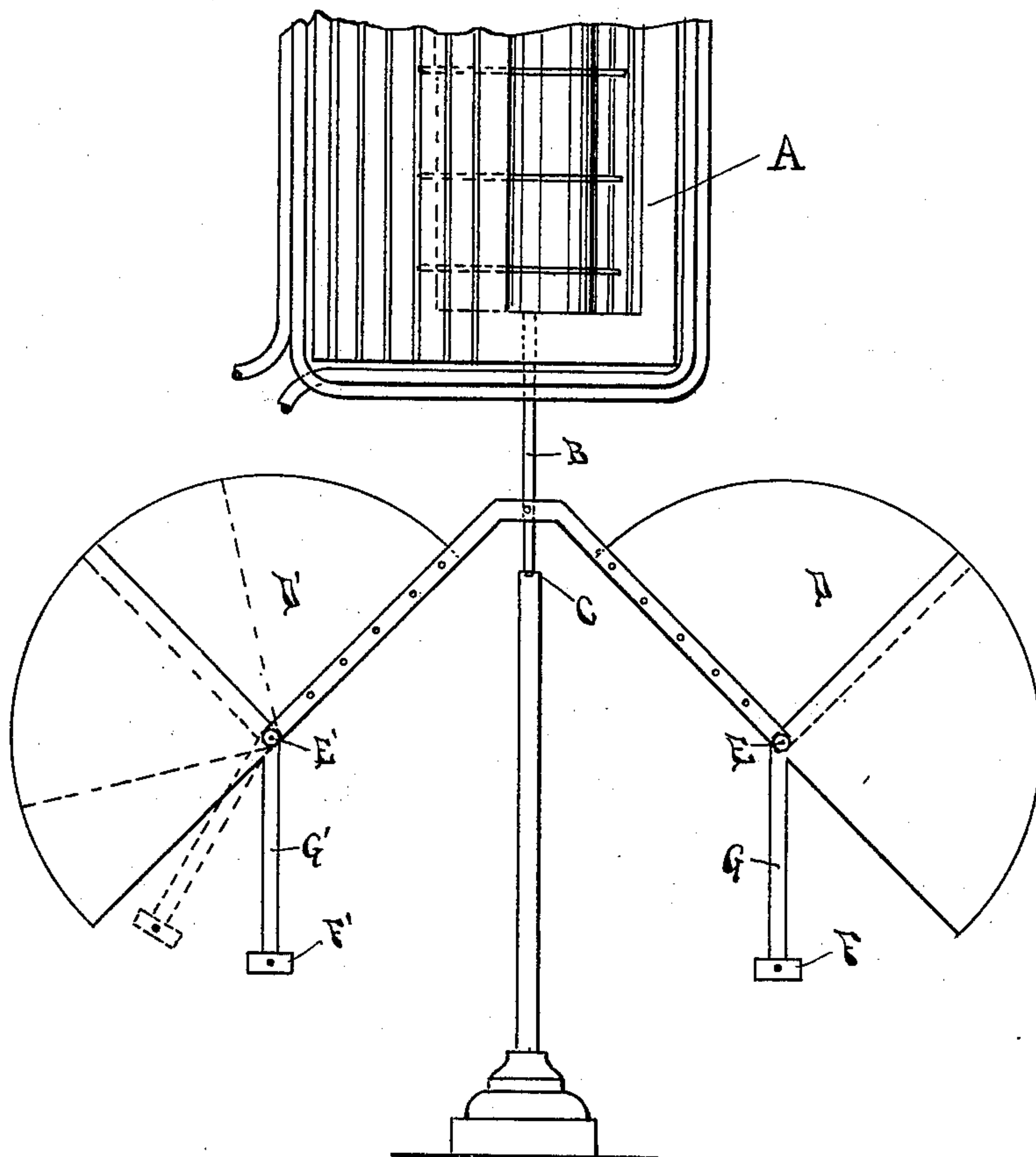


(No Model.)

