

No. 693,688.

Patented Feb. 18, 1902.

C. T. CLAYPOOLE.
ELECTRIC METER.

(Application filed Jan. 6, 1902.)

(No Model.)

Fig. 1.

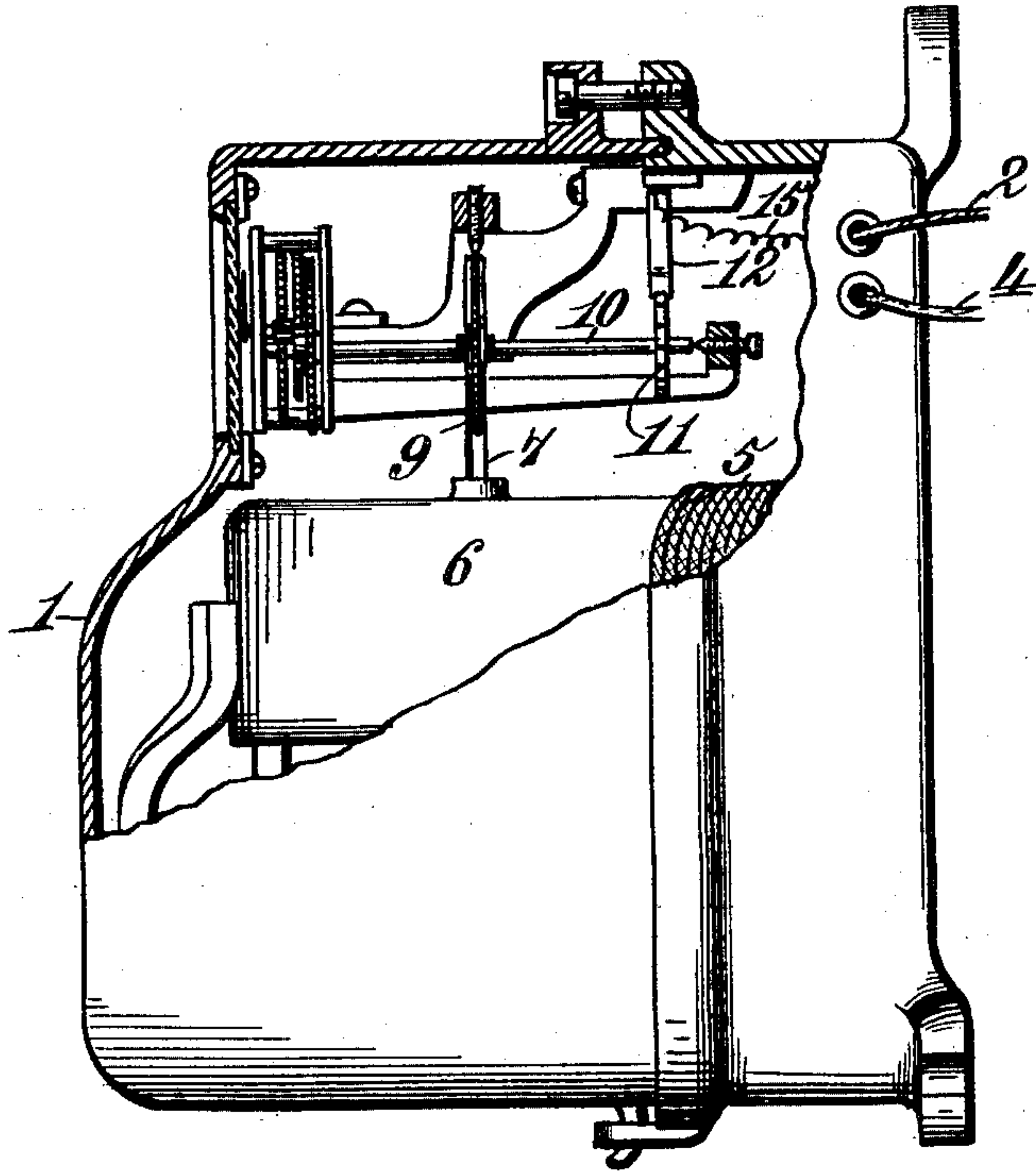


Fig. 2.

