

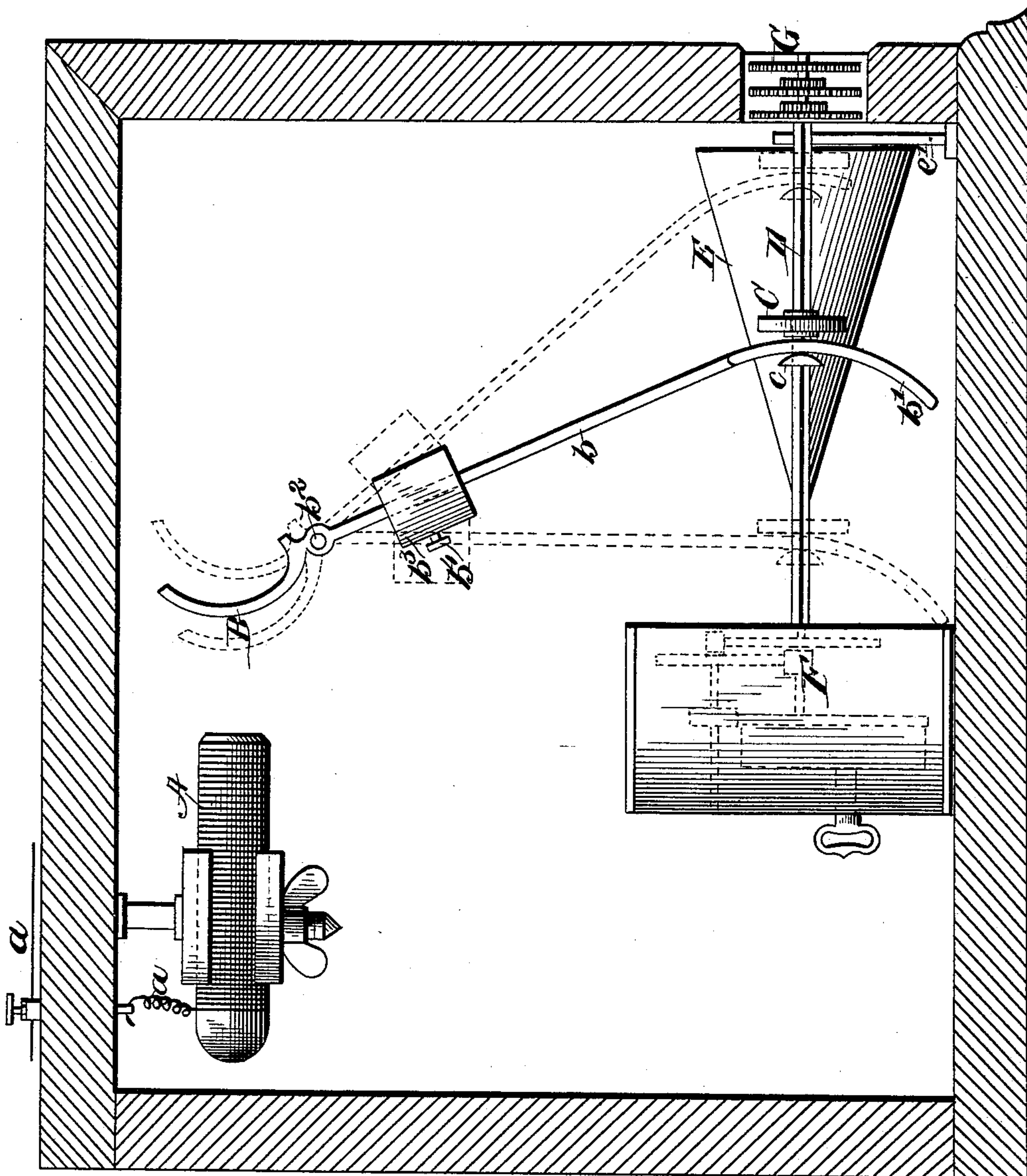
(No Model.)

2 Sheets—Sheet 1.

H. BENTZ.  
ELECTRIC METER.

No. 391,010.

Patented Oct. 16, 1888.



Witnesses.  
O. Fred. Ballard.  
Vernon M. Horsey.

Fig. 1.

Inventor,  
Harry Bentz.  
By C. S. Whitman  
Attorney.

