

No. 681,835.

Patented Sept. 3, 1901.

F. SOLDANA.  
MEANS FOR BRAKING ELECTRICITY METERS.

(Application filed May 22, 1900.)

(No Model.)

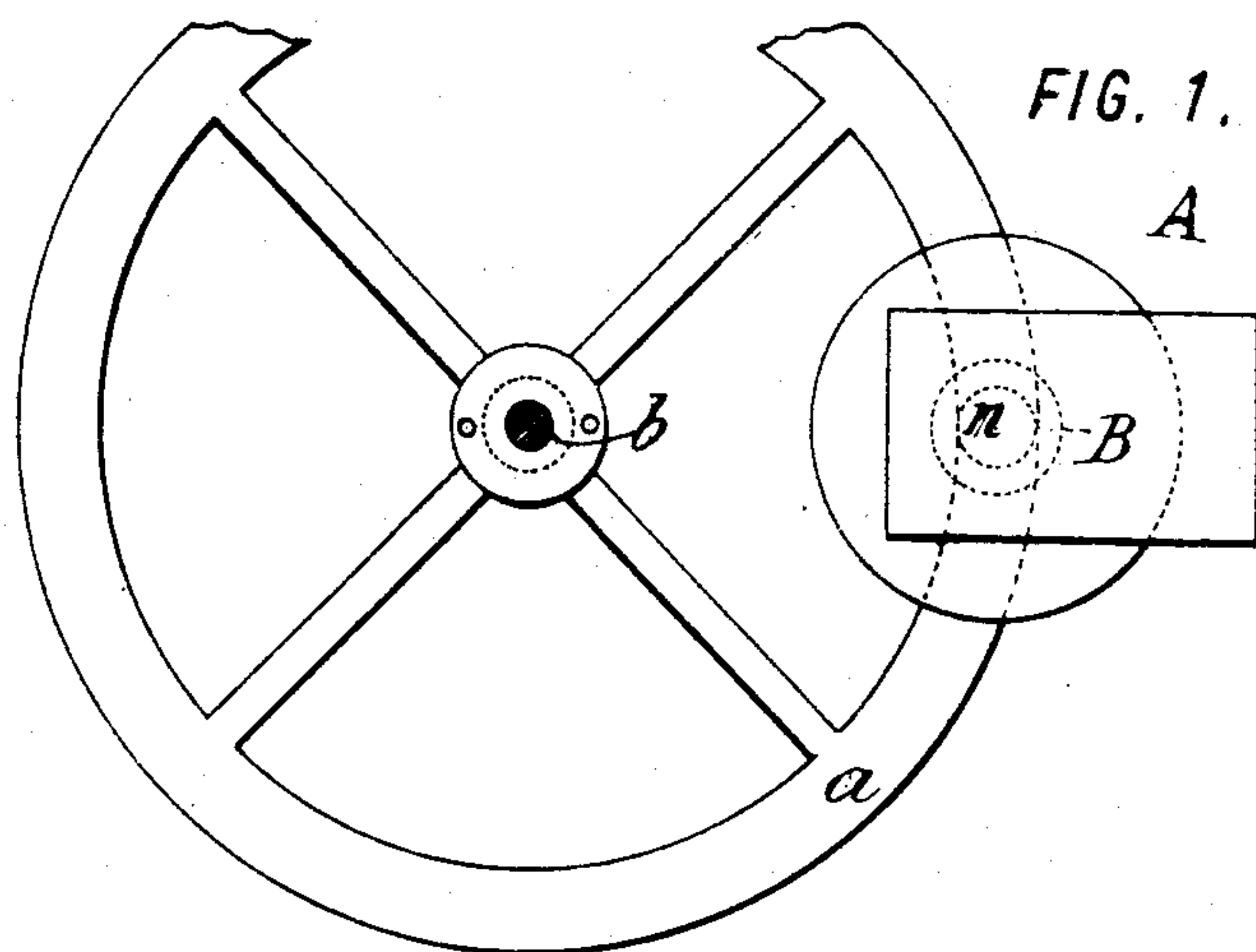


FIG. 2.

