T. W. VARLEY.

COMMUTATOR BRUSH.

APPLICATION FILED NOV. 13, 1908.

1,082,571. Patented Dec. 30, 1913.

Fig. 1.

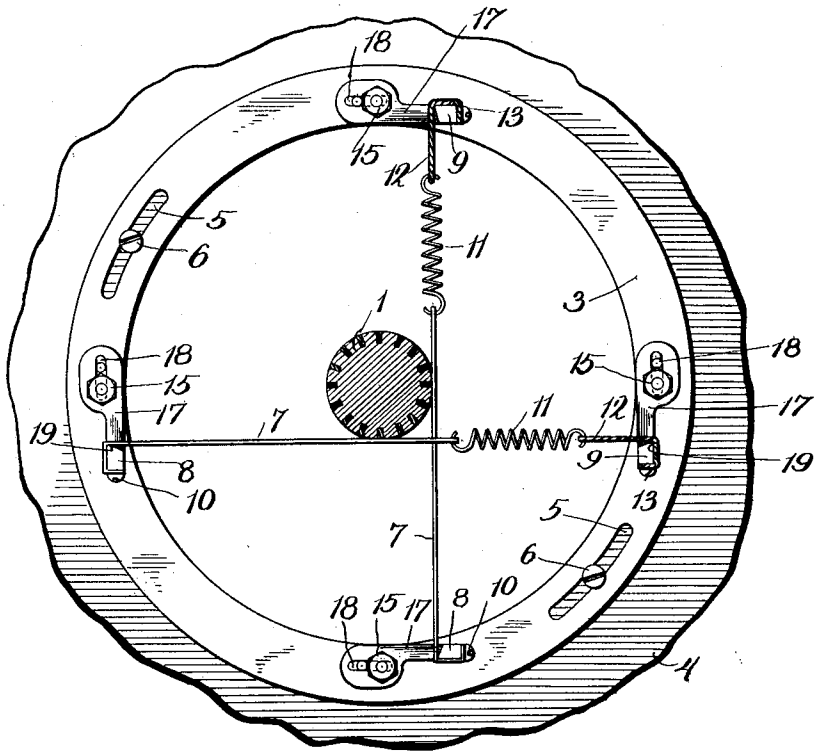
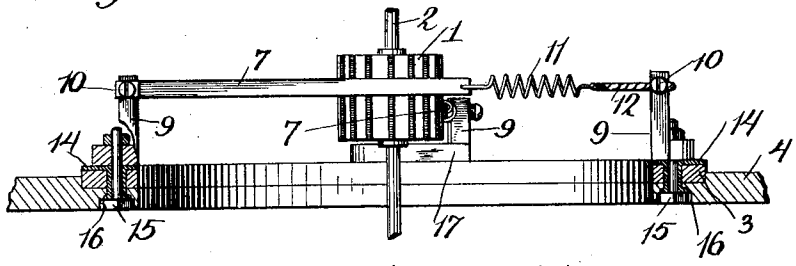


Fig. 2.



WITNESSES:

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THOMAS W. VARLEY, OF NEW YORK, N. Y., ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

COMMUTATOR-BRUSH.

1,082,571. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed November 13, 1908. Serial No. 462,463.

To all whom it may concern:

Be it known that I, THOMAS W. VARLEY, a citizen of the United States, residing in the city, county, and State of New York, have invented a new and useful Improvement in Commutator-Brushes, of which the following is a specification.

My invention relates to commutator brushes and particularly to brushes for use in connection with electrical measuring instruments whereby constancy of contact is assured between the brushes and the commutator cylinder.

In the following description and in the accompanying drawings I have set forth one form of device which embodies my invention as applied to a four pole armature requiring but two brushes, the novel features thereof being more particularly specified in the claims.

In the drawings Figure 1 is a plan view and Fig. 2 a side elevation, partly in section, illustrating one application of my invention.

Similar numerals of reference illustrate similar parts throughout the several views.

