

(No Model.)

W. H. MORGAN.
RHEOSTAT.

No. 553,538.

Patented Jan. 28, 1896.

Fig. 1.

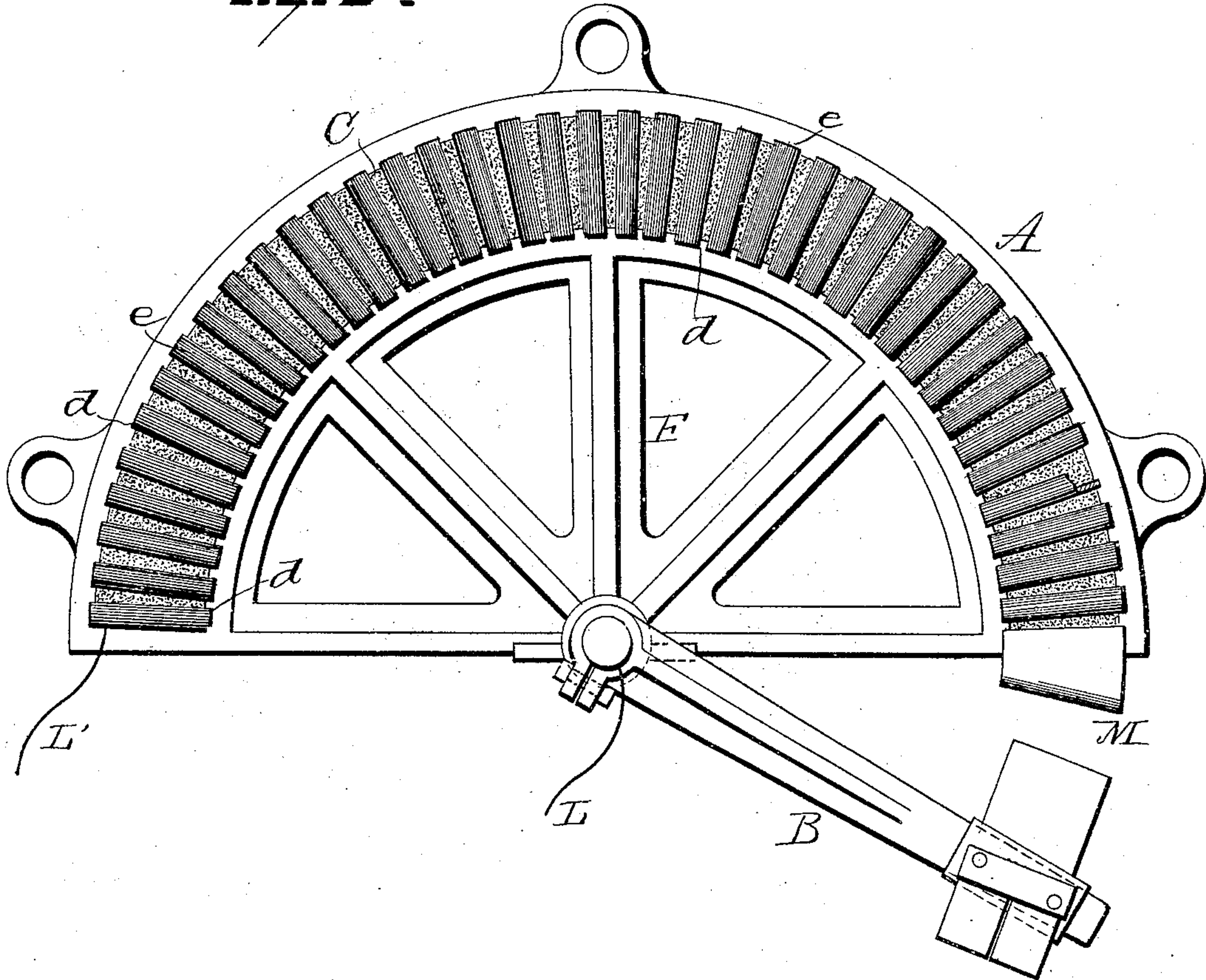


Fig. 2.

