(No Model.) 2 Sheets—Sheet 1.

T. A. EDISON.

Electric Meter.

No. 242,901. Patented June 14, 1881.

Fig. 1.

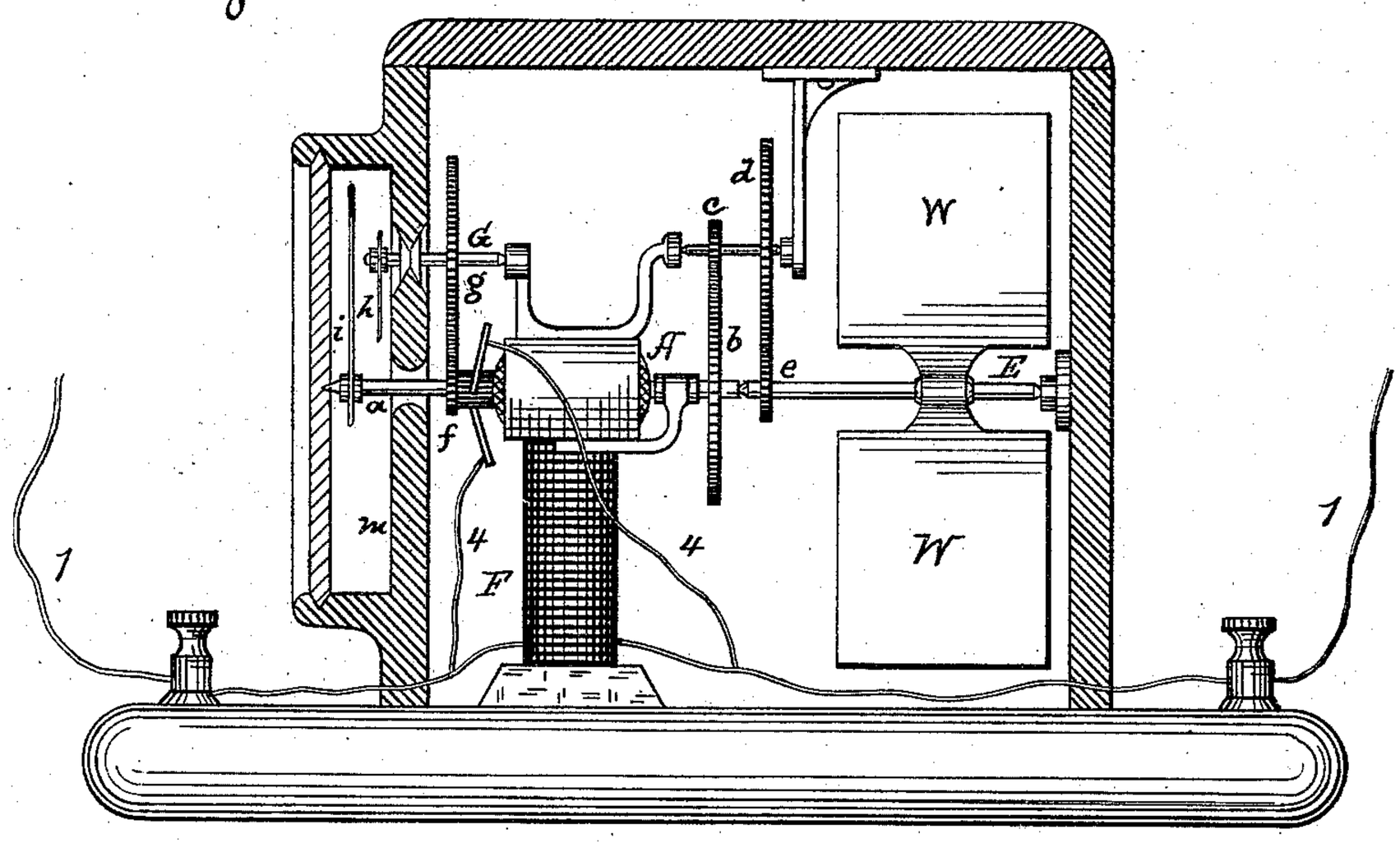
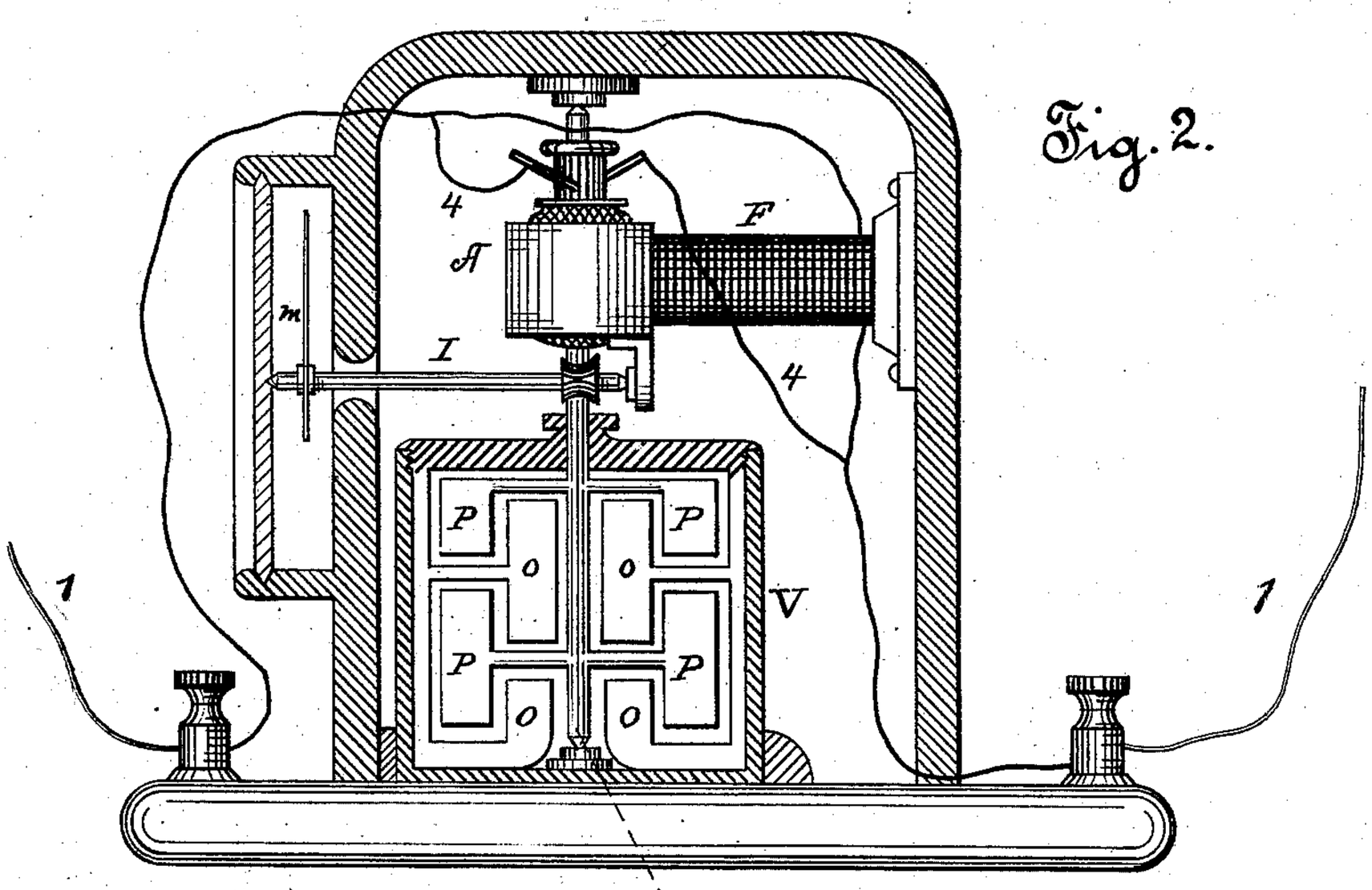


