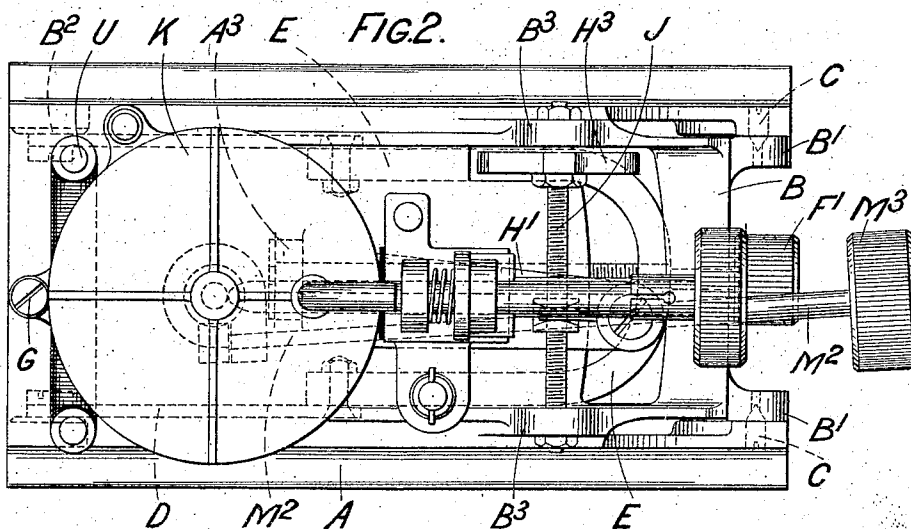
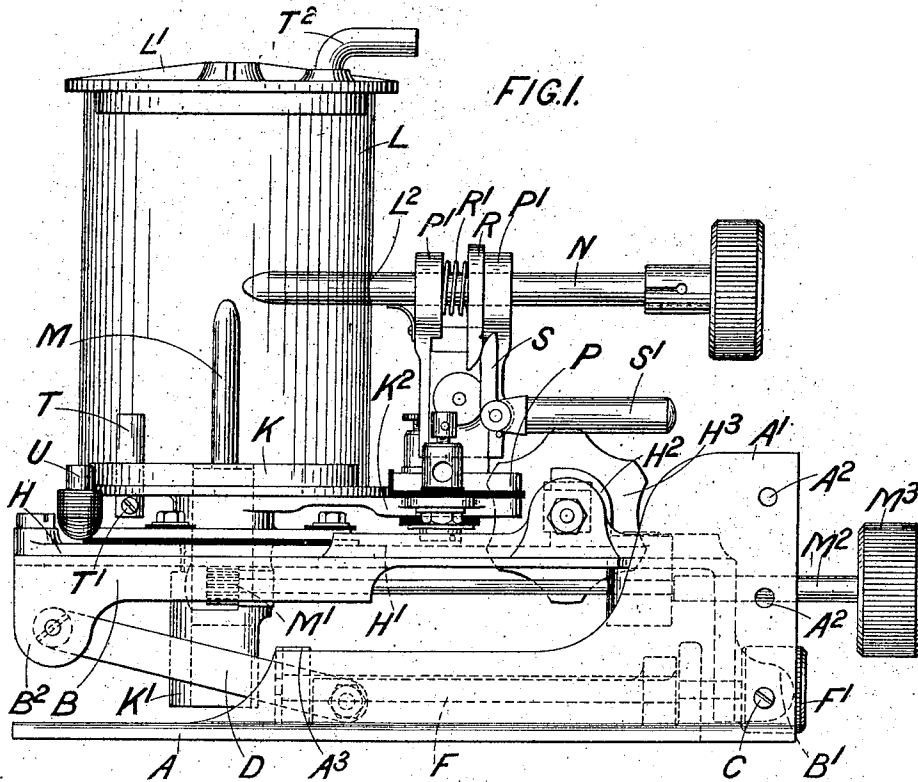


ELECTRIC ARC LAMP.
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1,062,809.

Patented May 27, 1913.



-WITNESSES-

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UNITED STATES PATENT OFFICE.

ARTHUR GEORGE WAY, OF LONDON, ENGLAND.

ELECTRIC-ARC LAMP.

1,062,809.

Specification of Letters Patent.

Patented May 27, 1913.

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To all whom it may concern:

Be it known that I, ARTHUR GEORGE WAY, subject of the King of England, residing at London, in England, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention relates to electric arc lamps of the type used in lanterns, projectors and the like. Such arc lamps hitherto have either been of the open type with carbons inclined at an angle to each other, or of the inclosed type with carbons in a vertical line. Each of these types has disadvantages, the open form consuming the carbons very rapidly and thus, if hand-regulated, requiring constant attention, and the closed form with vertical carbons being unsuitable for use with standard lanterns or apparatus on account of the large amount of head-room required and also causing considerable loss of illumination owing to the crater of the carbons being in the wrong direction. A further disadvantage of the open type is that the arc is entirely unprotected and likely to cause fire.

The present invention embodies various improved constructional features, one being that the arc is practically inclosed although the carbons are at right angles to each other, one of the carbons being substantially horizontal and passing through an opening made to receive it in the inclosing cover or casing of glass or other transparent material. Another feature is the arrangement for feeding this horizontal carbon by means of a ring clutch operated by a hand lever.

The invention also includes other details of construction hereinafter described and shown in the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 is a plan of one construction of lantern or projector arc lamp according to this invention.

