

(No Model.)

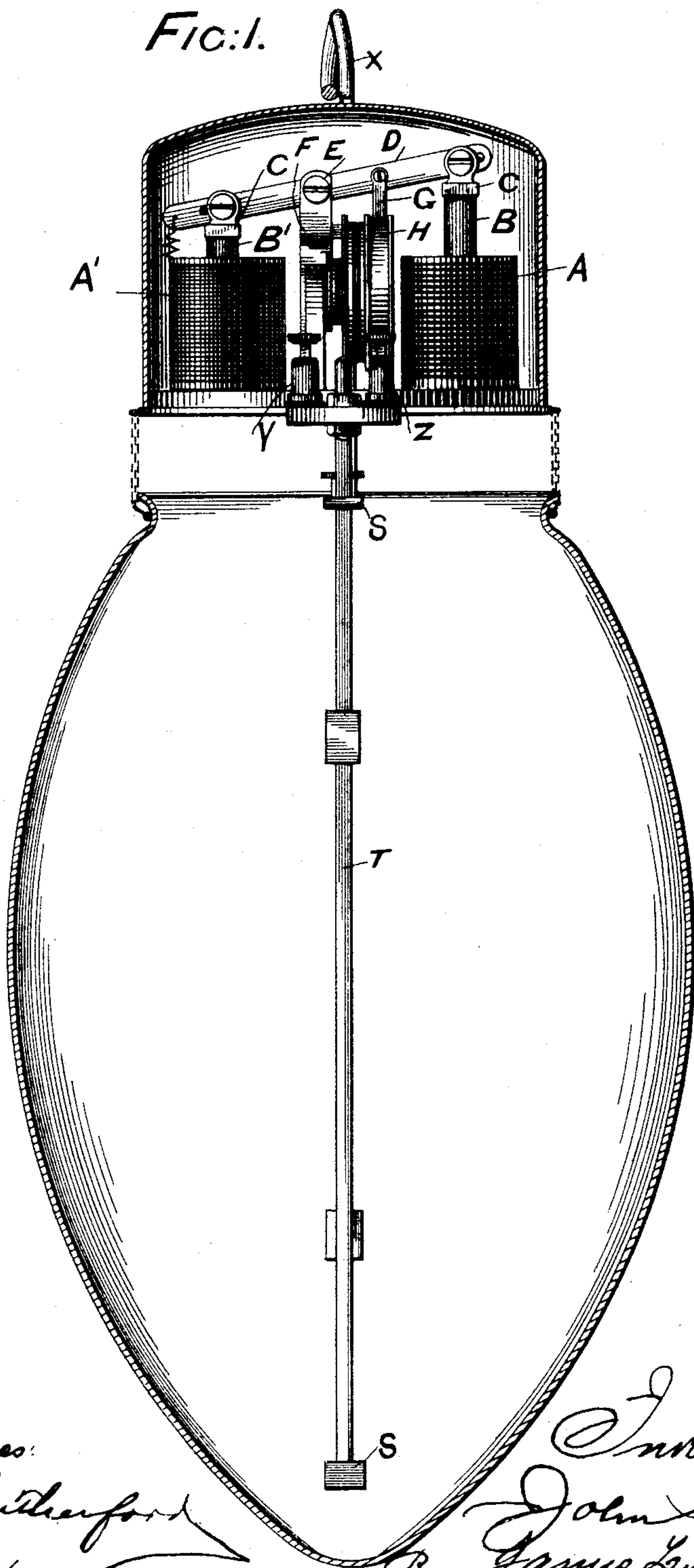
3 Sheets—Sheet 1.

J. KENT.
ARC LAMP.

No. 439,011.

Patented Oct. 21, 1890.

Fig. 1.



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Inventor:

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James L. Norris
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Fig. 2.

