No. 887,333. PATENTED MAY 12, 1908.

F. KUHN.

ELECTRICAL HEATING ELEMENT.

APPLICATION FILED OCT. 15, 1907.

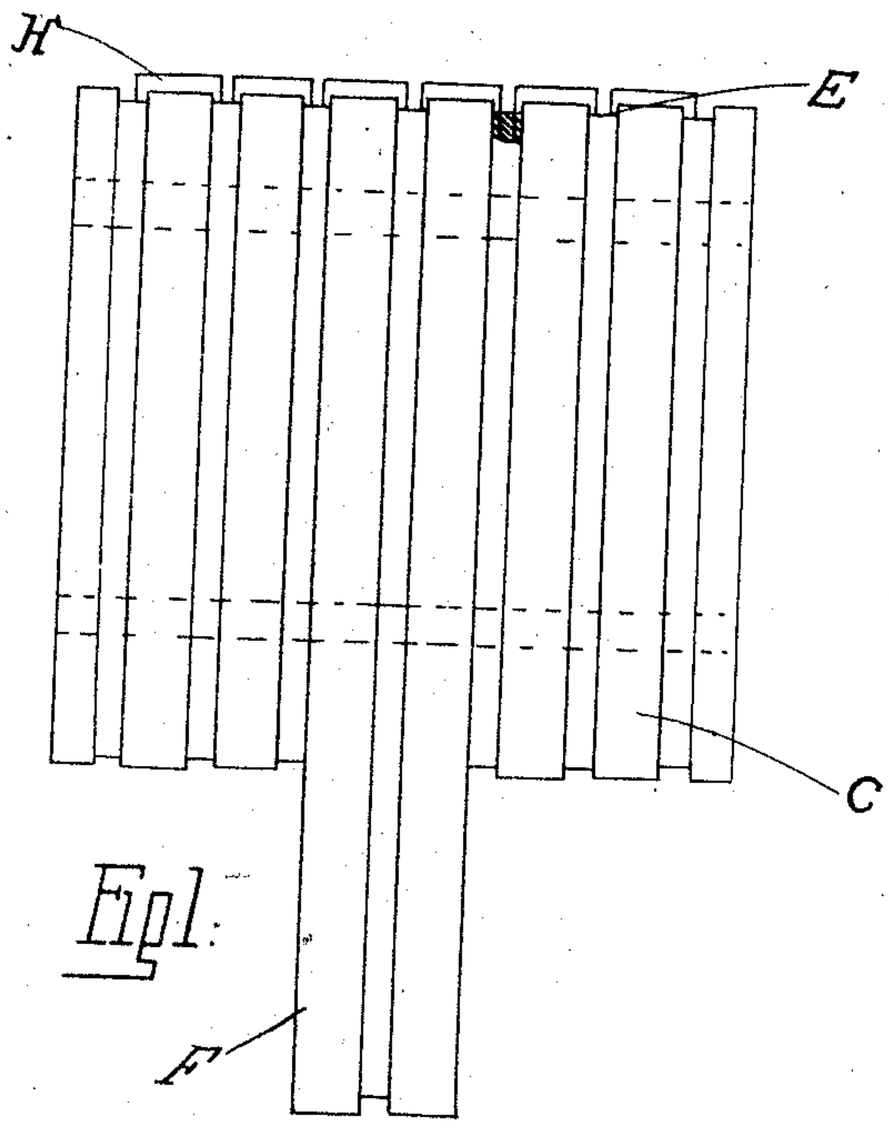

Fig 1.

