

UNITED STATES PATENT OFFICE.

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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 528,894, dated November 6, 1894.

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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 rheostats, and consists in certain novel features of construction hereinafter set forth, whereby I secure compactness and durability, with cheapness and efficiency.

Figure 1 is a perspective view of my improved rheostat, the casing being broken away to show the interior; Fig. 2, a horizontal section through two of the spacing contact blocks, showing the conducting strips and connections; Fig. 3, a perspective view of one of the blocks with two of the conducting strips properly connected thereto; and Fig. 4, a perspective view of one of the spacing contact blocks alone.

It is desirable, generally, that rheostats or current controllers be made as compact as practicable, and since they are frequently subjected to rough treatment in the hands of unskilled workmen, they need to be strong and simple in construction. It is also found convenient to make the contact device in the form of a radial arm or lever, movable about a fixed point, and arranged to sweep over a series of contact blocks arranged concentrically about said point. With these general features in view I adopt the construction shown in the accompanying drawings, in which—

A indicates a shell or casing, which may be made of metal coated with suitable enamel, or duly faced with mica, asbestos or other insulating material; or it may be of non-conducting material, such as earthenware, vulcanized fiber or the like.

The top or cover B is radially slotted, and may be secured to the box or body portion by screws or other suitable fastenings.

Each resistance block, card or section comprises a metallic spacing and contact block C, and a folded band D of metallic ribbon or equivalent material, light hoop or strap iron being preferred.

The preferred manner of folding is illustrated in Figs. 1 and 3, the metal being bent

or folded upon itself, first in one direction and then in the other,—sufficient space being left between proximate faces to prevent short-circuiting, and to afford good ventilation. If desired, however, the folded strip may be immersed in or otherwise thoroughly coated with any good insulating enamel, and then subjected to proper heat to vitrify the coating.

Each block C is made of wedge shape in horizontal section, as shown in Fig. 2, when intended for radial grouping, and each is formed with a horizontal lip or plate C', to rest upon the plate B and sustain the block, while serving also as a contact surface for the movable brush or contact device E.

As shown in Fig. 4, each block is further provided with two ears, *a* and *b*, projecting from opposite ends, and in opposite directions, for attachment of the ends of successive sections of the folded band or ribbon. The ears *a* and *b* are advisably drilled and tapped to receive screws *c*, by which to secure the ends of the bands, as shown in the several figures.

Fig. 2 shows clearly the order and mode of assembling or connecting the several resistance cards, block or sections, and Fig. 1 shows the arrangement of the contact plates C', the edges of which are brought within such proximity as to enable the contact brush or device to span the intervening space and make contact with one before leaving another.

In folding the ribbon or band, care is taken to make the blocks or section as a whole of such dimensions as will leave space between the ends or bends of the various folds and the plate C', to receive the plate B. By reason of this arrangement it is only necessary to pass the blocks C endwise into the slots of the plate B and secure the cover or plate in position, in order to fasten the blocks securely in place, because the inner ends of the slots limit the inward movement of the blocks; the plates C' prevent them from falling; the folded bands, coming directly beneath plate B prevent the blocks from rising, and the walls of the shell A or projecting lugs *d* extending inward therefrom as shown in Fig 1, prevent outward movement.

If the shell A be made of metal and the top plate or cover B be made of vulcanized fiber, slate, or other non-conducting material, it

will not be necessary to supply other insulation, except at the outer ends of blocks C, where they must be protected against contact with the shell A. This of course assumes
 5 that the coils and blocks do not reach to the bottom of the shell; but it will be safer and better to line the shell with enamel, micanite or the like. It is obvious, however, that the blocks C may be otherwise placed and secured
 10 in position.

Between the side face of each folded-strip section or card and the proximate faces of the blocks C, there is interposed a layer of insulating material, which may be a sheet *e*,
 15 of micanite or equivalent material, or a layer of enamel applied directly to the faces of the blocks.

E indicates a radial arm or lever movable about a central bolt or stem *f*, and carrying
 20 a series of plates, springs, or fingers, *g*, which press upon the plates C' as the arm E is swung about its pivot. The fingers or plates may be of any ordinary form and arrangement, and of any suitable electrical conductor. The
 25 arm or lever E will also be of good conducting material, or will carry on its under face a strip of copper or other good conductor, so that the current entering by a conductor *h*, passing through the intervening resistance to
 30 the fingers *g*, and taken up by them, may pass thence to a conductor *i* connected with the central post or stem about which the lever swings. Under this arrangement it will be
 35 seen, it is only necessary to swing the lever E about its pivot to introduce or to cut out the whole or any portion of the resistance.

The lever E is furnished with a handle E' of vulcanized fiber, hard rubber, or other non-conducting material.

40 It is obvious that the contact plates and the lever E may be inclosed if desired, and only the hand-piece E' exposed; but as this is a common feature of construction and is not claimed, I have not deemed it necessary to
 45 illustrate it.

Having now described my invention, I claim—

1. A rheostat consisting of a series of blocks provided with lateral contact plates, a series of folded conducting strips interposed be- 50
 tween the blocks and connected therewith in series, and a movable contact adapted and arranged to sweep the contact plates, substantially as described and shown.

2. The herein-described rheostat or current controller, consisting of a slotted supporting plate B, a series of spacing blocks C seated in the slots and having lateral contact plates C' overhanging the plate B, folded conducting bands or strips D, connected in series 60
 with the spacing blocks, and located beneath plate B, and movable arm or lever E provided with contact fingers to bear upon the plates C'.

3. The herein-described block for use in 65
 rheostats, consisting of a plate C having a lateral contact surface C' of greater width at one end than at the other, whereby it is adapted to form one of a circular series or group with narrow spaces between proximate 70
 contact surfaces.

4. A resistance block, card or section, consisting of block C, provided with lateral contact plate C', and with ears or lugs *a* and *b*, and a folded conducting strip connected at 75
 one end to one of said ears.

5. In combination with a plate or support B, a series of blocks C provided with contact plates C', and ears *a*, *b*, a series of folded conducting bands D connected in series with the 80
 plates C' through the ears *a*, *b*, and insulating material interposed between the faces of blocks C and the folded bands.

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

ALTON J. SHAW.

Witnesses:

CHAS. L. GRIFFIN.

J. G. EMERY, Jr.