

No. 665,882.

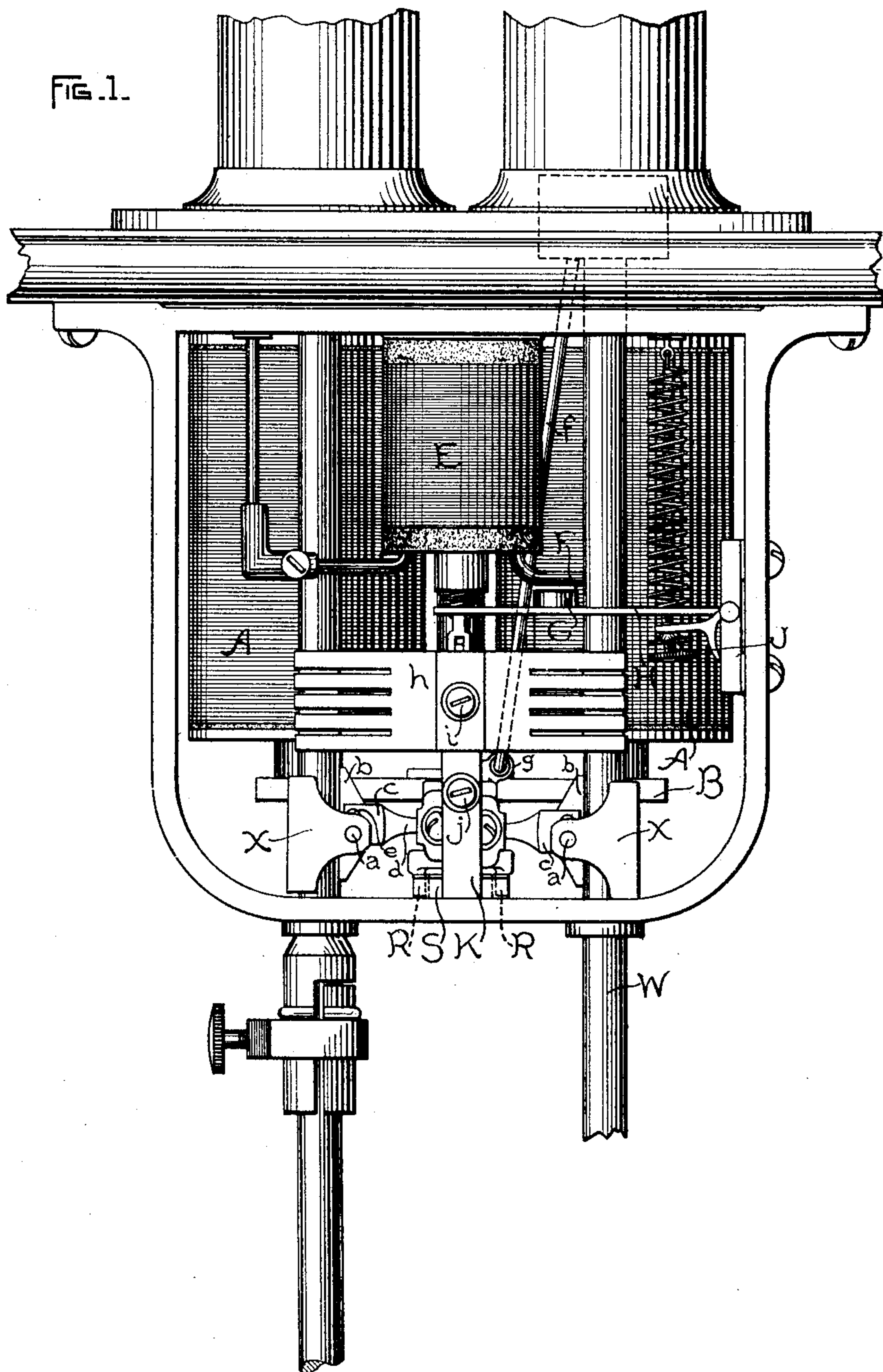
Patented Jan. 15, 1901.

J. A. DALZELL.  
ELECTRIC ARC LAMP.

(Application filed Dec. 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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A. F. Macdonald.

