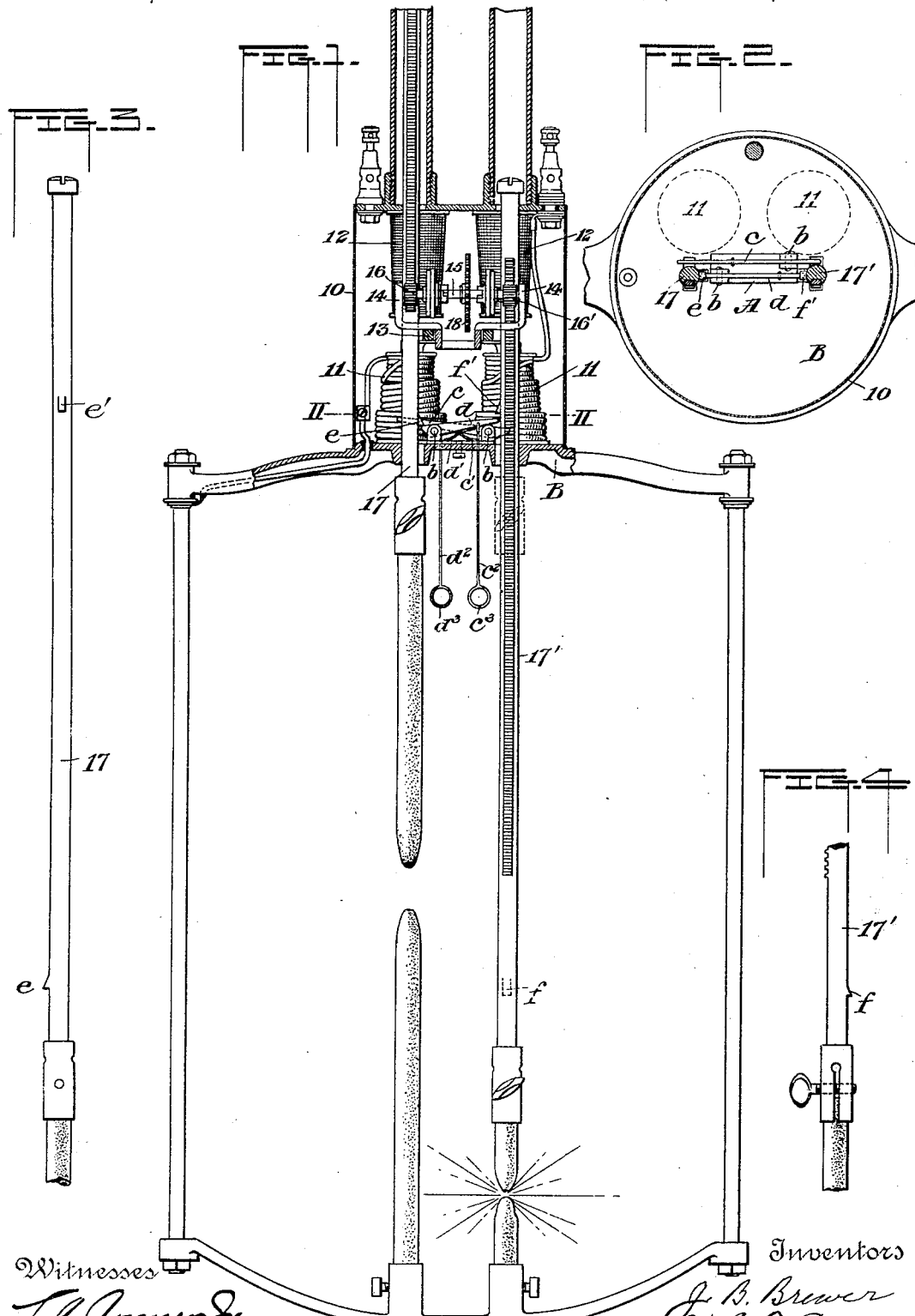


(No Model.)

