

E. M. BENTLEY.

RHEOSTAT.

APPLICATION FILED JULY 11, 1919.

1,364,687.

Patented Jan. 4, 1921.

Fig. 1.

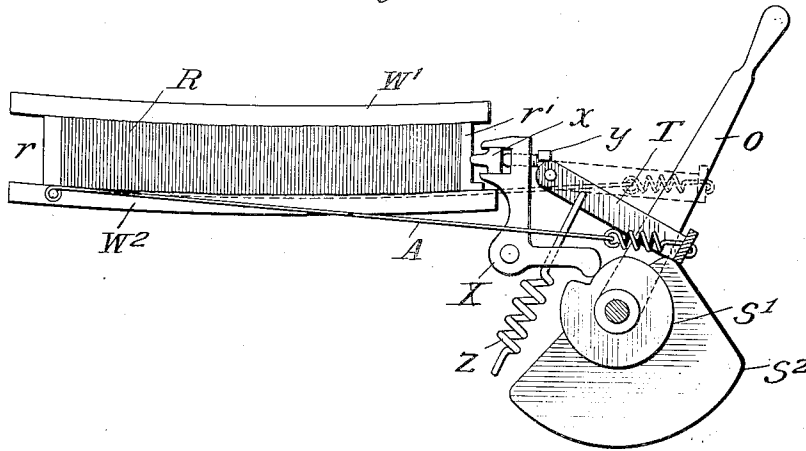
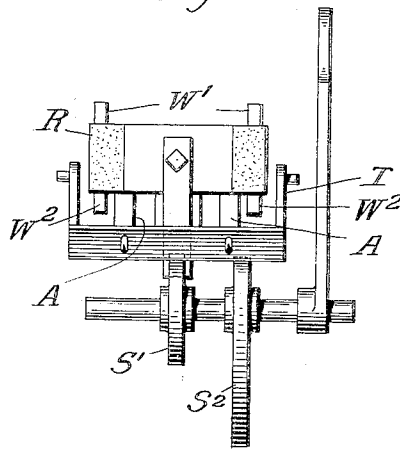


Fig. 2.



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Specification of Letters Patent.

Patented Jan. 4, 1921.

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To all whom it may concern:

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, residing at Lawrence, county of Nassau, and State of New York, have invented certain new and useful Improvements in Rheostats, the following being a full, clear, and exact disclosure of the one form of my invention which I at present deem preferable.

For a detailed description of the present form of my invention, reference may be had to the following specification and to the accompanying drawings, which illustrate my invention, wherein—

Figure 1 is a side elevation of my rheostat;

Fig. 2 is an end elevation thereof.

In Letters Patent No. 1,313,853, dated August 19, 1919, I have shown and claimed broadly a rheostat wherein a conductor forming a loop has the sides of the loop brought into contact progressively to cut out its resistance, this being preferably effected by a curved surface of contact. One form of that invention shown but not specifically claimed in said application involved a carbon pile as one side of the loop, a flexible tangent conductor extended over the pile forming the other side. The two sides were brought into contact progressively by bending the conductor over the curved surface of the pile. The resistance presented by the surface contact of the plates is thus cut in or out progressively. In addition I provided for effecting a certain range of resistance variation by compressing the carbons prior to the further variation by short-circuiting them as aforesaid. My present application constitutes a division of the application upon which the above identified patent issued and relates to that aforesaid particular embodiment of my generic invention.

Referring to the drawing, R represents a pile of carbon plates contained between holders W^1 , W^2 so arranged as to give one side of the pile a curvature following an arc of long radius. The edges of the plates composing the pile thus form a convex contact surface integral with the material of the plates. A, A are two flexible ribbons of metal secured at one end to the metallic terminal plate r of the pile and at the other end secured, through intervening helical springs, to the free end of a tilting lever-

frame T. Manifestly, as that end of the frame T is raised from the position it occupies in Fig. 1 to its dotted-line position in the same figure, the ribbons A, A will be progressively wrapped over the curved surface of the carbons until they finally rest against the opposite terminal plate r^1 and complete the short-circuit of the pile. The preliminary compression of the pile is effected by means of an angle-lever X, the upper end of which is provided with a bearing block α resting against the terminal plate r^1 of the pile and adjustable with respect to lever X by a screw Y. The other arm of the lever bears on a cam S^1 on a shaft operated by handle O. On the same shaft is a second cam S^2 displaced with respect to S^1 and operating in succession thereto to lift the outer side of frame T, against the stress of spring Z, thereby causing the ribbons A, A to be wrapped progressively over the convex surface of the carbon pile and ultimately short-circuit it as aforesaid. Thus, after the resistance of the pile is partly removed by compression the remaining resistance is removed by the ribbons. By a reverse operation the resistance is restored to the circuit to any desired degree without arcing and by a short movement of the operating handle. It will also be observed that in this form of my generic invention the flexible conductor ribbon is the part or member which is operated to produce the bending of it over the curved contact surface, said surface being relatively stationary and the curved holders W^1 , W^2 acting as the presser which brings the two sides of the conducting loop into contact to short-circuit its resistance. In the other forms of my invention it is the presser member which is movable and operated in distinction from the present arrangement wherein the curved contact surface is both rigid and stationary with respect to the flexible ribbon which is the movable and actuated member. This feature is also embraced in my present application.

