P. J. HOWE.

ADJUSTABLE RHEOSTAT.

APPLICATION FILED FEB. 7, 1918.

1,350,280.

Patented Aug. 17, 1920.

Fig. 1.

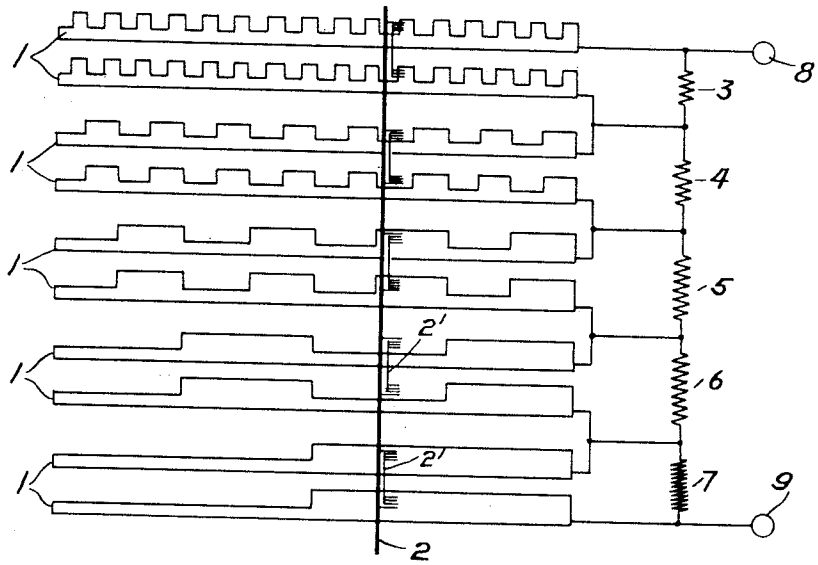


Fig. 3.

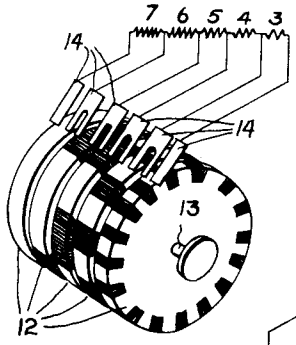
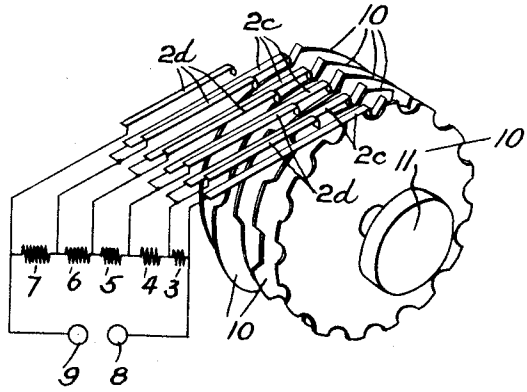


Fig. 2.



WITNESSES:

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ADJUSTABLE RHEOSTAT.

1,350,280. Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed February 7, 1918. Serial No. 215,938.

To all whom it may concern:

Be it known that I, PAUL J. HOWE, a citizen of the United States of America, and resident of Ridgewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Adjustable Rheostats, of which the following is a specification.

My invention relates to improvements in adjustable rheostats, and comprises contact means in combination with resistances of progressively increasing value, whereby the several resistances may be placed in circuit singly, or in series in their various combinations, and thereby a number of progressively changing resistance values may be obtained, very much greater in number than the number of individual resistances contained in the instrument, and with a total variation of resistance much greater than the range of resistance of the several resistances of the instrument, taken singly; and, furthermore, the various changes of resistance may be obtained by the operation of a single operating member (which usually is rotatable), instead of by operating a large number of contact pegs, as is usually the case.

The object of my invention is to simplify adjustable rheostats, to permit the obtaining of a large number of resistance values by means of a relatively small number of resistances and by the operation of a single operating member, and in general to make the device simple, easy to operate, and relatively inexpensive.

