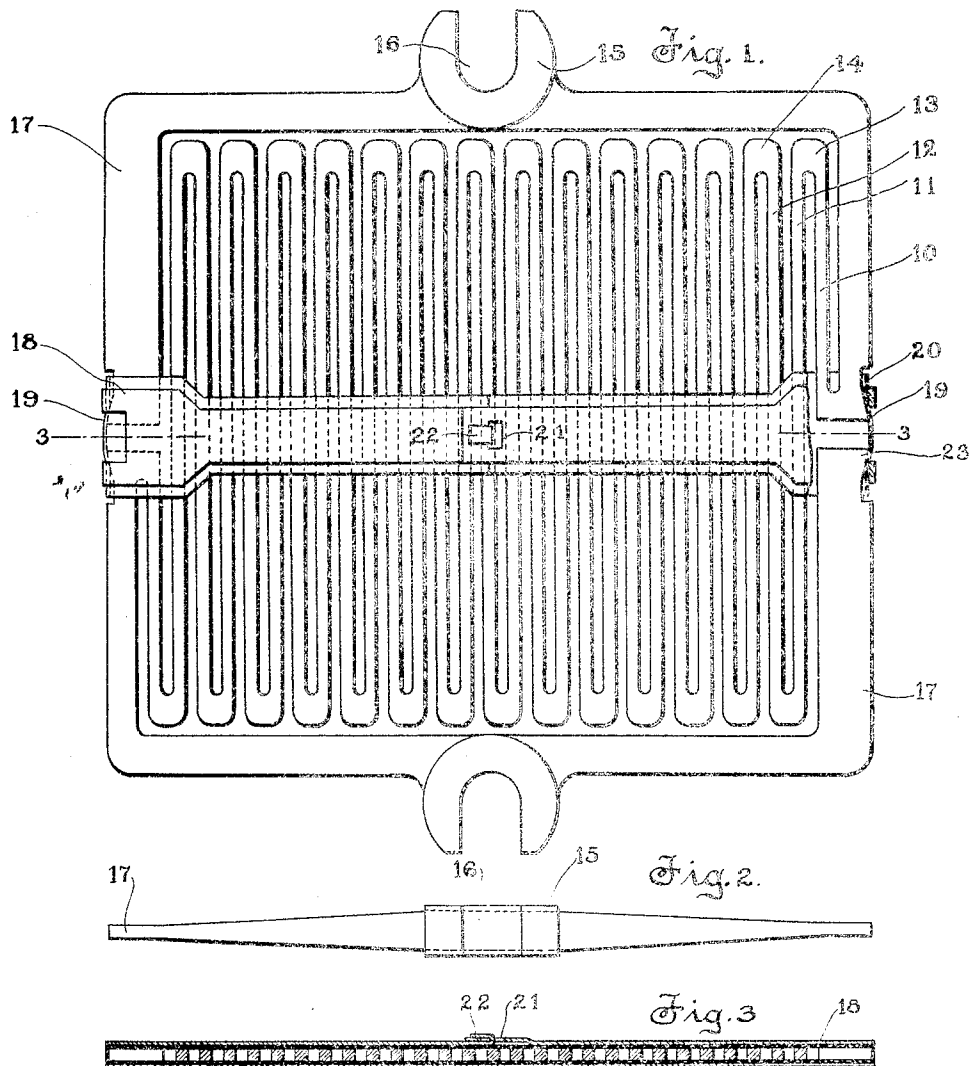


B. HASKINS.
RESISTANCE GRID.
APPLICATION FILED MAY 20, 1909.

945,092.

Patented Jan. 4, 1910.



11/12

Witnesses
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UNITED STATES PATENT OFFICE.

BRADLEY HASKINS, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, A CORPORATION OF NEW JERSEY.

RESISTANCE-GRID.

945,092.

Specification of Letters Patent.

Patented Jan. 4, 1910.

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To all whom it may concern:

Be it known that I, BRADLEY HASKINS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Resistance-Grids, of which the following is a full, clear, and exact specification.

My invention relates to the construction of resistances for use in electrical circuits.

Among the objects of my invention are to obtain strength, durability, compactness, and cheapness of construction.

In addition to providing a resistance possessing superior structural features, the arrangement of the parts is such that they may all be readily assembled and firmly held in a permanent or fixed position except those parts intentionally made movable. In this construction, the grids are so formed and assembled that one or more of the grids, comprising the resistance, can be taken out and replaced in case of breakage or injury without much trouble.

