

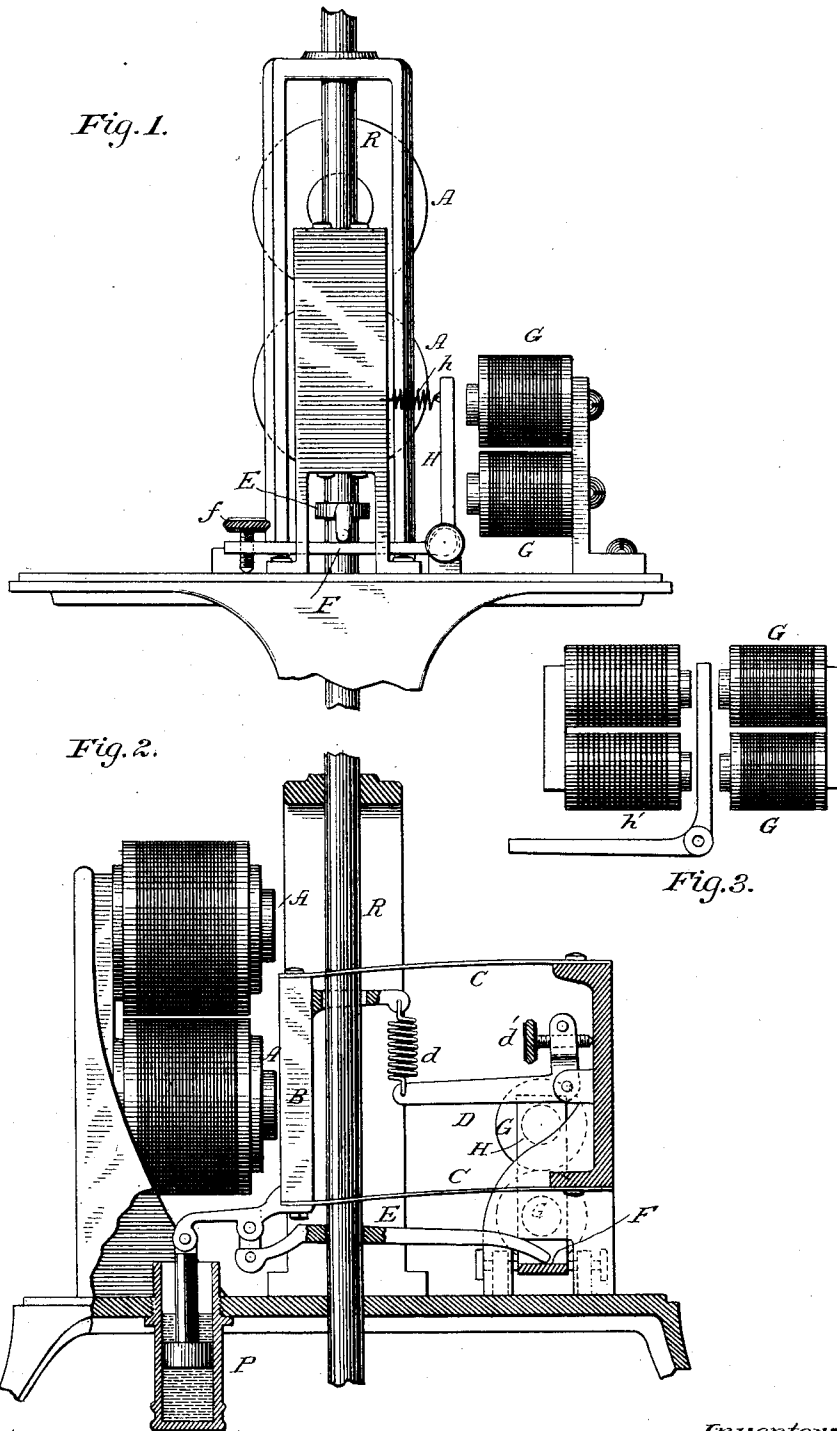
(No Model.)

L. E. CURTIS & E. WESTON.

ELECTRIC LAMP.

No. 255,148.

Patented Mar. 21, 1882.



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UNITED STATES PATENT OFFICE.

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ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 255,148, dated March 21, 1882.

Application filed November 11, 1881. (No model.)

To all whom it may concern:

Be it known that we, LEONARD E. CURTIS and EDWARD WESTON, residing respectively in the cities of New York, county and State of New York, and Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

In another application of even date hereunto we have shown and described an apparatus for use in combination with the feed regulating or controlling mechanism of electric lamps, for the purpose of releasing the carbon-carrier from the influence of the said feed mechanism and allowing it to fall upon the opposed electrode when for any reason the arc shall have been interrupted or unduly elongated. By this means the arc is re-established without that delay which might otherwise be fatal to the coils of fine wire which compose the shunt, and through which lies the only path for the current when the arc is interrupted.

