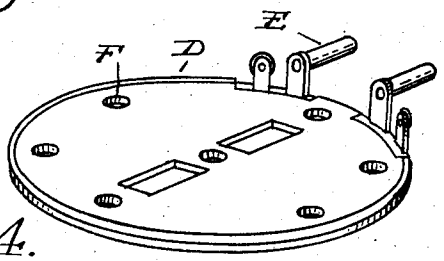



Fig. 4.

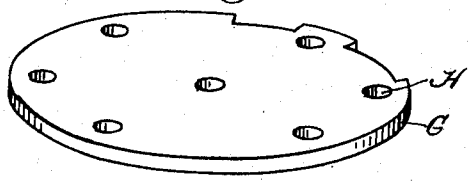
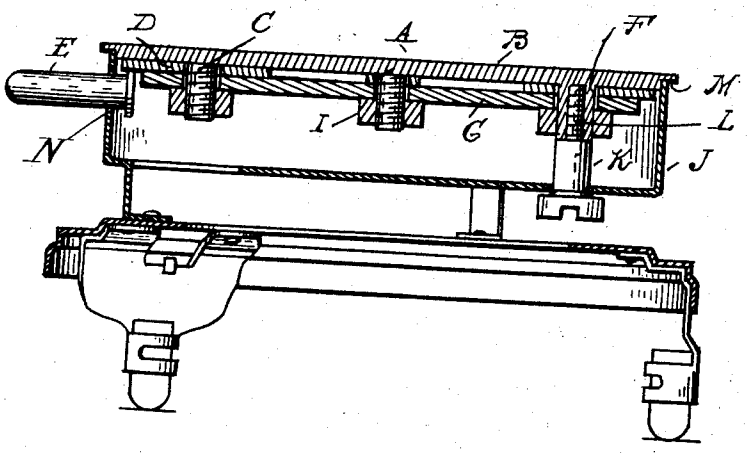



Fig. 2.




Witnesses
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# UNITED STATES PATENT OFFICE.

FRANK KUHN, OF DETROIT, MICHIGAN.

## ELECTRIC HEATER.

1,096,928. Specification of Letters Patent. Patented May 19, 1914.

Application filed March 29, 1912. Serial No. 687,075.

*To all whom it may concern:*

Be it known that I, FRANK KUHN, a citizen 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 Electric Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electric heaters and is more particularly adapted for use in connection with hot plates used in various cooking appliances and for other similar uses.

It is an object of the invention to hold the heating element in heat conducting contact with all portions of the plate and at the same time to avoid marring or interrupting the surface of the hot plate, and to reduce the thickness of the same to the minimum.

In the drawings,—Figure 1 is a perspective view of the hot plate, element and backing detached; Fig. 2 is a central section through the plate with the element clamped thereto and arranged in the supporting frame. Fig. 3 is a perspective view of the heating element; and Fig. 4 is a similar view of the backing plate.

A is a metallic plate having a smooth work surface B. On the opposite side from the work surface are a plurality of projecting studs C which are distributed over the area and are used to clamp the element to the plate. For various reasons, wrought metal is better for the hot plate than cast metal, as for instance, the cast metal constructions must be of greater thickness and are liable to crack by the heat. It is however, desirable to have an unbroken and unmarred work surface, and therefore, the punching of the plate for the attachment of the studs C is to be avoided. I have avoided the difficulty by electrically welding the studs to the under face of the plate, which will securely fasten them thereto without in any way injuring the work surface.

The element D may be of any suitable construction but is preferably armored and is provided with terminals E which are fixedly secured in position. At various points distributed over the area of the element are apertures F therethrough which are positioned for registration with the studs C.

G is a backing plate which is of substantially the same thickness and mass as the plate A and which is apertured at H to correspond to the apertures F and studs C.

When the parts are assembled the element D is first placed in contact with the plate A and the backing plate G in registration therewith. The clamping nuts I are tightened which will press all portions of the element in firm heat conducting contact with the plates A and G so that the heat generated in the element will be uniformly distributed therethrough. This will prevent uneven heating and warping of the plate and will also protect the element from overheating at any point which might cause it to burn out.

The plate A may be mounted on any suitable standard but as shown it is marginally supported upon the cup-shaped casing J which incloses the element and backing plate and forms a heat insulating air chamber therebeneath. The plate is secured to the casing by suitable means such as the shoulders K which engage the threaded sockets in one or more of the lugs C as shown at L. The plate A is also preferably grooved or rabbeted about its margin as shown at M to form a brake joint fit with the casing J which properly centers the parts and holds them from relative movement. The marginal flange of the casing J is apertured as at N to permit the terminal E to pass therethrough.

What I claim as my invention:

1. In an electrical heater, the combination with a wrought metal heat-distributing plate, of an armored heating element formed as a unitary structure, a backing plate for said element, and a detachable connection between said heating element and plates permitting the heating element to be detached as a unit from said plates, comprising studs distributed over the area of the heat-distributing plate and welded to one face thereof, said heating element having apertures registering with the studs and being in contact with the wrought metal plate and the backing plate also being provided with apertures registering with the studs, and detachable means coöperating with the studs for pressing the backing plate and element into heat-conducting contact with each other and with the heat-distributing plate in all positions of the area of the latter.

2. An electrical heater comprising a wrought metal plate having a grooved or

rabbeted margin, a plurality of threaded studs welded to said plate and distributed over the area thereof, an armored electrical heating element placed adjacent to said plate within the grooved portion thereof and apertured for the passage of said studs, a backing plate correspondingly apertured, nuts engaging said studs for clamping said backing plate against said element, terminals on said element, a cup-shaped casing having a marginal flange engaging the groove or rabbet of said plate, said flange being apertured for the passage of said terminals, and securing screws for holding said plate in relation to said casing operable from the lower side thereof.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK KUHN.

Witnesses:
HENRY F. KOLBE,
ROLAND DRESSEL.

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