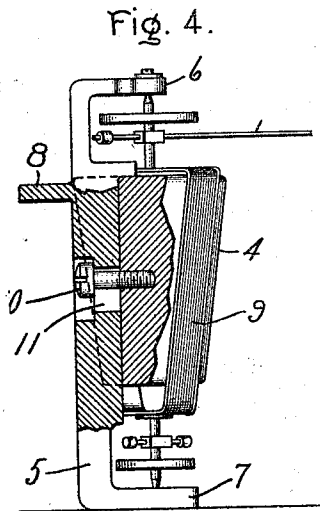
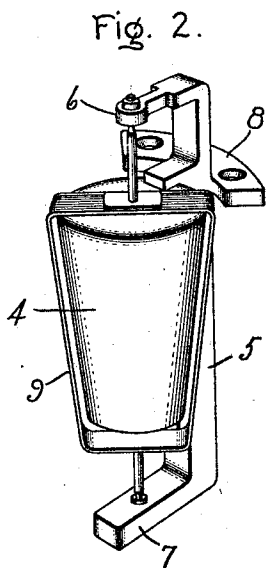
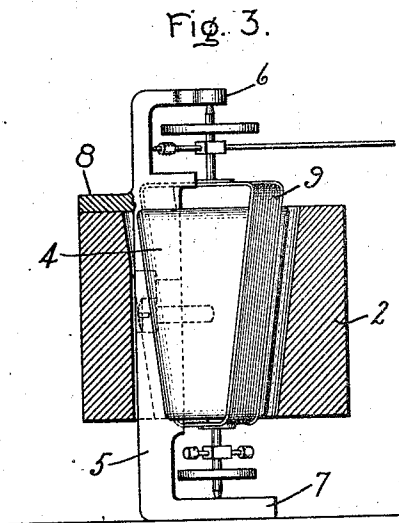
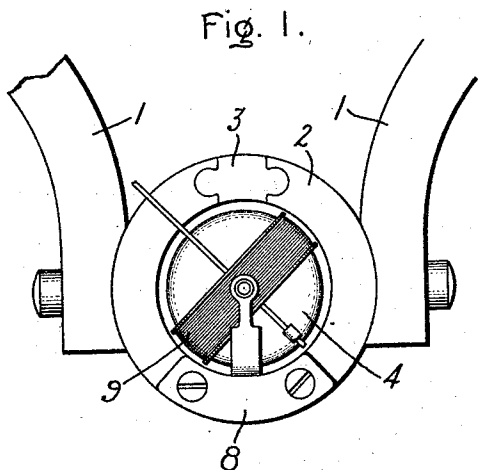


W. H. PRATT.
 ELECTRIC MEASURING INSTRUMENT.
 APPLICATION FILED FEB. 24, 1910.

1,000,942.

Patented Aug. 15, 1911.



Witnesses:

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 His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM H. PRATT, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC MEASURING INSTRUMENT.

1,000,942.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed February 24, 1910. Serial No. 545,725.

To all whom it may concern:

Be it known that I, WILLIAM H. PRATT, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Electric Measuring Instruments, of which the following is a specification.

My invention relates to electric measuring instruments and has for its object an improvement in such devices.

More specifically, my invention relates to electric meters which consist of a magnet having opposing pole pieces between which is mounted a magnetic core and a movable coil surrounding this magnetic core and swinging between it and the pole pieces. In instruments of this type it is desirable to have the air gap in which the movable coil swings between the core and the pole faces as small as possible. When this air gap is made small it necessitates constructing the coil in such a fashion that it shall very closely embrace the magnetic core, and, as the core usually has a circular cross-section, in order to permit the coil's swinging in a uniform air gap, it is difficult to remove the core from the coil without distorting the latter.

The object of my invention is to provide a construction whereby a small air gap may be employed and the difficulty above mentioned avoided.

