

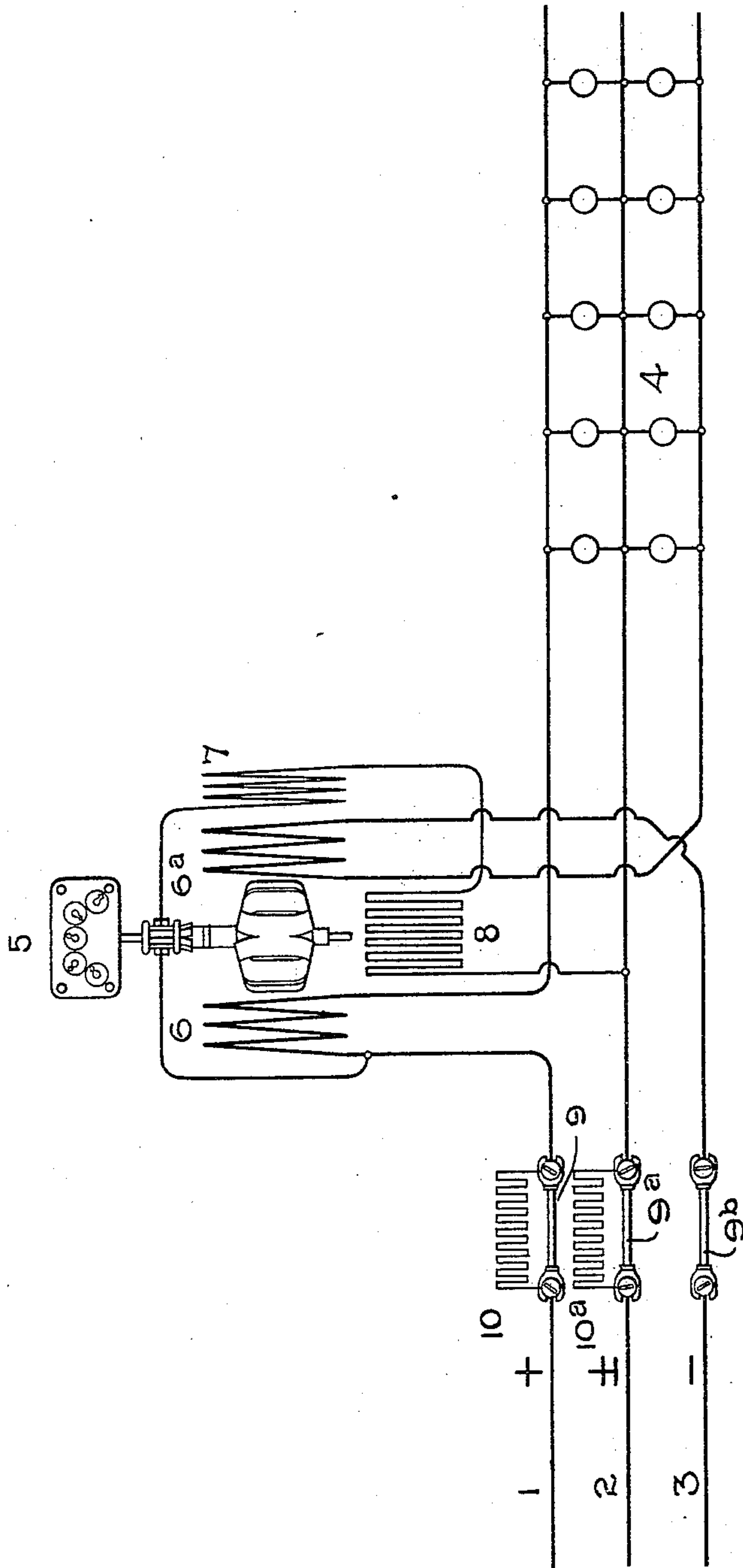
No. 632,739.

Patented Sept. 12, 1899.

E. OXLEY.
ELECTRIC METER.

(Application filed July 27, 1899.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

EUSTACE OXLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 632,739, dated September 12, 1899.

Application filed July 27, 1899. Serial No. 725,231. (No model.)

To all whom it may concern:

Be it known that I, EUSTACE OXLEY, a subject of the Queen of Great Britain, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Electric Meters, (Case No. 1,044,) of which the following is a specification.

My present invention relates to electric meters.

In operating electric meters of the recording wattmeter type on three-wire or multiple-series distribution-circuits it is the practice to connect one of the meter-operating circuits between the neutral or return wire and one of the outside wires of the system or between the two outside wires. With such a system of connections the blowing of the fuse employed to protect the meter against injury or the surreptitious removal of the fuse or substitution of one that has already been damaged permits the consumer to use his lamps or translating devices between some of the leads without causing the meter to record.

