No. 673,108

Patented Apr. 30, 1901.

A. W. BERRESFORD.

RHEOSTAT.

(Application filed June 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

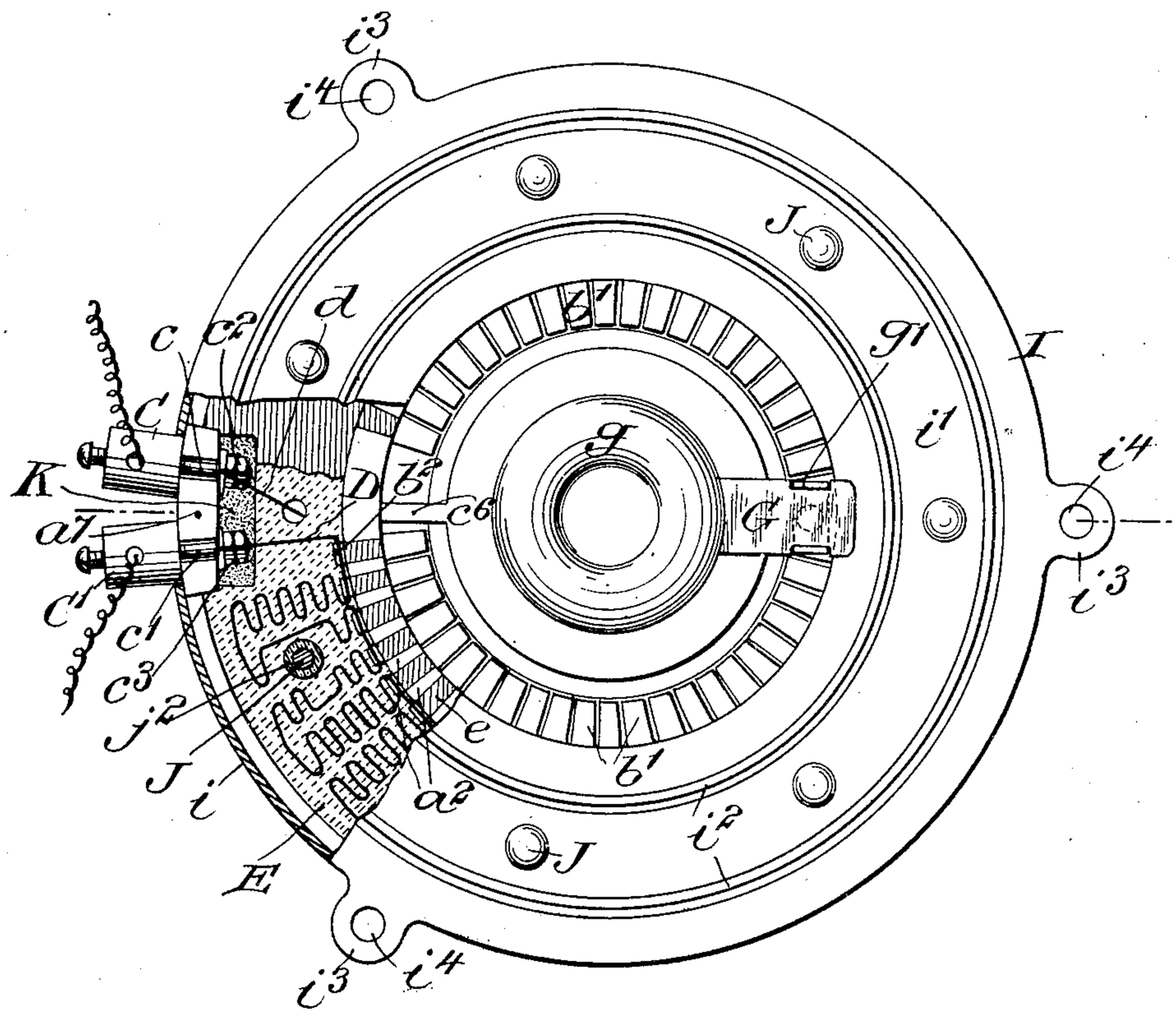
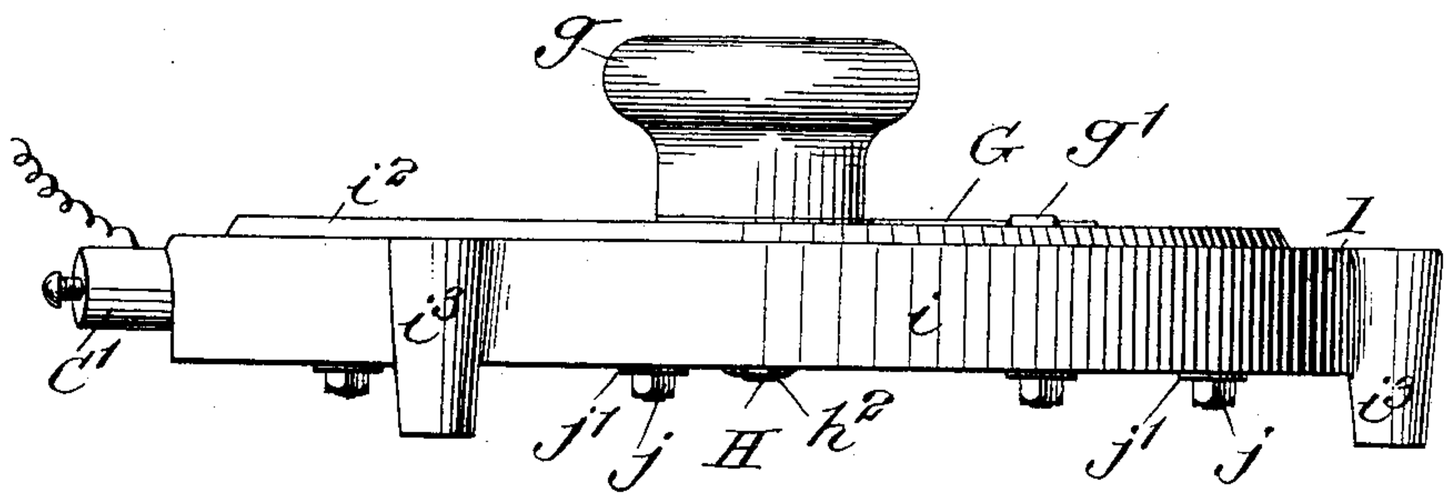


