

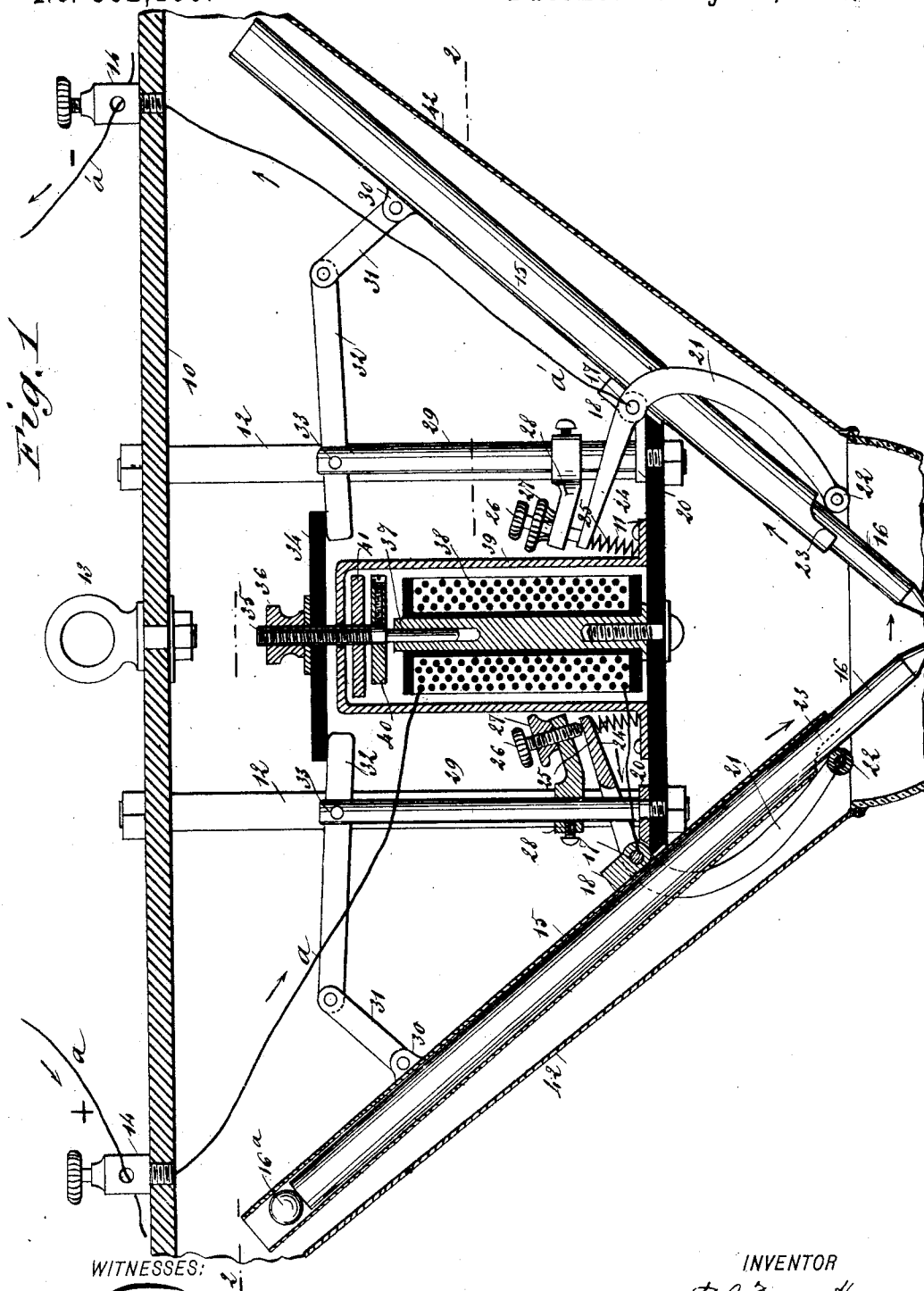
(No Model.)

2 Sheets—Sheet 1.

P. J. BARRETT.
ELECTRIC ARC LAMP.

No. 502,166.

Patented July 25, 1893.



