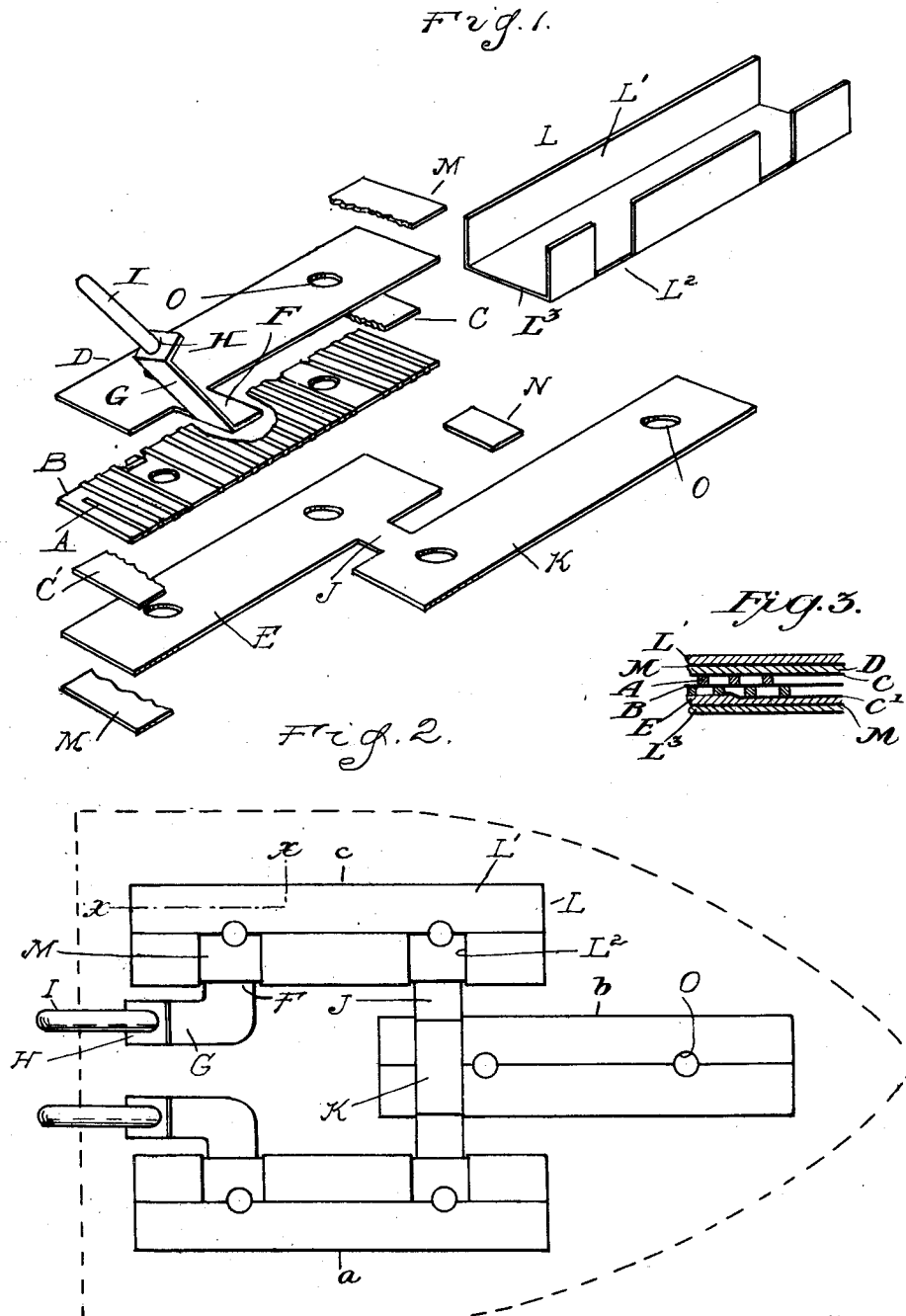


F. KUHN & F. E. SHAILOR.
ELECTRICAL HEATING UNIT.
APPLICATION FILED OCT. 16, 1909.

1,052,730.

Patented Feb. 11, 1913.



Witnesses
H. D. Ford.
C. B. Bellamy

By

Inventors
Frank Kuhn
Frank E. Shailor
Attys.

UNITED STATES PATENT OFFICE.

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

ELECTRICAL HEATING UNIT.

1,052,730.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed October 16, 1909. Serial No. 523,018.

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 Electrical Heating Units, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electrical heating units, being more particularly designed for use in electrically-heated sad irons, and the invention consists in the construction as hereinafter set forth.

In the drawings—Figure 1 is a perspective view of the various parts composing the unit detached; Fig. 2 is a plan view of the unit complete, and Fig. 3 is a section on line $x-x$ Fig. 2.

In the construction of electrically-heated sad irons, it is desirable to distribute the heat over the bottom of the iron, and particularly to conduct the heat into the point of the iron. This has been accomplished in certain constructions heretofore used, by forming the unit of a plurality of sections a , b and c arranged parallel to each other, with the central section b in advance of sections a and c on opposite sides thereof. These sections must be connected to each other in series, and also connected to terminal contacts for the attachment of the conductor cord.