Fig. 2.



Attest

O. D. Mott

M. J. Nagott

per

Inventor:

T. A. Edison

Dyer & Wilber

Attys

(No Model.)

2 Sheets—Sheet 2.

T. A. EDISON.

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Fig. 3.

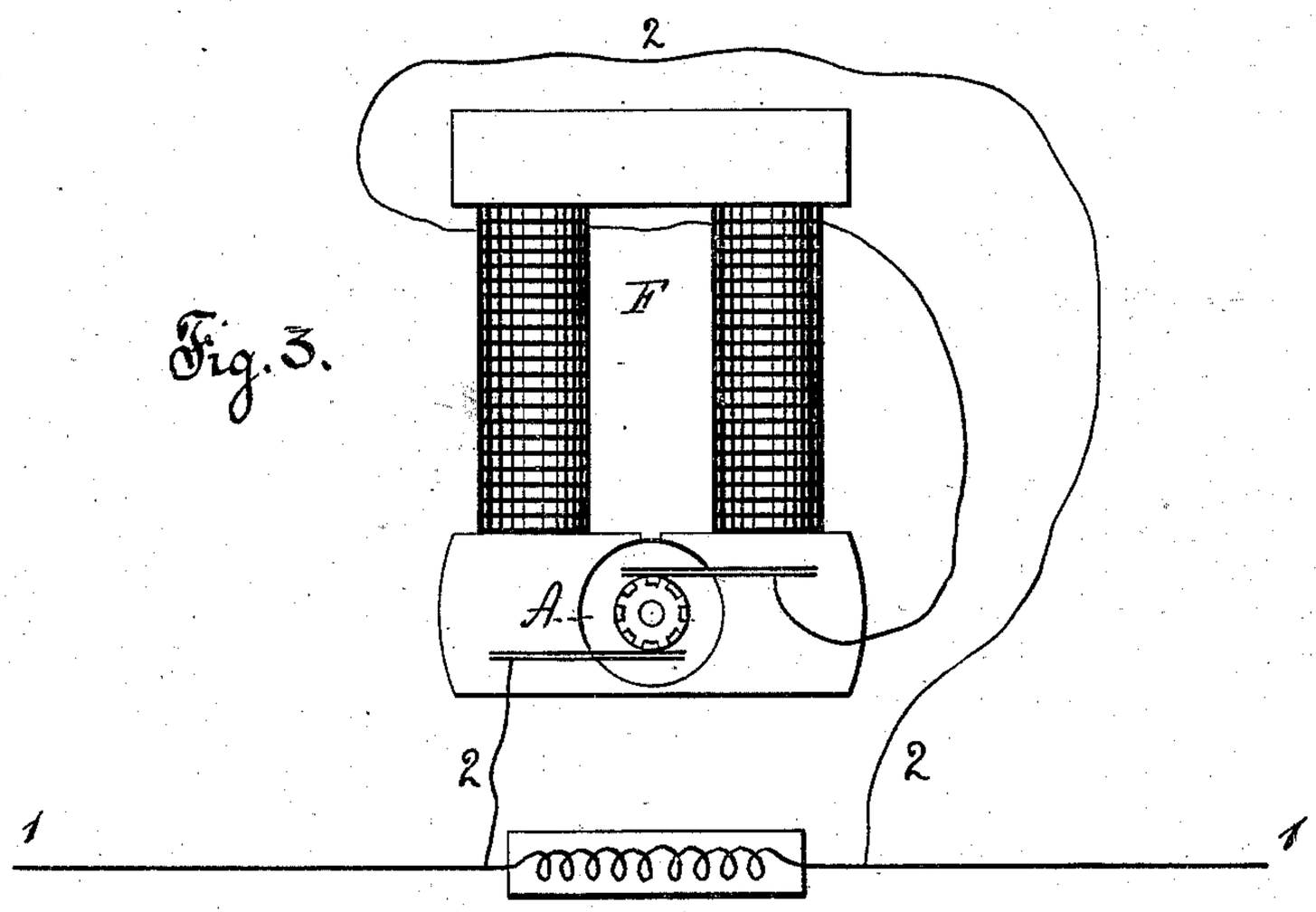
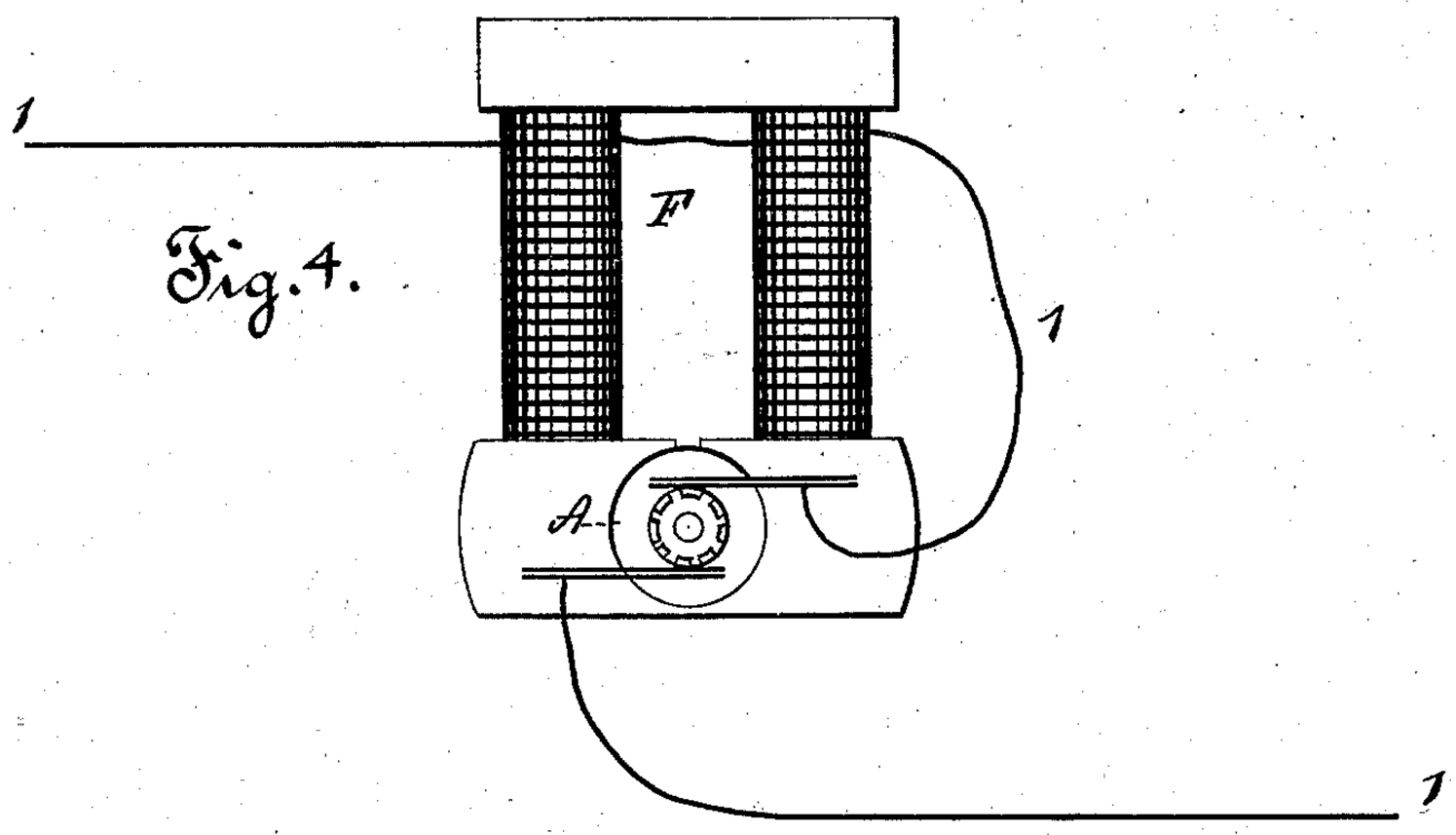