In an electric lamp wherein a clutch is employed in conjunction with a carbon-carrier having a smooth exterior surface the said carrier is entirely freed and allowed to fall instantly upon the occurrence of an interruption in the arc. A releasing device similar to that above mentioned would then be uncalled for in clutch-lamps, were the mere interruption of the arc the only accident likely to occur to the lamp. It happens, however, with these lamps, particularly so when they are run by a very powerful current, that the clutch at times fails to respond to an increase in the length of the arc, so that the carrier remains locked, thus rendering possible the formation of an arc of great length, that endangers the lamp.

In the present case the invention consists in combining with the clutch mechanism of an electric lamp auxiliary devices which are brought into action by any abnormal increase in the resistance of the main circuit—that is to say, the circuit which includes the carbon elec-

trodes—and effect the release of the carrier from its clamp or clutch, should the same stick or the feed-magnets fail to impart to it the movement necessary for effecting the requisite feed. Said devices consist, in the main, of an electro-magnet in a shunt-circuit around the lamp, and an armature adapted to be actuated by the said magnet, and thereby tilt the clutch into a position where the carrier will be free to fall. These elements may be somewhat modified in detail, however, certain others—such as a magnet in the main circuit—being added for the attainment of a more certain action, or by dispensing entirely with the armature, as will more clearly appear hereinafter.

In the accompanying drawings, Figure 1 represents, in side elevation, the operative portions of an electric lamp embodying our invention; Fig. 2, a similar view taken at right angles to the former, and Fig. 3 a modified arrangement of the releasing-magnets.

The character of the lamp may be indefinitely varied. The form shown, however, exemplifies the invention, and is therefore given in illustration thereof.

A A represent the regulating-magnets, each consisting in this case of a core attached to a magnetic cross-piece, a helix of coarse wire included in the main or arc circuit, and a reversely-coiled helix of high resistance, forming part of a shunt about the lamp.

B is an armature arranged in face of the poles of magnet A, and supported by the flat springs C C.

D is a lever, connected with the armature by spring e, the tension of which is regulated by an adjusting-screw, d'.

E is a flat plate or bar, suspended at one end from the armature. Plate E is perforated and constitutes the clutch, the perforation being of such diameter that it grips and raises the carbon-carrier R when tilted. P is a dash-pot, the piston-rod of which connects with the armature and prevents the same from vibrating.

The above comprise the now well-understood feed-controlling mechanism proper.

G G designate an electro-magnet wound

with a wire that forms a part of a shunt of high resistance about the lamp. In face of said magnet is a pivoted bell-crank lever, one arm of which, H, is of soft iron, and serves as an armature. The other arm, F, is of iron or any desired material, and contains at its end a set-screw, *f*, the point of which bears on the base of the case containing the feed mechanism. It serves to determine the lowest position of the arm F. A spring, *h*, is employed to withdraw the armature H away from the poles of magnet G. The free end of plate E rests upon the arm F.

The operation of the devices is as follows, assuming that the lamp is in operation: The armature B is raised and the plate E tilted thereby, so that the carbon carrier R is held fast. Should the armature B now, from any cause, fail to lower in response to a lengthening of the arc, the magnet G begins to increase in power by reason of the increased amount of current directed through its coils. As a result the armature H is drawn over when the attraction has reached a point at which it overcomes the adjusted tension of spring *h*, the arm F is raised, and the plate E brought into a horizontal position. When this occurs the carrier R at once drops downward through the clutch, and the injurious results of an abnormally long arc are obviated.

As stated above, a magnet, *h'*, the coils of which are in the arc-circuit, may be employed in lieu of the spring *h*.

We would also state that the bell-crank lever composed of the two arms H F may be modified in many ways, or even dispensed with entirely, the end of the plate or clutch E being utilized as an armature, or provided with an armature in case it be itself of non-magnetic metal.

Without confining ourselves therefore to the details herein shown, or attempting to illustrate more of the various ways in which the in-

vention may be applied to different forms of lamp,

What we claim as new, and desire to secure by Letters Patent, is—

1. In an electric lamp, the combination, with the feed-controlling magnets, of a carbon-carrier, a clamp or clutch, a closed shunt of high resistance, and an electro-magnet, independent of the feed-controlling magnets, included therein, and mechanism adapted to be operated by the said magnet, and thereby liberate the said carrier from the clutch, as set forth.

2. In an electric lamp, the combination, with the feed-controlling magnets, of a carbon-carrier, a clutch by means of which the carrier is controlled, a shunt-circuit of high resistance, and a magnet, independent of the feed-controlling magnets, included therein, by the action of which the clutch is caused to release the carrier, substantially as set forth.

3. In an electric lamp, the combination, with the feed-regulating mechanism and carbon-carrier controlled thereby, of two electro-magnets independent of the feed-regulating mechanism, one in the main circuit, the other in a shunt about the lamp, and mechanism controlled by the differential action of said magnets for the purpose of releasing the carbon-carrier from the control of the feed mechanism, substantially as set forth.

In testimony whereof we have hereunto signed our names.

LEONARD E. CURTIS.
EDWARD WESTON.

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PARKER W. PAGE,
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