WITNESSES:

C. Naeux
C. Sedgwick

INVENTOR

P. J. Barrett
BY *Munn & Co*
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3

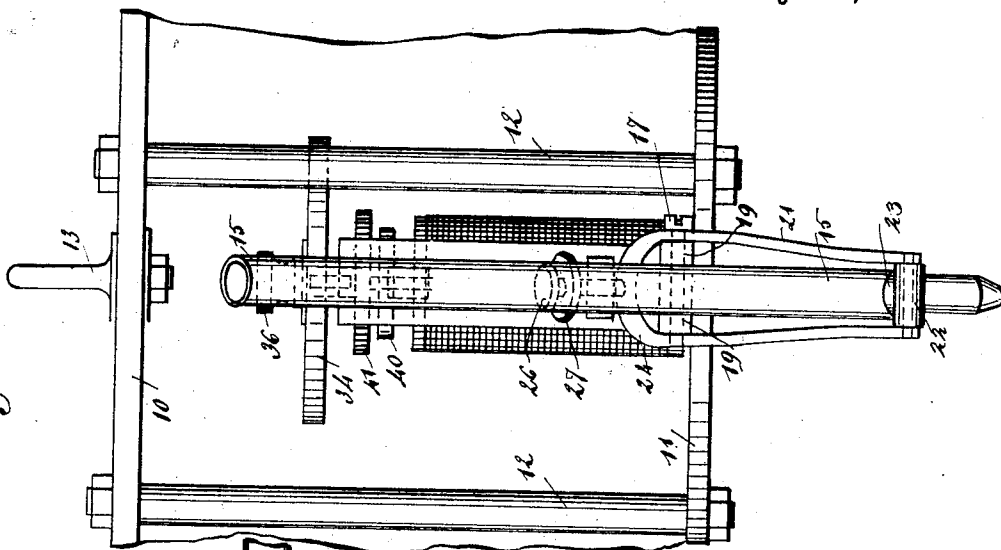


Fig. 2

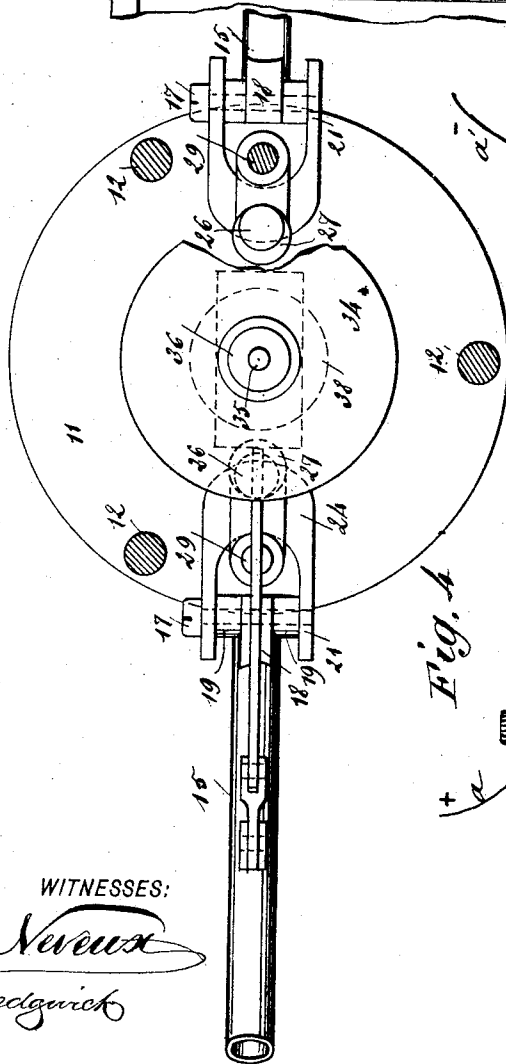
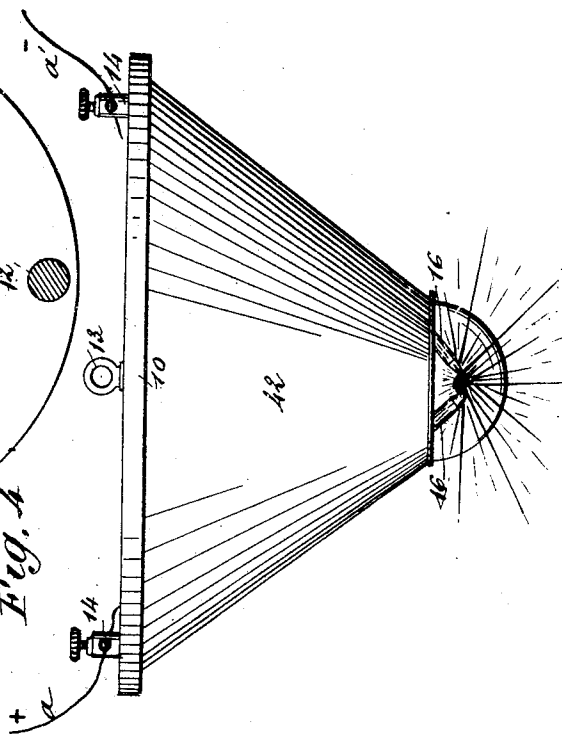


Fig. 4



WITNESSES:

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UNITED STATES PATENT OFFICE.