What I claim as new and desire to secure by Letters Patent is:

1. A rheostat of the character described comprising a conducting loop, one side of which is formed of stationary resistance elements arranged edgewise, and a conductor positioned to be brought into contact with a progressively increasing or decreasing num-

ber of said resistance elements, whereby the loop resistance may be increased or diminished.

2. A rheostat of the character described comprising a contacting loop, one side of which is formed of stationary resistance elements arranged edgewise, and a conductor provided with a flexible body positioned to be brought into contact with a progressively increasing or decreasing number of said resistance elements, whereby the loop resistance may be increased or diminished.

3. A rheostat of the character described comprising a conducting loop, one side of which is formed of a pile of resistance elements having parallel edges forming a contact surface, and a conductor positioned to be brought into contact with a progressively increasing or decreasing number of said resistance elements, whereby the loop resistance may be increased or diminished.

4. A rheostat comprising a pile of resistance elements having their edges relatively positioned to provide a curved contact surface, and a conductor formed with a flexible body arranged tangentially to said surface and positioned to make contact with a progressively increasing or decreasing number of said resistance elements to increase or decrease the resistance of the pile.

5. A rheostat comprising a pile of carbon plates having their edges arranged to present a contact surface and a conductor formed with a body of flexible material extending longitudinally along said surface and arranged to make contact therewith progressively to reduce or increase the resistance of the pile.

6. A rheostat comprising a pile of carbon plates having their edges arranged to form a curved contact surface and a conductor formed with a body of flexible material extended longitudinally over said surface and making contact therewith progressively to reduce or increase the resistance of the pile.

7. A rheostat comprising a pile of carbon plates, their edges forming a curved contact surface, and a flexible ribbon conductor extended longitudinally over said surface and bending thereon to make contact therewith progressively for reducing or increasing the resistance.

8. A rheostat comprising a pile of resistance elements having their edges formed as a curved contact surface and a plurality of parallel flexible conductors bending over said surface progressively to reduce or increase the resistance of the pile.

9. A rheostat comprising stationary resistance elements arranged with a curved contact surface, a movable flexible conductor bending down on said surface progressively to vary the resistance and an oscillating lever to which one end of said conductor is connected.

10. A rheostat comprising a series of resistance elements having a curved contact surface, a longitudinal flexible conductor bending over said surface to vary the resistance and a spring maintaining the said conductor under tension.

11. A rheostat comprising a series of resistance elements presenting a convex contact surface, a longitudinal conductor bending down on said surface to vary the resistance, a spring maintaining said conductor under tension, and an oscillating lever to which one end of said conductor is connected.

12. A rheostat comprising a carbon pile, a compressor therefor, and a short circuiting conductor positioned to contact with a progressively increasing or diminishing number of the resistance elements of said pile.

13. A rheostat comprising a carbon pile, a compressor therefor, and a short-circuiting conductor contacting with the edges of the plates subsequently to their compression for cutting out the pile progressively.

14. A rheostat comprising a carbon pile having the edges of its plates arranged to form a curved contact surface, a compressor for the pile, and a flexible conductor bending over said surface for short-circuiting the pile progressively.

15. A rheostat comprising a carbon pile, a compressor therefor, a device for cutting out said pile and a common actuator for said compressor and the cutting-out device.

16. A rheostat comprising a carbon pile, a compressor therefor having its range of action adjustable, and a cutting-out device acting on said pile in succession to the compressor.

17. A rheostat comprising a carbon pile having the edges of the plates arranged to form a convex contact surface, a flexible conductor bending over said surface to short-circuit the plates progressively, a compressor for the pile, and actuating devices for operating said compressor and said conductor consecutively.

18. A rheostat comprising a carbon pile having the edges of its plates arranged to form a curved contact surface, a flexible conductor bending over said surface to short-circuit the plates progressively, an operating lever for said conductor, a second lever for compressing the pile and a common actuator for both levers.

19. A rheostat comprising a carbon pile, a compressor therefor, a short-circuiter therefor, and two relatively displaced cams acting on the said compressor and short-circuiter respectively and consecutively.

20. A rheostat comprising a conducting loop, one side of which is a conductor provided with a body of flexible material constituting the movable member and the other side a conductor with a curved contact sur-

face relatively stationary, combined with actuating means applied to the movable member.

5 21. A rheostat comprising a conducting loop, one side thereof being relatively stationary and formed with a curved contact surface, the other side being a flexible conductor and a vibrating lever to which one end of said conductor is secured.

10 22. A rheostat comprising a conducting loop, one side of which is relatively stationary and formed with a curved contact surface, the other side being a flexible conductor secured at one end but free to move at

its opposite end combined with a vibrating 15 lever to which the free end of the conductor is connected and which maintains said conductor under tension while in operation.

23. A rheostat comprising a pile of resistance elements with their edges present- 20 ing a convex contact surface and a plurality of flexible conductors each anchored at one end and arranged to bend down on said surface to vary the resistance of the pile.

Signed at New York city, county and 25 State of New York, this 10th day of July, 1919.

EDWARD M. BENTLEY.