Upon a tray or base A adapted to fit into the lantern or projector, is a plate or table B having lugs B¹ which are engaged by pivot screws C passing through screwed holes A² in side plates A¹ forming part of the base A. It will be seen that each portion A¹ is furnished with three holes A² so that the plate or table B can have its position relatively to the base A altered to suit various lanterns or projectors. The front end of the plate B is furnished with lugs B² and to each of these is pivoted a link D, the other ends of the

links being pivotally connected to a yoke E which can be made to slide backward and forward along the base A by the rotation of a screw F furnished with a milled head F¹. The front end of this screw is held in a lug A³ forming part of the base A and it passes through a tapped hole in the yoke E. Thus, by turning the milled head F¹, the yoke E is forced one way or the other along the screw F, the angular position of the links D is altered and the front end of the plate B raised or lowered. This motion is for purposes of adjustment after the initial position for height has been determined by the pivots C.

Pivoted as at G to the plate B is a carrier plate H having an extension H¹ furnished with a lug H² through which passes a cross traverse screw J. This screw is mounted in bearings in lugs B³ on the plate B and is provided with a wheel or disk H³ by means of which it can be turned. This rotary motion of the screw J turns the plate H about its center at G.

Secured to the plate H, but insulated from it, is a circular plate K flanged to receive a cylindrical casing L of glass or other transparent material which is provided at its upper end with a cover L¹. The plate K is furnished with a downwardly extending boss or stem K¹ which passes through a hole in the carrier plate H and is bored to take a sliding carrier or holder for the bottom carbon M. This carrier is not shown in the drawings but it may be of any convenient form and it is provided with a rack operated by a pinion M¹ at the end of a spindle M² having a milled head M³. The rotation of the spindle M² will thus cause the lower carbon M to be raised and lowered in the usual way.

As will be seen from Fig. 1, the upper carbon N is substantially horizontal, that is, at right angles to the lower vertical carbon M. It passes through holes made to receive it in two lugs P¹ in a bracket P carried on, but insulated from an extension K² on the plate K. Between the lugs P¹ is a clutch plate R normally pressed against the face of the rearmost lug P¹ by a spring R¹. This clutch plate is furnished with a hole just large enough to allow the carbon N to slide through it when the clutch plate is practically at right angles to the carbon. Pivoted to the bracket P is a lever S having a handle S¹ and positioned so that it acts upon

a projection or tail on the clutch plate R. Thus, if the handle S¹ be raised, the clutch plate R is first slightly rocked so that its hole binds on the carbon N and is then carried forward taking the carbon with it. Upon the release of the lever handle S¹, the spring R¹ causes the clutch plate R again to assume its normal position relatively to the carbon N and carries it back over the carbon to its position of rest as shown in Fig. 1. By rocking the lever S through its handle S¹, the upper carbon N can thus be fed forward by a series of short steps, the size of the steps depending upon the amount of motion of the lever.

As will be seen by reference to Fig. 1, the carbon N passes through a hole L² in the cylinder L and preferably fits quite closely in that hole so that no appreciable inlet of air takes place there. For projection purposes it is convenient to admit a limited quantity of air and for that purpose an inlet T having a regulating screw T¹ is provided and the cover L¹ is furnished with an outlet T². For photographic and other purposes requiring a strongly actinic light, the inlet T¹ may be closed so that practically no air is admitted within the cylinder L.

In order to control the direction of the arc in the well known way, an electromagnet U is fitted to the carrier plate H and may be connected in series with the carbons. A permanent magnet may be used for this purpose instead of the electromagnet shown.

The arrangement of the hand-operated clutch for feeding the horizontal carbon is of material advantage for lantern and projector work as a considerable saving of length is effected as compared with the space occupied by a rack and pinion.

In smaller lamps the inclosing cylinder L may be placed eccentrically with regard to the lower carbon M in order to prevent undue heating or deposit of carbon dust in the direction of the projection of the arc. Further, in such small forms, the mechanism for raising and lowering the lamp and for turning it slightly, may be simplified. For example, the plate B bearing the lamp might be mounted so as to slide up and down and

turn about a vertical pillar in the manner usual with projection lamps.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In an electric arc lamp, the combination of a relatively stationary upright carbon, a casing surrounding said carbon, a second carbon extending through an aperture in the side wall of the casing, means for supporting the second carbon arranged outside of the casing and comprising two uprights through which the carbon is freely movable, a clutch plate supported on and surrounding the second carbon between said upright, a lever fulcrumed below the second carbon and having an arm adapted to actuate the clutch plate to feed the carbon into the casing, and a coiled spring surrounding the second carbon and engaging the clutch plate and one of the uprights of the support for said carbon to move the clutch plate longitudinally of the carbon.

2. The combination in an apparatus of the character described, of a base, a table pivotally connected with the base, a yoke slidable upon the base, links connecting the yoke and table, means for moving the yoke relative to the base to vary the inclination of the table, a carrier plate pivotally mounted on the table, means for moving the plate, and an inclosed arc lamp mounted on the plate.

3. The combination in an apparatus of the character described, of a base, a table pivotally connected with the base, means for varying the inclination of the table relative to the base, a carrier plate mounted on the table to swing about a vertical axis, means for thus moving said plate, an inclosed arc lamp mounted on the plate, and means mounted on the plate at one side of said lamp and connected to one of the carbons of the lamp for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR GEORGE WAY.

Witnesses:

W. MEACHER,
HERBERT L. GILES.