(No Model.)

C. W. DE MOTT.

ELECTRIC GAS LIGHTING APPARATUS.

No. 571,723. Patented Nov. 17, 1896.

Fig. 3.

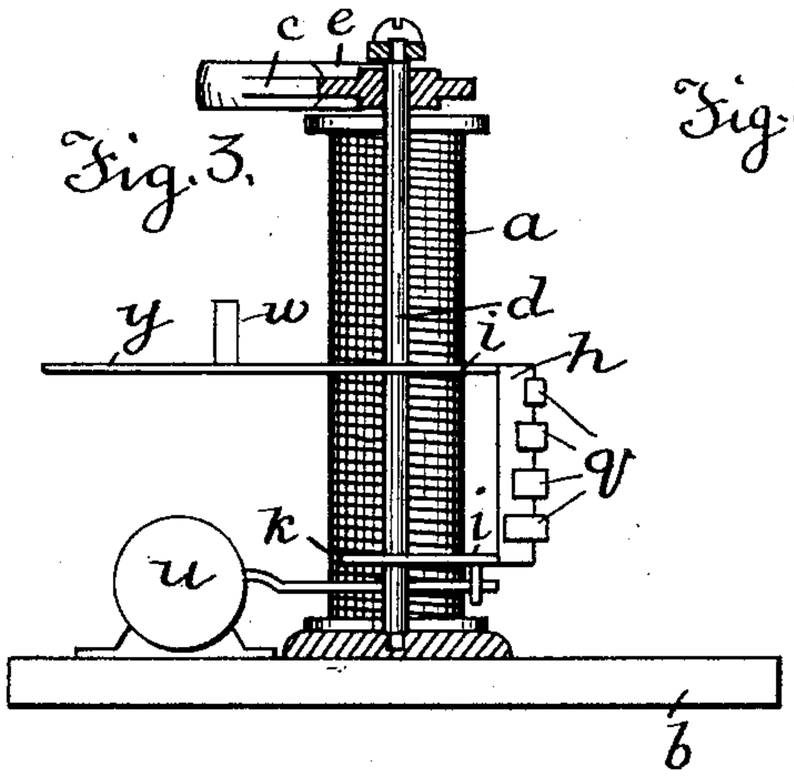


Fig. 2.

