

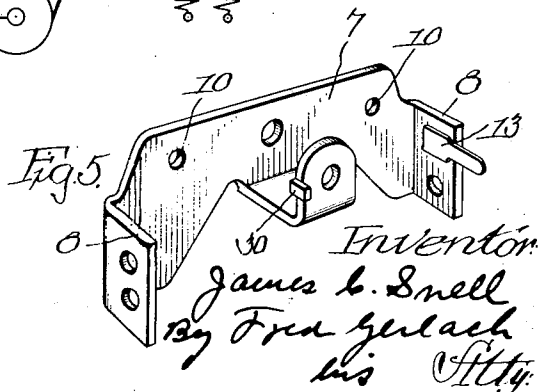
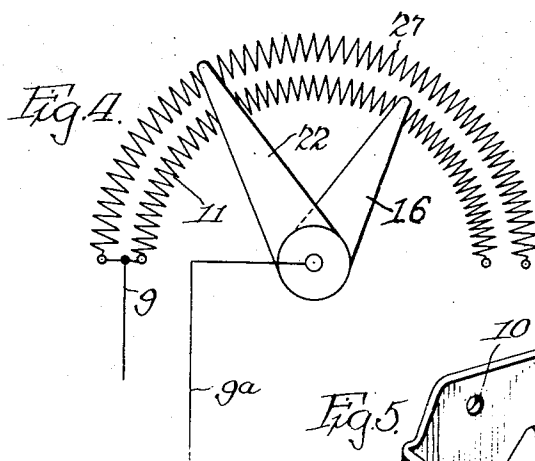
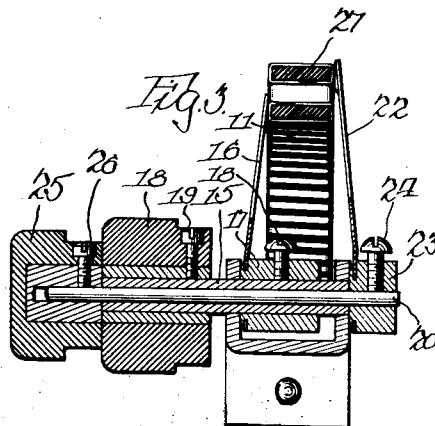
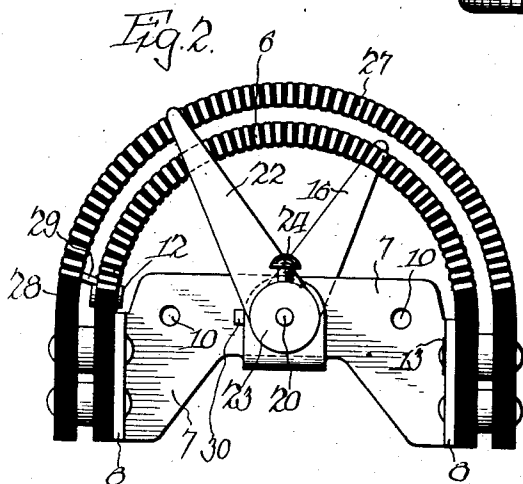
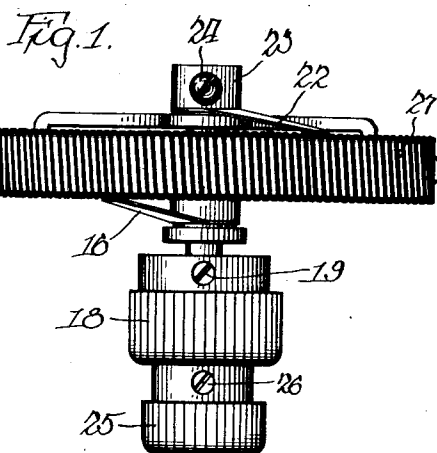
Feb. 17, 1925.

J. C. SNELL

1,526,441

RHEOSTAT

Filed June 4, 1923



UNITED STATES PATENT OFFICE.

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RHEOSTAT.

Application filed June 4, 1923. Serial No. 643,202.

To all whom it may concern:

Be it known that I, JAMES C. SNELL, a citizen of the United States, and a resident of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rheostats, of which the following is a full, clear, and exact description.

The invention relates to rheostats and more particularly to those adapted for radio service and its object is to provide an improved device in which provision is made for quick or coarse and fine adjustment for corresponding variations in the resistance in the circuit.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is a plan of a device embodying the invention. Fig. 2 is a rear elevation. Fig. 3 is a section on line 3-3 of Fig. 1. Fig. 4 is a diagram of the electrical connections. Fig. 5 is a detailed perspective of the rheostat frame.

The invention is exemplified in a rheostat comprising a semi-circular or arched core 6 of insulating material; a bracket or frame 7 between the ends of the core and provided with laterally extending lugs 8 which are riveted to the core and with holes 10 for screws whereby the frame may be supported in any suitable manner; a ribbon or wire resistance coil 11 wound on said core and having one of its ends electrically connected to a terminal strip 12 to which one of the conductors 9 of the circuit is connected. The other conductor 9^a is connected to a terminal strip 13 which is riveted to bracket 7 which forms a part of the electrical circuit. A sleeve 15 is pivotally mounted in frame 7. A conductor or switch-arm 16 has its hub 17 secured by a screw 18 to sleeve 15 and is adapted to travel over one side of the coil 11 to include more or less of the convolutions thereof in the circuit between conductors 9 and 9^a, the arm serving as a conductor between bracket 7 and said coil. A handle 18 is fixed by a screw 19 to sleeve 15, so that arm 16 may be rotatively adjusted over any part of the resistance coil.