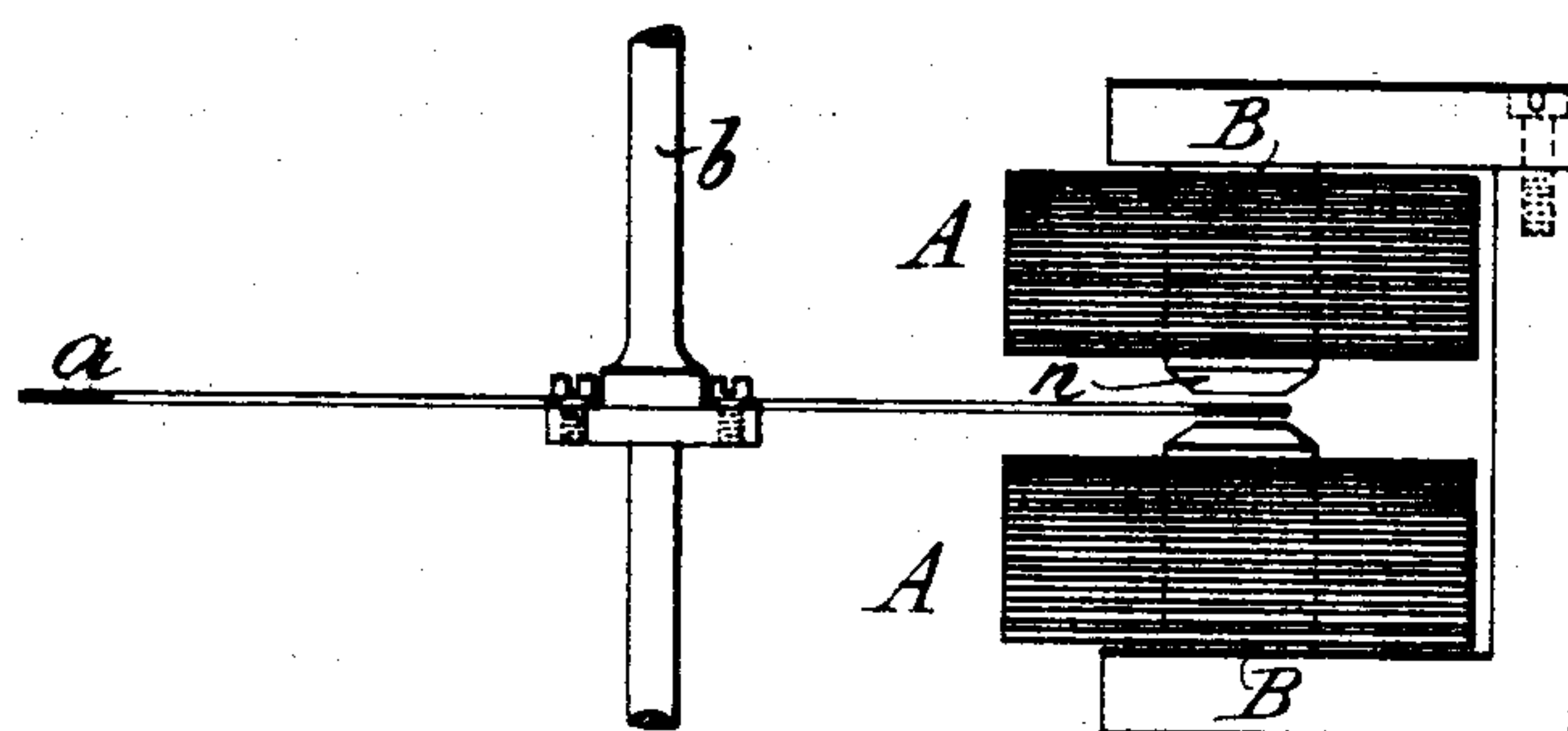
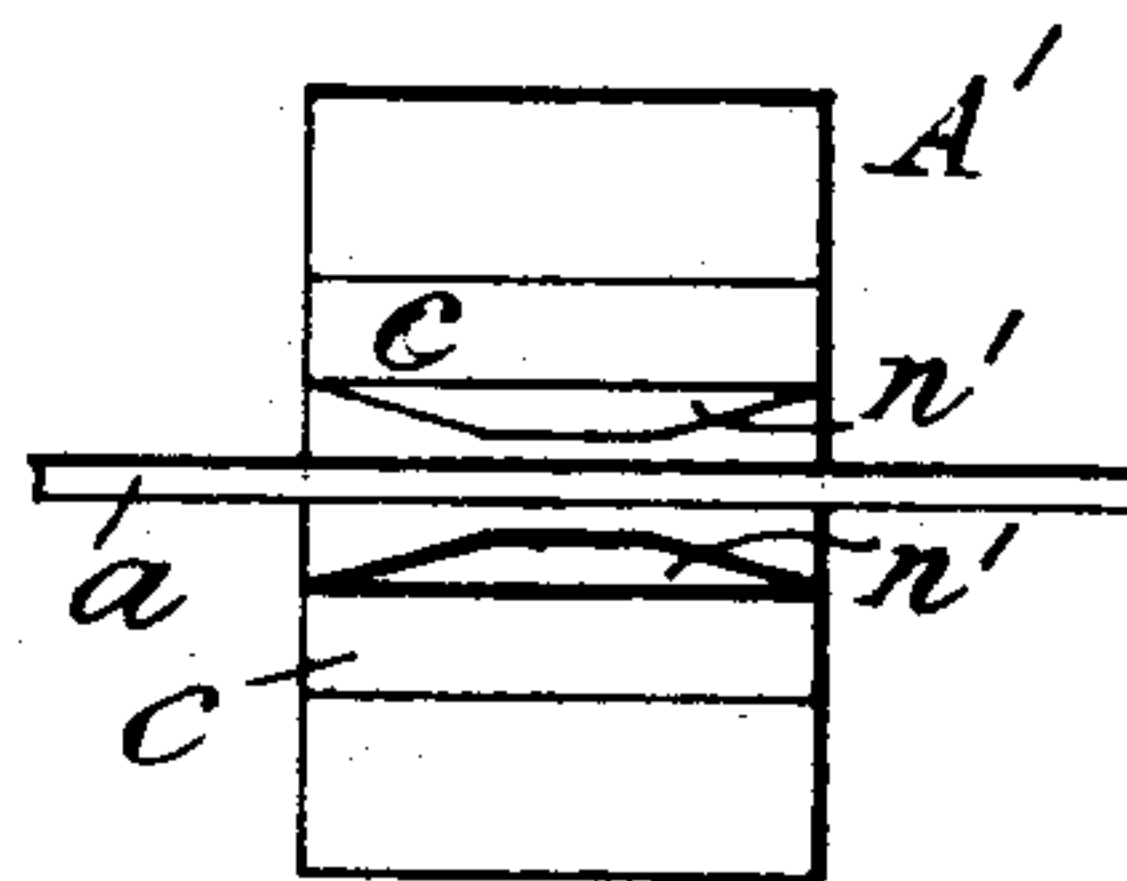