Fig. 2.



Witnesses:-
George Barry Jr.
Edward Dieser

Inventor:-
Arthur W. Berresford
by attorneys
Brown Durand

No. 673,108. Patented Apr. 30, 1901.

A. W. BERRESFORD.

RHEOSTAT.

(Application filed June 12, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

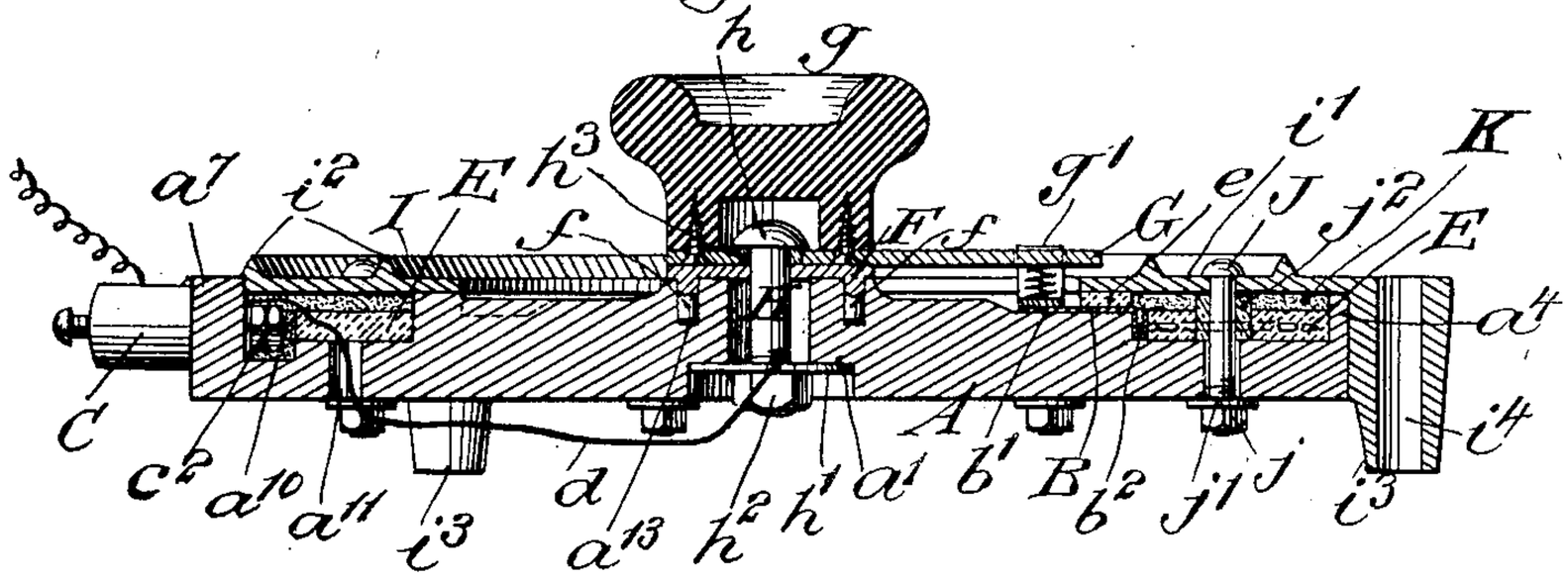


Fig. 4.

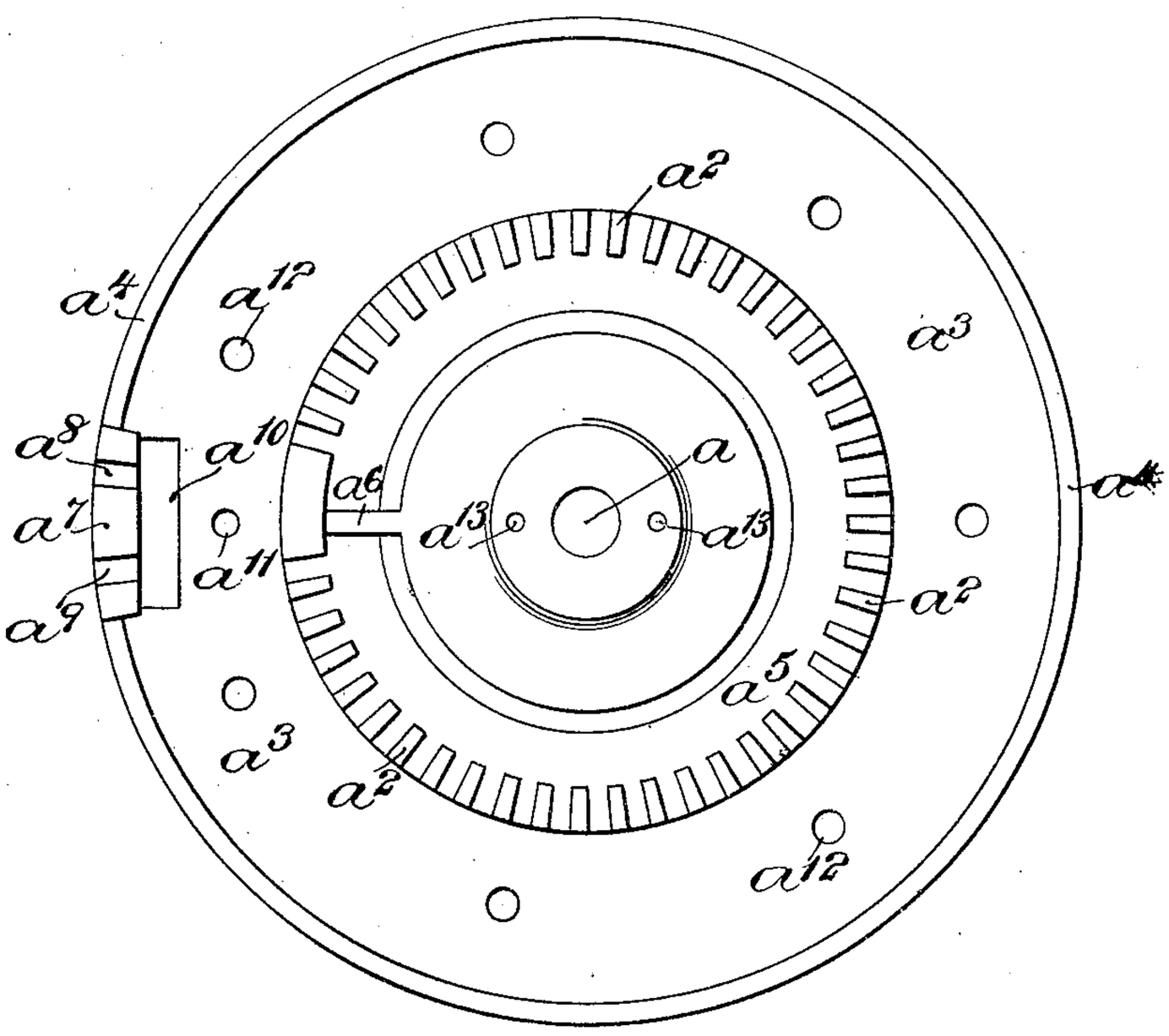
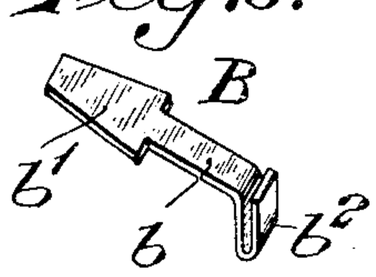