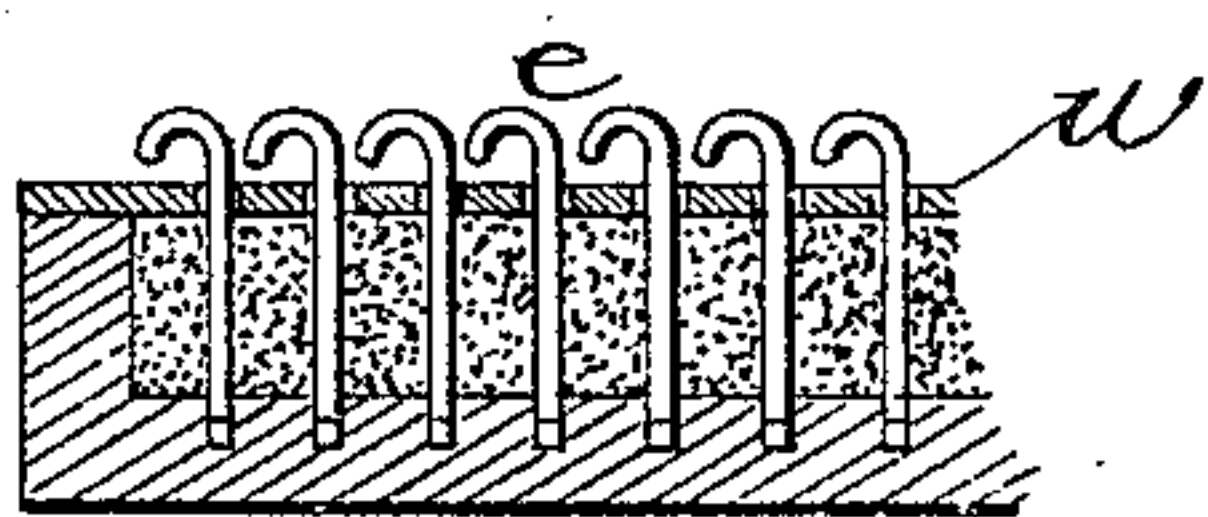
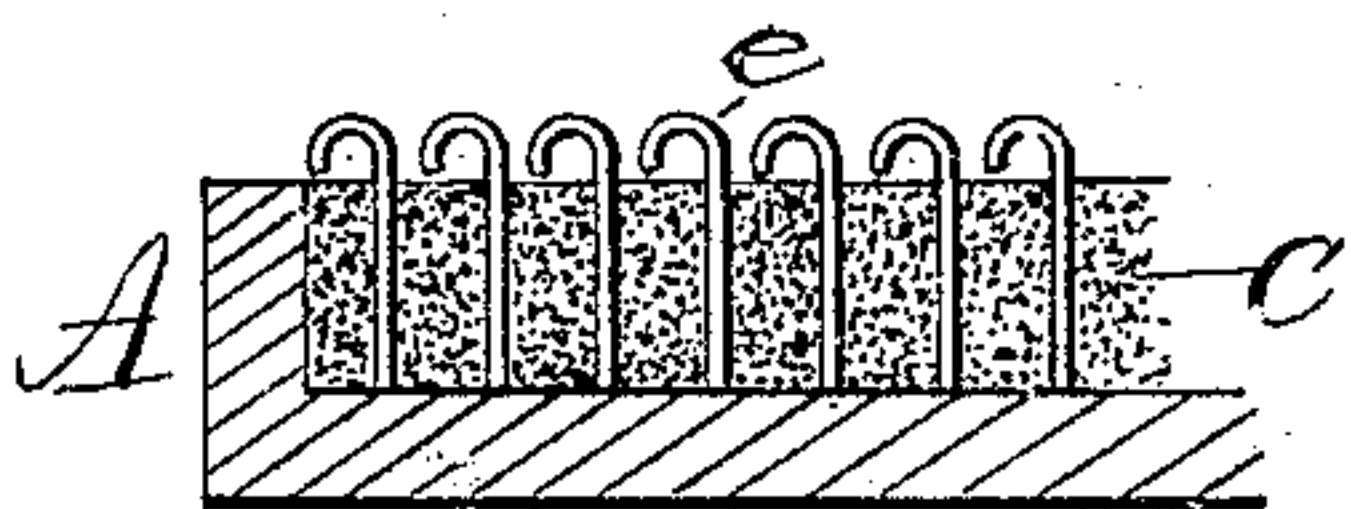


Fig. 3.

