

(No Model.)

3 Sheets—Sheet 1.

C. E. SCRIBNER.
ELECTRIC ARC LAMP.

No. 467,656

Patented Jan. 26, 1892.

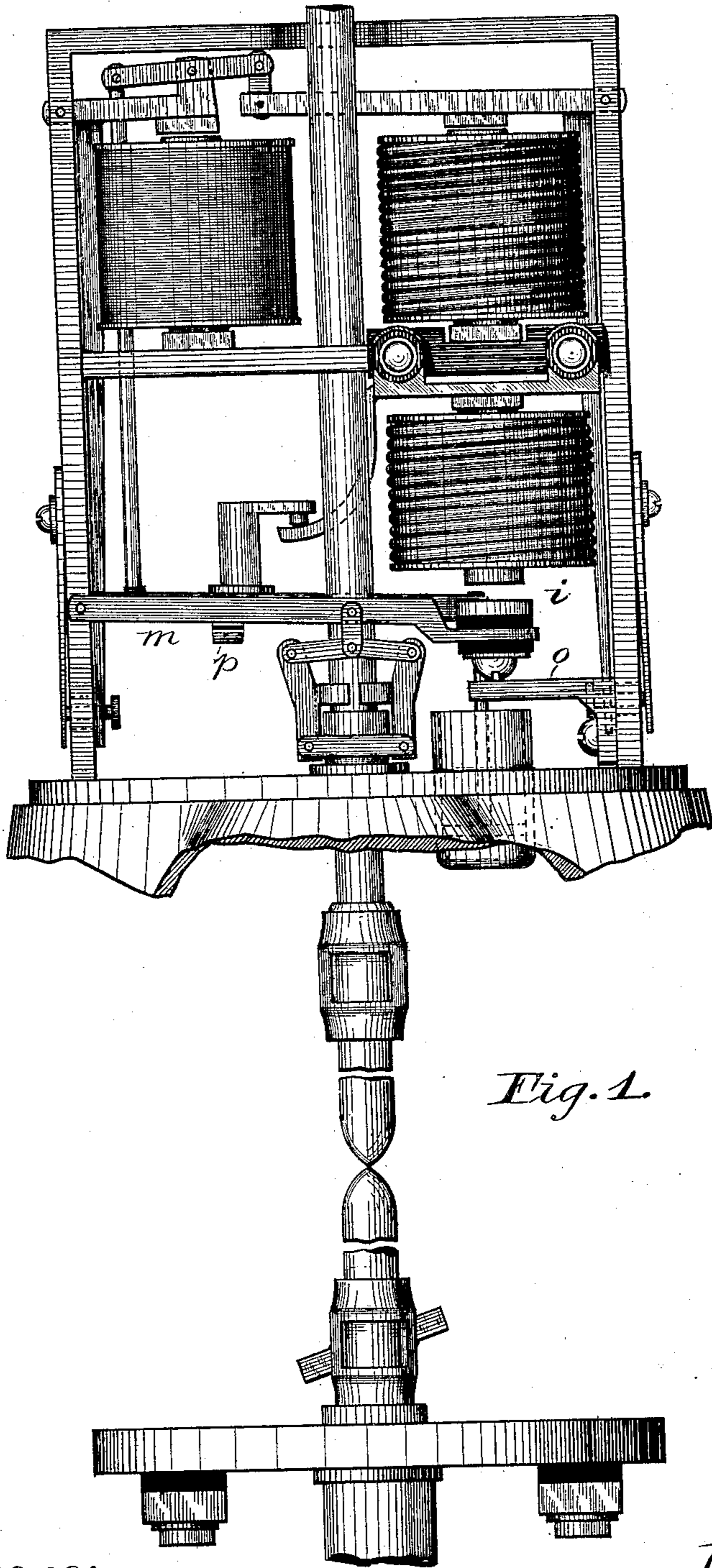


Fig. 1.

Witnesses:

Chas. G. Hawley.
Chas. C. Woodworth.

Inventor:

Charles E. Scribner
By George P. Barton
Attorney.