Fig. 5.



Witnesses:-
George Barry Jr
Edward Wieser.

Inventor:-
Arthur W. Berresford
by attorneys
Brown & Seward

UNITED STATES PATENT OFFICE.

ARTHUR W. BERRESFORD, OF WESTFIELD, NEW JERSEY.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 673,108, dated April 30, 1901.

Application filed June 12, 1900. Serial No. 20,009. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BERRESFORD, a citizen of the United States, and a resident of Westfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Rheostats, of which the following is a specification.

My invention relates to an improvement in rheostats, and more particularly to that class known as "circular-base" rheostats.

The object of my invention is to provide a circular-base rheostat in which the parts are assembled in a very compact and strong manner, the structure being very simple and inexpensive.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the rheostat in top plan, portions of the same being broken away to clearly set forth the interior construction of the same. Fig. 2 is a view of the rheostat in side elevation. Fig. 3 is a vertical central section. Fig. 4 is a top plan view of the circular base of the rheostat, and Fig. 5 is a detail perspective view of one of the contact-points.

The circular base of the rheostat is denoted by A, and it is composed of insulating material. A vertical hole a extends through the center of the base, the bottom of the said hole being enlarged to form a shoulder a'. An annular row of teeth or projections a^2 are formed in the face of the base concentric with the hole a and about half-way between the hole and the periphery of the base. The face of the base is further provided with an annular shallow groove a^3, which extends from the outer portion of the annular row of teeth a^2 to a point a short distance inwardly from the periphery of the base, thus leaving an outward upwardly-extended annular flange a^4. The teeth a^2 extend upwardly from an annular depressed portion a^5, which depressed portion extends inwardly from the inner edge of the row of teeth a short distance toward the center of the base.

A stop a^6 for the contact-lever, to be hereinafter described, is formed by leaving a rib extended between the central portion of the base and the inner edge of the row of teeth. A raised block a^7 is formed at the periphery of the base, which block is provided with two channels or grooves a^8 a^9 for reception of parts of the binding-posts of the rheostat. A depression a^{10} is formed in the annular groove a^3 immediately to the rear of the block a^7 for receiving the inner clamping-nuts of the binding-posts. A hole a^{11} is formed through the base adjacent to the binding-post block a^7 for the passage therethrough of one of the wires of the rheostat. The base is further provided with a number of vertical holes a^{12} therethrough for receiving the bolts which clamp the cover of the rheostat in position on the base.

The base, as above described, is stamped out at a single operation, thus requiring no cutting to adapt it for receiving the other parts of the rheostat. This base is preferably formed of granite which has been ground to a sufficient degree of fineness and then compressed between suitable dies under hydraulic pressure into the form above described.