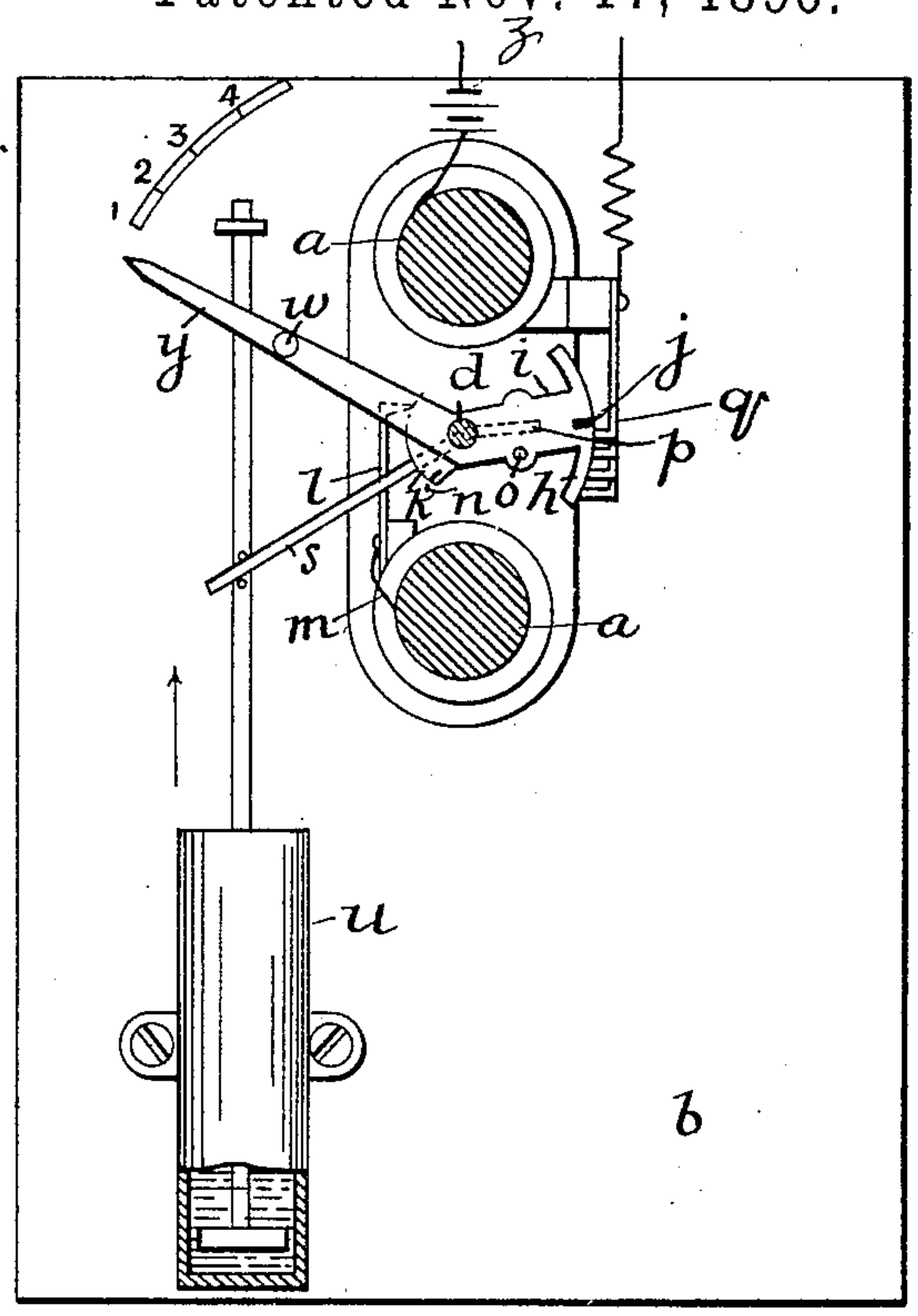


Fig. 4.

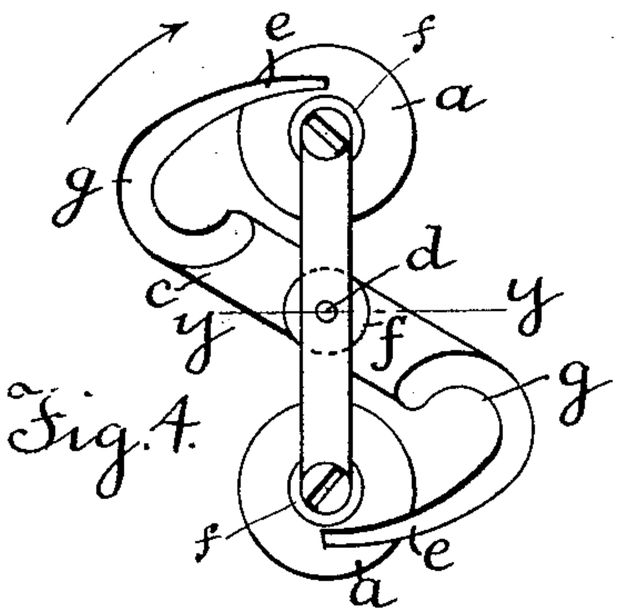
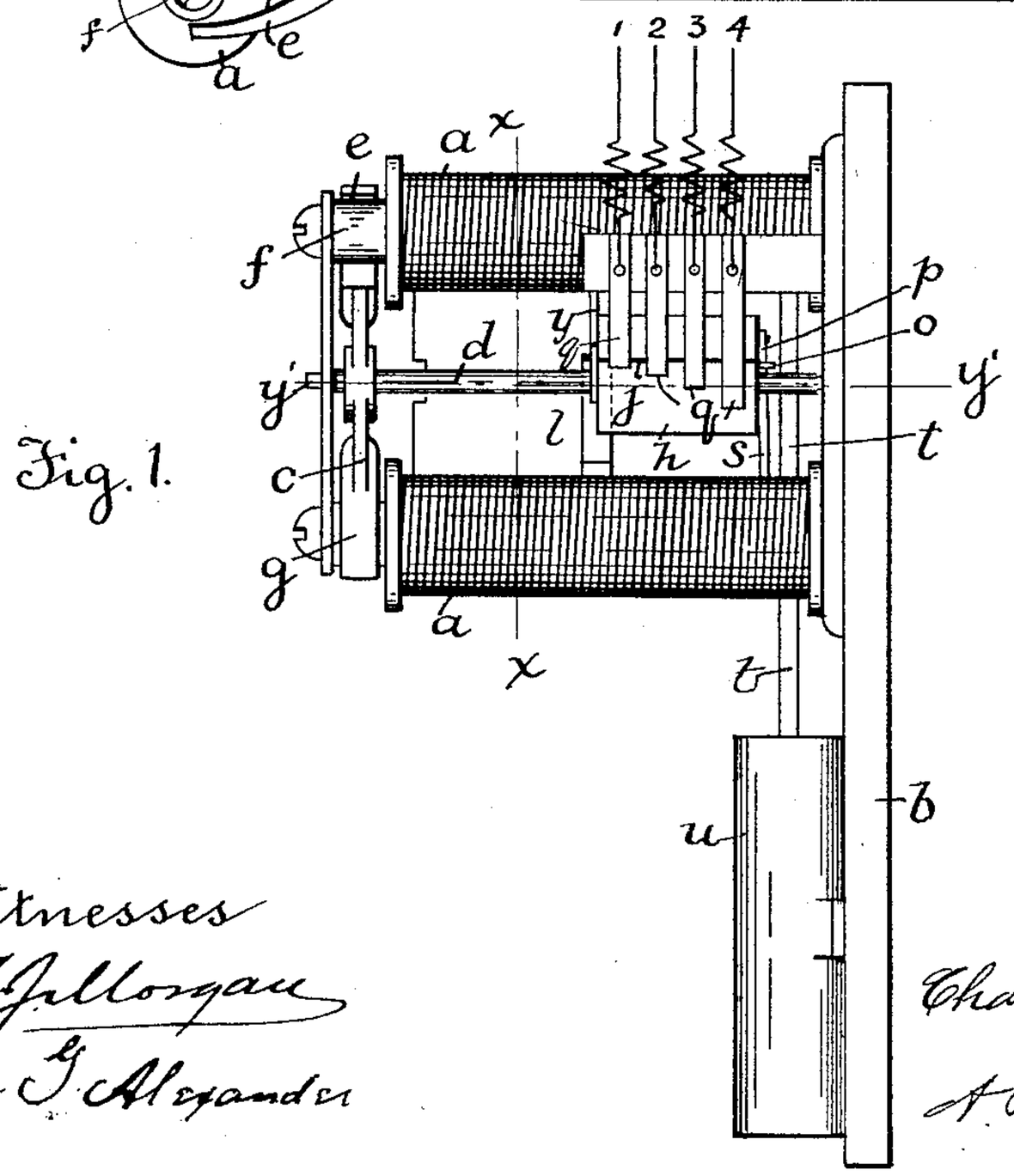


