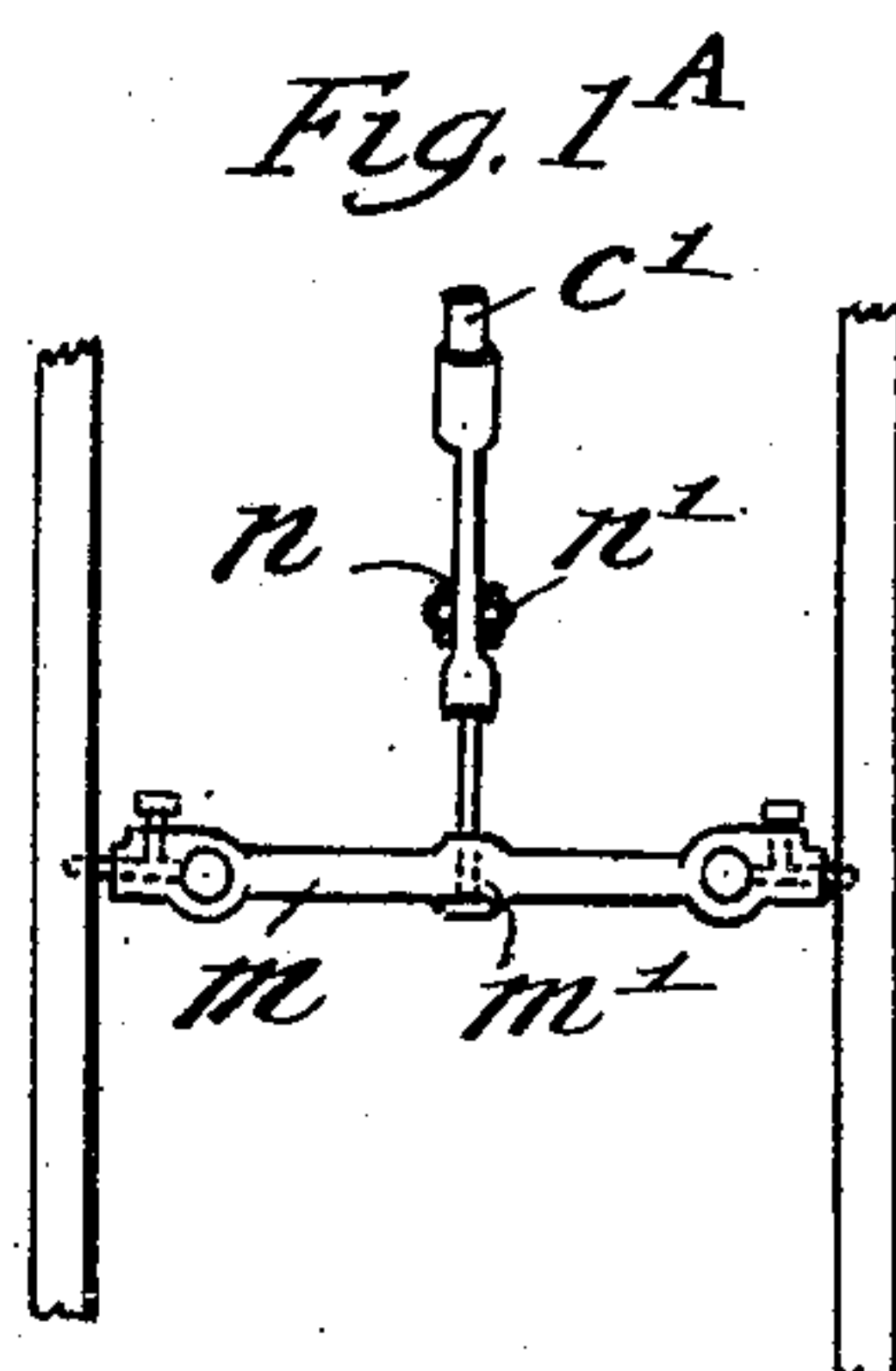


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2 SHEETS—SHEET 1.