Contact-points B are interposed between the teeth a^2, each of which contact-points comprises a neck portion b, which is inserted onto the face of the depressed portion a^5, between two adjacent teeth, an inner wedge-shaped portion b', which rests upon the face of the depressed portion a^5 inside of the row of teeth, and an outer U-shaped portion b^2, which is bent downwardly against the inner wall of the annular groove a^3 at the outer edge of the teeth. Shoulders are formed at the inner ends of the neck b, which shoulders engage the inner edges of two adjacent teeth, and as the outer extension of the neck engages the inner wall of the groove a^3 the contact-point is absolutely locked against any longitudinal movement after it has been seated. The teeth a^2 also serve to space the said contact-points apart.

Contact-posts C C′ are secured to the block a^7 of the base by providing bolts c c', which pass through the grooves a^8 a^9 in the block and which are provided with lock-nuts c^2 c^3 at their inner ends, the outer ends of the said bolts being screw-threaded into the posts C C′. One wire D, for instance, leads from the binding-post C′ into the loop b^2 of the first contact-point B and from thence into contact with all of the points around the rheostat. The por-

tion between each pair of adjacent contact-points is bent into reflexed form and extended outwardly and inwardly upon the face of the groove a^3 for forming the resistance. The wire d, which leads from the other binding-post C, passes through the hole a^{11} and from thence along the bottom of the base into electrical contact at all times with the contact-lever, to be hereinafter described. The reflexed portions of the resistance-wires D are embedded in a solid insulating-filler E, which may or may not be of a vitreous nature, the filler being of such character that it will adhere firmly to the base, and thereby securely fasten the resistance-wire thereto. This filler E fills the annular groove a^3 to a point about level with the face of the depressed portion a^5 of the base. The spaces between the teeth a^2 are also filled up to a point level with the tops of the teeth with a solid insulating-filler e, which serves to hold the contact-points rigidly in their positions between the teeth.

The contact-lever is constructed and mounted as follows: A center plate F is mounted upon the face of the base A and is held against turning thereon by two downwardly-extended projections f, which enter two holes a^{13}, formed in the face of the base adjacent to its central hole a. A contact-arm G has secured thereto a suitable handle g, and the arm is mounted to turn on the center plate F by means of a bolt H, which passes through the arm, the center plate, and the hole a in the base and has its head h overlapping the arm G, while its lower end is screw-threaded and provided with a washer, which engages the shoulder a', and below the washer a lock-nut h^2. A bushing h^3, of slightly-greater thickness than the arm G, is interposed between the head h of the bolt and the top of the center plate F, so that the bolt may be set firmly home without cramping the arm G. The outer end of the contact-arm is provided with a yielding contact-plate g', which is located in position to travel along the faces of the inner portions b' of the contact-points B as the contact-lever is turned. This yielding contact-plate g' also engages the stop a^6 on the base when the lever is swung around into the limit of its movement in either direction.

The rheostat-base is provided with a cover or casing I, having its rim i snugly engaging the outer periphery of the base and its top preferably extended inwardly to a point over the annular row of teeth a^2. This top portion i' of the cover may be provided with one or more strengthening-ribs i^2.

The base A has secured thereto separate legs in the following manner: The casing I is provided with a plurality of legs i^3, which extend a short distance below the bottom of the base A. These legs have holes i^4 therethrough for receiving bolts for mounting the rheostat upon a suitable support. The casing and the legs may be formed of an integral casting, if so desired. The casing is secured to the base A by means of a number of bolts J, which pass through holes in the top of the casing and also through the holes a^2 in the base, the inner screw-threaded ends of the bolts, which project beyond the bottom of the base, being provided with the usual nuts and washers $j\,j'$. The portions of the bolts J which are located between the inner face of the casing I and the bottom of the groove a^3 are protected from contact with the resistance-coils by short tubes j^2, of glass or other suitable insulating material.

A loose filler K, of some insulating heat-conducting material, such as sand, is placed in the space between the inner wall of the top of the casing I and the top of the solid filler E, thus serving to conduct the heat from the resistance-coils rapidly to the casing I.