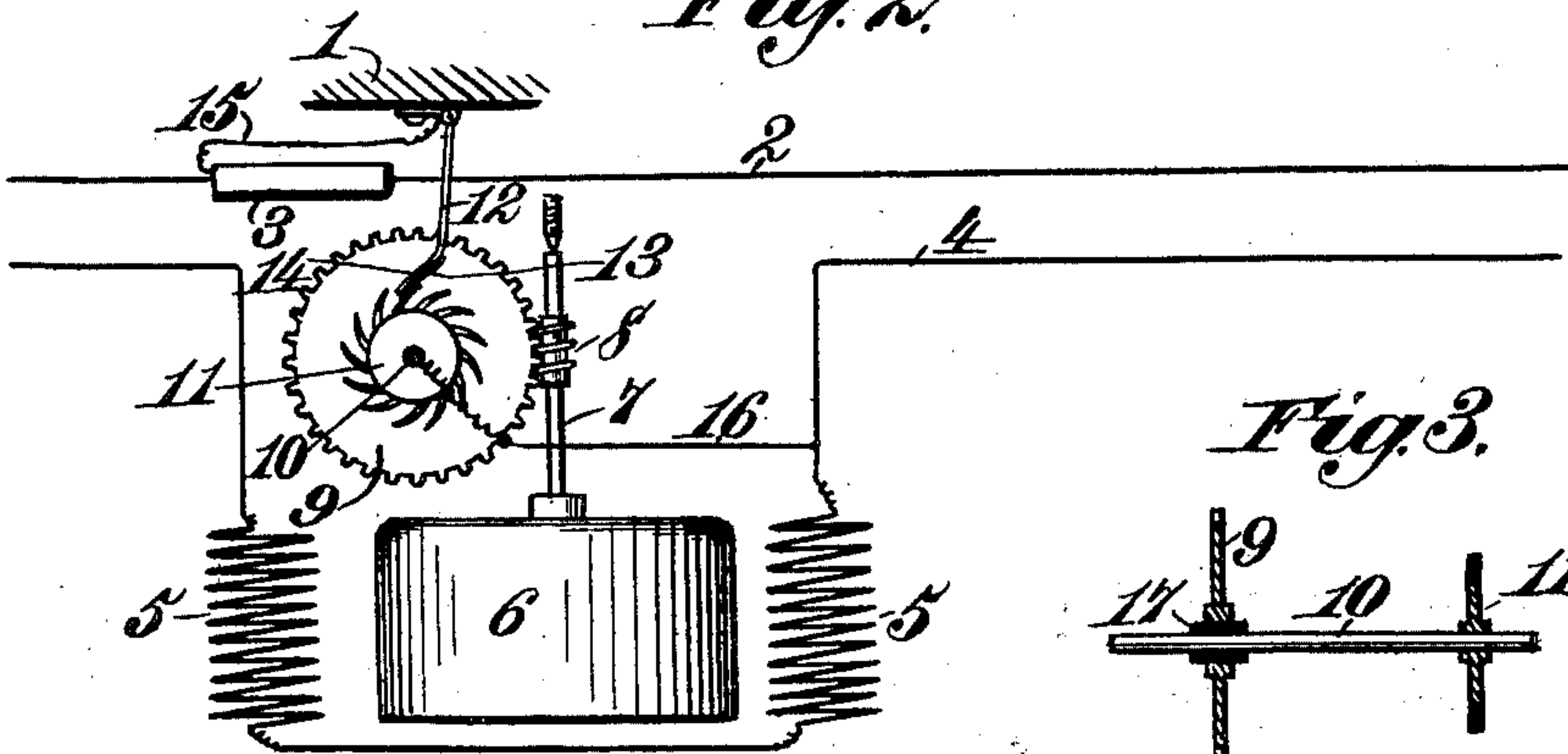


Fig. 3.