G. F. EDENS & J. B. BREWER.  
DUPLEX ELECTRIC ARC LAMP.

No. 521,434.

Patented June 12, 1894.



Witnesses  
*L. A. Commons.*  
*Chas. E. Rindon.*

Inventors  
*J. B. Brewer*  
*G. F. Edens*  
By *Buttsworth & Powell*  
*their Attorneys.*

# UNITED STATES PATENT OFFICE.

GEORGE F. EDENS AND JOHN B. BREWER, OF XENIA, OHIO.

## DUPLEX ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 521,434, dated June 12, 1894.

Application filed March 31, 1894. Serial No. 505,838. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE F. EDENS and JOHN B. BREWER, citizens of the United States, residing at Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Duplex Arc Lamps; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to trip-mechanism for duplex arc lamps, and its objects are to provide means whereby either set of carbons may be consumed first instead of being confined to one particular set; and also to so arrange the parts that the feed-rod of either set of carbons will automatically complete the arc in the adjacent set during its downward movement.

A further object is to provide means for controlling the trip-mechanism from without the casing.

The invention consists essentially in providing a trip lever for each feed-rod, the said trip lever engaging with one of its ends a portion of the feed-rod, and having its opposite end arranged in the path of movement of the adjacent feed-rod; also in providing each lever with means arranged without the casing for controlling the movement of said levers.

The invention further consists in certain features of construction and combinations of parts all as will be hereinafter more fully described and then pointed out in the claims.

Referring to the drawings, which form part of this specification, and in which similar figures and letters of reference are used to denote similar parts in each of the several views, Figure 1 is a vertical sectional elevation through the casing of an arc lamp illustrating the invention applied thereto. Fig. 2 is a sectional plan on the line II—II of Fig. 1. Fig. 3 is an elevation of one of the carbon feed-rods; and Fig. 4 is a fragmentary view of the adjacent feed-rod.

In the drawings we have shown our invention as applied to a well-known lamp with part of its mechanism for allowing the carbon feed-rods to move downwardly. In this lamp 10 is a closed casing in which are arranged the direct magnets 11 and the shunt

magnets 12, which control the movement of the armature-lever 13. Upon the armature-lever is pivotally connected a bracket 14 which has journaled therein a shaft 15, carrying pinions 16 and 16', loosely mounted thereon, which engage the racks of the carbon feed-rods 16 and 17 respectively. These pinions have a pawl and ratchet connection with the shaft 15, which allows one to be rotated independently of the other or to be stationary when the other is rotated. The gear wheel 18 of the shaft 15 is in mesh with a train of gearing, not illustrated, carried by the armature-lever which has located above same a detent for preventing movement of the train when in engagement therewith. When there is a sufficient variation of the arc the armature is acted upon by the magnets and the train of gearing will be released from the detent and the shaft 15, by its train of gearing, will rotate, thereby allowing the feed-rod to move downwardly.

A, is a bracket secured to the base plate B of the casing 10, the said bracket having uprights or studs *b, b*, arranged adjacent to the carbon feed-rods. Pivotaly connected to these uprights are the trip-levers *c* and *d*, each having a short arm and a long arm; the said short arms adapted to engage a portion of the adjacent carbon feed-rod, while their long arms extend in the path of movement of the opposite feed-rod, the long arms of said trip-levers being normally pressed upwardly by springs *c'* and *d'* secured to the bracket A. The feed-rods 17 and 17' have projections *e* and *f*, respectively, near the lower portion thereof, which engage the short arms of the trip levers *d* and *c* by which said feed-rods are held in a raised position. The feed-rods are further provided at their upper portions with projections *e'* and *f'* which engage the ends of the longer portions of the trip-levers *d* and *c*, respectively, as will presently appear. To the longer part of each trip-lever is connected a rod *d<sup>2</sup>* and *c<sup>2</sup>*, or its equivalent, which pass through the base plate B of the casing 10, each rod having a handle or ring *d<sup>3</sup>*, *c<sup>3</sup>*, respectively, attached to the end thereof, so that either lever may be tilted upon its pivot from without the casing.