Edward S. White

Chas. Kesler

*Inventor*  
*James Brockie*

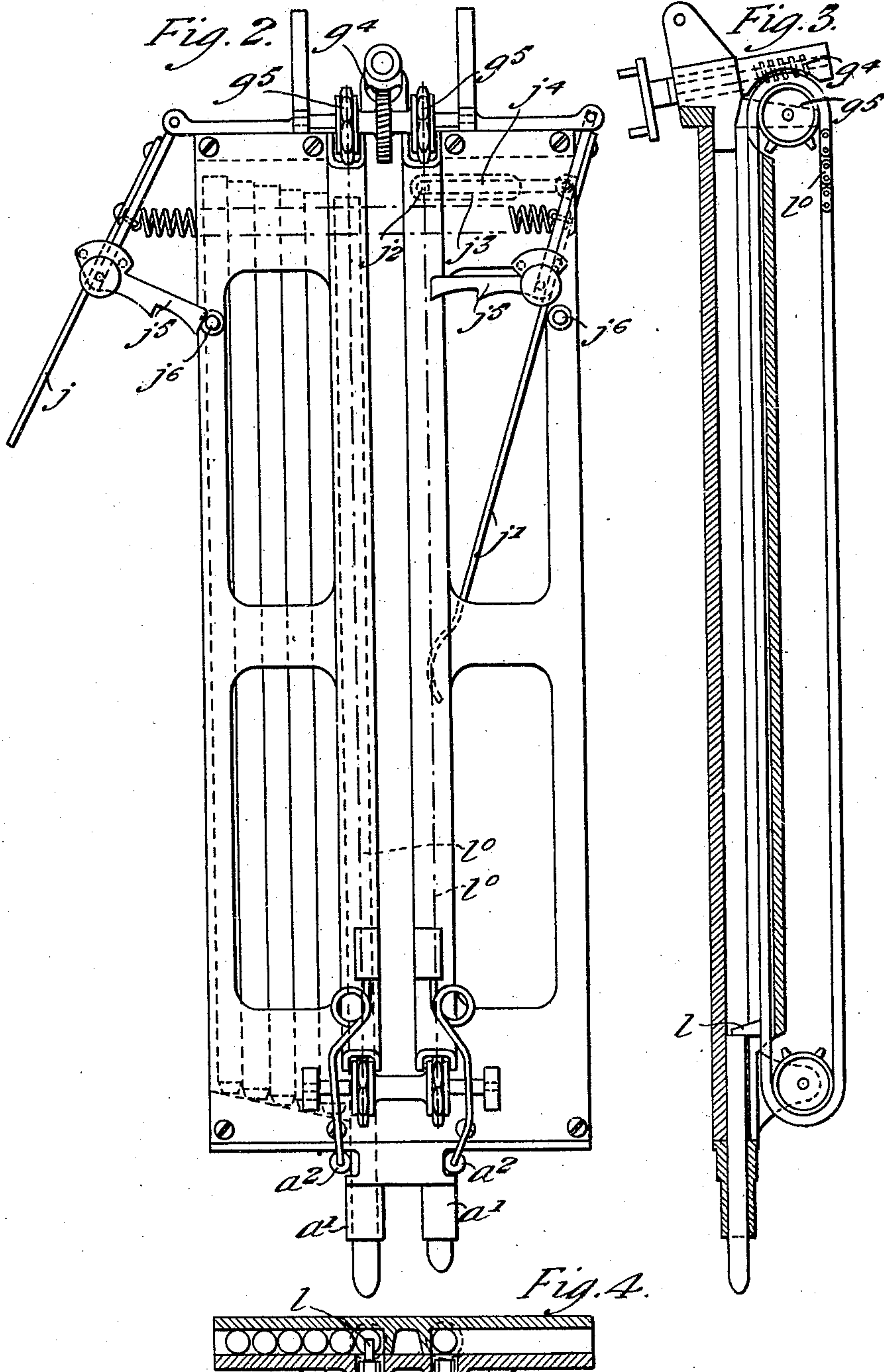
By James L. Norris, Jr.  
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J. BROCKIE.  
MAGAZINE ELECTRIC ARC LAMP.  
APPLICATION FILED JULY 22, 1910.

990,103.

Patented Apr. 18, 1911.

2 SHEETS-SHEET 2.



Witnesses:

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Fig. 4.

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# UNITED STATES PATENT OFFICE.

JAMES BROCKIE, OF FOREST HILL, ENGLAND.

MAGAZINE ELECTRIC-ARC LAMP.

990,103.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed July 22, 1910. Serial No. 573,264.

*To all whom it may concern:*

Be it known that I, JAMES BROCKIE, a subject of the King of Great Britain, residing at 41 London road, Forest Hill, in the county of London, England, electrical engineer, have invented certain new and useful Improvements in Magazine Electric-Arc Lamps, of which the following is a specification.

This invention relates to magazine flame arc lamps and consists in certain improvements having for their main objects to render the regulation of such lamps very accurate and sensitive by simple means and to improve the construction of the magazines and carbon feeding device.

It has been found with lamps of this class that if the magazines are linked directly to the regulating lever, as in the usual practice, the work imposed upon the regulating cores or armature in moving either or both of the somewhat heavy magazines, renders the regulating action sluggish so that the carbon feed gear is neither started nor stopped with the accuracy and promptitude which is desirable. This defect is overcome according to the present invention by so connecting the regulating mechanism with one or both of the magazines that, while the said connection transmits an appreciable relative movement to the carbon holders during part of the stroke of the regulating lever, when the holders have arrived at a certain proximity, any further movement of the regulating lever in the same direction does not produce any sensible change in the distance separating the carbon holders; and therefore, the regulating lever being relieved of the work of actually moving the magazines, any further movement of the lever in the same direction can be and is utilized in starting and stopping the motor mechanism or gearing which imparts or permits the actual progressive feed of the carbons out of the magazine nozzles.