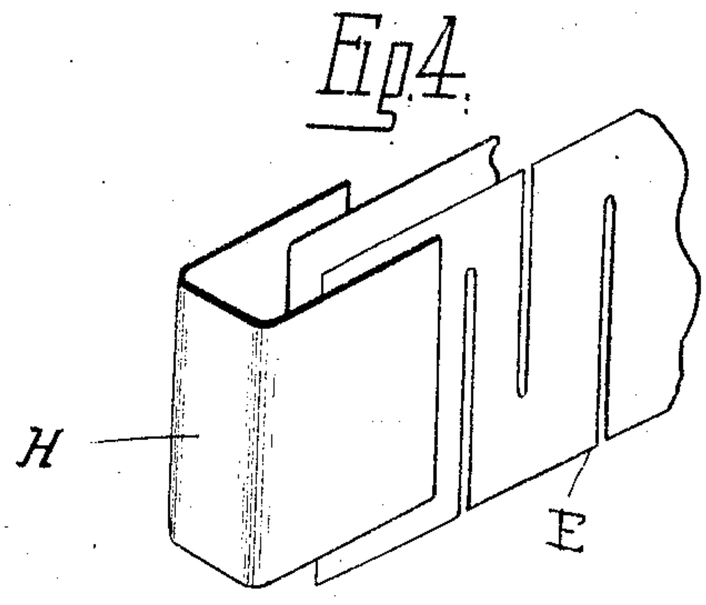

Fig 4.

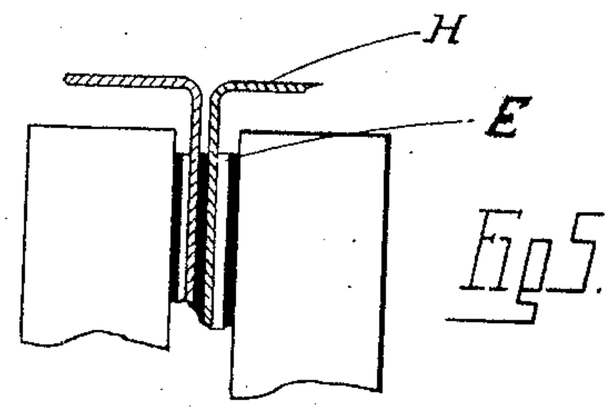

Fig 5.

