

(No Model.)

A. J. SHAW.
RHEOSTAT.

No. 515,254.

Patented Feb. 20, 1894.

Fig. 1.

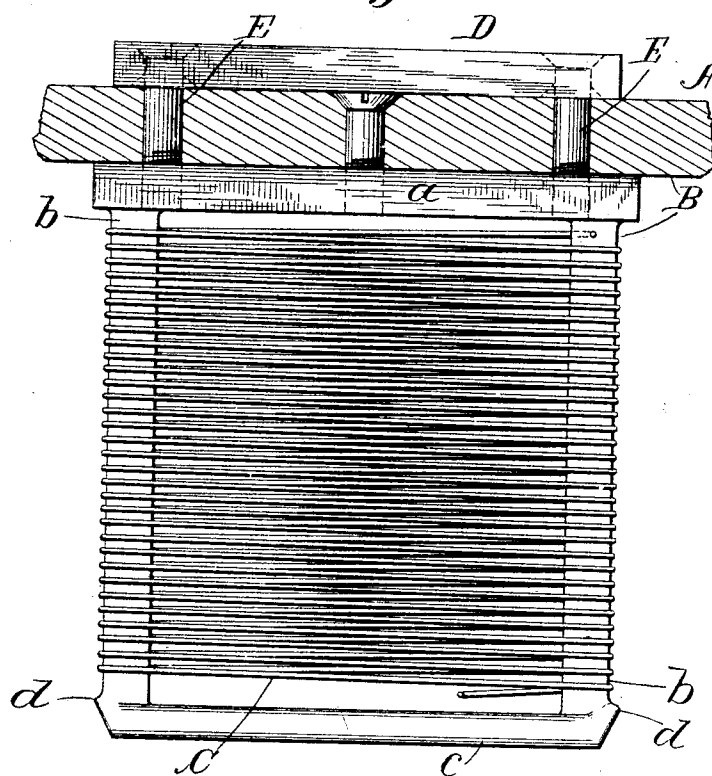
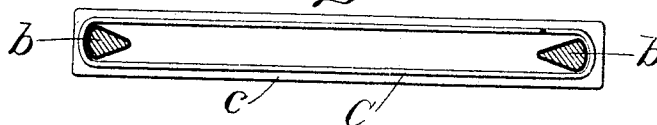


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF MUSKEGON, MICHIGAN.

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SPECIFICATION forming part of Letters Patent No. 515,254, dated February 20, 1894.

Application filed October 13, 1893. Serial No. 488,087. (No model.)

To all whom it may concern:

Be it known that I, ALTON J. SHAW, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

My invention relates to resistance devices for use in electrical work, and has for its object the production of a cheap, durable and compact device, capable of withstanding the action of moderate currents.

The invention is in the nature of a modification of that set forth in another application filed in my name October 12, 1893, and bearing Serial No. 487,926. As the resistance card, block, or section herein described may be used singly, as well as in a group or series, and as the manner of grouping, connecting, &c., is fully set forth in said application, I shall show and describe only one such section in the present case.

In the drawings,—Figure 1 is a side elevation; and Fig. 2, a transverse section of my improved resistance card or section, Fig. 1 showing also the supporting body, the contact block, and the manner of securing the contact block and card to the supporting body.

In said figures, A indicates a supporting body, which may be of slate, vulcanized fiber, or other material capable of withstanding high temperatures, and having good insulating properties; or it may be a substance incapable in itself of acting as an insulator, but provided with means of insulation from the parts carried by it. In every case one or the other provision for insulation must be made.

B indicates a frame, preferably of a substantially rectangular form and comprising a top bar *a*, side bars *b b*, and bottom bar *c*, which latter may, however, be omitted, provided the side bars be made sufficiently rigid. In cross section, the side bars are triangular or wedge-shaped, the angles being removed, and the apices facing each other, as shown in Fig. 2. At or near the lower end of each side bar *b* there is formed a swell or projection, *d*, which precludes the escape of the wire or band which forms the resisting conductor,

should said wire become loosened through expansion or otherwise. The frame B is provided with an insulating covering or envelope, advisably of enamel such as is commonly employed for metallic culinary vessels and utensils, that used upon the so-called "granite-ware" being very well adapted to the purpose. Asbestos, mica, or other heat-resisting electric insulator may be employed instead of enamel, but not so satisfactorily, all things considered.

C indicates a wire, band or strip of metal or alloy, which has one end mechanically and electrically connected with the frame B. This connection may be conveniently made by drilling a hole into the frame B, and inserting the end of the wire therein, wedging, screwing, riveting, or brazing the same in place, or passing the wire through the hole and then twisting it about itself or about the frame, or otherwise made fast to insure its retention. The attachment of the wire is advisably made at or near the upper end of one of the side bars *b*, as in Fig. 1. After thus securing the wire, it is wound about the frame in separated folds or courses, as illustrated in Fig. 1,—the separation being sufficient to afford good ventilation, and, if bare wire be used, sufficient also to prevent short circuiting or leaping of the current across the spaces from fold to fold. The winding is continued from one end of the frame B to the other, or such portion thereof as may be necessary to give the required resistance to the section, and just before leaving the frame the wire or band is twisted about itself, as shown in Fig. 1, to prevent unwinding. After winding the wire upon the frame, the whole is or may be dipped into an enamel bath, the enamel being subsequently hardened by baking or otherwise. The enamel serves not only to secure the wires in place, but also insulates them so that there is no liability of short-circuiting in the event of the wires being crossed by any conducting material. The thickness of the side bars *b b* will be sufficient to preclude the leaping of the current across from folds at one side of the frame B to those on the opposite side thereof. The triangular form of the side bars gives adequate strength

with relatively limited bearing surface for the wire, which is consequently thoroughly ventilated throughout. By rounding off the corners or angles I lessen the liability of the enamel being broken or chipped off.

D indicates a contact block with which the frame B is mechanically and electrically connected by screws or equivalent fastenings E, passing through the block D and support A, and entering holes formed in the bar *a* of frame B. An additional screw passing through support A and entering bar *a*, is also shown, but that has a special function and is claimed in the aforesaid other application.

Having thus described my invention, what I claim is—

1. A resistance card or device, consisting of an open frame, and a wire or metallic band wound about said frame, and connected at one end therewith but insulated therefrom at all other points, substantially as described and shown.

2. A resistance card or body, comprising an open frame, a metallic band thereon in separated folds, and an insulating layer of enamel serving mechanically to unite but electrically

to insulate the frame and the band, except at a single point where the two are electrically connected.

3. A resistance card or body consisting of a frame B, having triangular bars, an insulating covering for said frame, and a metallic band wound upon said frame over the insulation but electrically connected with said frame at one point.

4. In combination with frame B having projections *d*, wire C wound about said frame and electrically connected therewith at one point, and insulating material interposed between the frame and the body of the wire.

5. In combination with supporting body A, frame B, and its band C, contact block D, and fastenings extending from the block D to frame B and serving electrically to connect the same.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ALTON J. SHAW.

Witnesses:

J. G. EMERY, Jr.,
T. C. AKIN.