INVENTOR.

James A. Dalzell,

by

Wm. G. Davis

Atty.

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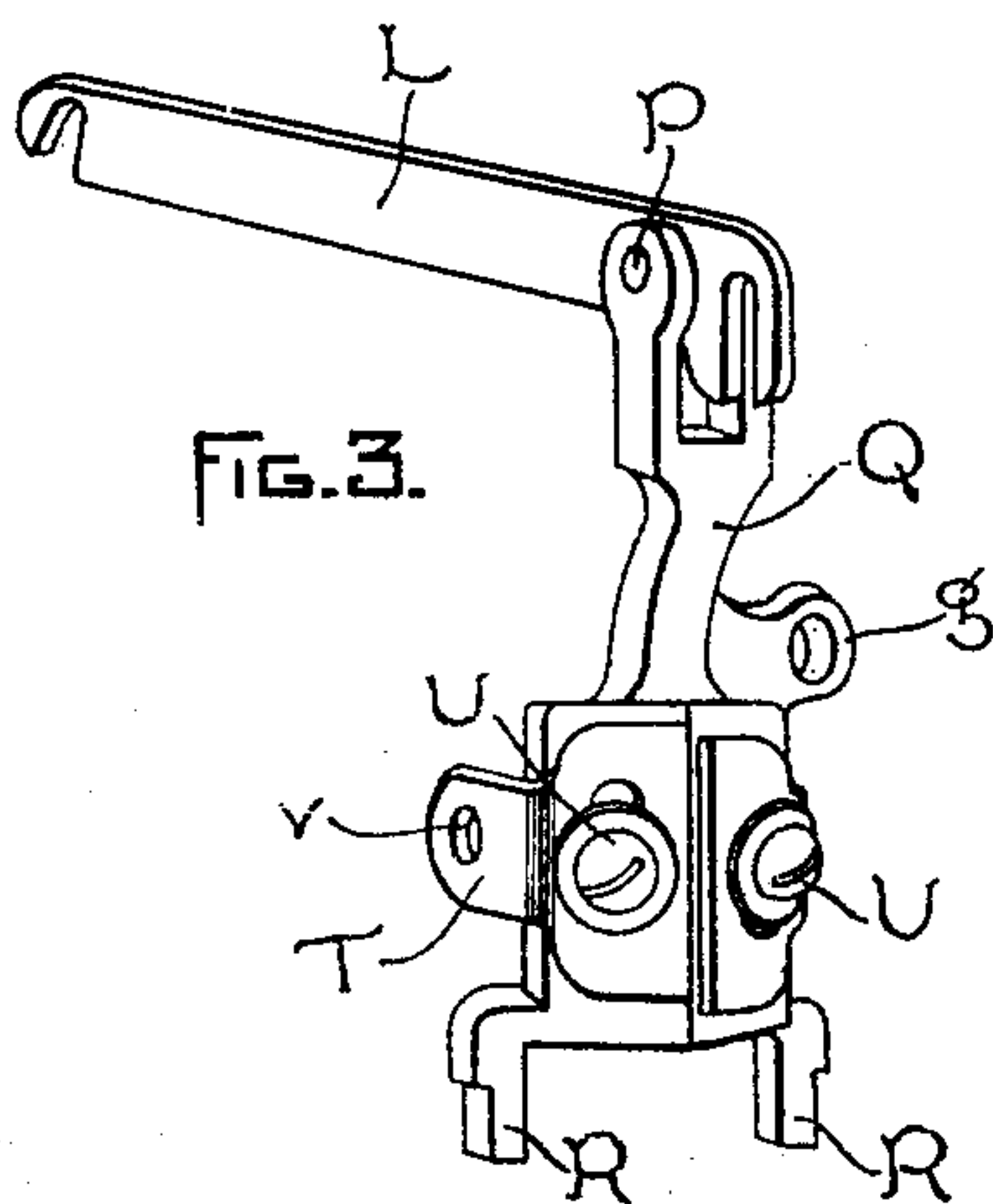
