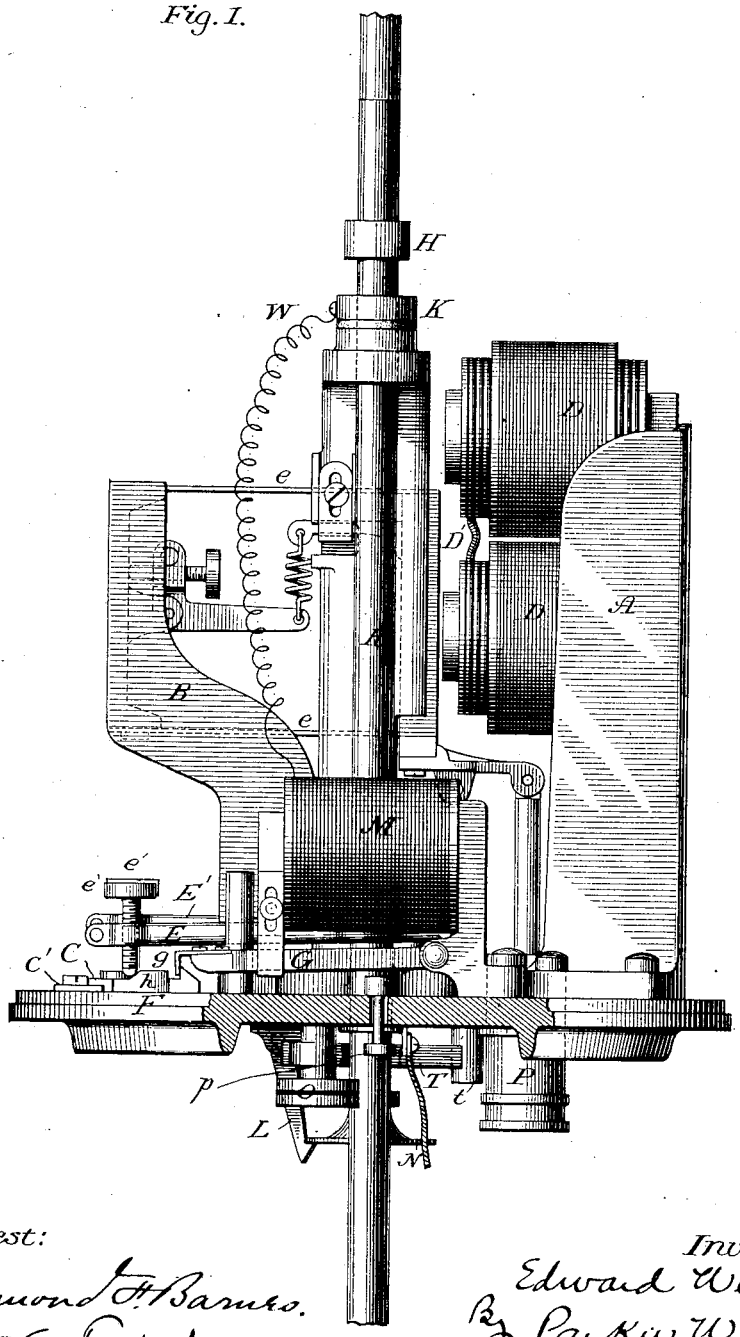
(No Model.) 4 Sheets—Sheet 1.

E. WESTON.

ELECTRIC ARC LAMP.

No. 266,240. Patented Oct. 17, 1882.

Fig. I.



Attest:
Raymond F. Barnes.
W. Frisby

Inventor:
Edward Weston
By Parker W. Page
atty.

