

No. 812,611.

PATENTED FEB. 13, 1906.

F. L. STONE.
RHEOSTAT.

APPLICATION FILED JULY 25, 1904.

Fig. 1.

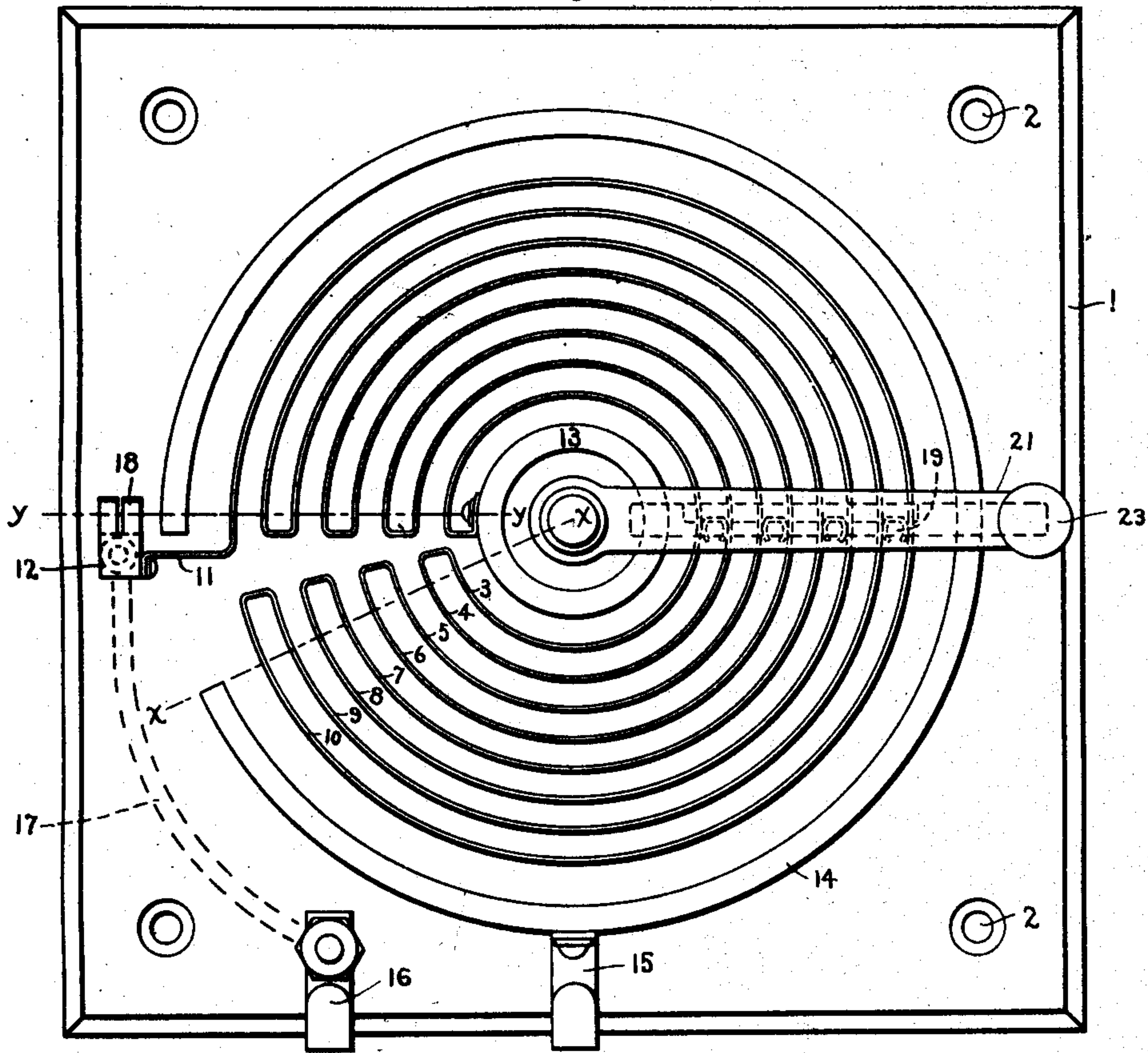
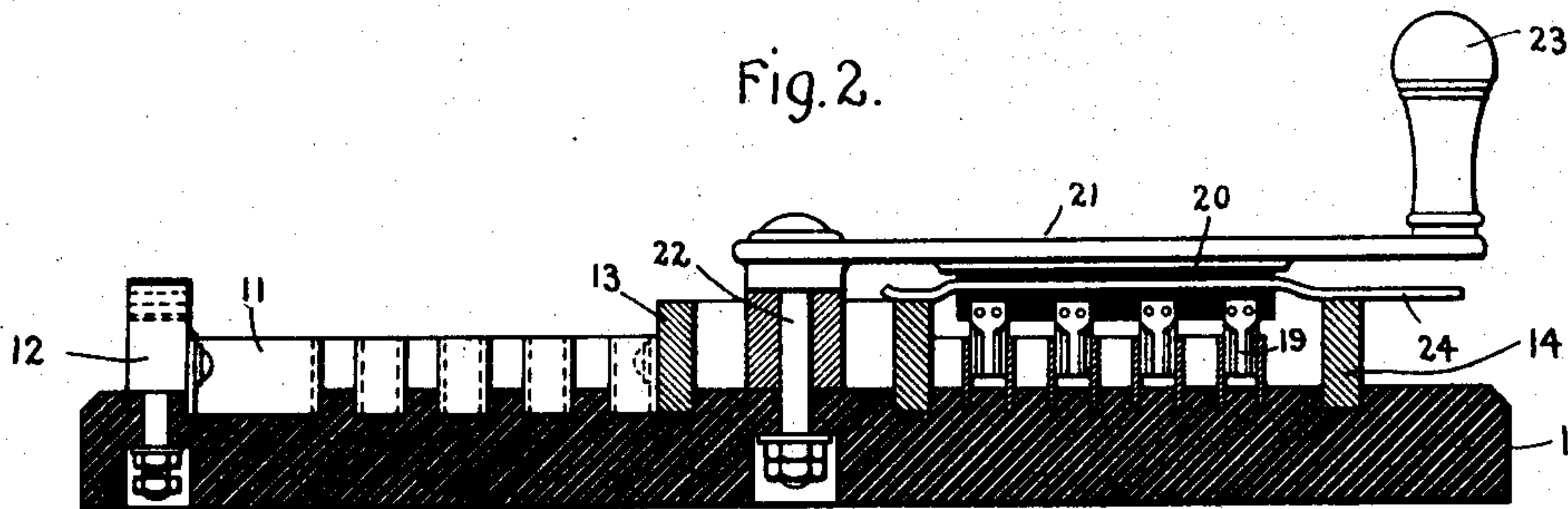