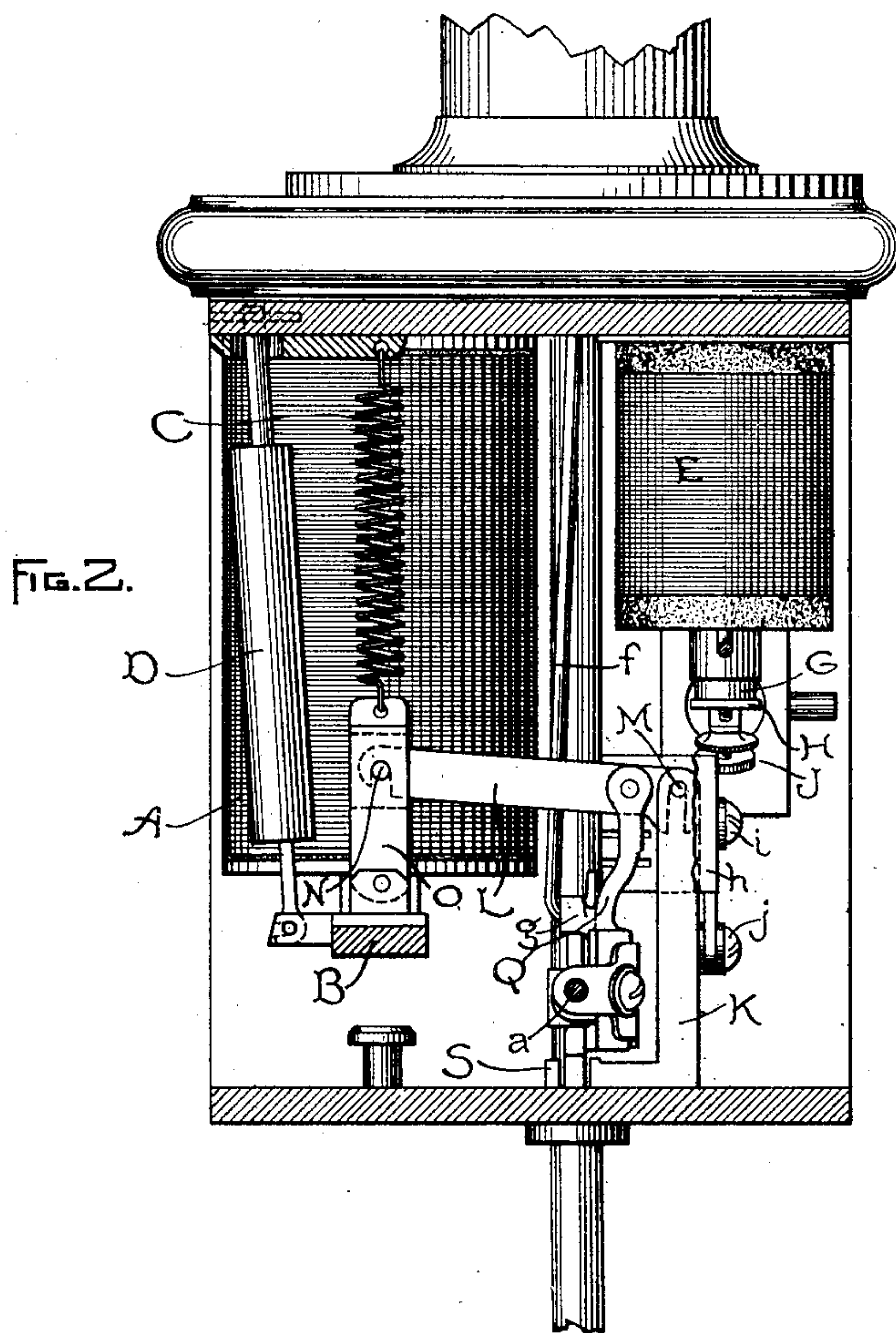
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# UNITED STATES PATENT OFFICE.