Our improved construction is one which permits of assembling, clamping together, and electrically-connecting the several sections of the unit with an exceedingly simple and inexpensive construction of the parts. In detail, describing the sections 2, A is the heat-producing resistance, which is in the form of a flat conductor secured upon an insulator supporting plate B .

C and C' are insulator plates arranged upon opposite sides of the plate B and resistance A , and D and E are clamping plates upon opposite sides of the insulator plate, which also forms the terminal connections for the resistance. The plates D and E comprise a heat conducting medium and are each of a size to substantially cover one face of the heating resistance, the plates C , C' serving to insulate the plates D and E for substantially their entire area from

the resistance. As shown, the plate D is provided with a laterally-projecting portion F , which is bent upward at G , and provided with an angle flange H , to which the terminal contact post I is secured. The plate E is also provided with a laterally-extending portion J , but this forms a connector to a plate K for the adjacent section b of the unit, the latter plate having the same relative position to the section b as the plate E . The plates E and D of the section c however, are positioned upon the opposite sides of the resistance element from which they occupy in the section a , while the heat conducting medium or plates of the section b comprises two plates K carried by the plates E of sections a and c . Thus the bottom plates E and K of the adjacent units are formed integral with each other, and form an electrical connection between the two sections of the resistance.

To secure the parts together a U-shaped member L is engaged with each section and the flanges L' thereof bent down, the flanges L' and the bottom L^3 of the U-shaped member comprising plates between which all the parts of the section are clamped. The flanges L' are cut-away at L^2 to avoid contact with the laterally projecting conductor portions F and J .

In assembling the parts, the insulator strips C and C' which are of slightly lesser length than the resistance A are so arranged that one end of the resistance A will be exposed for contact with the plate D , while the other end of said resistance will be exposed for contact with the plate E . Insulator strips M are also placed between the plates D and E , and the U-shaped member L , and insulator strips N are arranged to cover the lateral projections F and J . Thus all portions of the circuit will be thoroughly protected, with exception of the terminals G , which are arranged to be out of contact with any contacting part of the structure. All of the parts of each section are apertured at O in alinement with each other for the insertion of screws or other fastening devices by which the unit is secured to the body to be heated.

With the above described construction, the assembling of the parts will complete the circuit through all of the sections which are in series with each other being connected by

the plates E and K and the integral portion J. These plates perform the further function of the heat conductors and distributors, and together with the U-shaped member L serve to hold the heating resistance in firm contact with the insulating strips on opposite sides thereof.

What we claim as our invention is:

1. An electrical heating unit, comprising a flat insulated resistance and a flat conducting plate extending over a considerable portion of the outer surface of the resistance and clamped thereto, said plate forming a part of the electric circuit and having a terminal integral therewith.

2. An electrical heating unit, comprising a tortuous resistance, insulating plates on opposite sides of said resistance, and conducting plates clamped to said resistance and extending over a considerable portion of the outer surface of the resistance, one of said plates forming a part of the electric circuit and having a terminal integral therewith.

3. An electrical heating unit, comprising a plurality of separate insulated resistances, and plates clamped to said resistances forming integral connections therebetween.

4. An electrical heating unit, comprising a plurality of separate heating resistances, and plates clamped to said resistances integrally connected to each other and forming the electrical connection between said resistances.

5. An electrical heating unit, comprising a plurality of separate insulated resistances, plates clamped to said resistances integrally connected with each other, separate cooperating plates also clamped to said resistances and having integral terminal connections.

6. An electrical heating unit, comprising an insulated resistance, and a conducting plate clamped thereto and extending over a considerable portion of the outer surface of the resistance, said plate forming a part of the circuit and having an integral lateral projection struck up therefrom to form a terminal connection.

7. An electrical heating unit, comprising

a plurality of separate flat heating resistances, insulating plates embracing said resistances, plates clamped to adjacent resistances integral with each other and forming an integral connection between said resistances, and cooperating plates also clamped to the end resistances having terminal connections formed integral therewith.

8. An electrical heating unit including insulated clamping plates, a heating resistance, a heat conducting medium arranged over and of a size to substantially cover one outer face of the heating resistance, and insulating material insulating substantially all of said heat conducting medium from said resistance, said heat conducting medium including a terminal engaging the resistance.

9. An electrical heating unit including flat insulated clamping plates, a flat heating resistance, a heat conducting medium arranged over and of a size to substantially cover one outer face of the heating resistance, insulating material insulating substantially all of said heat conducting medium from said resistance, said heat conducting medium including a terminal engaging the resistance and extending without the clamping plates.

10. An electrical heating unit including clamping plates, a heating resistance, a heat conducting medium arranged over and of a size to substantially cover one outer face of the heating resistance, an insulator plate positioned between the heat conducting medium and the heating resistance, said heat conducting medium having a terminal engaging the resistance, and insulator plates arranged respectively between the heat conducting medium and one of the clamping plates and intermediate the resistance and the other clamping plate.

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

FRANK KUHN.
FRANK E. SHAILOR.

Witnesses:

LEO PORDEN,
HENRY F. KOLBE.