M. M. M. SLATTERY.
ELECTRIC METER.

No. 410,860.

Patented Sept. 10, 1889.



WITNESSES:

E. Talbot

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UNITED STATES PATENT OFFICE.

MARMADUKE M. M. SLATTERY, OF FORT WAYNE, INDIANA.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 410,860, dated September 10, 1889.

Application filed May 17, 1889. Serial No. 311,116. (No model.)

To all whom it may concern:

Be it known that I, MARMADUKE M. M. SLATTERY, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Electric Meters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates more especially to the fans, vanes, or similar retarding devices which are frequently used in meters for measuring and indicating, by means of a motor operated or controlled by the current and suitable mechanism in connection therewith, the quantity of electric current which may have passed through such meter in a given time. In the absence of any provision to the contrary it is a generally-accepted law that the speed of rotation of such a motor will increase approximately as the square of the current applied to it, and it is also recognized as true that the retarding effect of a revolving fan or vane, due to the atmospheric pressure thereon, varies approximately as the square of the speed of rotation. Theoretically, therefore, the application of such a retarding device to such a motor should result in indications of the registering mechanism proportional to the current passing; and this is in fact true in practice with approximate accuracy within a comparatively-narrow working range; but it is found in practice that as between a very light and a very heavy load this proportionality does not always obtain, and that the retarding effect is in such case greater at high speed than it ought to be.

To obviate this irregularity is the purpose of my present invention, and this I do by giving to the blades of the retarding device a variable surface exposed to the pressure of the air, and consequently a variable resistance to revolution. This I accomplish by dividing the fan into two or more portions, one fixed to the rotating shaft and the others pivoted in a plane or planes parallel to the first,

so as at high speed to be thrown outward by the centrifugal force of their own revolution. The parts are thus folded together, one part sliding over another, in the manner of a slide-shutter, so reducing the area exposed to atmospheric pressure.

In the drawing, A is a general view of a form of meter described by me in other patents and applications for patents, and not herein specifically claimed.

B is the rotating shaft pivoted at C. D D' are vanes or fan-blades attached thereto and revolving therewith. These are preferably of a sectoral or quadrant form, and disposed as shown.

At E E' are pivoted other portions of the blades or fans, which may be of similar form, and constitute with the fixed portions, when at rest or revolving very slowly, one complete blade of semicircular form, or of the form of a larger sector of a circle. Attached to these movable portions as counter-balances are small weights F F', which may conveniently be made adjustable on the light shafts or rods G G', connecting the same to the movable portions at the pivot. This additional weight to assist inertia may be disposed within or upon the movable blade or fan itself; but the form shown is preferred as being efficient and convenient. When the speed of rotation of the fan increases beyond a certain velocity, its movable portion is thrown outward by centrifugal force and folds or slides over the rigid portion, thus reducing the area exposed and reducing the resistance offered to the revolution of the fan by the atmosphere.

I claim—

1. In combination with an electric meter, a retarding device consisting of a folding fan presenting a variable surface to the atmosphere.

2. In combination with an electric meter, a retarding device consisting of a fan revolving in the atmosphere and folding upon itself by the action of centrifugal force.

3. In an electric meter, a retarding device consisting of a folding fan revolving in the atmosphere, with an adjustable weight attached to its movable portion.

4. In an electric-motor meter, a retarding

device consisting of a fan revolving against atmospheric pressure and having one portion fixed rigidly to the motor-shaft, with a movable portion or portions adapted to slide over
5 the fixed portion by the action of centrifugal force at high velocity, and so reduce the area exposed to atmospheric pressure.

5. In an electric meter, a retarding device consisting of a revolving fan divided into sec-

tions adapted to slide together at high velocity.

In testimony whereof I do hereto subscribe my name, in the presence of two witnesses, this 15th day of May, 1889.

MARMADUKE M. M. SLATTERY.

Witnesses:

CHAS. C. MILLER,
J. E. TALBOT.