Fig. 2.



Witnesses
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ATTY.

UNITED STATES PATENT OFFICE.

FRED L. STONE, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

RHEOSTAT.

No. 812,611.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed July 25, 1904. Serial No. 218,031.

To all whom it may concern:

Be it known that I, FRED L. STONE, a subject of the King of Great Britain, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

The present invention relates to rheostats for regulating electric currents.

10 The rheostats in common use comprise a resistance-conductor connected at one end to one side of the electric circuit and provided at certain intervals of its length with fixed contact-studs and a movable contact
15 part connected to the opposite side of the circuit and adapted to be stepped from contact-stud to contact-stud to complete the circuit through a greater or less number of sections of the resistance-conductor. As the mov-
20 able contact member steps from one independent contact-stud to another more or less electric sparking takes place, which very soon pits and roughens the contact-surfaces, caus-
25 ing the movable contact to cling and move with irregularity and producing fluctuations in the current.

30 The object of my invention is to provide a highly-efficient rheostat in which the movable contact may pass with facility from one extreme position to the other without inter-
35 ruption or sparking of the electric circuit.

In carrying out my invention I mount upon an insulating-support a plurality of parallel resistance-conductors connected in series and
35 shunt-circuit the several pairs of the resistance-conductors by short bridging-contacts mounted on a suitable insulated support arranged to travel the length of the conductors.