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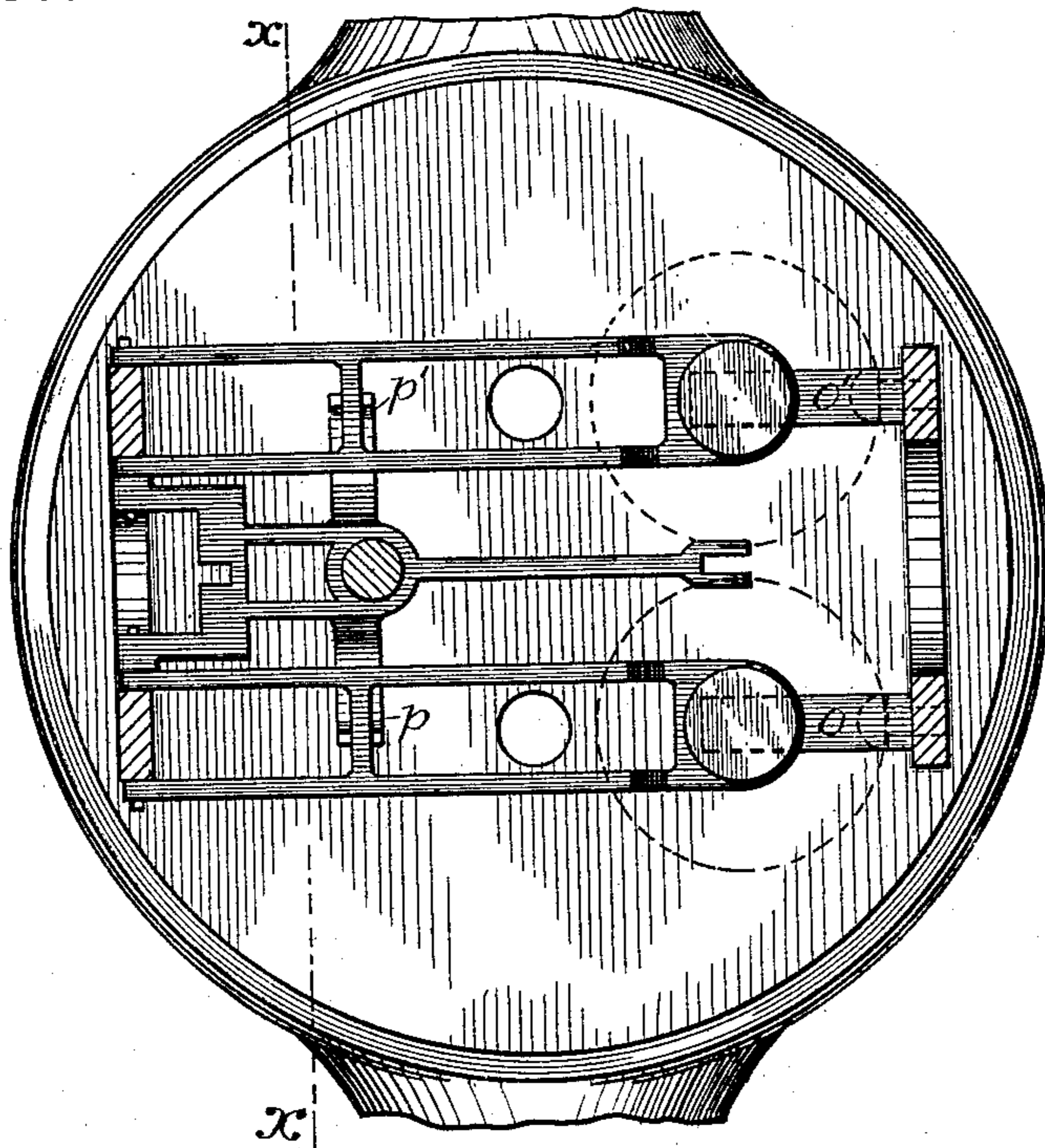