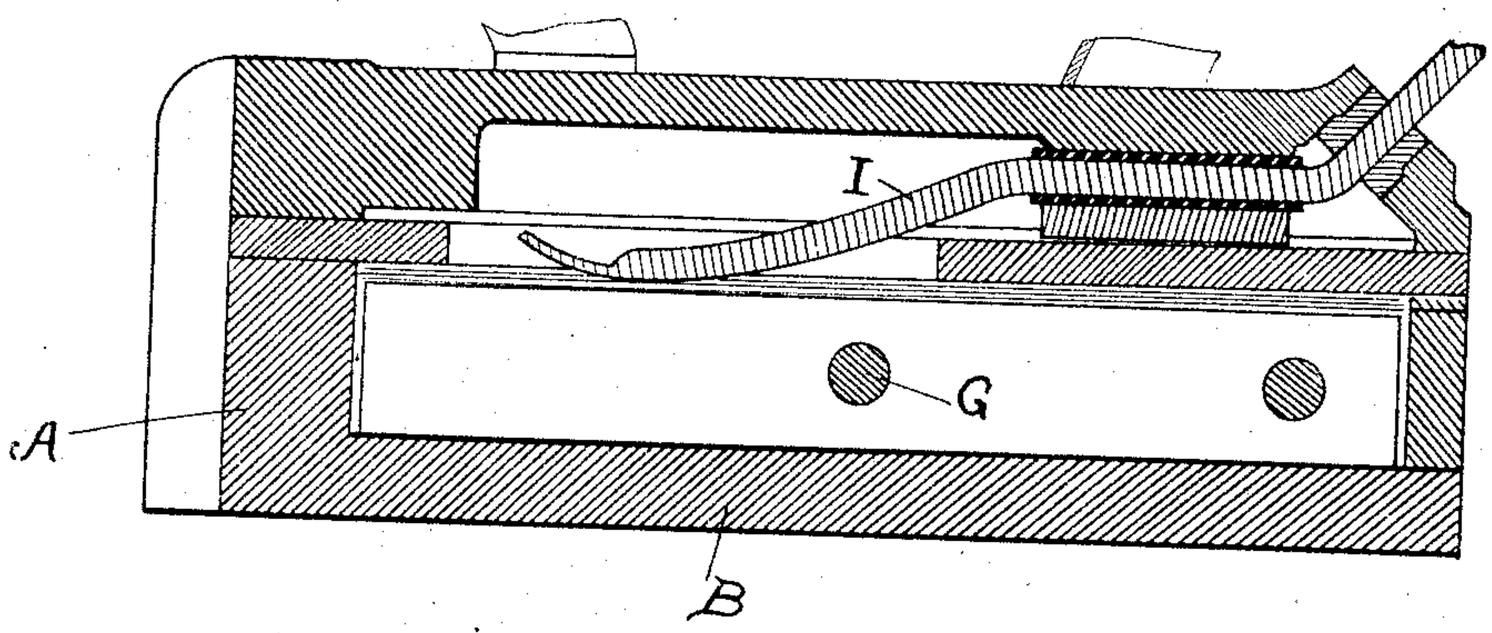

Fig 3.

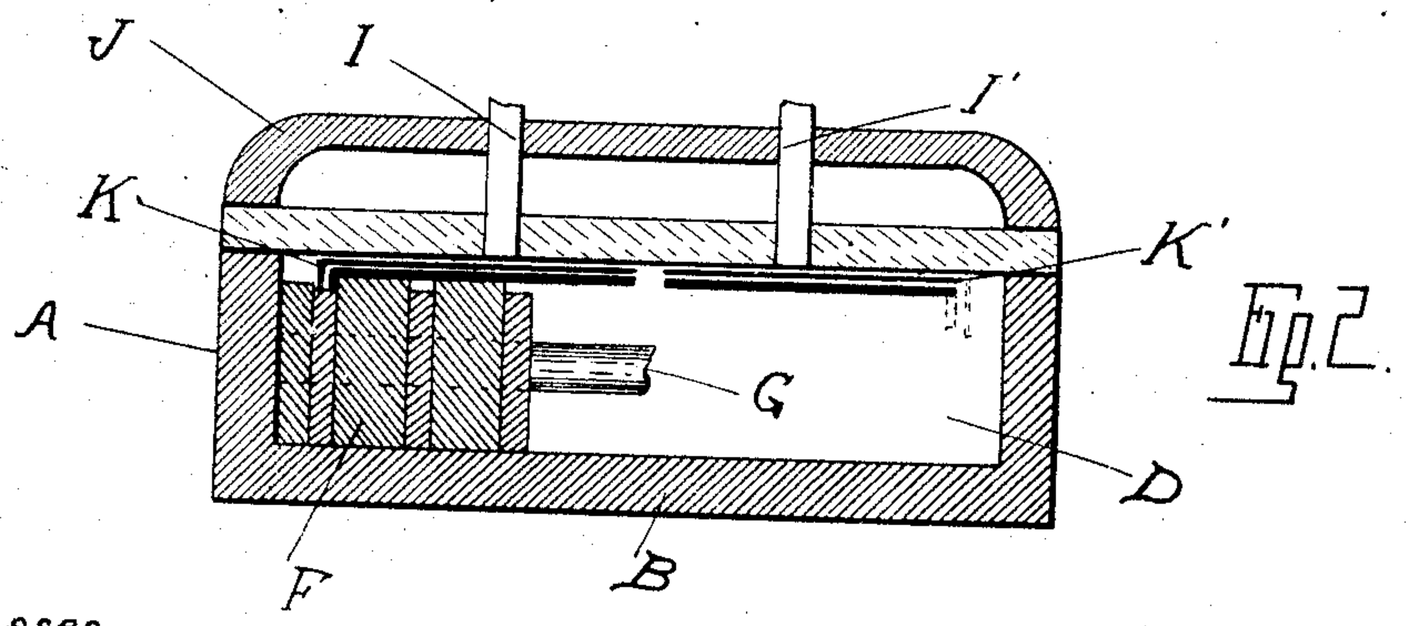

Fig 2.

Witnesses.
W. K. Foxl.
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UNITED STATES PATENT OFFICE.