40 For a more complete understanding of my invention reference may be had to the following detailed description and the accompanying drawings, forming a part of this specification, in which—

45 Figure 1 is a plan of a rheostat embodying one form of my invention, and Fig. 2 is a central transverse section of the same.

50 The base consists of a rectangular slab 1, of stone, porcelain, or composition, provided with suitable apertures 2 for the reception of screws by which it is secured in position.

The resistance-conductor consists of a plurality of flat bars or strips 3 to 10 of nickel, steel, or other material of low conductivity bent into the form of nearly complete circles

of progressively-increased diameter and con- 55
centrically arranged in grooves in the upper surface of the base-plate. The outermost strip 10 has one end 11 bent radially outward and secured to a terminal post 12 and the
60 other end folded in and connected to the corresponding end of the adjacent strip 9; the opposite end of the latter strip being similarly connected to strip 8, and so on in series to the end of the innermost strip 3, which is
65 connected to a ring-contact 13, also secured in a concentric groove in the top surface of the base. Concentrically arranged in a groove outside the bars 3 to 10 is a segmental contact-ring 14, having a terminal binding-clip 15 secured to one side thereof. A second
70 terminal binding-clip 16 is mounted on the base adjacent to the first binding-clip 15 and connected by a back conductor 17 to post 12, which is provided with spring contact-fingers 18 for a purpose hereinafter set forth. 75

The movable contact consists of a plurality of spring-fingers 19 of U-shaped cross-section extending into the spaces between alternate bars or strips 3 to 10 and pressing transversely against their sides. These fingers 19 80
are secured to a block 20 of insulation secured to the under side of an arm 21, pivoted upon a shaft 22, mounted upon the base concentrically with the strips 3 to 10. The arm 21 carries at its outer end a handle 23, by
85 which it is actuated, and extending through the block 20 is a spring conducting rod or plate 24, adapted to engage at its respective ends with the inner and outer circular contacts 13 and 14. The outer end of the rod 24 90
is extended somewhat beyond the outside periphery of the larger contact 14, so as to enter between the spring-fingers 18 of the post 12. When the arm 21 is in the starting position *xx*, the current passes from terminal 95
16 through the back conductor 17, post 12, substantially the full length of the resistance-conductor, to the inner contact-ring 13, contact-bar 24, outer contact-ring 14, and terminal 15. As the arm 21 is moved counter- 100
clockwise more and more of the resistance-conductor is shunt-circuited by the contact-fingers 19, so that when the arm reaches the position indicated in Fig. 1 the lower half of the resistance-conductor strips 3 to 10 will 105
have been cut out of circuit. When the arm 21 arrives at the full-on position *yy*, the outer end of the contact-bar 24 engages the spring-

fingers 18 on the post 12 and shunt-circuits the current directly from the post 12 to the outer contact-ring 14, cutting out the whole of the resistance-conductor, so that no part thereof will be injured by excess of current, however long continued.

I do not desire to restrict myself to the particular form or arrangement of parts herein described and shown, since it is apparent that they may be changed and modified without departing from my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a rheostat, the combination of a resistance-conductor comprising a series of parallel strips or bars alternately connected in sets of two, and a movable member provided with a series of bridging-contacts each adapted to serially connect two adjacent sets of strips or bars.

2. In a rheostat, the combination of an insulating-base, a resistance-conductor comprising a series of circular parallel strips or bars mounted upon said base and alternately

connected in sets of two, and a concentric-ally-pivoted member extending over said strips or bars and provided with a series of spring-contacts each adapted to serially connect two sets of strips or bars.

3. In a rheostat, the combination of an insulating-base, a resistance-conductor comprising one or more pairs of parallel circular bars or strips mounted on said base, a concentric inner contact-ring connected to one end of said resistance member, an outer concentric contact-ring and a concentrically-pivoted member having one or more bridging-contacts each adapted to engage a pair of strips or bars, and a contact rod or plate adapted to engage said inner and outer concentric rings.

In witness whereof I have hereunto set my hand this 22d day of July, 1904.

FRED L. STONE.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.