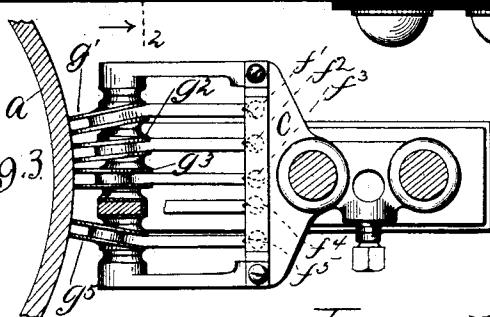
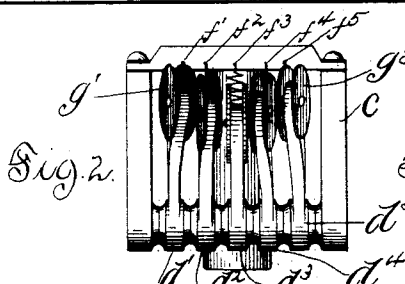
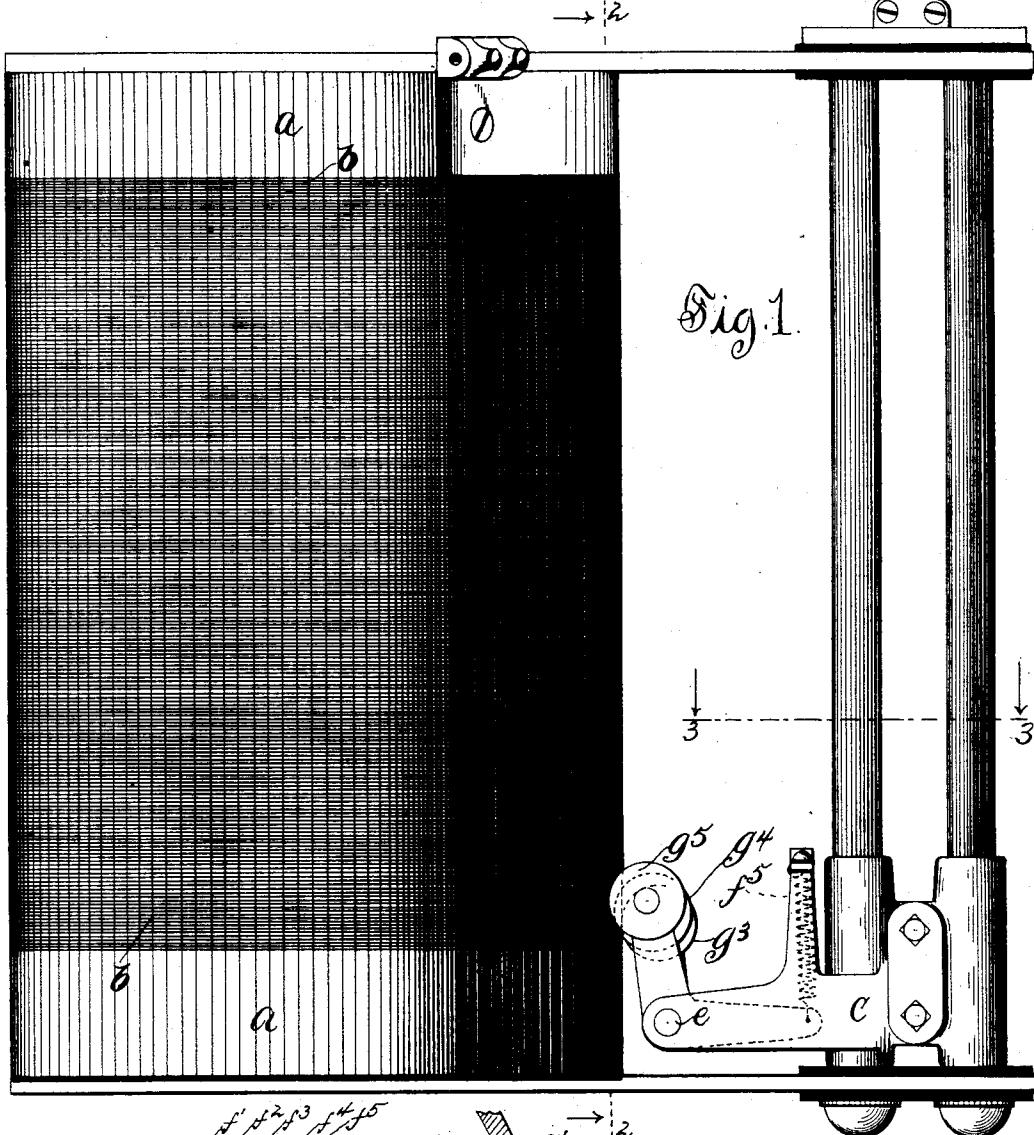


(No Model.)