PATRICK J. BARRETT, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JOHN J. FRAWLEY, AS PRESIDENT OF THE BOSTON SOCIETY OF RED-EMPTORIST FATHERS, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 502,166, dated July 25, 1893.

Application filed April 5, 1893. Serial No. 469,183. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. BARRETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and
5 Improved Arc Lamp, of which the following is a full, clear, and exact description.

My invention relates to improvements in electric arc lamps, and the object of my invention is to produce a very simple and economical arc lamp, which is adapted to run on
10 a low voltage current, and to give a very steady and brilliant light.

A further object of my invention is to construct the lamp in such a way that two or
15 more carbons of the lamp will feed downward, and to construct the feed-controlling mechanism so that the most efficient spread of the arc will always be maintained.

To these ends, my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification,
25 in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a broken central vertical section of the lamp embodying my invention.
30 Fig. 2 is a sectional plan on the line 2—2 in Fig. 1. Fig. 3 is a broken side elevation of the lamp; and Fig. 4 is a side elevation, on a reduced scale, of the lamp.

The lamp is provided with a suitable frame consisting essentially of the top plate 10, a smaller base plate 11, and connecting posts 12
35 extending vertically from one plate to the other. The frame is suspended by the usual eye hangers 13, which may be also used as connectors if desired, but as illustrated, the
40 frame is provided with binding posts 14 through which the connections are made.

The carbon-holders comprise converging tubes 15, which are suspended on the sides of
45 the frame, the lower ends of which approach beneath the base plate, and in the drawings two such tubes are shown, but it is obvious that any necessary or desired number may be

employed without affecting the principle of the invention. The carbons 16 are held in
50 these tubes 15, being pushed up into the tubes from the bottom so as to slide downward through the tubes with their points converging, and to facilitate the feed of the carbons, balls 16^a are placed above them and held
55 to follow them down as they are consumed. Each tube 25 is hinged near its lower end to the base 11 on a pin 17, which projects through a lug 18 on the tube, and through lugs 19 on a plate 20, which is secured to the base plate
60 11, the lugs 19 being arranged to embrace the lugs 18, but any suitable hinge may be employed without affecting the principle of the invention.

Embracing the lower end of each tube is a
65 feed fork 21, the members of which straddle the tube as shown, and their lower ends come nearly opposite the lower end of the tube, and between the members of the fork is pivoted a roller 22, which registers with the cut-away
70 or recessed portion 23 of the tube, and which therefore presses upon the carbon 16, so as to regulate its descent. The fork has at its upper end an inwardly-extending shank 24, which is normally pressed upward by a spring
75 25, and the tension of the spring thus presses the roller against the carbon so that the fork 21 and its roller 22 act as a brake. The tension of the spring and the pressure of the brake are regulated by a set screw 26, which
80 extends through a milled nut 27 on an arm 28, which is carried by a post 29 extending vertically upward from the base 11, and the lower end of the set screw extends into the path of the shank 24, so that by adjusting the set
85 screw, the throw of the fork and the pressure of the roller or brake may be very nicely regulated.

The brake mechanism is the same for each tube. Near the upper end of each tube, and
90 on the inner side, are lugs 30, between which is pivoted a link 31, connecting with the outer end of a lever 32 which is fulcrumed, as shown at 33, on the upper end of the post 29, and the inner end of the lever extends beneath a
95 presser plate 34, which is held on a vertical

