H. J. WIEGAND.

RHEOSTAT.

APPLICATION FILED AUG. 2, 1912.

1,092,880.

Patented Apr. 14, 1914.

Fig. 1.

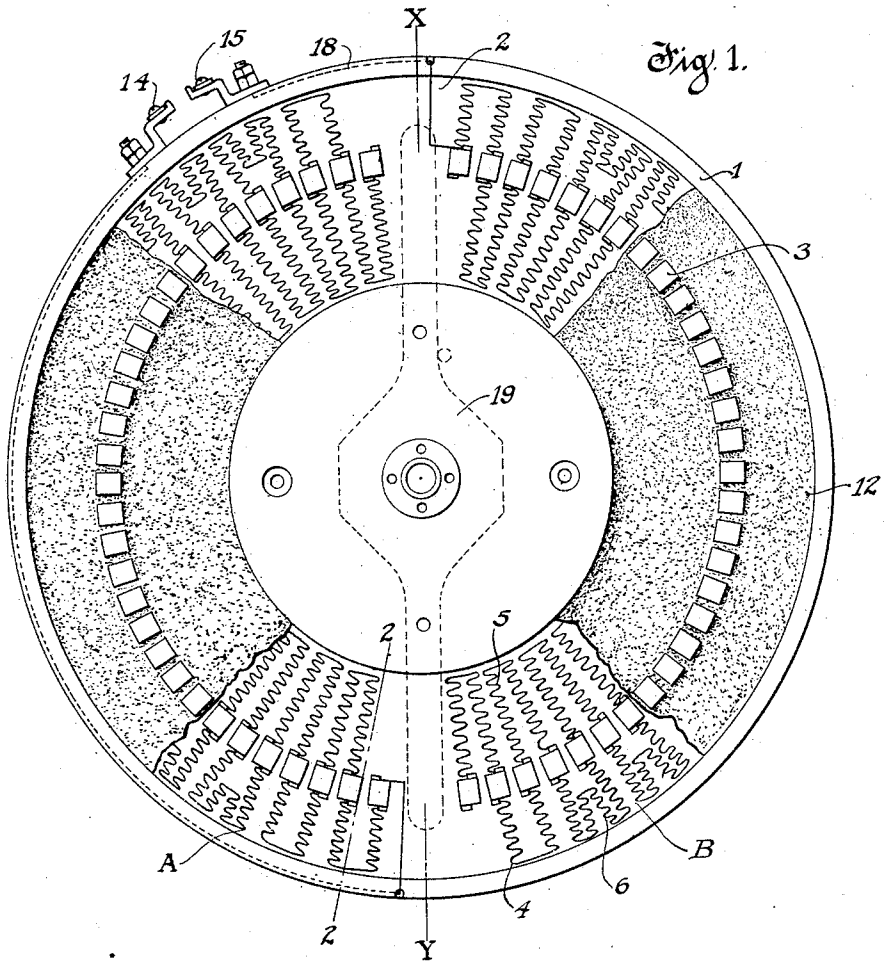


Fig. 2.

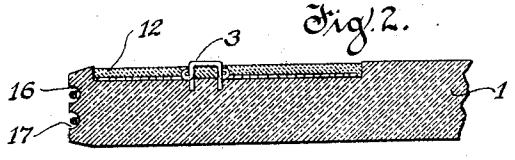
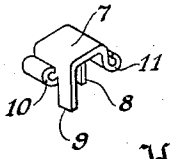


Fig. 3.



Witnesses

John L. Johnson

Jeanette S. Brock.

Inventor

Henry J. Wiegand

By Edwin B. Stevens, Jr.

Attorney

UNITED STATES PATENT OFFICE.

HENRY J. WIEGAND, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE CUTLER-HAMMER MFG. CO., OF MILWAUKEE, WISCONSIN.

RHEOSTAT.

1,092,880. Specification of Letters Patent. Patented Apr. 14, 1914.

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To all whom it may concern:

Be it known that I, HENRY J. WIEGAND, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Rheostats, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in rheostats.

In certain classes of rheostats, especially those of the flat, circular type, great difficulty has heretofore been experienced in so arranging the resistance and contacts as to secure the desired amount of resistance and the desired number of steps of regulation in a rheostat of preferred dimensions.

My invention has among its objects to provide a rheostat wherein the desired amount of resistance and the desired number of steps of regulation may be readily provided for with great economy of space.

Other objects and advantages of my invention will hereinafter appear.

For the purpose of more clearly and fully disclosing the nature and advantages of my invention I shall describe the rheostat illustrated in the accompanying drawing. It should, of course, be understood that my invention is susceptible of modification.

In the accompanying drawing, Figure 1 is a plan view of the rheostat with the covering of the resistance removed. Fig. 2 is a sectional view on line 2—2 of Fig. 1. Fig. 3 is a perspective view of one of the contacts.

The rheostat selected for the purpose of illustration is of the disk type and particularly adapted to theater dimmer use. It comprises a flat, circular base 1 of any suitable insulating material, such for example as soapstone. The upper side of the base 1 is provided with an annular channel or recess 2 of suitable depth. Within this channel is arranged a circular series of contacts 3 secured to the base in a manner hereinafter set forth. These contacts are preferably arranged concentrically within the channel and about midway between the walls of the channel. This permits the resistance to be arranged on opposite sides of the contacts, with the advantages hereinafter set forth.