Fig. 2

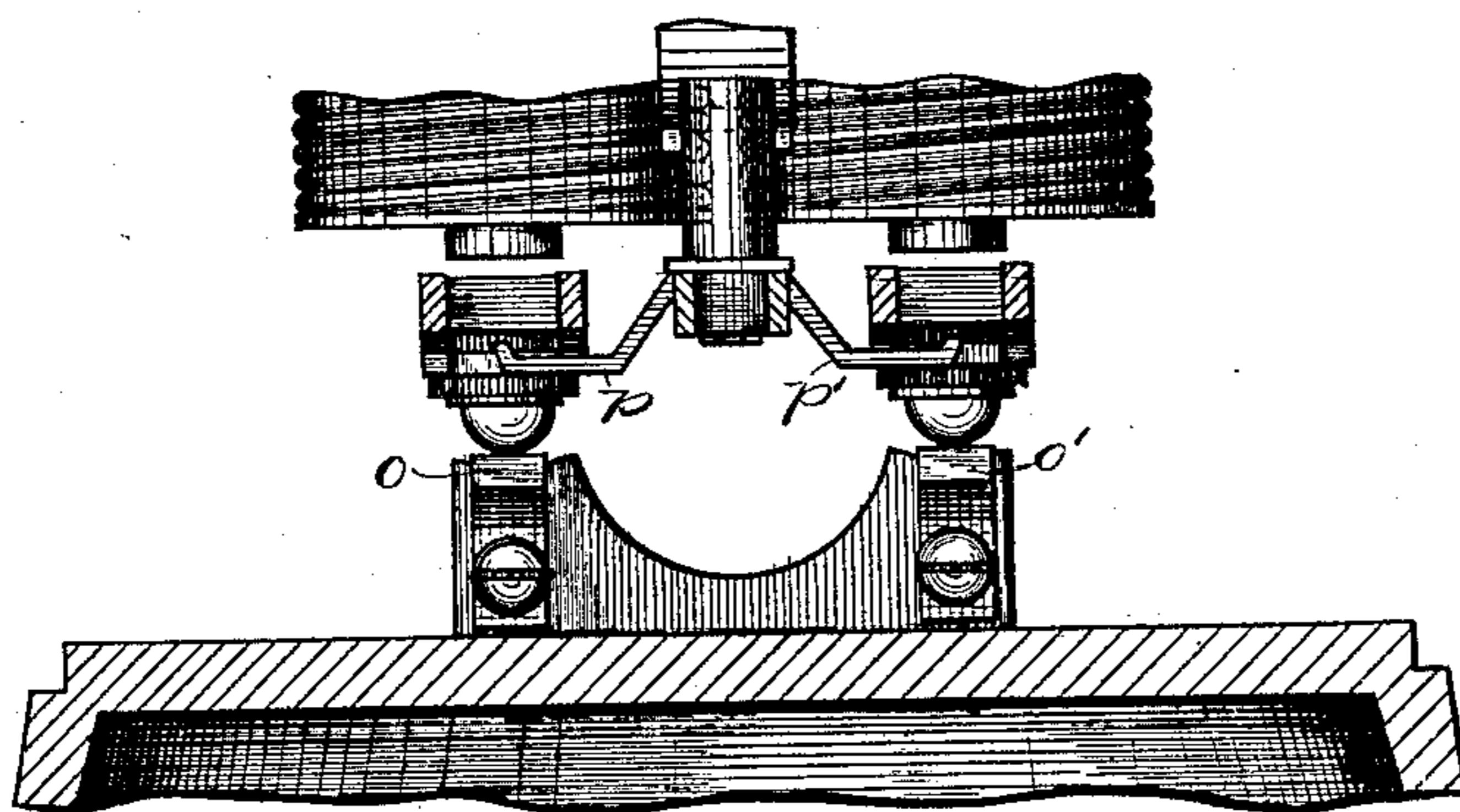


Fig. 3.

Witnesses:

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Inventor:

Charles E. Scribner
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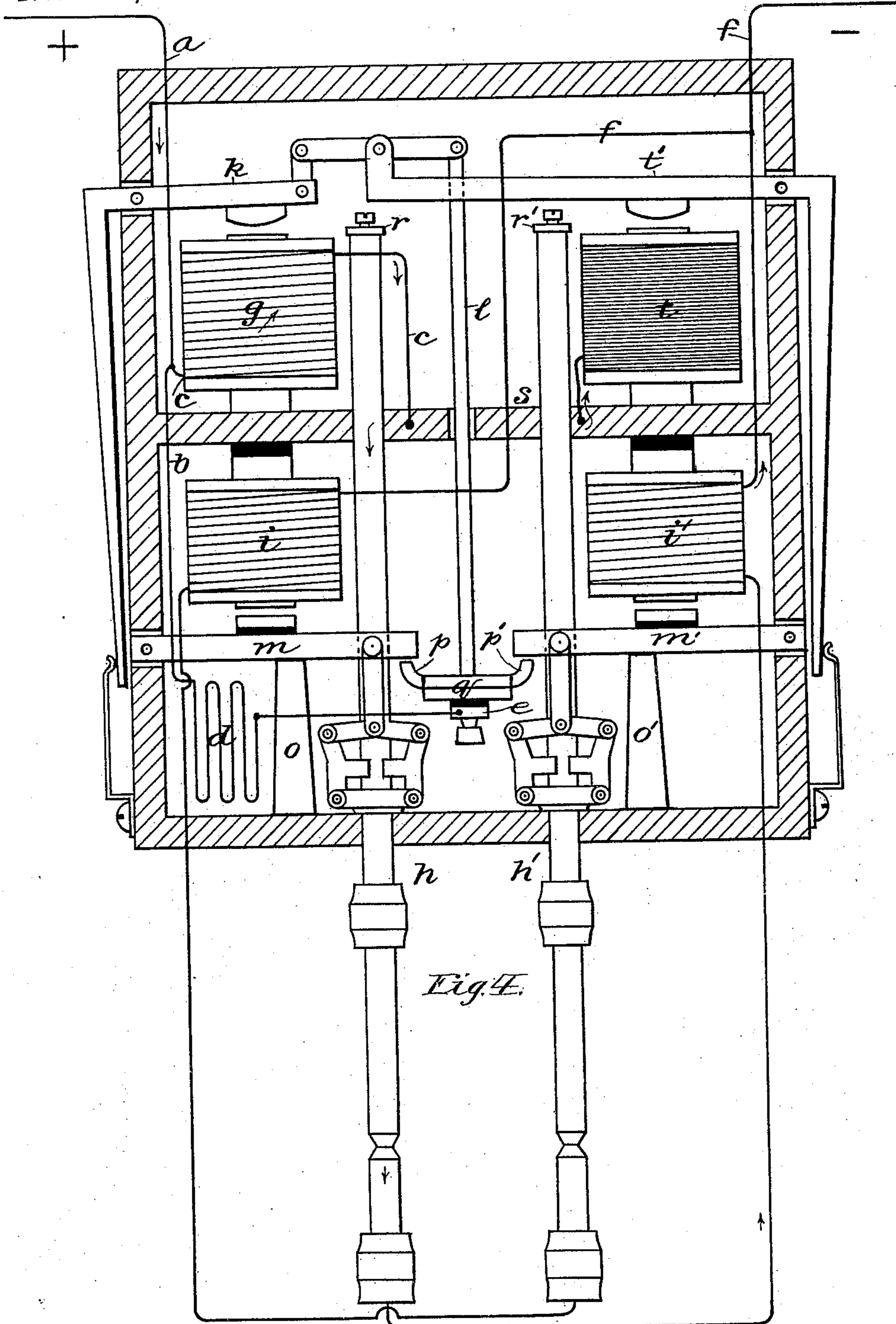
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Chas. C. Woodworth.

Inventor:

Charles E. Scribner

By George P. Barton
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 467,656, dated January 26, 1892.

Application filed July 3, 1888. Serial No. 278,915. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Double-Carbon Arc Lamps, (Case 149,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to arc lamps, but more especially to that class of lamps in which two sets of carbons are employed. When the lamp is trimmed, ready to be brought into circuit, the carbons of the two sets are in contact. On closing the circuit through the lamp to establish the arc the upper carbons of the two sets are lifted and the arc is established and maintained between one of the sets only. When the carbons first lifted are consumed or nearly consumed, the arc is shifted to the other set. Such a lamp is described and claimed in my patent, No. 418,758, (Case 109,) granted January 7, 1890.

My invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a double-carbon arc lamp embodying my invention. Fig. 2 is a plan view upon line $x x$ of Fig. 1, the dash-pot, clutches, and rods being omitted. Fig. 3 is a view showing the positions of the brackets or supports, the clutch-levers, the yoke or lifting-lever, and the retaining-magnets when the lamp is trimmed before the arc is established. Fig. 4 is a diagrammatic view illustrative of a double-carbon arc lamp embodying my invention, the clutch-levers being shown each supported a short distance above the arms or lugs of the lifting-lever.

Like parts are indicated by similar letters of reference throughout the different figures.

As illustrated in Fig. 4, the current enters the lamp by the wire marked a , and there divides itself between two circuits b and c . One circuit b is downward through resistance d , and then passes through the contact or cut-out e , and thence to the wire f leading out. The other circuit or branch c extends through the lifting-magnets g to the frame of the lamp.