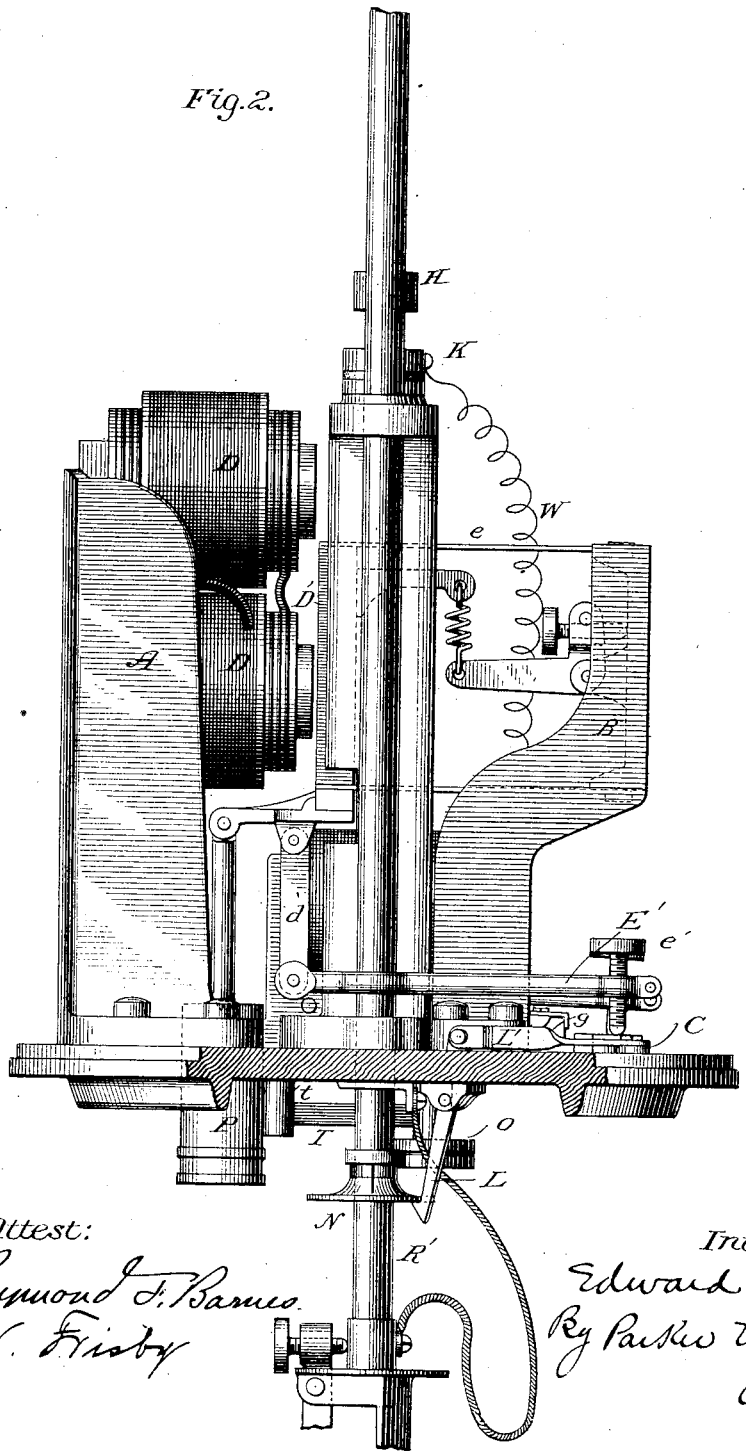
(No Model.) 4 Sheets—Sheet 2.

E. WESTON.

ELECTRIC ARC LAMP.

No. 266,240. Patented Oct. 17, 1882.

Fig. 2.



Attest:
Raymond F. Barnes.
W. Frisby

Inventor:
Edward Weston
By Parker W. Page
atty.