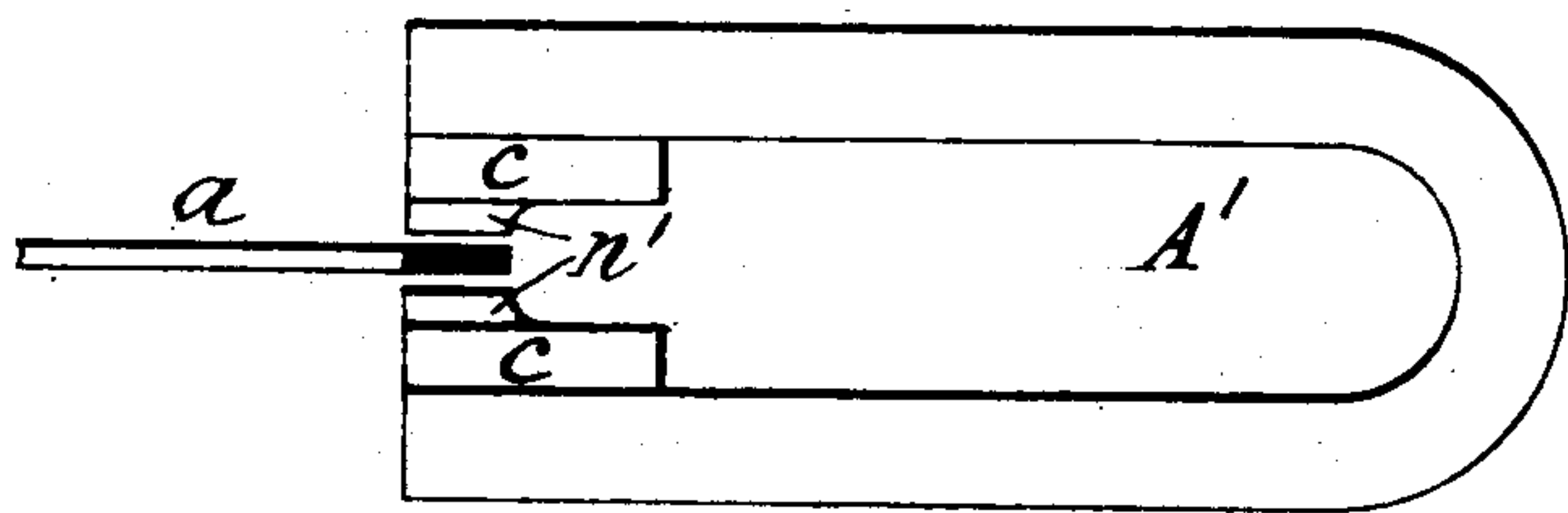