spindle 35 and is prevented from rising by a nut 36, and it will be seen that the depression of the presser plate will depress the inner ends of the levers 32, thus raising their outer ends and swinging inward the upper ends of the tubes 15, which action swings out the lower ends of the tubes and causes the rollers 22 to press with increased tension on the carbons. The lower end of the spindle 35 is reduced, as shown at 37, and is held to slide, being suitably insulated, in the core of the magnet 38, which is erected vertically and centrally on the plate 11, and which is covered by an inverted U-shaped frame 39, this being secured to the base 11, and the upper end of the frame which extends above the magnet serves as an abutment for the limiting nut of the spindle, as described presently. The spindle 35 carries near its reduced end an armature 40, which, when the magnet 38 is energized is drawn down, thus drawing down the spindle and the presser plate 34, and actuating the levers 32, and the carbon holding tubes. The movement of the presser plate and armature is regulated by a nut 41, which is arranged on the spindle between the armature and the top of the frame 39, and it will be seen that the nut may be adjusted so as to permit the presser plate to rise but slightly, or to any necessary extent. The whole framework and all the operative parts of the lamp are covered by a reflecting hood 42, which is open at the bottom, and the reflector serves to throw the light downward through its lower opening, and concentrates the rays so as to make the light very effective. The current is led in through a wire *a*, which passes through one binding post 14, thence through the magnet 38, thence to one of the carbon holders at its hinge, as shown clearly in Fig. 1. The current then passes down through the carbon holder and carbon, up through the adjacent carbon, and then out through the hinge and through a wire *a'* and the other binding post 14.

It will be seen that as the carbons converge and feed downward, the feed may be very nicely regulated, and the spread of the arc is controlled by the magnet 38 as follows: The nut 41 is adjusted so that the presser plate 34 will have the necessary movement, and then as the current enters the lamp it will pass through the magnet and through the carbons as specified, and the magnet being energized, depresses the armature and presser plate, thus swinging upward and inward the upper ends of the carbon-holding tubes and spreading the lower ends of the carbons so as to give the necessary spread to the arc. As soon as the arc spreads too much, however, the lessening of the current through the magnet permits the outer and upper ends of the carbons to swing out, thus swinging the lower ends inward, and the levers 32 being pulled down at their outer ends, raise the presser plate and

armature slightly, and in this way the correct position of the carbons is constantly maintained.

As before remarked, it will be understood that any necessary number of carbon-holding tubes may be employed, and I do not limit myself to the particular mechanism described for actuating the carbon holders, or for controlling the feed of the carbons therein.

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

1. An electric arc lamp, comprising a supporting frame, carbon-holding tubes pivoted to the frame, carbons arranged to move downward through the tubes, spring pressed brakes pivoted to the frame and each projecting outward beyond the carbon tubes and having its lower end engaging the carbons thereof, and electrical connections for sending the current through the carbons, substantially as described.

2. An electric arc lamp, comprising converging carbon-holding tubes, a support for the tubes, carbons arranged to move downward through the tubes, a brake mechanism to control the movement of the carbons, ball followers arranged in the tubes above the carbons, and electrical connections for the carbons, substantially as described.

3. An electric arc lamp, comprising a supporting frame, hinged carbon-holding tubes carried by the frame and having converging lower ends, carbons held to slide longitudinally in the tubes, a swinging brake mechanism carried by the frame and provided with rollers to press against the carbons, an electromagnet carried by the frame, an armature for the magnet, and a lever mechanism actuated by the movement of the armature for shifting the pitch of the tubes, substantially as described.

4. An electric arc lamp, comprising a supporting frame, hinged carbon-holding tubes supported on the frame and having converging lower ends, carbons held to slide longitudinally in the tubes, adjustable spring-pressed forks pivoted on the frame and having rollers to engage the carbons, a magnet carried by the frame, a vertically-movable armature above the magnet, a presser plate moved vertically by the armature, outwardly-extending levers fulcrumed on suitable supports and having their inner ends extending beneath the presser plate, and a link connection between the levers and the upper portions of the carbon-holding tubes, substantially as described.

5. The combination, in an arc lamp, with the supporting frame and the swinging carbon-holding tubes having longitudinally movable carbons therein, of the spring-pressed forks fulcrumed on the frame and having rollers to engage the carbons, and a screw mechanism for adjusting the tension of the

rollers on the carbons, substantially as described.

6. In an electric arc lamp, the combination
of an electro magnet, a vertically movable ar-
5 mature above the magnet a hinged carbon
tube, a presser plate carried by the armature
spindle, a pivoted lever having one end pro-

jecting under the presser plate, and a link
pivoted to the lever and to the carbon tube,
substantially as described.

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Witnesses:

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J. L. MCAULIFFE.