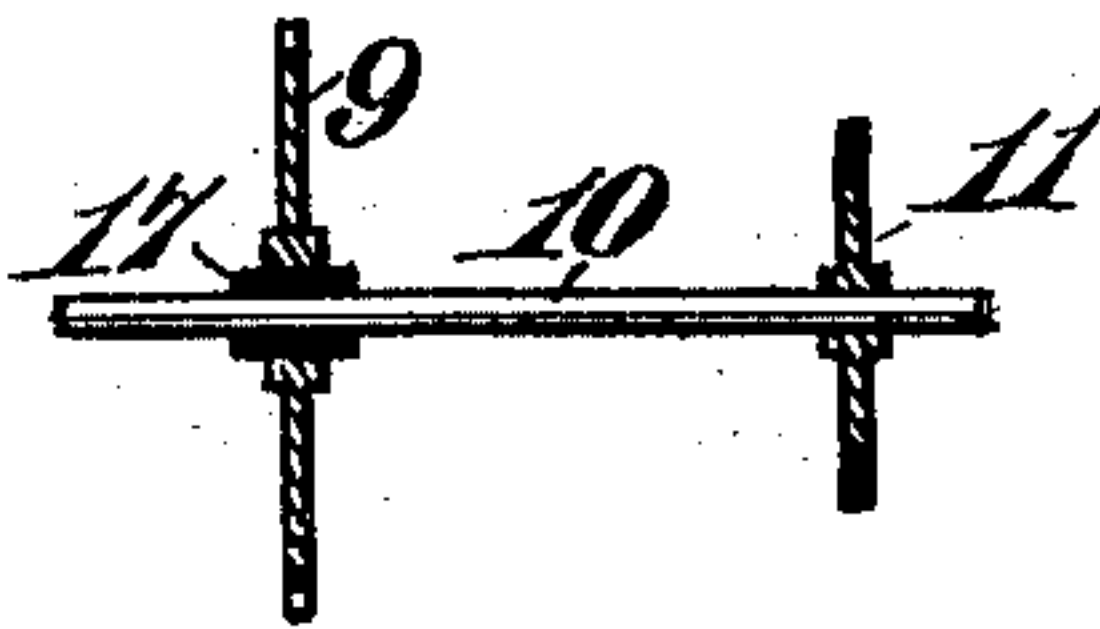
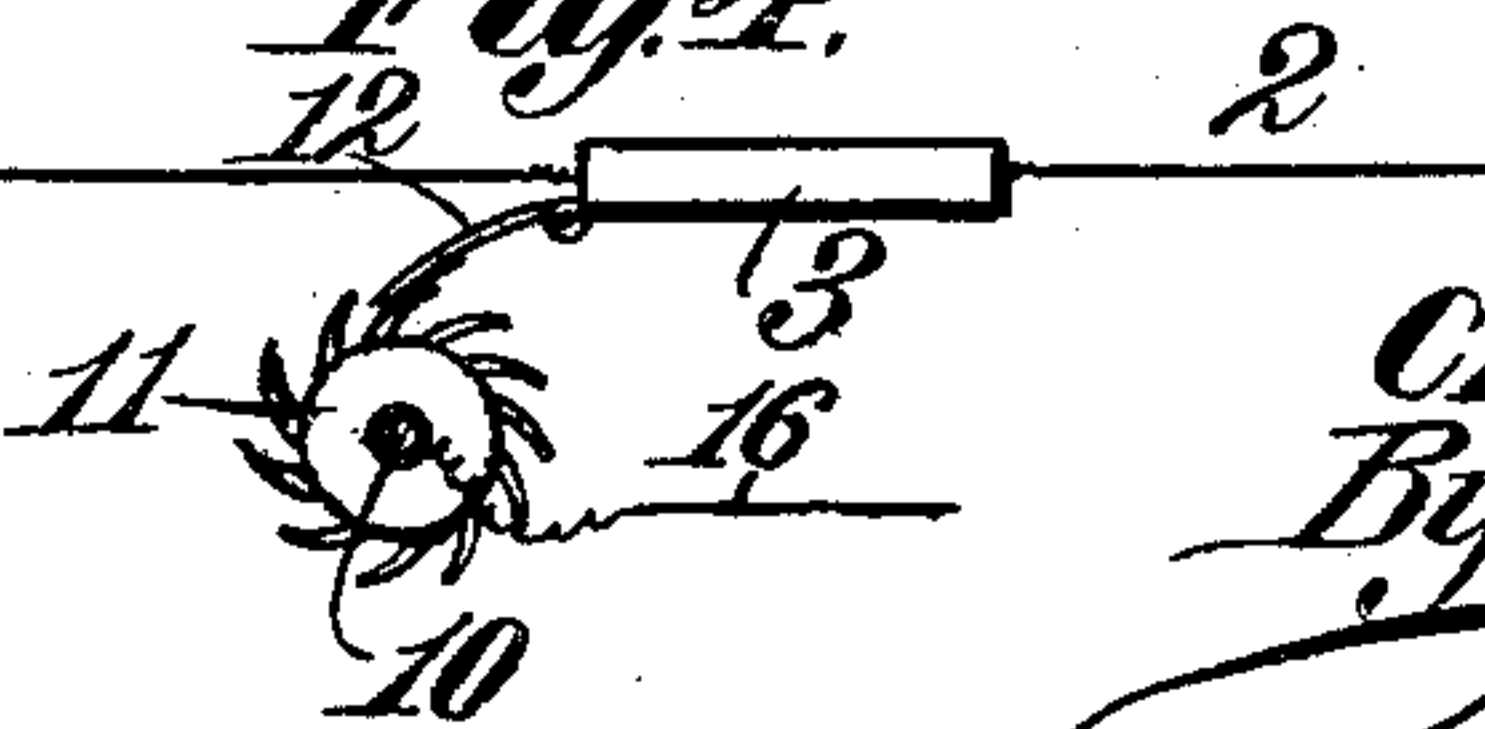