FIG. 3.

FIG. 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

FELIPE SALDAÑA, OF PARIS, FRANCE.

## MEANS FOR BRAKING ELECTRICITY-METERS.

SPECIFICATION forming part of Letters Patent No. 681,835, dated September 3, 1901.

Application filed May 22, 1900. Serial No. 17,562. (No model.)

*To all whom it may concern:*

Be it known that I, FELIPE SALDAÑA, a subject of the King of Spain, residing in Paris, France, (post-office address 334<sup>bis</sup> Rue de la

5 Tour d'Aubergne, Paris, France,) have invented new and useful Improvements in Means for Braking Electricity-Meters, which invention is fully set forth in the following specification.

10 The method of braking employed in electricity-meters is based, as is well known, upon the application of a Foucault disk rigid with the indicating device. The chief disadvantage of this method is that it renders the

15 moving parts very heavy, and from this main disadvantage there result the following, namely: the sensitiveness of the apparatus is considerably diminished, the pivots wear quickly, and when transporting the apparatus

20 it is necessary to employ a special arrangement for preventing the breakage of the pivot-stone.

The present invention has for its object to avoid these disadvantages or in any case to

25 largely reduce them. To this end I replace the ordinary movable solid disk by a much lighter movable device, and the magnet which produces the Foucault currents giving rise to the braking action is arranged in such a manner

30 that in the space comprised between its poles and traversed by the movable device a magnetic field is concentrated upon the ring, the circumferential solid portion of which is only of the width necessary for being power-

35 fully subjected to the action of the concentrated magnetic field. The weight of the moving part is thus reduced to an extent such that it no longer gives rise to the above-described disadvantages, which are inherent in

40 solid disks. In the case of permanent magnets I also effect the concentration of the magnetic field by adding to the poles of these magnets magnetic masses of suitable shape and having a high magnetic permeability—

45 soft iron, for example. In the case of electromagnets I effect the same result either by employing a core magnetically saturated or by employing a non-saturated core, but which has near the ring—that is to say, at the poles—

50 a smaller section than at any other point, so that the said poles are magnetically saturated or are near to saturation.

The accompanying drawings show by way of example suitable constructions of apparatus which can be employed for carrying out 55 the invention.

In the accompanying drawings, Figure 1 is a side elevation of the brake-ring and magnet, the spindle of the ring being cut in cross-section and the magnet being an electromag-

60 net in which the core is not magnetically saturated. Fig. 2 is a plan view thereof, the ring being shown in axial section and its spindle fragmentarily in plan. Fig. 3 is an enlarged

65 plan view, the ring being shown fragmentarily in axial section, of a construction in which permanent magnets are employed; and Fig. 4 is a front elevation of these magnets, showing a fragment of the ring between their

70 pole-pieces.

Referring to Figs. 1 and 2 of the drawings, let A indicate the magnets; B, their cores; *n*, their pole-pieces; *a*, the ring, and *b* its spindle.

Figs. 1 and 2 show the arrangement where- in an electromagnet is employed, the core B

75 of which is not saturated. It will be seen that the ends *n* of this core are reduced in diameter in such a manner that the poles are saturated, or are practically so. From this it results that between these poles the magnetic

80 field is concentrated over a space equal to the area of the movable ring *a* or for a space a little smaller than the area of this.

Figs. 3 and 4 show the arrangement where- in permanent magnets are employed. In

85 these figures, A' indicates a permanent magnet, and *c c* indicate the polar masses, which are of a material having a high magnetic permeability and are reduced at their ends at *n'* to concentrate the magnetic field of the per-

90 manent magnets. In all cases the ring *a* can be mounted in any suitable manner upon the spindle or shaft *b*, the speed of which it is desired to regulate. In the example shown it is formed of a thin rim of copper with four

95 arms and a boss. The latter is fixed by means of screws upon a collar rigid upon the shaft *b*. A good result could also be obtained by replacing the arms by a very thin disk—made, for example, from the same sheet of

100 metal as the rim.

It is to be understood that in the case of meters having oscillatory movements the ring can be reduced to an arc forming a quarter



or a third, &c., of the circumference of the said ring, according to the amplitude of the oscillations of the movable part. It will also be clear that several concentrated magnetic  
5 fields generated by means of magnets in the manner hereinbefore indicated can be caused to act upon the complete or incomplete ring.

I claim—

10 The improved means for braking electricity-meters comprising a rotatably-mounted member having a rim, in combination with

magnets having pole-pieces at the opposite sides of the rim reduced at their ends to concentrate the magnetic field upon said rim.

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

FELIPE SALDAÑA.

Witnesses:

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