E. P. WARNER.
VARIABLE RHEOSTAT.

No. 539,105.

Patented May 14, 1895.



Witnesses:

George L. Bragg.
W. Clyde Jones

Inventor:
Ernest P. Warner.
By Barton & Brown
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UNITED STATES PATENT OFFICE.

ERNEST P. WARNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

VARIABLE RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 539,105, dated May 14, 1895.

Application filed September 18, 1894. Serial No. 523,334. (No model.)

To all whom it may concern:

Be it known that I, ERNEST P. WARNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Variable Rheostats, (Case No. 58,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to rheostats of the class illustrated and described in Letters Patent No. 454,038, granted to John J. Fanning June 16, 1891.

My invention relates to the traveling contact piece which passes over the bare wire constituting the resistance coils of the rheostat for bringing more or less of said coils into the circuit to vary the resistance thereof.

In order that the contact with the coils of the wire when wound on a drum, may be satisfactory, I have provided contact wheels mounted so as to yield when pressed against the coils, and so arranged as to bear upon two or more of the convolutions of the winding when passing over the same. The metal contact disks may be mounted side by side, but not exactly in line, so as to insure simultaneous contact with more than one of the windings.

The particular construction which I have employed comprises a set of levers, each having two arms, a separate spring being attached to each of the levers at the end of one of the arms, and a rotating disk or a pair of disks mounted upon the free end of the other arm thereof. The arms of the different levers upon which the disks are mounted I make of different lengths in order that the disks may not all be directly in line with one another. The disks are normally pressed against the bare wires constituting the winding of the rheostat, the pressure being in a direction opposed to the tension of the springs, so that the disks may yield and conform to the wires wound about the drum and make good contact therewith.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a rheostat provided with a contact device embodying my invention. Fig. 2 is a view of the contact

device or brush as seen from line 2 2 of Fig.

1. Fig. 3 is a plan view thereof.

Like parts are indicated by similar letters of reference throughout the different figures.

The drum *a* is of insulating material, and the bare wire constituting the winding *b* is wound thereon in the usual manner. The contact device or brush is normally pressed against the bare winding as shown in Fig. 1. This contact device consists, essentially, in the frame *c* and the levers *d'*, *d*², *d*³, *d*⁴, *d*⁵, mounted on the shaft *e*, these levers being attached at one end to retractile springs *f'*, *f*², *f*³, *f*⁴, *f*⁵, and provided at the other ends with contact disks *g'*, *g*², *g*³, *g*⁴, *g*⁵. The arm of the lever *d*³ upon which the contact roller *g*³ is mounted is preferably shorter than the arms of levers *d*² and *d*⁴ carrying, respectively, the contact wheels *g*², *g*⁴, and the arms of levers *d'* *d*⁵ carrying the disks *g'* *g*⁵ may be longer than the arms carrying contact rollers *g*² *g*⁴. It is not material which particular arms may be the longer or the shorter, the object being simply to bring the contact wheels out of line so that the contact devices may surely press against more than one of the convolutions of the winding simultaneously.

The number of yielding contact rollers may be varied as circumstances require. I have found, however, that at least two out of line with one another are essential, and that three are more certain in their action than two, and that with five sets arranged in the manner described there is no danger of defective contact between the contact device and the winding.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a drum wound rheostat, the combination of the bare resistance wires constituting the winding, with a contact device adapted to travel over said wires, said contact device being provided with contact rollers which are adapted to bear upon a number of the convolutions of the winding at the same time.

In witness whereof I hereunto subscribe my name this 2d day of August, A. D. 1894.

ERNEST P. WARNER.

Witnesses:

GEORGE L. CRAGG,
HARRIET G. TEMPLETON.