A shunt coil 27 is wound on a core 28 of insulating material which is separated from the core 6 and coil 11. One end of coil 27 is connected to a terminal strip 29 which is

also connected to circuit-conductor 9. The resistance of coil 27 is at least greater than the resistance of coil 11. For example, if the coil 11 has a resistance of ten units, the shunt coil 27 would have a resistance of from thirty to forty units. Coils 11 and 27 are connected in parallel to conductor 9. A shaft 20 extends through sleeve 15 and carries at its rear end a conductor arm 22, the hub 23 of which is fixed to said shaft by a screw 24. The outer end of arm 22 engages one side of the coil 27 and is rotatable so that it may be shifted to include more or less of the coil 27 in the shunt circuit between the conductors 9, 9^a through coil 27, arm 22, and frame 7. Arms 16 and 22 are slightly resilient to provide good contacts against the coils respectively. A handle or finger-piece 25 for turning arm 22 is secured by screw 26 to the front end of shaft 20. By means of handles 18 and 25, the conductor arms are separately adjusted. A stop 30 is provided to limit the sweep of arm 22 so that the minimum resistance included in the shunt circuit will be at least as great as the maximum resistance in the main circuit through coil 11. This also prevents reversal of current through the coils to the contacts. Coil 27 and arm 22 exemplify a shunt resistance in the circuit which is variable for the purpose of a finer adjustment of the flow of current between conductors 9 and 9^a. Arms 16 and 22 constitute separately movable contacts which are connected to conductor 9^a and are adapted to include in parallel more or less of the resistance coils in the circuit between conductors 9 and 9^a.

The operation will be as follows: Normally, arms 16 and 22 will be disposed adjacent terminal 13 and against core 6 so the circuit will be interrupted between said arms and their respective coils. As arm 16 is shifted into contact with coil 11, it will first include in the circuit the entire resistance coil 11, and, as it is shifted towards terminal 12, it will gradually cut out the convolutions of the coil 11 until approximately the minimum resistance desired is included in the circuit. This arm 16 is for quick or coarse adjustment to vary the resistance in the circuit. When arm 16 has reached approximately the position desired, arm 22 may be adjusted to effect a finer adjustment of the resistance in the circuit. By shifting arm 22 over coil 27, a shunt circuit will be

established between conductor 9 through coil 27, arm 22 and frame 7 with resistance that varies according to the position of arm 22. Under the resistance heretofore given by way of example, the movement of arm 22 will effect a very fine variation of resistance in the circuit because the variation is made by increasing or decreasing the convolutions of the high resistance coil. As a result, an extremely fine variation of the resistance may be effected by variation of the resistance included in the shunt circuit. Stop 30 prevents arm 22 from being shifted so that the resistance of the shunt coil will be less than the maximum resistance of the main coil.

The invention exemplifies an improved rheostat, in which provision is made for a quick or coarse adjustment and for an extremely fine variation by means of a shunt circuit.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

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

1. In a rheostat, the combination of a plurality of resistance coils connected in parallel to one conductor of a circuit, and separately operable contacts connected to the other conductor, engaging the coils respectively, and movable to include more or less of the coils in parallel in the circuit between said conductors.

2. In a rheostat, the combination of a plurality of coils of relatively high and low resistance and connected in parallel to one conductor of a circuit, and separately operable contacts connected to the other conductor, engaging the coils respectively, and movable to include more or less of the coils in parallel in the circuit between said conductors.

3. In a rheostat, the combination of a plurality of resistance coils connected in parallel

to one conductor of a circuit, a plurality of separately operable contacts for the coils respectively and connected to the other conductor, and separately movable to include more or less of the coils in parallel in the circuit, and means to limit the movement of one of the contacts to prevent reversal of current through the coils.

4. In a rheostat, the combination of a plurality of coils of relatively high and low resistance and connected in parallel to one conductor of a circuit, a plurality of separately operable contacts for the coils respectively and connected to the other conductor, and separately movable to include more or less of the coils in parallel in the circuit, and stop-means to limit the movement of the contact which engages the high resistance to prevent reversal of the current through the coils.

5. In a rheostat, the combination of a plurality of resistance coils connected in parallel to one conductor of a circuit, separately operable contacts for the coils respectively and movable to include more or less of the coils in parallel in the circuit, and a frame to which both of the contacts are electrically connected and in which they are rotatably supported, the coils being also supported on said frame, said frame being electrically connected to the other conductor.

6. In a rheostat, the combination of a plurality of resistance coils connected in parallel to one conductor of a circuit, separately operable contacts for the coils respectively, and movable to include more or less of the coils in parallel in the circuit, a frame in which both of the contacts are electrically connected and in which they are rotatably supported, the coils being fixedly supported on said frame, and a stop on the frame to limit movement of one of the contacts to prevent reversal of current through the coils.

Signed at Chicago, Illinois, this 4th day of May, 1923.

JAMES C. SNELL.