It will be seen by referring to Fig. 1, that by a slight further movement of the feed-

rod 17' the projection *f'* located thereon, will engage the long arm of the lever *d* and press same downwardly, releasing its short arm from engagement with the projection *e* of the feed-rod 17, thereby allowing the arc to be completed through that set of carbons. These carbons will be only partly consumed after an all-night run, so that instead of transferring them to the other holder or replacing them by new ones, it will be only necessary to trim these carbons and raise the opposite feed-rod to be held by the trip-lever *d*, and then replace those which have been consumed by new carbons. The partly consumed set may then be placed in circuit and on its further downward movement the trip projection *e'* of the feed-rod 17 will engage the long arm of the lever *c*, disengaging the short arm from the projection *f* of the feed-rod 17', thus releasing same and completing the arc through this set of carbons. Should it be necessary at any time to place either set of carbons in circuit this may be readily done by means of the connections *d*<sup>2</sup> and *c*<sup>2</sup> connected to said lever, or either set of carbons may be held in a raised position by its trip levers for trimming said carbons.

It is obvious that we may use our invention on other construction of lamps whether two or more sets of carbons are used, and that the particular arrangement or construction of the parts may be varied without departing from the spirit of our invention. The bracket A may be dispensed with, if desired, and the uprights or studs *b, b* arranged directly upon the base plate B.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a duplex arc lamp the combination with the feed-rods, of a trip-lever for each feed-rod adapted to hold same in a raised position and having a portion thereof arranged in the path of movement of the adjacent feed-rod, the said feed-rods carrying means for engaging a portion of the trip-levers for releasing the adjacent feed-rods, whereby the arc may be completed in either set of carbons by the downward movement of the adjacent feed-rod, substantially as described.

2. In a duplex arc lamp the combination with the feed-rods, of a trip-lever for each rod engaging a portion thereof for holding same in a raised position, and extending in the path of movement of the adjacent feed-rod, the said feed-rods having projections for

engaging a portion of the trip-levers for releasing the adjacent feed-rods, whereby the arc may be automatically completed in either set of carbons by the downward movement of the adjacent feed-rod, substantially as described.

3. In a duplex arc lamp, the combination with the feed-rods, of a spring-pressed trip-lever for each rod one end of which lever engages a projection on said rod for holding same in a raised position, the other end of said lever extending in the path of movement of the adjacent feed-rod, the said feed-rods having projections for engaging a portion of the trip-levers for releasing the adjacent feed-rods, whereby the arc may be completed in either set of carbons by the downward movement of the adjacent feed-rod, substantially as described.

4. In a duplex arc lamp, the combination with the feed-rods, of a trip-lever for each feed-rod adapted to hold same in a raised position and having a portion thereof arranged in the path of movement of the adjacent feed-rod; the said feed-rods carrying means for engaging a portion of the trip-levers for releasing the adjacent feed-rods, whereby the arc may be completed in either set of carbons by the downward movement of the adjacent feed-rod, together with means extending without the casing for disengaging said levers from the feed-rods, substantially as described.

5. In a duplex arc lamp, the combination with the feed-rods, of a spring-pressed trip-lever for each rod, one end of which lever engages a projection on said rod for holding same in a raised position, the other end of said lever extending in the path of movement of the adjacent feed-rod; the said feed-rods having projections for engaging a portion of the trip-levers for releasing the adjacent feed-rods, whereby the arc may be completed in either set of carbons by the downward movement of the adjacent feed-rod, together with a handle without the casing having a connection with the trip-levers for raising the feed-rods or disengaging said levers from the feed-rods, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE F. EDENS.  
JOHN B. BREWER.

Witnesses:

JAS. M. FLETCHER,  
C. T. FAGAN.