After passing to the frame of the lamp the

current divides itself between the two carbon-rods h and h' , the side of the multiple circuit, including rod h' , extending through retaining-magnet i , and thence connecting with the wire f leading out. The other side of the multiple circuit, which includes the rod h , extends through the retaining-magnet i' and thence passes to wire f and out. When the circuit is first closed through the lamp, the resistance d causes enough current to pass through lifting-magnets g to attract its armature k , thus raising rod l sufficiently to open the cut-out e . It will be observed that the clutch-levers $m m'$ are supported by the pillars or brackets $o o'$ a short distance above the lugs $p p'$ of the yoke or lifting-lever q , which is raised with the rod l . Therefore lifting-lever q is raised a short distance before the lugs $p p'$ come against the levers $m m'$, thus causing the entire current to pass through magnets g before the weight of the said clutch-levers $m m'$ comes upon the lifting-lever.

In my lamp as previously constructed no supports or brackets $o o'$ were provided, and hence the lifting-lever q on starting was loaded with the weight of clutch-levers $m m'$ and the clutches, rods, and carbons carried thereby. On this account the lamp, as previously constructed, sometimes failed to start, the current shunted through magnets g not being sufficient to cause said electro-magnets to move their armature k when loaded with the weight of the clutch-levers, the clutches, rods, and carbons supported thereby. By suspending the levers $m m'$, as shown, a short distance above the lugs $p p'$ the lifting-lever q is unobstructed when it first begins to rise. Its first movement, however, opens the cut-out e , thus bringing the whole current through the electro-magnets g . The electro-magnets g then are sufficiently energized to attract the armature k and lift the rod l when carrying the weight of clutch-levers $m m'$. After one set of carbons is consumed the arc shifts to the other set of carbons.

The operation of the lamp in shifting is briefly as follows: The stop r or r' of the rod of the set which first takes the arc finally comes against the frames. This rod can then

descend no farther, and the arc increases in length and resistance until enough current is shunted through the electro-magnet *t* in the shunt of the arc to cause the armature *t'* to descend far enough to close the cut-out *e*. The first arc is extinguished and the retaining-magnet *i* or *i'*, as the case may be, which had been sustaining the clutch-lever of the rod of the idle pair of carbons, is demagnetized. The idle-rod is released and its carbons come together, thus closing the circuit again through the lamp. The circuit being thus closed through the second set of carbons, electro-magnets *g* are energized, as before, to first open the cut-out *e* and then to raise the rod *l*, and with it the lifting-lever *q* and the clutch-levers. The carbons of the second set are thus separated and the current flows through the retaining-magnet included in circuit therewith, so that the retaining-magnet serves to support the clutch-lever of the rod of the consumed set of carbons while the arc of the second set is burning.

I preferably make the supports *o o'* in the form of brackets, as shown more clearly in Figs. 1, 2, and 3. They may, however, be in the form of pillars or studs, as shown in Fig. 4.

I have described my invention as embodied in a double-carbon lamp. It is obvious, however, that the invention would be of utility in a lamp employing only one set of carbons, in which the lifting-magnets were shunted by a circuit containing a resistance and a cut-out, the cut-out being opened by the starting of the lifting mechanism—that is to say, if in a lamp of the form shown one rod, its lever, and

clutch were dispensed with, we should have a single-carbon lamp, and the operation of my invention and its utility would be the same at the instant of starting, as hereinbefore described. I therefore do not limit myself to the construction shown.

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

1. In an electric-arc lamp containing two sets of carbons, the clutch-levers supported a short distance above the lifting-lever and a cut-out carried by said lifting-lever, whereby the lifting-lever may be raised a short distance without being obstructed by the weight of the clutch-levers, substantially as described.

2. The combination, in a double-carbon arc lamp, with the two sets of carbon-rods, their clutches, and clutch-levers, of a lifting device suspended at a short distance below said levers and provided with a cut-out, the electric circuit branched through resistance and said cut-out in one direction and in the other direction through electro-magnets which operate the lifting device, whereby the electro-magnets energized by the current thus diverted by the resistance through them moves the lifting-lever to open the cut-out before the lifting device comes against the clutch-levers.

In witness whereof I hereunto subscribe my name this 31st day of May, A. D. 1888.

CHARLES E. SCRIBNER.

Witnesses:

GEORGE P. BARTON,
CHAS. C. WOODWORTH.