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES T. CLAYPOOLE, OF SIOUX CITY, IOWA.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 693,688, dated February 18, 1902.

Application filed January 6, 1902. Serial No. 88,602. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. CLAYPOOLE, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Electric Meters, of which the following is a specification.

My invention relates to electric meters, the object of the same being to provide means for preventing without detection the backward movement of the operative parts of the meter either through accident due to the improper connection of the circuit-wires or through design on the part of the one in whose house the meter is installed.

The invention consists of a fuse in one of the line-wires, a trip or dog having an insulated portion and a conducting portion, the conducting portion being electrically connected with said fuse, a toothed wheel of conducting material operated by the flow of current through the meter normally moving in contact with the insulated portion of said dog or trip, but adapted when moved in the opposite direction to be brought in contact with the uninsulated portion of said dog or trip, and a shunt-circuit between the two line-wires, including said wheel and said trip, and connected with said fuse.

The invention also consists in certain features and details of construction and combinations of parts, which will be hereinafter more fully described and claimed.

In the drawings forming part of this specification, Figure 1 is a sectional elevation of an electric meter embodying my improvements. Fig. 2 is a diagrammatic view of the circuit connections. Fig. 3 is a detail sectional view of the contact-wheel and the parts connected therewith, and Fig. 4 is a detail view showing an alternative manner of mounting the trip or dog with which the contact-wheel coöperates.

Like numerals indicate like parts in the different views.

The meter-casing 1 and the meter mechanism inclosed within the same may be of any suitable or preferred construction. The line-wire 2, which extends through said casing, has interposed between the two parts thereof a fuse 3. The line-wire 4 has in series with it the field-coils 5 of the meter mechanism, be-

tween which is located and mounted for rotation the armature 6. This armature has the stem or shaft 7 thereof extended upwardly and provided with a worm 8, which meshes with a worm-wheel 9, fixed to a transverse shaft 10. Said shaft 10 is mounted in suitable bearings and is connected with the registering mechanism of the meter in the usual manner. Also secured to said shaft 10, parallel to the wheel 9, is a ratchet-wheel 11, of copper, brass, or other suitable electric conducting material. The teeth of the ratchet-wheel 11 extend in a direction opposite that of the normal forward movement of said wheel and move in contact with the under side of the dog or trip 12. Said dog or trip is preferably supported from the upper wall of the meter-casing 1 and is pivotally suspended so as to normally rest by gravity in contact with the teeth of the wheel 11, as clearly shown. The lower face of the dog or trip 12 is made of non-conducting or insulating material, as shown at 13, whereas the upper face thereof is made of metal or other electric conducting material, as shown at 14, the latter face being connected by a wire 15 with the fuse 3 in the line-wire 2. Instead of supporting the dog or trip 12 from the upper wall of the casing 1 the same may be pivotally connected to the shell of the fuse 3, as shown in Fig. 4 of the drawings. In the latter case the connection between the uninsulated portion 14 of said dog and the fuse 3 would be a direct one and the connecting-wire 15 would be dispensed with. Leading from the line-wire 4 to the shaft 10 or directly to the wheel 11 is the wire 16, which forms with the wheel 11, the dog or trip 12, and the wire 15 a normally open shunt-circuit between the two line-wires 2 and 4. To prevent the flow of current through the delicate registering mechanism of the meter, I provide between the hub of the wheel 9 and the shaft 10, on which said wheel is mounted, a bushing 17, of insulating fiber or other like material.