Fig. 1.



Witnesses
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atty

UNITED STATES PATENT OFFICE.

CHARLES W. DE MOTT, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-FOURTH TO DEVAN P. BLOODGOOD, OF SAME PLACE.

ELECTRIC GAS-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 571,723, dated November 17, 1896.

Application filed May 8, 1896. Serial No. 590,649. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DE MOTT, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric Gas-Lighting Apparatus, of which the following is a specification.

The object of my invention is to provide improved simple and reliable apparatus for automatically breaking the circuit in electric gas-lighting apparatus to prevent the battery from being exhausted when the wires get crossed, also to indicate which one of the section-wires is crossed to facilitate the search for the crossing, and also to provide a simple automatic circuit-breaker for the main wire in case the break device for the section-wire fails to act, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved apparatus. Fig. 2 is a sectional elevation, the section being taken on line x x, Fig. 1. Fig. 3 is a view in the direction indicated by the arrow at Fig. 1, with one of the coils of the electromagnet detached and parts sectioned on line y' y', Figs. 1 and 4. Fig. 4 is a side view of the armature and end view of the coils of the electromagnet.

A suitable electromagnet, of which a represents the coils, is mounted on a base-plate b, adapted to be secured to the side of a wall or other support. An armature c is secured at the middle of its length to the shaft d, located midway between and parallel with the coils, so as to oscillate freely in a plane wherein the ends f of the cores of the magnet lie. The armature is formed with the gooseneck terminals e of gradually-diminishing transverse section toward the point and suitably curved for traversing the cores f of the coils suitably for being attracted thereby for turning the shaft d. The crooks g at the base of the goosenecks coming in contact with the cores f of the coils terminate the movement of the armature and the shaft. The goosenecks are tapered for limited effect of the attraction in the first part of the movement of the armature and increased effect later for a purpose that will appear later on.

The shaft d carries the curved contact-plate h by means of arms i, fixed loosely on the shaft, across the face of which plate is an insulating-strip j. Said plate is in electrical connection with the electromagnet by the arm k, having a curved end, and the contact-spring l, bearing on said curved end and connected with the magnet-wire m. An insulating-piece n is fixed in the curved end of arm h to break the electrical connection in certain cases hereinafter stated.

One of the arms i has a stud o projecting laterally from one side for coaction with a rigid arm p of the shaft d, to shift contact-plate h when the wires are crossed, but having no effect thereon when the apparatus is in normal working order.