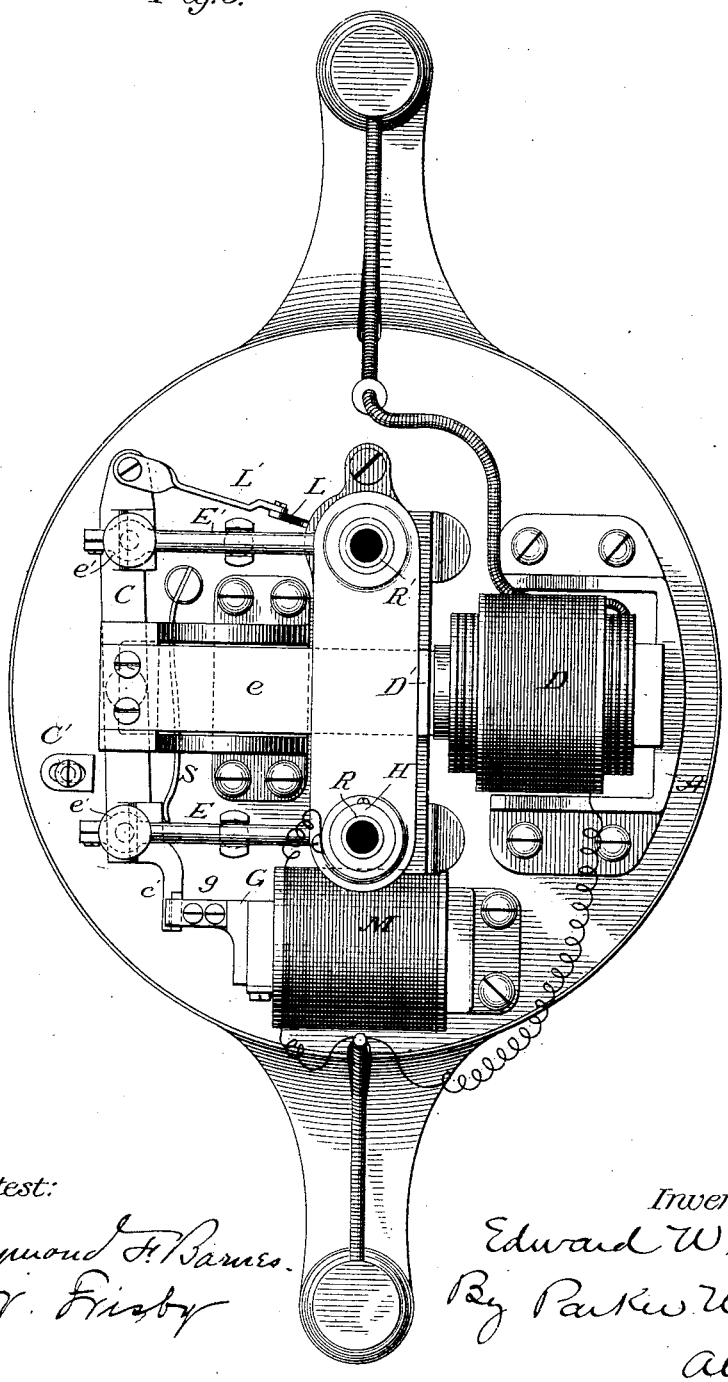
(No Model.) 4 Sheets—Sheet 3.

E. WESTON.

ELECTRIC ARC LAMP.

No. 266,240. Patented Oct. 17, 1882.

Fig. 3.



Attest:

Raymond F. Barnes.

W. Frisby

Inventor:

Edward Weston

By Parker W. Page

Atty.

(No Model.)

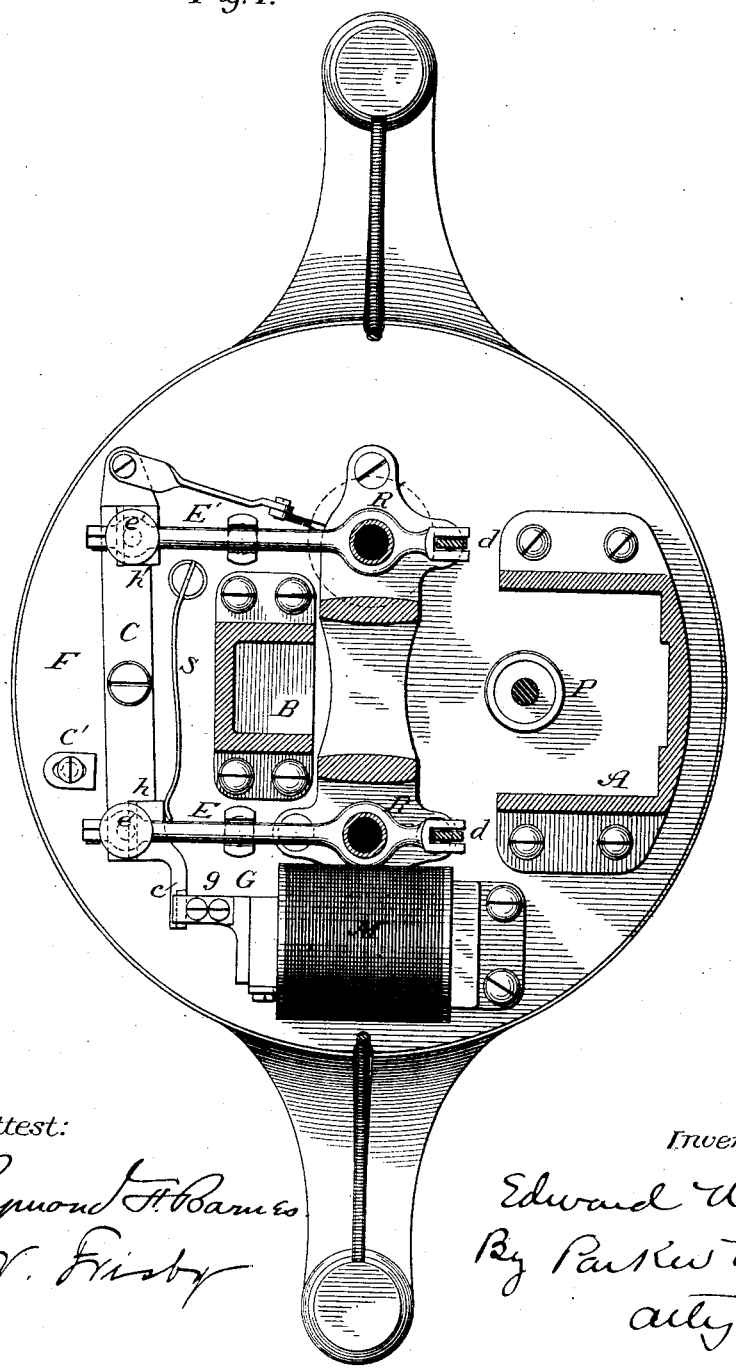
4 Sheets—Sheet 4.