Conspicuous among the features of my improvement is the method of reinforcing or stiffening the grids, especially when they have become excessively heated and flexible.

In the drawings, Figure 1 is a side view of one of the grids embodying my invention; Fig. 2 is an end view of that shown in Fig. 1; and Fig. 3 is a sectional view of the grid taken along the line 3—3 in Fig. 1.

Resistance grids have been made very heavy and bulky in construction in order to withstand jars and tendencies to warp out of shape when excessively heated. The resistance grids shown in these drawings are made light in structure. These grids are made of suitable resistance material in zig-zag form and substantially as shown in Fig. 1, so as to reduce into a comparatively small space a resistance of considerable length. The resistance grid consists of the conductor 10, formed substantially as shown, and having its elements, such as 11 and 12, parallel and in integral connection to form a number of end turns such as 13 and 14, the conductor terminating in enlarged ends 15, formed of hooks 16 or holes open on one side. These hooked ends fit over insulating rods or bolts of a suspended frame. The number of grids may be varied according to the desired length of the suspended frame. The parallel elements are surrounded by enlarged

portions 17 of the conductor forming a comparatively strong and rigid frame protecting the inclosed frailer elements. A strip of metal 18 is passed or wrapped around a central portion of the grid, the former being slotted to conform with projections 23 of the enlarged portions of the grid formed by depressions, as shown at 19. With this arrangement it is impossible for the reinforcing member to shift from a fixed position. Interposed between the grid and reinforcing member is a strip of suitable insulating material 20. The reinforcing strip is further provided with another slot 21 for the reception of a tongued portion 22 of such reinforcing member. The tongue is slipped through the slot and the reinforcing member drawn up to any desirable degree of tightness; the tongue is then bent over to prevent the reinforcing member from loosening, thus rigidly reinforcing the grid. By means of this reinforcing it is possible to use grids which are comparatively frail in structure without having its elements warp to such an extent, when excessively heated, as to buckle up or come into contact with each other or to have adjacent grids in the same frame come in contact with each other.

It is apparent that there may be many modifications of the precise arrangement here shown and described, and I aim in my claims to cover the invention broadly.

What I claim as new is:

1. A resistance grid comprising a zig-zag conductor, and a reinforcing member passing around said grid and insulated therefrom.
2. A resistance grid comprising a conductor having end turns, and a reinforcing member passing around the middle portion of said grid and insulated therefrom.
3. A resistance grid comprising a zig-zag conductor, the elements of said conductor being parallel to each other, and a reinforcing member passing around said grid and insulated therefrom.
4. A resistance grid comprising a conductor, enlarged portions of said conductor surrounding the other parts of said grid, and a reinforcing member passing around said grid and insulated therefrom.
5. A resistance grid comprising a zig-zag conductor, the elements of said conductor being parallel to each other, enlarged portions of said conductor surrounding said parallel

elements, and a reinforcing member passing around said grid and insulated therefrom.

6. A resistance grid comprising a conductor, enlarged portions of said conductor being provided with a plurality of depressions, a reinforcing member passing around and insulated from said grid and occupying said depressions.

7. A resistance grid comprising a conductor, enlarged portions of said conductor being provided with a plurality of depressions, a slotted reinforcing member passing around and insulated from said grid and occupying said depressions.

8. A resistance grid comprising a conductor, and a reinforcing member passing around said grid and insulated therefrom, said member having a plurality of slots and a tongue, said tongue passing through one of said slots and bent to fasten said reinforcing member.

9. A resistance grid comprising a zig-zag conductor, enlarged portions of said conductor provided with depressions and surrounding said zig-zag part, and a reinforcing member provided with a plurality of slots and a tongue, said reinforcing member pass-

ing around and insulated from said grid and occupying depressions in the enlarged portions of said conductor, said tongue passing through one of said slots, the former being bent over to prevent the displacement of said reinforcing member.

10. A resistance grid comprising a zig-zag conductor, enlarged portions of said conductor passing around said zig-zag portions and being provided with hooks, and a reinforcing member wrapped around said grid and insulated therefrom.

11. A zig-zag resistance grid adapted to be supported at certain portions and having parallel elements intermediate the supported portions, in combination with a strip of sheet metal passing around said resistance grid to reinforce it.

12. In combination, a zig-zag resistance grid, and a reinforcing member wrapped around said grid and insulated therefrom.

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

BRADLEY HASKINS.

Witnesses:

CHAS. L. BYRON,
ROB. E. STOLL.