Fig. 4.



Attest:

O. D. Mott

M. J. Liggett.

per

Inventor:

T. A. Edison

Dyer & Wilber

Attys.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 242,901, dated June 14, 1881.

Application filed March 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Electric Meters, (Case No. 291;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In a system of electric generation and distribution, wherein electricity is generated at a central station and thence distributed to consumers, a meter which shall indicate exactly the amount supplied to a customer is a desideratum.

The invention in this case relates to such a meter.

Generally speaking, it consists of a motor, to which is given a certain definite amount of work to do or resistance to motion to be overcome, combined with registering devices which register the amount of work done or resistance to motion overcome.

I have found that the rapidity with which the motor will accomplish its work with a definite loading is proportioned to the amount of current energizing it. Hence, if the motor be arranged to have a slow motion when the amount of current necessary for, say, one translating device, passes through the circuit its speed will be increased proportionately as the number of translating devices using current is increased.

The motor may be placed with its field and armature coils both directly in the main circuit or both in a shunt-circuit. The field-coils may be placed in the direct circuit and the armature in a shunt thereto.

The loading or resistance may be given in a variety of ways. For instance, fan-blades or wings may be connected to the armature-shaft by multiplying gearing; or, preferably, blades or wings may be driven in a tank or dash-pot filled with a thick liquid, such, for instance, as are used in gas-meters, the armature-shaft being connected to suitable registering devices, such, for instance, as are used in gas-meters, by slowing-down gearing or worm and screw, so that the movement of the registering devices is much less than that of the actuating rotating armature. In the drawings means for accomplishing this are shown, wherein—

Figures 1 and 2 are views showing the motor and fans in elevation, and Figs. 3 and 4 are diagrams giving different methods of connecting the motor in circuit.

In these drawings, 1 1 is one of the main conductors of the place of consumption, the other not being shown.

F is the field-of-force magnets, and A the revolving armature of an electro-motor. In Figs. 1 and 2 the coils of F are directly in the circuit 1, while the armature is in a shunt-circuit, 4. In Fig. 3 both A and F are in a shunt-circuit, 2, while in Fig. 4 both A and F are directly in the main circuit 1.

In Fig. 1, *a* is the shaft of the armature A, and upon one end it carries a gear, *b*, which meshes into a pinion, *c*, on whose shaft is a gear, *d*, taking into a pinion, *e*, on a shaft, E, carrying the wings or fan-blades W, which give the load or resistance to motion to the engine. The shafts of the gears and pinions and blades are supported in suitable framing, and by the arrangement shown the rate of motion of A is increased in W, whereby large reduction in size of W is effected. Upon the other end of the shaft *a* of A is a pinion, *f*, and an index-finger, *i*, the latter passing over a register-face, *m*, which, in practice, corresponds to the first wheel of the register employed in a gas-meter. The pinion *f* meshes with a gear, *g*, on whose shaft is an index-finger, *h*, the pinion *f* and gear *g* being so proportioned that *h* shall advance one step or registration to a complete revolution of *i*.

In Fig. 2 the shaft *a* of A carries the fan-blades or wings P P, working in contracted spaces formed in the vessel or dash-pot V by projections O, extending inwardly from its sides. This vessel or pot may be filled with a liquid, such as glycerine or petroleum, so that the definite work or load for the motor may be given it in a very small space or compass. Upon *a* is a screw meshing into a worm upon shaft I, carrying index-pointer *m*, to which may be added carrying devices, as in case of Fig. 1. As the load is constant, the rapidity with which work is done will depend upon the energizing of the motor, which, in turn, is dependent upon the current flowing through 1 1,

which is determined by the number of translating devices in use upon the circuit to be measured. Hence, as more or less current is used the registration at the time proceeds faster or slower, with the result that a substantially correct indication of the current used in any given time is obtained.

What I claim is—

1. The combination, with an electric circuit containing translating devices, of an electric motor having a definite loading and apparatus for registering the work done, substantially as set forth.

2. The combination of an electric circuit, an electro-motor, a fan driven thereby, and a registering apparatus, substantially as set forth.

3. The combination of an electric circuit, an electro-motor, a fan or blades driven thereby, a vessel or tank in which the fan or blades are placed, and registering apparatus, substantially as set forth.

4. The combination of an electric circuit, an electro-motor, a fan or blades, a vessel or tank filled with liquid, in which the blades or fan are placed, and registering apparatus, substantially as set forth.

5. An electric meter consisting of a motor having a definite work to perform or loading to overcome, and registering devices, substantially as set forth.

This specification signed and witnessed this 24th day of February, 1881.

THOS. A. EDISON.

Witnesses:

S. D. MOTT,

H. W. SEELY.