The wires 1, 2, 3, and 4, which are to be understood as communicating with as many different sections or systems of gas-burners to be lighted, are normally in contact with the plate h by the contact-springs q, as represented in the drawings, the contact-points being in different radial lines of the axis of said plate respectively.

An arm s of the shaft d connects with the piston-rod t of a dash-pot u for a retarder to graduate the movement of the contact-plate h by the armature when subject to the influence of a short circuit, and said shaft d carries a pointer y for indicating by the scale v which one of the section-wires is crossed. A thumb-bit w is arranged on the pointer y for resetting the contact-plate h after displacement by a short circuit.

As represented in the drawings, all the section-wires are normally in electrical connection with the battery z through the electromagnet, but, as in all lighting-wires, the circuit is broken at the burners, so that there is no draft on the battery.

When the usual momentary connection of the circuit is made at a burner for producing the igniting-spark, and a momentary impulse is thereby given to the armature, the slight movement of the armature caused thereby will be spent without effect on the contact-plate h, because of the lost motion between arm p and the stud o, through which said plate can only be moved by said arm, the said movement of the armature being insuf-

ficient to move arm *p* far enough to shift the plate; but in case a short circuit occurs the movement of the armature will be continued and with increased force as the larger sections of the goosenecks come under the influence of the cores *f* to enable it to actuate plate *h* by arm *p* taking effect on stud *o*, which will cause said plate *h* to move until the insulating-strip *j* in said plate reaches that one of the contact-springs *q* through which the circuit is closed and breaks said circuit. The said plate will then remain and continue the interruption through that section, the others continuing in electrical connection while the armature returns to normal position, and the pointer *y* will show by the scale *v* the number of the section-line that is crossed. In case of a second cross the armature will move on until the insulating-point in arm *k* comes to contact-spring *l* to break the main current as an extra precaution to protect the battery. It will be seen that the electromagnet will also serve the purpose of the usual spark-coil, which may therefore be dispensed with.

I claim—

1. The combination in an electric gas-lighting circuit, of the electromagnet, oscillating armature, contact-plate for the section-wires mounted loosely on the vibrating axis of the armature, and having the insulating-strip for breaking the circuit through said section-wires, contact devices connecting said plate with the magnet-wire, and the rigid arm of the armature-shaft connected with the contact-plate by a slack-motion device whereby it is inoperative on said plate in the normal use of the lighting apparatus, but causes said plate to interrupt a short circuit substantially as described.

2. The combination in an electric gas-lighting circuit, of the electromagnet, oscillating armature, contact-plate for the section-wires mounted loosely on the vibrating axis of the armature and having the insulating-strip for breaking the circuits through said section-wires, said strip and the contact of the wires arranged to break the contacts of the series successively and interrupt any one while continuing the connection of the other, contact devices connecting said plate with the magnet-wire, and the rigid arm of the armature-shaft connected with the contact-plate by a slack-motion device whereby it is inoperative on said plate in the normal use of the lighting apparatus but causes said plate to interrupt a short circuit substantially as described.

3. The combination in an electric gas-lighting circuit, of the electromagnet, oscillating armature, contact-plate for the section-wires mounted loosely on the vibrating axis of the armature, and having the insulating-strip for breaking the circuits through said section-wires, contact devices connecting said plate with the magnet-wire, insulating-piece in said contact devices, and the rigid arm of the armature-shaft connected with the contact-plate by a slack-motion device whereby it is inoperative on said plate in the normal use of the lighting apparatus, but causes said plate to interrupt a short circuit substantially as described.

4. The combination in an electric gas-lighting circuit, of the electromagnet, oscillating armature, contact-plate for the section-wires mounted loosely on the vibrating axis of the armature, and having the insulating-strip for breaking the circuits through said section-wires, contact devices connecting said plate with the magnet-wire, the rigid arm of the armature-shaft connected with the contact-plate by the slack-motion device, whereby it is inoperative on said plate in the normal use of the lighting apparatus, but causes said plate to interrupt a short circuit, and the dash-pot connected with the said oscillating axis of the armature substantially as described.

5. The combination in an electric gas-lighting circuit, of the electromagnet, oscillating armature having the taper gooseneck-terminals, contact-plate for the section-wires mounted loosely on the vibrating armature-shaft and having the insulating-strip for breaking the circuits through said section-wires, contact devices connecting said plate with the magnet-wire, and the rigid arm of the armature-shaft connected with the contact-plate by a slack-motion device whereby it is inoperative on said plate in the normal use of the lighting apparatus, but causes said plate to interrupt a short circuit substantially as described.

Signed at New York city, in the county and State of New York, this 23d day of April, A. D. 1896.

CHARLES W. DE MOTT.

Witnesses:
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