A lamp embodying the present invention is shown in vertical section in Figure 1 of the accompanying drawings; Fig. 1<sup>A</sup> is an elevation of a part of the connecting link and its lower support taken at right angles to the section shown in Fig. 1; and Figs. 2, 3 and 4 are respectively a side elevation, a longitudinal section and a transverse section, drawn

on an enlarged scale, of one of the carbon magazines.

Referring first to Figs. 1 and 1<sup>A</sup>, one of the carbon magazines *a* is assumed to be stationary, while the other magazine *b* is connected to the lever *c* of the regulating mechanism by a link *c'* which is guided at its lower end by means of a rocking guide bar *m* which is suitably fulcrumed in the casing, the end of the link *c'* sliding in the bore of a central boss *m'* of the guide bar. The link *c'* has a flat part which has a slot *f* cut substantially longitudinally therein, the lower part of this slot being cut in line with the link *c'* while the upper part of the slot is inclined from this direction toward the magazine *b*. A forked bracket *n* attached to the magazine *b* embraces the flat head of the link and a transverse pin *n'* in the jaws of the bracket passes through the slot *f*. During that part of the movement of the regulating mechanism in which the pin *n'* engages the inclined part of the slot *f* the magazines *a*, *b* are moved relatively to each other, while during the remainder of the stroke of the regulator both the magazines are stationary.

To facilitate the filling of the magazines, they are constructed each with two spring arms *j*, *j'* (if double chamber magazines are used) which press or urge the several carbons toward the center, and these spring arms (or one of them, *j'* as shown in Fig. 2) have an additional duty imposed upon them, viz., to stop the rotation of the feed gear as by means of a catch or pin *j*<sup>2</sup> projecting inwardly through a slot *j*<sup>3</sup> from a link *j*<sup>4</sup> attached to the spring arm *j'* near its upper end, which pin, when the last carbon is pushed by the spring arm into position for feeding, slips over the end of the carbon and consequently arrests the feeding mechanism when the next tappet encounters it. In this manner, the tappets *l* which force down the carbons, are always left in a position which will not interfere with the proper placing of the carbons in the magazine, to facilitate which the spring arms are provided with catches *j*<sup>5</sup> which are arranged to rest against stops *j*<sup>6</sup> on the magazine, the catches *j*<sup>5</sup> being extended to the proper position for this purpose when the spring arms *j*, *j'* are retracted to enable the magazines to be charged. Also the arrest of the feed gear by the catch *j*<sup>2</sup>



prevents the continuous and unnecessary running of the feeding motor in the event of the magazines becoming absolutely empty.

The magazines are constructed with two  
5 separate chains  $l^0$ , one for each magazine chamber. Each chain has a link formed with a laterally projecting claw or tappet  $l$ , which tappets pass down slots  $l'$  and project into the magazines and so push down the  
10 carbons in turn when the sprocket-wheels  $g^5$  are driven by the motor.

The two chain-driving sprocket-wheels  $g^5$  are fixed rigidly on one spindle, and this is driven by a worm wheel and a coöperating  
15 worm  $g^4$ , the worms for the two magazines being suitably coupled to a driving spindle  $g^3$  having a ratchet wheel  $g^2$  thereon which latter may be actuated by any suitable motor.

The two tappet chains are so placed on the  
20 sprockets that when the tappet, say on the right hand chain is at the top, the tappet on the other or left hand chain is at the bottom, and as this relation is accurately maintained, the tappets will, as the wheels turn,  
25 feed down one carbon at a time from each chamber alternately.

The nozzles or holders  $a'$ ,  $b'$  at the lower ends of the magazines are each provided, as usual, with spring rollers or blocks, such as  
30  $a^2$ ,  $a^2$ , which press against the burning carbons and make good electrical contact, and also retain the short ends until they are in turn expelled by the new long carbons following, when pushed down in their turn by  
35 the tappet.

The regulating mechanism shown generally in Fig. 1 comprises the usual main and shunt coils  $m$  and  $s$  respectively having the

cores  $c^0$  operating therein, said cores being operatively connected to the rocking lever  $c$  40 to which the link  $c'$  is connected.

I claim as my invention:

1. In magazine flame arc lamps, a connection between regulating mechanism and magazine, comprising a guided link pivotally connected with the regulating lever, a  
45 bracket on the magazine, and a pin and slot connection between the guided link and the bracket, the pin being fixed to one of said members and the slot formed in the other 50 member and the lower portion of the slot being parallel with the direction of movement of the guided link and the upper portion being inclined from said direction toward the magazine with which it coöperates, substan- 55 tially as described.

2. In magazine flame arc lamps, a connection between regulating mechanism and magazine, comprising a guided link pivotally connected with the regulating lever, a  
60 cam slot formed in a suitably shaped part of said link, the lower portion of said slot being in the direction of movement of said link and the upper portion of said slot being inclined from said direction toward the maga- 65 zine with which it coöperates, and a pin attached to said magazine and passing through said cam slot, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of 70 two subscribing witnesses.

JAMES BROCKIE.

Witnesses:

JOSEPH MILLARD,  
WALTER J. SKERTEN.