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WILLIAM HENRY MORGAN, OF ALLIANCE, OHIO, ASSIGNOR OF THREE-FOURTHS TO THOMAS R. MORGAN, SR., THOMAS R. MORGAN, JR., AND JOHN R. MORGAN, OF SAME PLACE.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 553,538, dated January 28, 1896.

Application filed November 21, 1891. Serial No. 412,627. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY MORGAN, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Rheostats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in rheostats, the object being to provide a simple, compact, and effective device that can be manufactured at a cost considerably less than the rheostats now generally employed; and it consists in a base, a resistance medium carried thereby, plates partly embedded in said resistance medium, and a movable contact carried by the base and adapted to engage the plates.

My invention further consists in certain details of construction and combinations of parts, as will be more fully described and pointed out in the claim.

In the accompanying drawings, Figure 1 is a view in plan of a rheostat embodying my invention. Fig. 2 is a view in section of the same, and Fig. 3 is a sectional view of a modification.

A represents a base, preferably of non-conducting material, provided with a groove or gutter *b*, preferably curved in the arc of a circle concentric with the axis of the switching-arm B. The base can be made of metal and the groove or gutter lined with a non-conductor, as shown at *c'*, and instead of making the groove or gutter curved it can be in the form of a rectangle, of sufficient width, however, that the resistance material therein will always be in contact with the contacts of the switching-arm throughout the movements of the latter. The groove or gutter *b* is filled with a composition C, composed of carbon or plumbago and any suitable resistance—such as asbestos fiber or cement, Portland cement, ground mica, &c.

The plumbago or carbon and the asbestos, cement, or mica are thoroughly mixed with sufficient water or a suitable binder to make a plastic mass, and the latter is then molded

under pressure into the proper shape to fit the groove or gutter and allowed to harden before being secured within the groove or gutter, or the plastic mass can be placed directly into the groove and allowed to harden therein. The sides of the frame at the opposite sides of the gutter are grooved or slotted, as at *d*, for the reception of the metal contact-plates *e*, the latter being insulated from the frame, but in intimate contact with the composition. The upper ends of the contact-plates are preferably turned over or bent, as shown, to increase the contact-surfaces.

Secured to the base A are the brackets F, carrying the switching-arm B, the latter carrying at its free end metal contacts adapted to move in contact with the surface of the resistance medium, or with the bent ends of the metal contact-plates embedded in the composition or resistance medium. This switching-arm and the contacts carried thereby can be of the well-known forms now commonly employed, and hence forms no part of my present invention. One wire, L, of the exterior circuit is connected with the traveling contact through the switching-arm B, the other wire, L', of said circuit being connected with one end of the resistance medium. The plate or rest M is insulated from the resistance material, and the contact on the switching-arm B rests thereon when it is desired to open the circuit or disconnect it entirely from the resistances.

In operating the device the contact travels in contact with the metal plates embedded therein progressively in series with each other in the circuit of the wires L and L' or cutting them progressively out of the circuit, according to the direction in which the arm is moved.

The plumbago, instead of being applied in a plastic state, can be used in loose or powdered form, and, if desired, can be used without asbestos, mica, cement or other resistance medium. When so employed, as shown in Fig. 3, I prefer to slot the lower frame, and provide a cover *w*, which not only prevents the blowing away of the carbon, but also prevents the plates from coming together, due to the sliding of the contact over them. The

frame and cover, if made of conducting material, are insulated from the plates.

Having fully described my invention, what I claim as new, and desire to secure by Letters
5 Patent, is—

In a rheostat the combination with a base, a resistance medium carried thereby and a series of metal plates partly embedded in said resistance medium, of a movable contact car-

ried by the base and adapted to engage the plates, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM HENRY MORGAN.

Witnesses:

F. E. DUSSEL,
H. W. HARRIS.