JAMES ALLAN DALZELL, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE  
GENERAL ELECTRIC COMPANY, OF NEW YORK.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 665,882, dated January 15, 1901.

Application filed December 7, 1898. Serial No. 698,532. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES ALLAN DALZELL, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have  
5 invented certain new and useful Improvements in Electric-Arc Lamps, (Case No. 780,) of which the following is a specification.

In electric-arc lamps of the well-known Brush type, in which ring-clutches are employed, it is the natural result of long usage  
10 that the carbon-rods should become roughened, dented, and otherwise worn and reduced in size. Under these conditions it has been found that ring-clutches work imperfectly and unsatisfactorily. It has therefore  
15 been customary when the carbon-rod has become worn in the manner described to replace the same by a new rod of uniform and suitable diameter. Such renewals are expensive; and it is the object of the present invention to  
20 avoid the necessity for the same by substituting for the ring-clutch a type of clutch which has been found to work satisfactorily with worn and roughened carbon-rods.

My present invention does not lie in the particular type of clutch employed, but rather  
25 in the means whereby such clutches are adapted for use in old-style lamps, either of the Brush or other type.

My invention will be more readily understood by reference to the accompanying drawings and the following description, while its scope will be more particularly pointed out  
30 in the appended claims.

In the drawings, Figure 1 is a side elevation of a lamp embodying my invention. Fig. 2 is an end elevation of the same, and Fig. 3  
35 a detail view of the clutch-carrying device.

Inasmuch as my invention does not relate  
40 to the particular form of clutch-actuating mechanism, I do not deem it necessary to describe in detail the actuating mechanism which I have illustrated in the drawings, since such mechanism is old and well known  
45 in the art. It will suffice to say that the lamp shown is a differential arc-lamp of the Brush type, in which A A represent the solenoids with differential windings, one winding being in series with the arc and the other  
50 in shunt thereto. The solenoids A A act

upon the U-shaped core B, the weight of which is partially counterbalanced by the spring C. The dash-pot D prevents undue noise and chattering, which would otherwise be caused by movements of the core B. The cut-out E  
55 is used to short-circuit the lamp in case through any accident the length of the arc becomes too great or the carbons become unduly separated. This cut-out has one winding in series with that winding on the differentially-wound solenoid which is in shunt  
60 to the arc. The cut-out has another winding connected across the terminals of the lamp and normally open-circuited, the two terminals which serve to close the circuit being  
65 shown at F and G. The terminal G consists of a contact mounted on the armature H within the influence of the core I of the cut-out. The cut-out is adjusted by adjusting the difference between the core of the cut-out and  
70 its armature H. This function is performed by the adjusting-screw J.

Projecting upward from the base of the lamp-frame and integral therewith is a post  
75 K, having its upper end forked and with a pin M connecting the forked ends. One end of a lever L is fulcrumed on this pin M, while its other end is hooked over a pin N, passing across a slot in a link O. One end of the link  
80 is pivoted to the core B and the other end to one end of the spring C. The object of the link O is to allow the pin N a circular motion about the fulcrum of the lever L, while at the same time permitting the core B to move  
85 in a straight line.

Pivoted to an intermediate point P in the lever L is the clutch-carrier Q. (Shown best in Fig. 3.) The lower end of the carrier ends in two legs R R, which are movable vertically in recesses formed in the boss S, projecting  
90 up from the bottom of the lamp-frame. The width of the recesses is a little greater than the width of the legs R R and is best shown in Fig. 2, while the depth to which the recesses extend into the boss S is best indicated  
95 by the dotted lines in Fig. 1. The legs R R in their engagement with the recesses in the boss S thus operate as guides for the lower end of the clutch-carrier Q.

The intermediate portion of the carrier Q 100



is provided with two faces placed at an angle to each other of approximately one hundred and twenty degrees. An ear or angle-piece T is secured to each face by means of screws U, passing through elongated openings in the angle-pieces. The projecting ends of the angle-pieces when in position are parallel to each other and are each provided with a hole *v*, drilled therein.

The construction described is such as to allow the angle-pieces T to be adjusted with respect to each other so as to bring the holes V into different horizontal planes. Any other construction which will allow a similar adjustment I consider fully within my invention.