It is the object of my invention to prevent the loss to the central station thus caused.

I carry out my invention by placing in shunt relation to one or all of the fuses or cut-outs impedances or resistances relatively high to that of the fuses, by virtue of which in the ordinary operation of the meter, while the cut-out is in operative condition, the latter will carry the current and be in condition to protect the apparatus in case of accidental circumstances in the circuit tending to injure the meter or the system. If, however, the cut-out acts, the high-resistance branch permits the meter-operating circuit to draw sufficient current to insure its operation.

In the accompanying drawing is diagrammatically shown a meter connected in a three-wire circuit and embodying my improvements.

1 2 3 represent the service-wires of a multiple-series circuit supplying lamps or other translating devices 4 through an electric meter 5. The connection of the meter-circuit is varied in practice, the shunt-circuit, which ordinarily leads through the armature, being sometimes connected across the outside

mains, as in a low-efficiency type of meter, and sometimes connected between one of the potential mains and the neutral or return wire, as in a high-efficiency type of meter. The lamps or other translating devices are placed in series relation to a field-magnet. Such an organization is diagrammatically indicated in the drawing, wherein the field-magnet coils 6 6^a are in series relation to the translating devices in the two sides of the circuit, respectively, and the shunt-circuit leads from one of the outside mains through the armature and the starting-coil 7 on the field-magnet and by way of a fixed shunt-resistance 8 to the return-wire 2.

In the service-wires are inserted fuses or other cut-outs 9 9^a 9^b. It is evident that if either of the cut-outs in the shunt-circuit is damaged the meter will not operate at all. Thus the consumer may use part or all of the lamps, according to the cut-out which is damaged, without being charged pro rata for the use of current. It sometimes happens in the case of unscrupulous consumers that a good fuse will be removed and a plug without a fuse substituted for the purpose of disabling the meter. I provide a very simple remedy for these defects by inserting in shunt relation to the fuse, and preferably as a part of the fuse-plug, a permanent resistance or impedance relatively high to the resistance of the fuse and which under normal conditions of operation has no effect on the operation of the meter, but which in case of the blowing of the fuse affords a path for current to the meter-circuits, thereby insuring its registration when any lamps are burning. Such a resistance is indicated at 10 10^a. A sufficient number should be employed to insure the closure of the meter-circuits in case any lamp is burning. In a three-wire circuit, as exemplified in the drawing, two will be sufficient, and may be placed in the neutral and one of the outside wires, respectively. In case of damage to the fuse in the service-wire 3 the lamps connected on that side of the circuit cannot burn while the meter-circuits are in operative relation to the other side. In case of damage to wires 1 and 2 a shunting resistance affords a by-pass for the meter-operat-

ing currents, and the meter performs its registering function in so far as current is taken by the translating devices. This resistance should be low in comparison with the total
5 resistance of the meter shunt-circuit, but high enough to prevent injurious current from flowing through the meter even if two of the mains are short-circuited.

What I claim as new, and desire to secure
10 by Letters Patent of the United States, is—

1. The combination with a multiple-series supply-circuit, of current-consuming devices and an electric meter connected in operative relation thereto, a protecting cut-out for the
15 meter, and an impedance in shunt to said cut-out.

2. The combination with a multiple-series supply-circuit, of current-consuming devices and an electric meter connected in operative
20 relation thereto, a protecting-fuse for the meter, and a resistance relatively high to that of the fuse in shunt relation thereto.

3. The combination with a three-wire supply-circuit, of current-consuming devices and
25 an electric meter in operative relation there-

to, protecting-fuses for the meter, and a by-pass of high resistance relatively to the fuse.

4. The combination with a multiple-series supply-circuit, of current-consuming devices, and an electric meter to measure their con- 30 sumption, a protecting cut-out for the meter, and a by-pass of high resistance relatively to the cut-out for admitting current to the meter upon the operation of the cut-out.

5. In a three-wire system of distribution, 35 the combination of current-consuming devices connected between the two sides thereof, an electric meter having one of its operating-circuits in series with the current-consuming devices, and the other in a high-resistance 40 shunt across two of the mains, a protecting-fuse in each of the latter, and a resistance relatively high to that of the fuse, in shunt relation thereto.

In witness whereof I have hereunto set my
hand this 24th day of July, 1899. 45

EUSTACE OXLEY.

Witnesses:

DUGALD MCKILLOP,

JOHN MCMANUS.