E. WESTON.

ELECTRIC ARC LAMP.

No. 266,240. Patented Oct. 17, 1882.

Fig. 4.



Attest:

Raymond F. Barnes

W. Finsby

Inventor:

Edward Weston

By Parker W. Page

atty.

UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 266,240, dated October 17, 1882.

Application filed July 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, residing in Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Electric-Arc 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 filed by me I have shown and described an electric lamp containing a single set of feed-regulating magnets, two pairs or sets of carbon pencils, and independent feeding devices connected therewith, which by the consumption of the carbons are brought successively under the controlling influence of the aforesaid magnets. The instrumentalities by means of which one set of the feeding devices in the lamp referred to was brought under the control of the magnets after the other had operated for a predetermined time consisted of a pivoted armature-lever which was adapted to be shifted to raise the free end of either of two clamping or clutch levers, and an independent electro-magnet for shifting the said lever. In conjunction with the upper or gravitating carbon-carrier of that set of carbons that was designed to burn last, a weighted catch was used to sustain the weight of the said carrier and its carbon. This catch was tripped by the shifting of the armature-lever, due to the energizing of the independent magnet, so that the second set of carbons was allowed to drop together and establish the arc.

Over these devices my present invention is an improvement, the novel portions of the mechanism composing the same being substantially as follows: In lieu of the pivoted armature-lever used in the previous instance, I employ a pivoted lever, with which a spring is connected or otherwise used, which has a tendency to draw it over in a direction which will throw the set of carbons that have been consumed out of circuit and bring the other set into action. Hinged to this lever is a pivoted catch that is employed to sustain the weight of one carbon-carrier. A pivoted armature constituting or provided with a catch is employed for holding the pivoted lever against the force of the spring, and an electro-magnet in an independent circuit is placed in position to raise the armature, and thereby effect the requisite shifting of current. The present invention therefore differs from that described in my previous case mainly in this respect, that by the above-described or any equivalent means one set of carbons is held positively out of action until the other is consumed to a predetermined point, while in the other case the position alone of the shifting devices maintained the second set of carbons out of contact, from which it was a possible result that when the lamps were knocked or jarred the second set might be permitted to drop together before the first were consumed.

The invention, together with other improvements in the details of construction, will be described by reference to the accompanying drawings, in which—

Figures 1 and 2 are views of the lamp from opposite sides, a portion of the base-plate in each figure being cut away to exhibit the arrangement of the parts constituting the shifting mechanism. Fig. 3 is a plan view of the lamp; and Fig. 4 is a plan view of the base and lifting mechanism, the upper portions of the frame being shown in section.

The lamp mechanism proper of the lamp is substantially the same as that heretofore used by me and described in my application above referred to. It consists of a bi-polar magnet, D D, supported by standard A and wound with two sets of coils in opposite directions, one in the main or lamp circuit, the other in a shunt about the lamp, an armature, D′, in face of said magnets, and supported by flat springs *e*, secured to a standard, B, a tension device for regulating the armature, and a dash-pot, P, for precluding sudden movement or vibration in the moving parts. I would state, however, that this particular form of lamp is given here only in illustration, and that many others may be employed to equal advantage. Connected by links *d* to the armature D′, or to a bar carried thereby, are two clamping plates or bars, E E′, having screw-stops *e′* passing through their free ends. R R′ are the two upper-carbon holders, passing through and controlled by the clamps E E′.