Each carbon-rod W is provided with a clutch. The clutch which I have shown I have found very desirable for the present purpose. It consists of a yoke X, embracing the carbon-rod and having a pivot *a* passing through its free ends and through an opening in the shoe *b*, which forms the other member of the clutch. This opening in the shoe is considerably larger than the diameter of the pin. Also pivoted about the pivot *a* is a fork *c*, having a projecting end or nose *d*. The arms of the fork embrace the shoe *b* and are pivoted thereto by a pin *e*. It will be obvious that a tilting movement of the fork *c* about its pivot *a* will cause the shoe *b* to move either toward or away from the carbon-rod.

The projecting nose *d* of each clutch engages one of the openings *v* of the ears or angle-pieces T. From the foregoing description therefore it will be evident that as the clutch-carrier Q moves up and down it will communicate a rocking motion to the forks *c*, and thus cause the clutches to engage the carbon-rods. The object of adjusting the angle-pieces T so as to bring the holes *v* into different planes is due to cause one of the clutches to engage its carbon-rod before the other as the carbon-carrier Q moves upward. As a consequence as the carbon-rods and their clutches move downward one of the clutches will engage the lower part of the frame of the lamp before the other, and thus release its carbon-rod, allowing the same to feed. One rod will therefore continue to feed to the exclusion of the other until it is finally prevented from doing so by reason of descending so far that the enlarged head on the upper end of the rod (shown in Fig. 1 in dotted lines) rests upon the upper end of the rod *f*, pivoted to the lug *g* on the carrier Q. When this takes place, the remaining carbon-rod will commence to feed.

Contact is made with the carbon-rods by means of the double brush *h*, of phosphor-bronze, so slotted as to present at each end five narrow fingers crosswise to the carbon-rod. This brush is carried on the upper end of a standard *i*, screwed to the post *k* by the screw *j*. A washer separates the standard *i* from the post *k*, and thus allows space for the free movement of the end of the lever L about its pivot M.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an electric-arc lamp, a clutch-carrier having its upper end pivoted to the operating mechanism of the lamp, its lower end movable in a suitable guide, and relatively adjustable perforated ears fastened to said carrier.

2. In an electric-arc lamp, the combination of a pivoted clutch-carrier having its lower end movable in a suitable guide, relatively adjustable perforated ears fastened to said carrier, carbon-feeding rods, a clutch engaging each rod, and a nose on each clutch engaging the perforation of one of said ears.

3. In an electric-arc lamp, the combination of a pivoted clutch-carrier, relatively adjustable perforated ears fastened to said carrier, carbon-feeding rods, a clutch engaging each rod, and a nose on each clutch engaging the perforation of one of said ears.

4. In an electric-arc lamp, the combination of a clutch-carrier, perforated ears adjustably fastened to said carrier, carbon-feeding rods, a clutch engaging each rod, and a nose on each clutch engaging the perforation of one of said ears.

5. In an electric-arc lamp, the combination of the lamp-frame, a post carried thereby, a lever fulcrumed at one end on the post and having the other end in operative relation to the core of the solenoid, a clutch-carrier pivoted to an intermediate point in said lever and having perforated ears fastened thereto and adjustable longitudinally thereof.

6. In an electric-arc lamp, the combination of a lever, a clutch-carrier pivoted to said lever and having its lower end movable in guides, and perforated ears adjustably fastened to said carrier.

7. As an article of manufacture a clutch-carrier consisting of a body part having one end forked, a guide in the other end and perforated ears adjustably fastened to said body part.

8. As an article of manufacture a clutch-carrier provided at one end with means for pivoting the same to the actuating mechanism of an arc-lamp, a guide on the other end of said carrier and perforated ears adjustably fastened to said carrier.

9. As an article of manufacture a clutch-carrier having one end forked, guides on the other end, and perforated ears removably fastened to the carrier between its ends and adjustable relatively to each other.

10. As an article of manufacture the combination of a lever, a clutch-carrier pivoted at one end to said lever and at the other end provided with guides, and perforated ears removably fastened to said carrier and adjustable relatively to each other.

In testimony whereof I have hereunto set my hand this 5th day of December, 1898.

JAMES ALLAN DALZELL.

Witnesses:

IRVING R. PRENTISS,  
DUGALD MCKILLOP.