F. KUHN & F. E. SHAILOR.

ELECTRIC HEATER.

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1,037,932.

Patented Sept. 10, 1912.

Fig. 1.

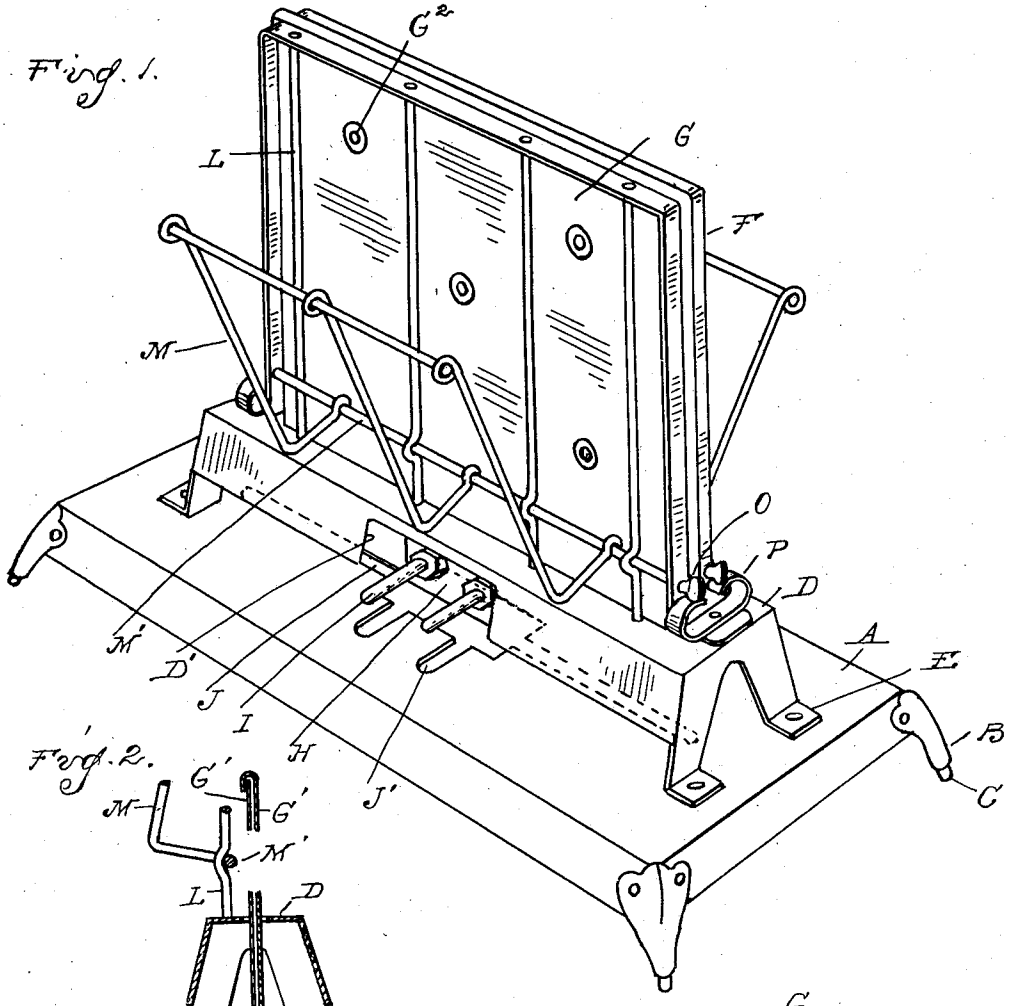


Fig. 2.

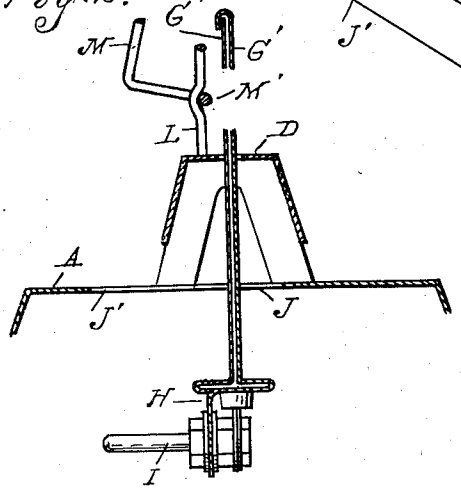
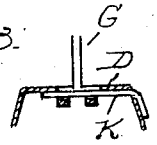


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK KUHN AND FRANK E. SHAILOR, OF DETROIT, MICHIGAN, ASSIGNORS TO AMERICAN ELECTRICAL HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELECTRIC HEATER.

1,037,932. Specification of Letters Patent. **Patented Sept. 10, 1912.**

Application filed October 16, 1909. Serial No. 523,017.

To all whom it may concern:

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

The invention relates to electrical heaters more particularly designed for use as a toaster.