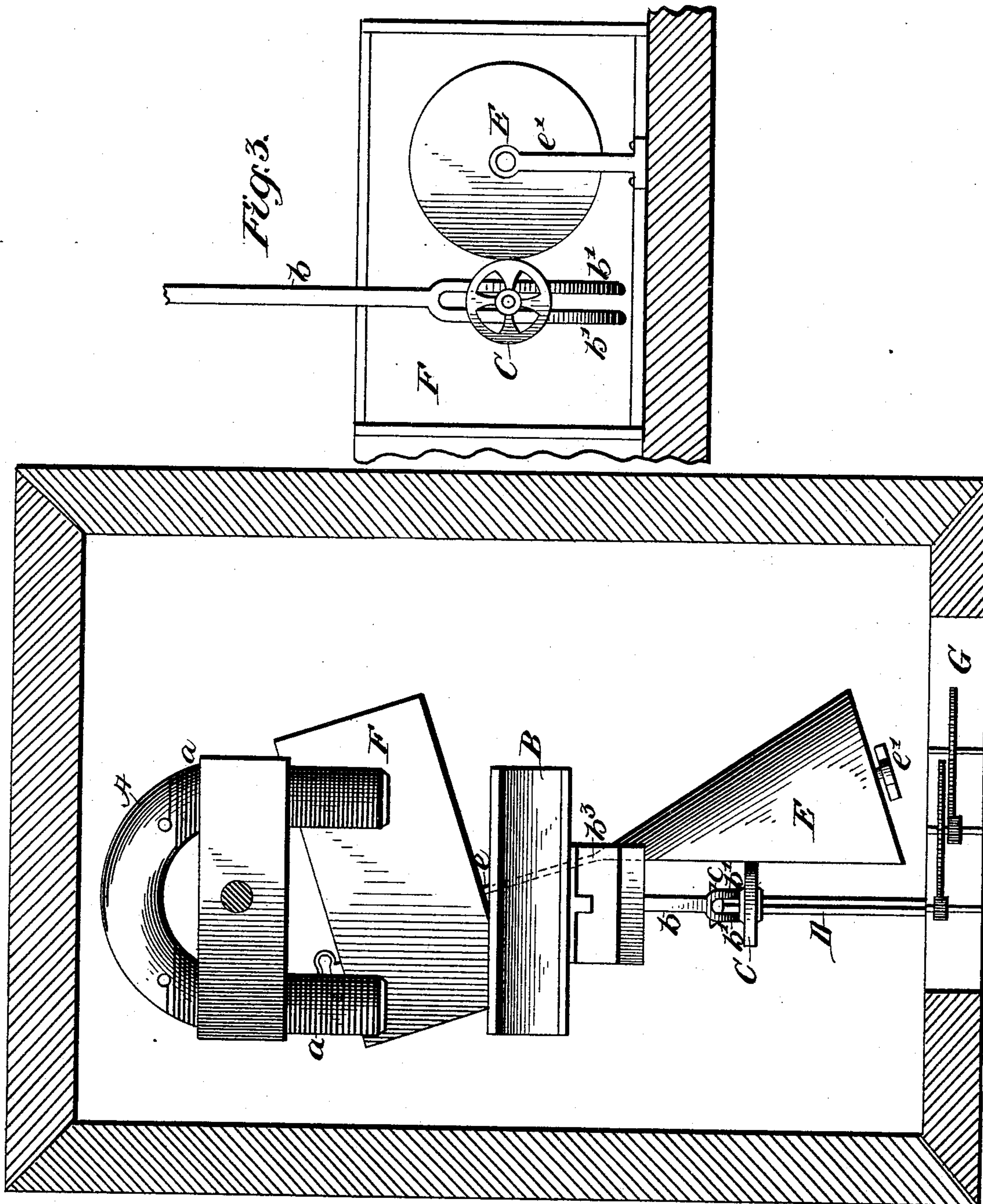
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2 Sheets—Sheet 2.

H. BENTZ.  
ELECTRIC METER.

No. 391,010.

Patented Oct. 16, 1888.



Witnesses.  
O. Fred Hoeller.  
Vernon M. Roney.

Fig. 2.

Inventor.  
Harry Bentz.  
By C. S. Whitman.  
Attorney.



# UNITED STATES PATENT OFFICE.

HARRY BENTZ, OF YORK, PENNSYLVANIA.

## ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 391,010, dated October 16, 1888.

Application filed November 30, 1887. Serial No. 256,523. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY BENTZ, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have  
5 invented certain new and useful Improvements in Electric Meters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make  
10 and use the same.