FRANK KUHN, OF DETROIT, MICHIGAN, ASSIGNOR TO AMERICAN ELECTRICAL HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELECTRICAL HEATING ELEMENT.

No. 887,333. Specification of Letters Patent. Patented May 12, 1908.

Application filed October 15, 1907. Serial No. 397,531.

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

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

In the drawings—Figure 1 is a plan view of the element; Fig. 2 is a cross section through a sad iron provided with the element; Fig. 3 is a longitudinal section through a portion of Fig. 2; and Fig. 4 is a perspective view of the members of the resistance element. Fig. 5 is a section through two adjacent bridge connections showing the relation of the resistance elements thereto.

In the construction of electrical heaters, it is important to provide means for rapidly communicating the heat from the resistance element to the surface to be heated, and it is equally important to provide a uniform distribution of heat over the surface. It has also been found desirable to have the resistance element detachable from the body of the heater so as to permit of quickly exchanging elements when necessary.

With the present invention, the heating element is arranged to communicate the heat generated in the resistance element by conduction to the surface to be heated, the element being detachable from said surface.

As shown, A is the body portion of the heater, such as a sad iron, and B the bottom thereof, which forms the surface to be heated. The heating element C is arranged to be placed in a recess D in the body A, and is of the following construction: E are the resistance elements, which are composed of alternately arranged laminated conductors and insulators such, for instance, as sheets of metallic foil and mica. A plurality of these resistance elements are arranged parallel to each other, and are separated by intermediate heat distributing bars F, the whole series being clamped into firm mechanical contact by bolts or riveted rods G passing through transverse apertures in the series. The heat distributing bars F are insulated from the resistance elements, and the several elements of the series are coupled to each other by bridge connections H. These are preferably in the form of U-shaped metal strips, the ends of which are in contact with the terminals of the metallic foil of the elements C, and which extend across the ends of the heat distributers F, out of contact therewith. The bars F are of greater width than the elements C and the bridges H, and have their lower edges in metallic contact with the bottom B of the body.

With the construction as described, the heat generated by the passage of an electric current through the series of resistances will be communicated by conduction, first to the intermediate heat distributing bars F, and then also by conduction from the latter to the bottom B. This will effect a much more rapid distribution of heat than would be possible by radiation from the resistance element and by reason of the fact that the intermediate bars F are relatively large in mass uniformity in the distribution of the heat is obtained.

The terminal connections for the heating element are formed by members I and I′ secured to the cover J for the body of the sad iron, these members having resilient end portions which bear against terminal plates K and K′ on the upper face of the element C. In addition to forming the electrical connection to the element, these members I and I′ press the bars F downward into firm metallic contact with the bottom D of the body, thereby facilitating the rapid conduction of the heat.

What I claim as my invention is:

1. In an electrical heater, the combination with the body to be heated, of a heating element detachable therefrom and comprising a series of parallelly arranged resistance elements and intermediate insulated heat conducting bars, said resistance element and bars being clamped in heat conducting contact and the edges of said bars being held in heat conducting contact with said body.

2. In an electrical heater, a heating element comprising a series of parallelly arranged resistance elements, alternate insulated heat conducting bars, and naked bridge strips electrically connecting the terminals of the adjacent resistance elements, being spaced from contact with said intermediate bars.

3. In an electrical heater, a heating element comprising a series of parallelly arranged laminated resistance elements, intermediate insulated heat-conducting bars and U-shaped bridges electrically connecting said resistance elements at the ends of said intermediate bars and spaced from contact with the latter.

4. In an electrical heater, the combination with a recessed body, of a heating element detachably engaging said body and comprising a series of parallelly arranged resistance elements, intermediate insulated heat distributing bars, and naked bridge connections between the resistance elements spaced from said bars, terminals for the opposite ends of the series of resistances arranged at the top of the heating element and resilient terminals connected to said body bearing against the terminals of said element and pressing said intermediate heat distributing bars into heat conducting contact with the bottom of said recessed body.

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

FRANK KUHN.

Witnesses:
NELLIE KINSELLA,
HARRY W. GALVIN.