The invention consists in the peculiar arrangement and combination of parts as hereinafter set forth.

In the drawings—Figure 1 is a perspective view of a toaster; Fig. 2 is a vertical cross section showing the manner of attaching the heating unit; Fig. 3 is a cross section in the plane of the locking bolt for the unit.

A is a suitable base preferably formed of sheet metal, and provided with the supporting lugs B, having non-metallic tips C of heat-insulating material.

D is a superbase also preferably struck up from sheet metal, and supported upon the base A by the lugs E at the opposite ends thereof. Upon the base D is mounted a frame F, in which the heating unit G is detachably mounted. The unit G is formed of any suitable resistance capable of being inclosed between closely placed metallic plates G′, which plates are secured together at the margin, and also preferably at intermediate points, as by the rivets G^2. At the lower edge of the plates is mounted a terminal supporting bracket H upon which are arranged the insulated terminal contacts I projecting laterally. In the normal position of the parts, these terminals are arranged beneath the superbase D, which is cut out at D′ to receive the attachment plug for the electrical connection. To permit of detaching the unit G, it is preferably engaged with the frame F by being inserted through a slot J in the base A, which slot is enlarged at J′ for the passage of the bracket H, and the terminal contacts I. The frame F is open centered and also is preferably grooved to receive the marginal portions of the unit. After engagement the unit is secured by suitable means—such as the locking bolts K. The frame F is preferably provided with a series of guard bolts L upon each side of the unit G, forming a double grid frame which serves to hold the toast or other material out of direct contact with the unit G. In Fig. 1 we have shown only one side of the frame F but it will be understood of course that the opposite side of the frame is of similar construction to the side shown.

M are supporting racks for the material to be heated arranged upon opposite sides of the heating unit. Each of the racks M is secured to a rock shaft M′ pivotally engaging the frame F. The ends of this rock shaft are provided with flattened heads O, which engage springs P at the ends of the base D, the arrangement being such that the rack M will be held in either a vertical or inclined position by the tension of the spring. Thus, the slice of bread, or other article to be toasted, may be placed on the rack when in inclined position, and may then be turned up into vertical position and held there by the springs.

With the construction described practically all of the radiated heat can be utilized, as the unit G is so thin as to lose very little heat from its edges, while both of its sides are exposed and may be utilized simultaneously.

What we claim as our invention is:

1. An electrical heater comprising a vertically-arranged open frame, a slotted base for supporting said frame, and a flat heating unit insertible through the slot in said base into engagement with said frame.

2. An electrical heater comprising an open double grid vertically-arranged-frame, a slotted base for supporting said frame, and a flat heating unit insertible through the slot in said base between the grids of said frame.

3. An electrical heater comprising a slotted base, a superbase mounted thereon having a slot alined with the slot in the base, an open frame mounted on said superbase, and a flat heating unit insertible through the slots in said base and superbase into engagement with said frame.

4. An electrical heater, comprising an open double grid vertically-arranged frame, a slotted base for supporting said frame, and a heating unit comprising a single uni-

tary structure insertible through the slot in said base between the grids of said frame.

5. An electrical heater, comprising a vertically-arranged frame, including a rock shaft having one end projecting therebeyond, a supporting rack carried by the rock shaft, and means engaging the projecting end of said shaft for holding the same in different positions of adjustment.

6. An electrical heater, comprising a vertically-arranged open frame, including a rock shaft, said rock shaft having one end projecting beyond the frame, and shaped to form a cam, a supporting rack carried by the rock shaft, and a spring adapted to engage the cam.

7. An electrical heater, comprising a slotted base, a slotted superbase mounted thereon, an open frame mounted on said superbase, a rock shaft carried by said frame, a supporting rack carried by the rock shaft, and a flat heating unit insertible through the slots in said bases into engagement with the frame.

8. An electrical heater, comprising a double grid frame, and a continuous flat heating unit arranged between the grids of said frame.

9. An electrical heater, comprising a double grid vertically arranged frame, and a heating element comprising a thin flat unitary structure of a size to extend over substantially the entire area therebetween, said frame having guides with which said element has a detachable engagement.

10. An electrical heater, comprising a double grid frame and a heating element between the grids of said frame comprising a thin flat unitary structure of a size to extend substantially the entire length and width of said grids.

11. An electrical heater, comprising a frame, and a heating unit including a resistance and plug engaging terminals, said heating unit being detachable, together with said plug engaging terminals thereof, as a unitary structure from said frame.

12. An electrical heater, comprising a double-grid frame, and a flat heating unit including a resistance and plug engaging terminals, said heating unit being detachable from and insertible between the grids of said frame together with said terminals thereof, as a unitary structure.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK KUHN.
FRANK E. SHAILOR.

Witnesses:
LEO PORDEN,
HENRY F. KOLB.