(No Model.)

J. H. F. GÖRGES.

ELECTRICAL MEASURING INSTRUMENT.

No. 489,249. Patented Jan. 3, 1893.

Fig. 2.

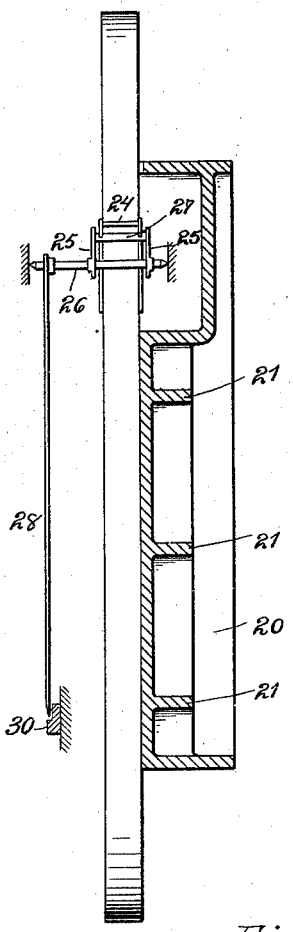


Fig. 1.

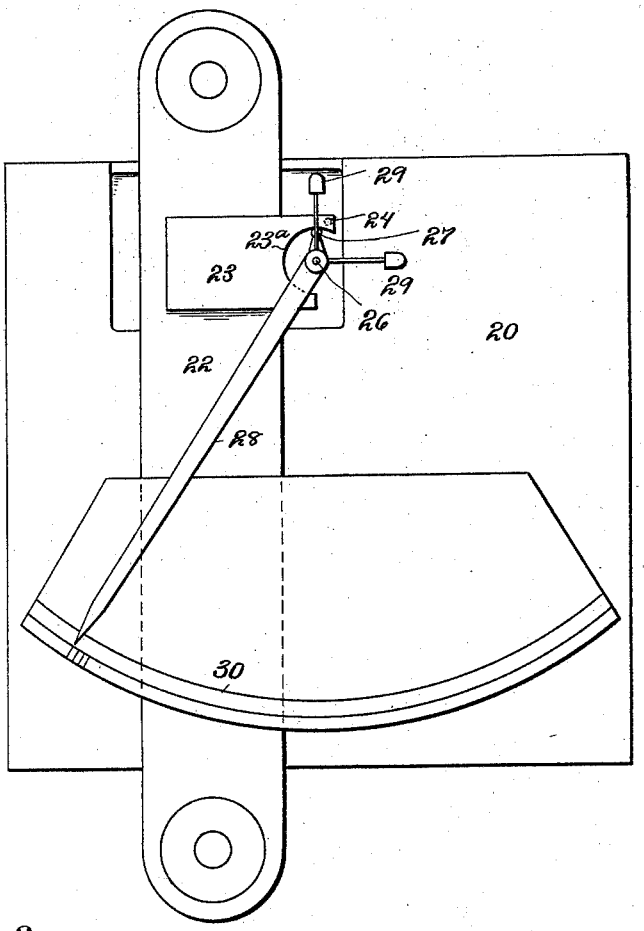


Fig. 3.

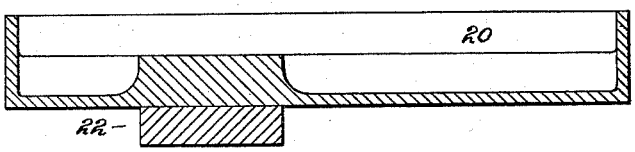


Fig. 4.

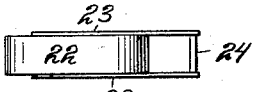
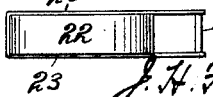


Fig. 5.



WITNESSES:

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ELECTRICAL MEASURING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 489,249, dated January 3, 1893.

Application filed October 27, 1892. Serial No. 450,137. (No model.) Patented in Germany August 29, 1888, No. 47,958.