It is evident that changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In a rheostat, a circular base of insulating material having a hole arranged centrally therethrough and a row of teeth formed on the base concentric with the said hole substantially as set forth.

2. In a rheostat, a circular base of insulating material having a hole arranged centrally therethrough, a row of teeth formed on the base concentric with the said hole, and a shallow annular groove formed in the base beyond the row of teeth, substantially as set forth.

3. In a rheostat, a circular base of insulating material having a hole arranged centrally therethrough, a depressed portion formed in the base concentric with the hole, and a row of teeth formed on the base and uprising from the outer edge of the said depressed portion, substantially as set forth.

4. In a rheostat, a circular base of insulating material having a hole arranged centrally therethrough, a depressed portion formed in the base concentric with the hole, a row of teeth formed on the base and uprising from the outer edge of the depressed portion and an annular shallow groove formed in the base between its periphery and the row of teeth, substantially as set forth.

5. In a rheostat, a circular base of insulating material, an annular row of teeth formed thereon, contact-points spaced apart by said teeth and a contact-lever arranged to travel around in engagement with the said contact-points, substantially as set forth.

6. In a rheostat, a circular base of insulating material, an annular row of teeth formed thereon, contact-points spaced apart by the said teeth and extended inwardly therefrom, and a contact-lever arranged to travel around in engagement with the said inward extensions of the contact-points, substantially as set forth.

7. In a rheostat, a circular base of insulat-

ing material having an annular row of teeth formed thereon, and a shallow annular groove between the row of teeth and the periphery of the base, contact-points spaced apart by the teeth and having inward and outward extensions, resistance-coils located in the said annular groove and connected to the outward extensions of the contact-points and a contact-lever arranged to travel around in engagement with the said inward extensions of the contact-points, substantially as set forth.

8. In a rheostat, a circular base of insulating material having an annular row of teeth formed thereon and an annular shallow groove formed therein, contact-points spaced apart by the said teeth and their resistance-coils located in the said groove and an insulating-filler within the groove for securing the coils to the base, substantially as set forth.

9. In a rheostat, a circular base of insulating material having an annular depressed portion, a shallow annular groove between the said annular depressed portion and the periphery of the base and an annular row of teeth uprising from the base along the outer edge of the said depressed portion, contact-points spaced apart by the said teeth, and having inward extensions along the face of the said depressed portion and outward extensions located within the shallow annular groove, resistance-coils located within the said shallow groove and connected with the outward extensions of the contact-points, an insulating-filler for said shallow groove, and a contact-lever arranged to travel around in engagement with the inward extensions of the contact-points, substantially as set forth.

10. In a rheostat, a contact-lever, a base of insulating material having an annular row of teeth formed thereon and contact-points spaced apart by the said teeth, each of said contact-points having a shouldered inner extension arranged to engage the inner edges of two adjacent teeth and a downwardly-extended outer portion for preventing the longitudinal movement of the contact-points, substantially as set forth.

11. In a rheostat, a contact-lever, a base of insulating material having an annular row of teeth formed thereon, contact-points spaced apart by the said teeth and an insulating-filler between the teeth for locking the contact-points in position therein, substantially as set forth.

12. In a rheostat, a base of insulating material having a hole therethrough, a center plate, a contact-lever mounted on said center plate and a bolt passing through the contact-lever and the center plate for hinging the contact-lever to the base, substantially as set forth.

13. In a rheostat, a base of insulating material having a hole therethrough, a center plate, means for locking the plate against rotary movement with respect to the base, a contact-lever mounted on the center plate and a bolt passing through the contact-lever and the center plate for hinging the contact-lever to the base, substantially as set forth.

14. In a rheostat, a circular base of insulating material, separate legs therefor and means for maintaining the legs in immovable engagement with the base, substantially as set forth.

15. In a rheostat, a circular base having an annular shallow groove formed therein, resistance-coils located in said groove, a casing for the base covering the groove, a solid insulating-filler within the groove for securing the coils to the base and a loose insulating-filler interposed between the solid filler and the casing, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 26th day of May, 1900.

ARTHUR W. BERRESFORD.

Witnesses:
FREDK. HAYNES,
EDWARD VIESER.