(No Model.)

J. B. BLOOD.

RHEOSTAT.

No. 508,674. Patented Nov. 14, 1893.

Fig. 1.

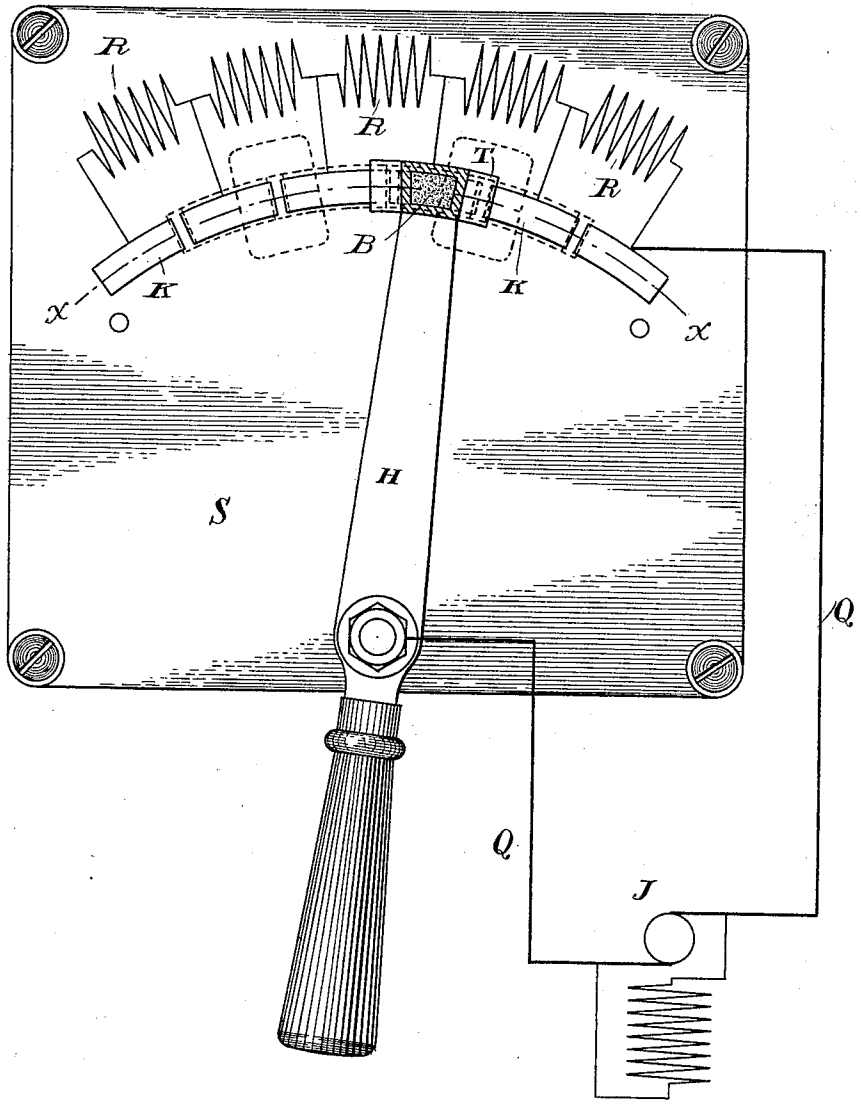
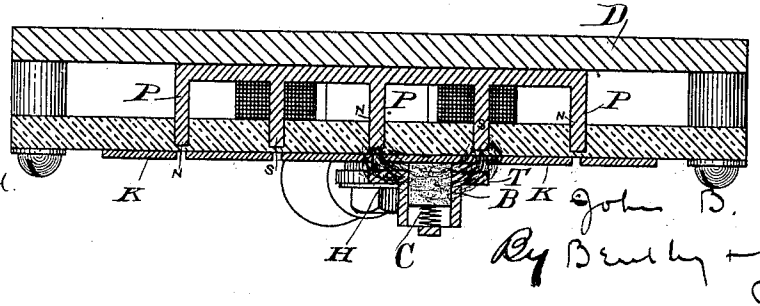


Fig. 2.