To all whom it may concern:

Be it known that I, JOHANNES HEINRICH FRIEDRICH GÖRGES, a subject of the King of Prussia, German Emperor, residing at the city of Berlin, in the German Empire, have invented new and useful Improvements in Electrical Measuring-Instruments, (for which German Patent No. 47,958, dated August 29, 1888, has been granted to me,) of which the following is a specification.

My invention relates to electrical measuring instruments, such as are adapted to transmit and measure very heavy electrical currents.

In the accompanying drawings which illustrate my invention, similar numerals of reference indicate like parts.

Figure 1 is a view in elevation; Fig. 2 is a partial elevation and vertical section: Fig. 3 is a transverse section; Figs. 4 and 5 are transverse sections of the conductor, and the metal plates fastened to it which form the actuating electro-magnet.

In the drawings, 20 is a metal casing, a part of which only is shown in the figures, and provided on its outer surface or surfaces with ribs 21, so as to form an extended surface and thus aid in radiating any heat which may be generated within the casing. Located within the casing is a copper conductor 22 suitably secured in position. At the upper end of this conductor are fastened two plates 23 of soft iron, one end of each of which is cut out to form semi-circular cavities 23^a. These plates may be suitably secured to the conductor 22, by means of small screws, or the plates may be clamped on by giving them the form shown in Fig. 5. The plates 23 are further held in position by means of a small iron post 24, which also serves the purpose of partially leading off the magnetism from the outer edge of these magnetized plates. Mounted upon the arms 25, which are secured to a pivoted shaft 26, is a small iron rod or armature 27. The shaft 26 is so centered relative to the semi-circular cavities 23^a as that when the plates 23 are magnetized by a current transmitted through 22, the iron armature 27 will be attracted and describe a circle concentric with the inner surface of the semi-circular cavities. Connected also to the shaft 26 is a pointer 28, counter-balanced by the weights 29. 30 is a scale over which the pointer moves, and empirically divided to indicate the current traversing the conductor 23.

The operation of the apparatus described is very simple. When the current is transmitted through 22, the plates 23 are magnetized, and according to the well known law of magnetic influence, attract the armature 27 to an extent in proportion to the current transmitted. The motion of the armature is transmitted to the pointer, and the pointer travels over the scale, thus visibly indicating the current transmitted to the instrument.

Having thus described my invention, I claim:—

1. In an electrical measuring instrument, the combination of a conductor, a portion of magnetic material attached thereto, having a semi-circular cavity in one end thereof, an armature mounted upon a shaft and adapted to move concentrically with the inner surface of the cavity, when influenced by a current transmitted through the conductor, a scale, and an index pointer to which motion is transmitted from the armature.

2. In an electrical measuring instrument, the combination of a conductor, a portion of magnetic material, having a semi-circular cavity in one end thereof, and so connected and related to the conductor that lines of force will be produced therein at right angles to the direction of the current flowing in the conductor, an armature mounted upon a shaft and adapted to move concentrically and to cut the lines of force through the cavity when influenced by a current transmitted through the conductor, a scale, and an index pointer to which motion is transmitted from the armature.

3. In an electrical measuring instrument, the combination of a conductor, a portion of magnetic material attached thereto, an armature so placed as to be attracted by the lines of force set up in said portion of magnetic material by the current transmitted through the conductor, and means for visibly indicating the degree of attraction exerted by the magnetic portion upon the armature.

4. In an electrical measuring instrument, the combination of a conductor, a portion of magnetic material attached thereto and provided with means for equalizing the distribution of magnetism thereon, an armature so placed as to be attracted by the lines of force set up in said portion of magnetic material by the current transmitted through the conductor, and means for visably indicating the degree of magnetic attraction exerted by the magnetic portion upon the armature.

In testimony whereof I have affixed my signature in the presence of two witnesses.

JOHANNES HEINRICH FRIEDRICH GÖRGES.

Witnesses:
GUSTAV STENZEL,
MAX WAGNER.