My invention has for its object to provide a new and simplified construction in meters for determining the quantity of electricity passing over a circuit of conductors in any known  
15 length of time and in registering the said quantity; and it consists in providing the same with a cone moving at a constant rate of speed, which imparts motion to a registering apparatus by means of a friction-wheel which bears  
20 upon the said cone, and the position of which is determined by an electro-magnet excited by the current to be measured.

In the accompanying drawings, in which corresponding parts are designated by similar  
25 letters, Figure 1 is a side elevation of my invention. Fig. 2 is a top plan view, and Fig. 3 is a detail end view of the cone and friction-wheel.

The electro-magnet, A, which is excited and  
30 regulated by the current to be measured, is wrapped with the insulated wires *a a*, the said wires forming a part of the circuit of conductors carrying the current to be measured, and therefore as the current increases or decreases  
35 the strength of the magnet increases or decreases to correspond therewith.

An armature, B, preferably of a curved form, as shown, is so placed as to be attracted in a greater or less degree by the electro-magnet.  
40 To the said armature is attached at one end a bar, *b*, while the other end is provided with forks *b' b'*, curved in a direction opposite to the armature. The said bar is swung upon an axis, *b<sup>2</sup>*, while a weight, *b<sup>3</sup>*, provided with a set-  
45 screw, *b<sup>4</sup>*, allowing it to be fastened in any desirable position under the point of suspension, is fastened upon the said bar.

The friction-wheel C is fastened upon one end of a hollow spindle, while upon the other  
50 end thereof is fastened the button *c*. The said hollow spindle is longitudinally, but not radi-

ally, movable upon the angular shaft D, thus causing the latter to revolve with it. The forked arms *b' b'* pass between the collar *c* and the wheel C, thus causing the latter to move  
55 with them.

A cone, E, is so situated at such a constant distance from the shaft D as to cause the friction-wheel C to bear upon its periphery, and that no portion of it is directly under the point  
60 of suspension of the bar *b*. One end of the axis *e* of this cone is connected with a suitable train of clock-work contained in the case F, which causes it to rotate at a constant speed, while the other end thereof is received by the  
65 standard *e'*.

Upon one end of the shaft D is attached the registering apparatus G, which may be of the form now in common use in gas-meters, &c.

When electricity is passing through the cir-  
cuit in which the wires *a' a'* are inserted, the magnet is excited and attracts the armature B, which causes the forked arms *b' b'* of the lever *b* to move the friction-wheel C upon the periphery of the constantly-moving cone E, by  
70 which the friction-wheel is turned, thereby imparting motion to the register G through the shaft D. If the current be still further increased, the armature is attracted farther toward the magnet, thus causing the wheel C to  
80 move farther upon the cone; but as the periphery of the cone is at this point greater than it was at the position occupied by the wheel before, the latter will turn faster, thereby causing the registering apparatus to register  
85 faster. If the current be decreased, the weight *b<sup>3</sup>* will act to withdraw the armature a corresponding distance from the magnet, and the wheel C a corresponding distance toward the smaller end of the cone, thus causing the regis-  
90 tering apparatus to register more slowly; and if the current be entirely stopped the weight will cause the bar *b* to assume an upright position, thus removing the friction-wheel entirely from off the cone and permitting the latter to  
95 turn without turning the former. As an example, say one sixteen-candle-power lamp is turned on. The current to supply the lamp causes the friction-wheel to assume a certain position upon the cone, and thus causes the  
100 registering apparatus to move at a certain rate. If five sixteen-candle-power lamps are turned

on, a greater current passes around the magnet, moving the friction-wheel to a point on the cone having five times the circumference of the point on which the friction-wheel rested before, 5 thus turning the friction-wheel five times as fast, and also causing the apparatus to register to correspond therewith.

Having now described my invention, what I claim, and desire to secure by Letters Patent, 10 is--

In an electric meter, an electro-magnet, an armature mounted upon one end of a bar, a weight attached to the said bar below the piv-

otal point thereof, curved forked arms upon the lower end of the said bar, a shaft, a wheel 15 movable thereon, and a cone provided with mechanism for imparting a constant motion thereto, substantially as and for the purpose described.

In testimony whereof I have affixed my sig- 20 nature in presence of two witnesses.

HARRY BENTZ.

Witnesses:

WM. BEITZEL,

I. A. C. MINNICH.