While in practice any suitable resistance material may be employed, I prefer to employ reflexed resistance wire sections 4 and 5, as illustrated. Each of these sections comprises a loop having the ends thereof connected to adjacent contacts, the sections 4 being connected on the outside of the contacts and the sections 5 being connected to the inside of the contacts and in a staggered relation to the sections 4. That is to say, the sections 4 and 5 are so connected to the contacts that current will flow from one of the contacts through one of the sections 4 to the next adjacent contact, thence through one of the sections 5 to the next adjacent contact, thence through another section 4 and another section 5, and so on. Thus, each of the sections constitutes one step of resistance.

The resistance is preferably laid out on substantially radial lines, as illustrated, in order to more uniformly distribute the same over the base and at the same time provide for such spacing of the portions as to insure against short circuits. Of course, in practice the sections of resistance may be graduated as desired by compressing or spreading the convolutions and reflexing the loops, as illustrated at 6, if desired. It will thus be at once apparent that this arrangement of the contacts and resistance enables the use of more resistance material and provides for more steps of regulation than would be possible with the contacts arranged at either the outer or inner periphery of the resistance receiving channel. Further, it provides for a much more even distribution of the resistance material and accordingly a much more even distribution of the heat over the surface of the base, which of course increases the efficiency of the rheostat.

In practice, various different forms of contacts may be employed. I prefer, however, to use contacts of the type illustrated in Fig. 3. This contact comprises a sheet metal stamping having a contact face 7, two

downwardly projecting lugs 8 and 9 adapted to project into suitable recesses in the base 1, as shown in Fig. 2 and with curved clips 10 and 11 for the attachment of the resistance sections. The contact illustrated may be readily formed of an oblong strip of sheet metal. The lugs 8 and 9 and the clips 10 and 11 are preferably staggered.

After the contacts have been set into the base and the resistance sections connected thereto the channel 2 is preferably filled with cement or other suitable plastic material 12 to embed the resistance and contacts, leaving only the upper extremities of the contacts exposed. This unites the resistance, contacts and base in a substantially integral structure.

Where the rheostat is to be used in theater dimmers, I have found it advantageous to divide the same into two electrically independent sections A and B. In the rheostat shown, the division is made on a vertical diametric line X and Y.

For connecting the rheostat in circuit binding posts 14 and 15 are provided. These binding posts are preferably arranged on the periphery on the base 1 and the base is preferably provided on its periphery with grooves 16 and 17 for housing the leads from the contacts to be connected to the binding posts. As shown, the binding post 15 is connected by conductor 18 to the uppermost contact of section B, while the binding post 14 is connected to the lowermost contact of the section A.

Any suitable controlling element may be provided for the resistance. For example, a double ended lever 19, such as illustrated in dotted lines, may be employed for simultaneously moving over the contacts of both sections A and B to electrically connect said sections and simultaneously cut out or insert their steps of resistance.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A rheostat provided with a series of contacts, a resistance connected thereto, said resistance being reflexed across said series of contacts to form loops on opposite sides thereof.

2. A rheostat provided with a series of contacts arranged in an arc and resistance connected to said contacts and having parts extending in opposite directions from said contacts on substantially radial lines.

3. A rheostat provided with a series of contacts and a resistance connected thereto and divided thereby into sections disposed alternately on opposite sides of said series of contacts.

4. A rheostat provided with a series of contacts and resistance loops arranged on opposite sides of said series of contacts, each loop connecting two adjacent contacts and the loops on opposite sides of said contacts being arranged in a staggered relation.

5. A rheostat provided with a series of contacts arranged in an arc and resistance loops on opposite sides of said series of contacts, each loop connecting two adjacent contacts and the loops on opposite sides of said contacts being staggered.

6. A rheostat provided with a series of contacts arranged in an arc and resistance comprising a reflexed wire arranged in loops on opposite sides of said series of contacts and connected thereto.

7. A rheostat provided with a series of contacts arranged in an arc and reflexed resistance wire connected to said contacts and having portions extending on substantially radial lines in opposite directions from said contacts.

8. A rheostat comprising a base, a series of contacts arranged thereon in the form of an arc, and resistance mounted on said base and connected to said contacts, said resistance having a plurality of complete sections on opposite sides of said series of contacts.

9. A rheostat comprising a base, a series of contacts mounted thereon in an arc and reflexed resistance wire looped flatwise upon said base on opposite sides of said contacts and connected thereto.

10. A rheostat comprising a flat base, a series of contacts mounted thereon in an arc and reflexed resistance wire laid out upon said base on opposite sides of said contacts on substantially radial lines and connected to said contacts.

11. A rheostat comprising a flat insulating base having a curved channel therein, a series of contacts arranged in an arc in said channel and spaced from both the edges thereof, resistance loops arranged in said channel on opposite sides of said contacts and connected thereto and a plastic filler for said channel embedding said resistance and portions of said contacts.

12. A rheostat comprising an insulating base having an annular channel therein, a series of contacts concentrically arranged in said channel, resistances arranged within said channel on opposite sides of said series of contacts and connected thereto and a plastic filler for said channel embedding said resistance and portions of said contacts.

13. A rheostat comprising an insulating base having an annular channel therein, a series of contacts concentrically arranged in said channel, resistances arranged within said channel on opposite sides of said series of contacts and connected thereto and a plastic filler for said channel embedding said resistance and portions of said contacts, said

resistance comprising loops of reflexed wire, each loop connecting two adjacent contacts and the loops on opposite sides of the contacts being disposed in a staggered relation.

14. A rheostat comprising a circular insulating base, a resistance mounted thereon, and a terminal device on the periphery of said base, said base having a peripheral groove extending from said devices to a point contiguous to a terminal of said resistance for receiving a connecting conductor.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

HENRY J. WIEGAND.

Witnesses:
ALFRED HALVERSON,
M. R. FENNO.