I accomplish the object of my invention by forming the inner pole faces so that they shall be substantially in the shape of the frustum of a cone. The magnetic core is also made as a frustum of a cone and the coil is made so as to be tapered to render its sides substantially parallel to those of the core. The coil is made somewhat longer axially than the core so that the latter may be readily slipped inside the core and then axially moved along the coil to make a small air gap between it and the pole faces, in which gap the coil swings.

For a further understanding of my invention reference may be had to the accompanying drawings where—

Figure 1 shows a top view of a portion of a meter provided with my invention; Fig. 2 is a perspective view of the core, the coil and the support for the same; Fig. 3 is a view partially in section of the pole pieces, the core, the coil and the supporting mem-

ber; and Fig. 4 is a view partially in section of the core, the coil and the support, the core and coil being in relatively different positions from those shown in Fig. 3.

Referring first to Fig. 1, the ends of a permanent magnet 1 are shown as connected to pole pieces 2. These pole pieces face each other in the usual manner and are separated and interlocked by pieces of non-magnetic material 3.

Referring to Fig. 3, the inner faces of the pole pieces are bored out so as to be conical in shape or tapered, that is, the diameter between the upper portion of the pole faces is greater than the diameter between the lower portion, as is shown in the drawing. The magnetic core 4 is constructed, as shown, with a taper substantially similar to that of the pole faces, and, for the purposes of convenience, will be called conical. The core is mounted on a support 5 which has upper lug 6 and lower lug 7 and a bracket 8 for attachment to the pole pieces in the usual manner. Mounted in any suitable manner between the upper and the lower lugs of the core support is coil 9 which may be wound in any manner but which is so fashioned, as shown, that it is tapered to render its sides substantially parallel to those of the core. The core is supported between the pole pieces so as to be coaxial with the pole piece faces and the coil is similarly mounted so as to swing coaxially with and between the core and the pole piece faces. The core is fastened to the support by the screw 10 which passes through the slot 11 in the support. The coil is made somewhat longer axially than the core, as shown.

Fig. 3 shows the relation of the core and the coil for the position of operation of the meter. The core is fastened to the coil support so that the smaller ends of the core and coil are closely adjacent. This permits a small air gap to be used, for the portion of the coil between the pole faces very closely embraces the core. When it is desired to remove the coil from the core, screw 10 is loosened after the support has been removed from the pole pieces and the core is moved upward in the position shown in Figs. 2 and 4. It will then be obvious that the coil may readily be slipped away from the core without any distortion of the former.

15 While I have shown my invention as embodied in a particular construction, I do not limit myself to this construction but seek in the appended claims to cover all constructions which shall be within the scope of my invention and obvious to those skilled in the art.

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

10 1. In an electric measuring instrument, pole pieces having conical faces, and a conical magnetic core mounted between said pole pieces and coaxially therewith.

15 2. In an electric measuring instrument, a magnet, pole pieces therefor having conical faces, a conical magnetic core mounted between said pole pieces coaxial therewith, and a tapered coil mounted to swing coaxially with and between the core and the pole piece faces.

20 3. In an electric measuring instrument, a conical core, a coil axially longer than the core tapered to render its sides substantially parallel to those of the core, and means for mounting said coil coaxially with said core and to permit a relative axial movement between them.

25 4. In an electric measuring instrument, a

conical core, a support therefor having upper and lower lugs, a coil axially longer than the core tapered to render its sides substantially parallel to those of the core mounted between said lugs, and means for permitting a relative axial movement between the core and the coil.

35 5. In an electric measuring instrument, a magnet, pole pieces therefor having conical faces, a conical magnetic core, a support therefor supporting said core between and coaxially with the pole piece faces, having upper and lower lugs, a coil axially longer than the core tapered to render its sides substantially parallel to those of the core mounted between said lugs, to swing coaxially with and between the core and the pole piece faces, and means for permitting a relative axial movement between the core and the coil.

In witness whereof, I have hereunto set my hand this twenty-first day of February, 1910.

WILLIAM H. PRATT.

Witnesses:

JOHN A. McMANUS, Jr.,
CHARLES A. BARNARD.