I will now proceed to describe my invention with reference to the accompanying drawings, in which certain embodiments of my invention are illustrated, and will then point out the novel features in claims. In the said drawings:—

Figure 1 is a diagrammatic view illustrating the nature of the contact devices employed and the connections of the individual resistances of the instrument to the contact device.

Fig. 2 shows a perspective elevation of one of the contact devices which may be employed, and also shows the resistances of the instrument connected to the brushes of that contact device.

Fig. 3 is a view similar to Fig. 2, illustrating a further form of contact device which may be employed.

Referring first to Fig. 1. Numerals 1 designate a number of toothed contact bars, arranged in pairs, and 2 designates a brush-support, carrying a plurality of pairs of brushes 2′, each bar serving one of such pair of bars 1, and each pair of such brushes insulated from the other pairs; and 3—7 inclusive designate resistances, of progressively increasing value, each connected on one side to a bar 1 of one such pair, and on the other side to a bar 1 of the next pair, and all connected in series between binding posts 8 and 9. The connections are such that by operating brush 2, one or more of the resistances may be shunted out, and thus the resistances may be connected singly, or in various series combinations, between binding posts 8 and 9. The bars 1 are toothed in the well-known manner so as to provide, by contact of brush 2 with teeth of one, or more of all of said bars, simultaneously, all possible resistance values of single or in series connections of the resistances 3—7.

One set of resistances which has been employed in the arrangement shown have values of 1, 2, 4, 8, and 16 ohms respectively. But sets of resistances having other rates of progression may be employed, and the rate of progression is not necessarily regular.

The bars 1, shown in Fig. 1, may be considered to be "developments" (using that term in its geometric sense) of the various toothed cam wheel members of the contact device shown in Fig. 2 of the drawings. Of course, a greater or less number of resistances, with a corresponding greater or less number of contact bars, toothed to correspond to the various possible combinations of the number of resistances used, may be employed.

In the arrangement shown in Fig. 2, a plurality of toothed cams, 10, mounted to be rotated together by the head 11, operate according to permutational combinations, brushes 2^c, moving them into contact with, or permitting them to drop away from contact with, spring contact members 2^d. From an operating point of view, the contact device of Fig. 2 offers advantages over that shown in Fig. 1, but functionally, the contact devices shown are equivalents one of the other.

In a companion application filed Feb. 7,

1918, Sr. No. 215,937, I have illustrated the contact devices above described, in connection with certain condensers; also certain equivalent contact devices. The said equivalent contact devices of my said companion application may also be used in combination with the resistances of the present application, just as the contact devices herein shown are used.

Still other various forms of contact devices may be employed; one of which is illustrated in Fig. 3, wherein a series of permutationally-segmented disks 12, mounted for rotation upon the same shaft 13, are employed in connection with brushes 14; to which brushes the various resistances 3—7 inclusive are connected as shown.

What I claim is:

1. The combination, with a series of three or more resistances of varying values, of a contact device comprising a single operating member and contact means operated thereby adapted, under control of said operating member, to connect said resistances to suitable terminals singly or in their various series combinations.

2. The combination, with a series of three or more resistances of varying values, of a contact device therefor comprising contact members connected to said resistances respectively, and other contact means to make contact with said contact members to connect said resistances to suitable terminals singly or in various series combinations, and a single operating member for said contact device.

3. The combination, with a series of three or more resistances of varying values forming a regular progression, of a contact device comprising a single operating member and contact means operated thereby adapted, under control of said operating member, to connect said resistances to suitable terminals singly or in their various series combinations.

4. The combination, with a series of three or more resistances of varying values, of a contact device therefor comprising a series of brushes, a contact member for each such brush, and a series of toothed cams, one for each such brush and adapted to move it into contact with, or to permit it to withdraw from, the corresponding contact member, said cams so toothed and said brushes and contact members so interconnected that by operation together of said cams said resistances may be connected to suitable terminals singly or in various series combinations.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL J. HOWE.

Witnesses:
H. M. MARBLE,
ETHEL JOHNES.