The operation of my device is as follows: Under normal conditions the load produced by the lamps or other translating devices in circuit between the line-wires 2 and 4 beyond the meter will cause the rotation of the armature 6, and through the worm 8 and worm-wheel 9 a rotation of the transverse

shaft 10. The registering mechanism will be thrown into operation, and the value of the current used will be properly indicated. At the same time the teeth of the wheel 11 on the shaft 10 will move in contact with the insulated portion 13 of the trip or dog 12. If any attempt be made, either through accident or design, to reverse the direction of movement of the shaft 10, through which the registering mechanism is operated, the teeth of the wheel 11 will be immediately brought in contact with the uninsulated or conducting portion 14 of the dog or trip 12, which will close a short circuit between the line-wires 2 and 4 over the following path: line-wire 2, fuse 3, wire 15, uninsulated portion 14 of the dog or trip 12, wheel 11, shaft 10, and wire 16 to line-wire 4. This causes a heavy flow of current through the fuse 3, which immediately blows the same and cuts out the circuit to the meter and to the translating devices on the opposite side thereof. It is now necessary for some attendant of the lighting company to open the meter-casing and insert a new fuse 3 in place before the service can be restored. It will thus be seen that any effort to reverse the movement of the meter from any cause will instantly cut out the meter and the light service in such manner as to require notice being given to the lighting company before the line can be again used.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric meter, a movable part operated by a flow of current through the meter, a contact device operated by said movable part, a fuse in one of the line-wires, a shunt-circuit between the line-wires connected to one of the same beyond said fuse and including said contact device, and means automatically thrown into operation by a reverse movement of said contact device for closing said shunt-circuit, as and for the purpose set forth.

2. In an electric meter, a movable part operated by a flow of current through the meter, a contact device operated by said movable part, a fuse in one of the line-wires, a shunt-circuit between the line-wires connected to one of the same beyond said fuse and including said contact device, and a trip or dog adapted to be engaged by said contact device upon a reverse movement of the latter for closing said shunt-circuit, as and for the purpose set forth.

3. In an electric meter, a movable part operated by a flow of current through the meter, a contact device operated by said movable

part, a fuse in one of the line-wires, a shunt-circuit between the line-wires connected to one of the same beyond said fuse and including said contact device, and a pivotally-mounted trip or dog having an insulated portion lying normally in engagement with said contact device, and having an uninsulated portion adapted to be engaged by said contact device, during the reverse movement of the latter, for closing said shunt-circuit, as and for the purpose set forth.

4. In an electric meter, a movable part operated by a flow of current through the meter, a toothed wheel, adapted to be rotated by said movable part, a fuse in one of the line-wires, a trip or dog having an insulated portion normally lying in engagement with the teeth of said wheel and having an uninsulated portion electrically connected with said fuse, and a normally open shunt-circuit including the uninsulated portion of said trip or dog, the connection between the same and said fuse, and said toothed wheel, the teeth of said wheel being adapted to engage the uninsulated portion of said trip, for closing said shunt-circuit during the reverse movement of said wheel, as and for the purpose set forth.

5. In an electric meter, a movable part operated by a flow of current through the meter, a shaft, a worm-wheel secured to said shaft but insulated therefrom, a worm connected with said movable part and meshing with said worm-wheel, a ratchet-wheel secured to said shaft having the teeth thereof extending in a direction opposite the normal direction of movement of said wheel, a fuse in one of the line-wires, a trip or dog pivotally supported from the meter-casing, having an insulated portion normally lying in contact with the teeth of said ratchet-wheel, and having an uninsulated portion in electrical contact with said fuse, and a shunt-circuit between the line-wires including the uninsulated portion of said trip or dog, the connection between the same and said fuse, said ratchet-wheel and said shaft, the uninsulated portion of said trip being adapted to be engaged by the teeth of said ratchet-wheel for closing said shunt-circuit upon the reverse movement of said ratchet-wheel, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES T. CLAYPOOLE.

Witnesses:

C. W. TAYLOR,
GEO. M. PASDOE.