C is a light bar of metal, pivoted to the base F at a point about equidistant from the two carbon-carriers R R′, and to one side of the

same. The bar or lever C is formed with beveled or wedge-shaped enlargements *h h'* near its ends, or at the points where the ends of the clamps E E' rest. A spring, S, of any proper kind, bears upon or is otherwise connected to the bar C, imparting to it a tendency to raise the end of clamp E and lower that of clamp E'.

G is a soft-iron armature pivoted to the standard of a small magnet, M, and carries a catch, *g*, that engages with an arm, *c*, on bar C, when the latter is drawn over against the force of the spring S. Magnet M is in a circuit independent of the lamp or closed shunt-circuit, and which is closed by a ring or collar, H, on one of the carbon-carriers, that in descending comes into contact with an insulated plate, K, to which the wire W, forming the circuit of magnet M, is connected.

L is a pivoted hook or catch, passing through an opening in the base F, and connected by hinged link L' with the bar C. On carbon-carrier R' is a flange or ring, N, with which the catch L engages. An adjustable stop, *c'*, is used to limit the movement of the bar C.

The purpose and mode of operation of the devices thus described are as follows: The lamps being supplied with carbons, the carrier R' is raised and the catch L caused to engage with the flange N. By this means the bar C is brought to the position where it is retained by the engagement of catch or hook *g* with the arm *c*. Under these conditions the free end of clamp E will be in its lowest position, so that the normal movement of the armature D' will cause said clamp to raise, lower, and feed the carbon-carrier R. Clamp E', on the other hand, owing to the fact that its end is raised by the wedge-shaped enlargement *h'*, is not capable of gripping the holder R'. Only the first set of carbons will therefore be in circuit, and they will continue to burn until the stop H comes into contact with plate K. When this occurs magnet M is energized, its armature attracted, and bar C set free, by which the catch L is withdrawn from the flange N, the end of clamp E' lowered, and the second set of carbons brought into action. The lamp is readily "set" from the outside by shifting the projecting catch L to trip the bar C at any time. A short pin, *p*, is held in a hole in base F, directly under the armature G, by heads.

For the purpose of holding the carbon-carrier R in any desired position while renewing or adjusting the carbons, I employ a flat spring-blade or bundle of stiff wires, (designated by T,) which is held by a post, *t*, on the under side of the base F, and arranged to press upon the carrier with sufficient force to prevent it from descending by its own weight. A thumb-screw, O, or any equivalent device formed or provided with a cam, is used to force away the spring T from the carrier R.

It will be seen that my invention, so far as concerns the shifting mechanism, is positive in its action, and will not be affected by the shocks and jars to which lamps of this character are often exposed.

In this application I would state that I do not claim broadly the employment of an independent magnet in a circuit closed by one of the carbon-carriers of a double lamp for the purpose of shifting the current; but,

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

1. In an electric lamp containing two sets of carbons, the combination, with the electro-magnet, of independent feed mechanisms, one for each set of carbons, a pivoted bar adapted to maintain either of said feed mechanisms out of operation, a spring for shifting the same, an electro-magnet independent of the feed-magnets, and an armature therefor, arranged to lock or release the pivoted bar, substantially as and for the purpose set forth.

2. In an electric lamp containing one set of feed-controlling magnets and two sets of carbons, the combination, with the movable armature, of two independently-connected clutch mechanisms, one for each set of carbons, a pivoted bar adapted to raise the free end of either of the said clutch mechanisms, a spring connected with the said bar, and an electro-magnet and pivoted armature for locking and releasing the bar, as and for the purpose set forth.

3. In an electric lamp containing one set of feed-controlling magnets and two sets of carbons, the combination, with the movable armature, of two independently-connected clutch mechanisms, one for each set of carbons, a pivoted bar adapted to maintain either of said clutch mechanisms out of operation, a catch hinged to said bar and arranged for sustaining the carrier of the inactive set of carbons, a spring for shifting the pivoted bar, and an electro-magnet and pivoted armature for locking and releasing the same, substantially as set forth.

4. The combination, with the spring-shifting bar C, of a magnet, M, and armature G, placed above the base F, and a pin, *p*, extending through the said base and arranged for raising the armature, substantially as described.

5. In an electric lamp, the combination, with the carbon-carrier, of a bearing-spring, T, or its equivalent, and a cam for controlling the position of the same, substantially as set forth.

In testimony whereof I have hereunto set my hand this 7th day of July, 1882.

EDWARD WESTON.

Witnesses:

W. FRISBY,

RAYMOND F. BARNES.