In the drawings 1 indicates the commutator cylinder on a shaft 2, supported in any convenient manner (not shown) and adapted to actuate any form of registering mechanism (not shown). The armature and its connections to the commutator cylinder, are not illustrated as the same form no part of this invention.

3 indicates a supporting ring mounted on a base 4 which may constitute a part of the frame of the measuring instrument.

5, 5, indicate slots in ring 3 which are adapted to coöperate with set screws 6, 6, to provide for adjusting the proper point of the brush contact.

7, 7, indicate the brushes which are supported by standards 8, 8, and 9, 9, as hereinafter described. The brushes are preferably made of flexible flat strips of silver, each fastened at one end to a standard 8 by means of a set screw 10, so as to give good electrical contact therewith, and fastened at the other end to one end of a helical spring 11, the other end of the spring being connected to a standard 9 by a thread 12 and a set screw 13.

Standards 8, 8, and 9, 9, are insulated from ring 3, as shown in Fig. 2, where 14 indicates the insulation and 15 a set screw seated in a recess 16 in base 4. The shank 17 of each standard is slotted at 18 to provide for lateral adjustment of the brushes. The standards are preferably provided with knife edges 19 so that the brushes have free lateral movement at either end. The brushes and threads 12 preferably extend over the knife edges 19 and around the standards as shown.

In the operation of the device, spring 11 is adjusted to put the proper tension on the brush, and the thread 12 prevents the spring 11 from twisting the brush under the varying tension of the spring, because the thread, being more flexible than the brush, takes up the twist of the spring and thus prevents the distortion or twisting of the brush. The circuits to the brushes are made by way of studs 8, 8, but are not illustrated herein. This construction permits the use of a light and flexible brush having low inertia; insures a fixed point of contact on the commutator cylinder; allows the brush freedom to follow the surface of the commutator cylinder and reduces the liability of the brush to leave the commutator cylinder because of inequalities or because of jarring, good contact under light tension being assured.

In practice, the brushes are so adjusted with relation to the commutator cylinder that a slight lateral pressure is exerted, that is to say, instead of a tangential contact, the brushes follow to a slight extent the curvature of the commutator cylinder. This adjustment further assures good and constant contact under minimum pressure.

I do not restrict myself to the details shown, as it is obvious that they may be varied without departing from the spirit of the invention and that the arrangement may be used in connection with other than four pole armatures.

I claim as my invention:

1. In an electrical measuring instrument, the combination with a commutator cylinder and a pair of strap brushes disposed for sidewise tangential engagement with said cylinder, of supports for the respective ends of each brush and a spring and thread connection interposed longitudinally between one end of each brush and the corresponding support.

2. In an electrical measuring instrument, a flat flexible brush adapted to make tan-

gential engagement with a commutator cylinder, and means for laterally adjusting the respective ends of the brush to vary the pressure upon the commutator cylinder without altering the plane of contact.

3. In an electrical measuring instrument, a flexible strap brush adapted to make tangential engagement with a commutator cylinder, an unyielding support and a flexible support for the respective ends of said brush, said flexible support comprising a helical spring and a thread, substantially as described.

4. In an electrical measuring instrument, a brush of strap form and adapted to make side contact with a commutator cylinder, means for laterally adjusting each end of said brush, standards, and means for revolubly adjusting said standards.

5. In an electrical measuring instrument, a flat flexible brush adapted to make tangential engagement with a commutator cylinder, standards for the respective ends of the brush, and means for laterally adjusting the respective standards to vary the pressure upon the commutator cylinder without altering the plane of contact.

6. In an electrical measuring instrument, a flat flexible brush adapted to make tangential engagement with a commutator cylinder, standards for the respective ends of the brush, a spring and a thread between one end of the brush and its standard, a rotatable structure for supporting said standards, and means by which said standards may be moved laterally on said rotatable structure to adjust the pressure upon the commutator cylinder without altering the plane of contact.

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

THOMAS W. VARLEY.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."