W. G. ABBOTT, JR.

RHEOSTAT.

APPLICATION FILED JULY 3, 1907.

925,551. Patented June 22, 1909.

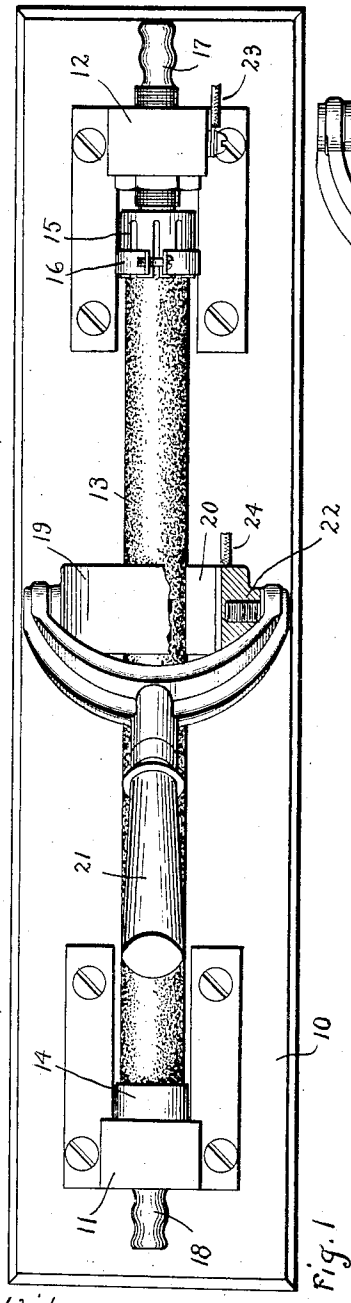


Fig. 1

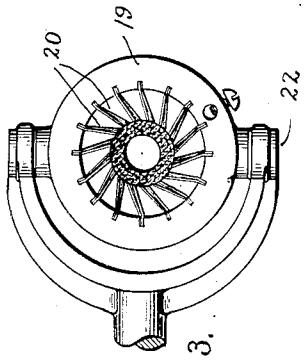


Fig. 3.

Fig. 2

Witnesses:
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UNITED STATES PATENT OFFICE.

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RHEOSTAT.

No. 925,551. Specification of Letters Patent. Patented June 22, 1909.

Application filed July 3, 1907. Serial No. 381,996.

To all whom it may concern:

Be it known that I, WILLIAM G. ABBOTT, Jr., a citizen of the United States, 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.

This invention relates to resistance devices for electric circuits and has for its object the provision of a device of this character which may be produced at a very low cost and which is provided with means for absorbing the heat energy generated so as to permit of its being worked at a high current density.

My invention relates more specifically to resistances of the type in which a resister in the form of a resistance stick is employed in combination with a sliding controlling member.

In carrying out my invention, I provide in connection with the resistance stick and sliding contact, means for keeping the stick cool. I accomplish this result by arranging a passage for cooling fluid through the rod. The rod is made of high resistance material, preferably molded, and is hollow, the connections being made so that the water is caused to flow through the rod. The controlling member is made in the form of a ring having radial brushes so it is movable both longitudinally and circumferentially, and a pivoted handle makes it conveniently operative from various positions.

In the accompanying drawing in which I have shown my invention embodied in a specific structure, Figure 1 is a plan view of my device; Fig. 2 is a side elevation of the same; and Fig. 3 is a section showing the controlling member and pivoted operating handle.

Referring to the drawing, 10 is a base, preferably of insulating material, upon which are mounted two supports 11 and 12 for supporting the resistance rod 13. This rod is preferably made of high resistance refractory material. The particular composition of this resistance stick forms no part of my invention. I have found, however, that carborundum clay made into the desired shape serves very well my purpose. I have formed a compound very desirable for this purpose by mixing about 75% blue clay, 15% spar, 8% flint and 2% cryolite into a base and mixing this base with carborundum and graphite in about the following proportions: base 41%, carborundum 41% and graphite 18%. In cases where it is desired that a very high resistance be obtained, the graphite may be omitted. These materials are molded into the desired form and baked at a high temperature. This rod is preferably made hollow as shown and is mounted in supports by means of clips 14 and 15. One of these clips 15 is yielding so as to permit of an easy removal of the rod as well as to allow for expansion and contraction. A clamp 16 surrounding the clip holds the rod securely in place. The clips pass through the supports 11 and 12 and at their outer extremities are provided with means for attaching a pipe or hose, being in this case merely nipples 17 and 18 for attaching a flexible hose.

The controlling member comprises a ring support 19, preferably of metal, in the interior of which are supported a plurality of contacts or brushes 20 adapted to bear upon the rod and arranged substantially radial thereto. I have shown a large number of these brushes so that they form practically a continuous ring upon the rod. This gives a very efficient contact but a smaller number of brushes may be used if desired. An operating handle 21 is pivoted on opposite sides of the ring on bearing screws 22 so that the brushes may be moved both longitudinally and circumferentially of the rod. This construction facilitates operation from various positions without placing undue strain upon the resistance rod and at the same time gives uniform contact as well as uniform wear upon the rod. The circuit connections are made at 23 and 24 on the supporting base and the controlling member respectively.

It will be seen that I have provided a very simple rheostat capable of giving a high resistance without excessive heat and the fluid in passing through the rod keeps it cool. If water is used there is a certain amount of leakage through the water, but this will be offset by the high current density at which the resistance may be run because of the cooling arrangement.

The resistance rods may, of course, be molded so as to have different specific resistances and made of various sizes and forms as desired.

It will be understood, of course, that I do not limit my invention to the specific con-

struction herein shown except in so far as it is limited by the scope of the claims annexed hereto.

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

1. In a rheostat the combination with a hollow resistance rod, of controlling means therefor comprising a revoluble ring surrounding the rod, and a plurality of laminated brushes mounted therein and extending radially into engagement with the rod.

2. A rheostat comprising a resistance rod, a revoluble supporting ring surrounding the same, a plurality of contact brushes mounted in said ring and arranged to engage the rod, and an operating handle pivoted to said ring.

3. A rheostat comprising a high resistance rod, and a controlling member in sliding engagement therewith and mounted for longitudinal and circumferential movement.

4. A rheostat comprising a high resistance rod, and a controlling member having a plurality of flexible contacts arranged substantially radial to said rod and mounted for longitudinal and circumferential movement thereof.

5. A rheostat comprising a high resistance rod, a support surrounding the same having a plurality of brushes mounted therein substantially radial to said rod, and means for moving said brushes longitudinally and circumferentially of said rod.

6. A rheostat comprising a high resistance rod, means for passing a fluid through the rod to cool the same, and a controlling member having a plurality of flexible contacts arranged substantially radial to said rod and mounted for longitudinal and circumferential movement thereof.

7. A rheostat comprising a hollow high resistance rod, means for passing a fluid therethrough to cool the same, and a controlling member having a plurality of brushes arranged substantially radial to said rod and mounted for longitudinal and circumferential movement thereof.

8. In a rheostat, the combination with a hollow resistance rod comprising a compound of conducting and non-conducting material, of a controlling member in sliding engagement with said rod and mounted for longitudinal and circumferential movement.

In witness whereof, I have hereunto set my hand this 28th day of June, 1907.

WILLIAM G. ABBOTT, JR.

Witnesses:
BENJAMIN B. HULL,
HELEN ORFORD.