Witnesses.
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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 508,674, dated November 14, 1893.

Application filed February 23, 1892. Serial No. 422,340. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. BLOOD, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Rheostats, of which the following is a specification.

The object of the present invention is to obviate the occurrence of sparking or arcing between the adjoining contact plates of rheostats, or other resistance controllers for electric circuits, which arcing, when the potential difference between the contact plates is rather high, may become a source of trouble by burning the metal and thus preventing free passage of the contact block or brush over the plates. To this end I provide a magnet or system of magnets having poles arranged adjacent to the successive intervals between the contacts so that, when the contact arm leaves one plate to make contact with the next, it forms a more or less complete magnetic bridge between the adjacent magnet poles. In this way a strong and intense magnetic field is concentrated at the point where the current is interrupted which prevents any continued arcing thereat. The construction of the contact arm is not altered, and in fact the only change in existing constructions is the addition of the magnets. With such an arrangement it is possible to employ rheostats with comparatively few divisions, when desired, for though in such an apparatus there would be a large potential difference between adjacent contacts yet any arc formed would be extinguished without damage.

In the accompanying drawings, Figure 1 is a plan view of the invention, and Fig. 2 is a section on the line *x*—*x* Fig. 1.

In the figures Q represents an electric circuit, in which is coupled up any translating device, such for example, as an electric motor J shown conventionally in the drawings. To vary the amount of current flowing to the motor the circuit comprises a resistance R and a contact or switch arm H which sweeps over and engages a series of contacts K, connected to successive portions of the resistance in the ordinary manner, but separated one from another by an insulating interval. Movement of the arm H to the right decreases the resistance of the circuit while movement to the left cuts in additional resistance, as will be readily understood without further explanation. The contact plates K are of copper and are supported on an insulating surface, such as a slab S of slate or porcelain. Back of this slab upon a suitable support D is fixed a magnet or system of magnets having poles P corresponding generally in number and position to the intervals between the different contacts K. The poles project through the insulating base to within as short a distance as practicable of the gaps between the contact plates, and preferably they are arranged so that each pole is of opposite polarity to the pole next it in the series. The magnets may be permanent magnets, but preferably are electro-magnets with iron cores wound with coils of wire through which current is passed from any suitable source. The contact arm has a brush or block B for engaging the different contacts which may be made of carbon or of metal, and may be pressed by a spring C into engagement with the plates. The arm also has formed on its outer end or attached to it an iron armature T of such width as to span two of the magnet poles. It therefore forms a more or less complete magnetic bridge between those poles immediately adjacent to the arm, and thereby gives rise to an intense magnetic field at this point which will extinguish any arcs which may form upon the passage of the contact block from one plate to another.

In putting this invention to practical use as many magnet poles may be provided as may prove necessary, but it is not essential to place a pole back of each gap between the contact plates unless the potential difference between such plates is quite high and sufficient to maintain an arc thereat.

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

1. The combination of the contacts of a resistance controller for electric circuits, with an electro-magnet having a series of poles corresponding to the intervals between the contacts and arranged adjacent thereto, each such pole being of opposite polarity to that

at the next interval, and a movable contact arm adapted to form a magnetic bridge between two adjacent poles as described.

2. The combination of the contacts of a resistance controller for electric circuits, and a magnet having poles separated one from another by such contacts and arranged adjacent to the intervals between them, with a contact arm adapted to sweep over such contacts and form a part of the magnetic circuit between unlike poles, as described.

3. The combination of the contacts of a resistance controller for electric circuits, with a magnet or system of magnets having poles arranged adjacent to the intervals between such contacts, and a contact arm forming part of the electric circuit and adapted to form a magnetic bridge between unlike poles of such magnets.

4. The combination of the contacts of a resistance controller for electric circuits, with a magnet having unlike poles separated by one of such contacts, and arranged adjacent to the intervals between such contact and those adjacent to it.

In testimony whereof I have hereto set my hand this 19th day of February, 1892.

JOHN B. BLOOD.

Witnesses:
JOHN T. BRODERICK,
JOHN W. GIBBONEY.