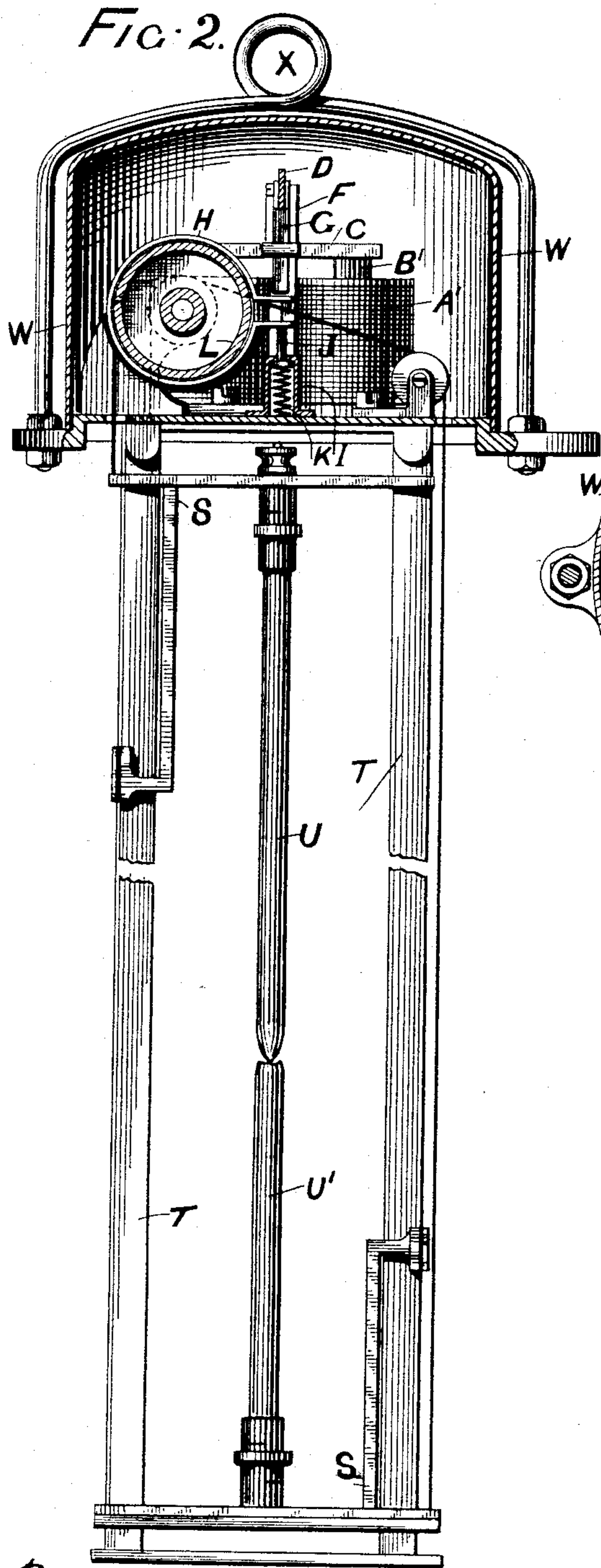


Fig. 3.

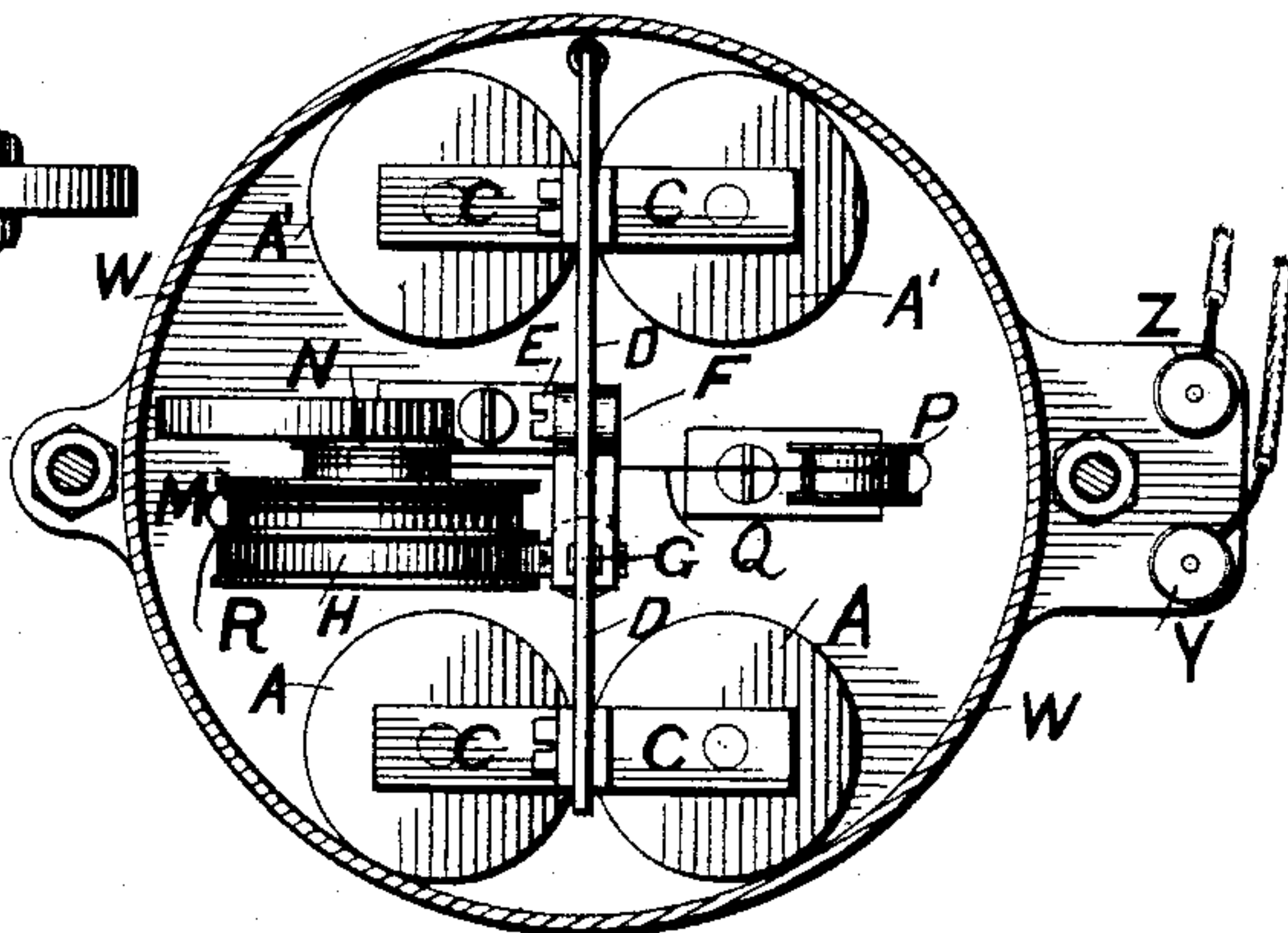
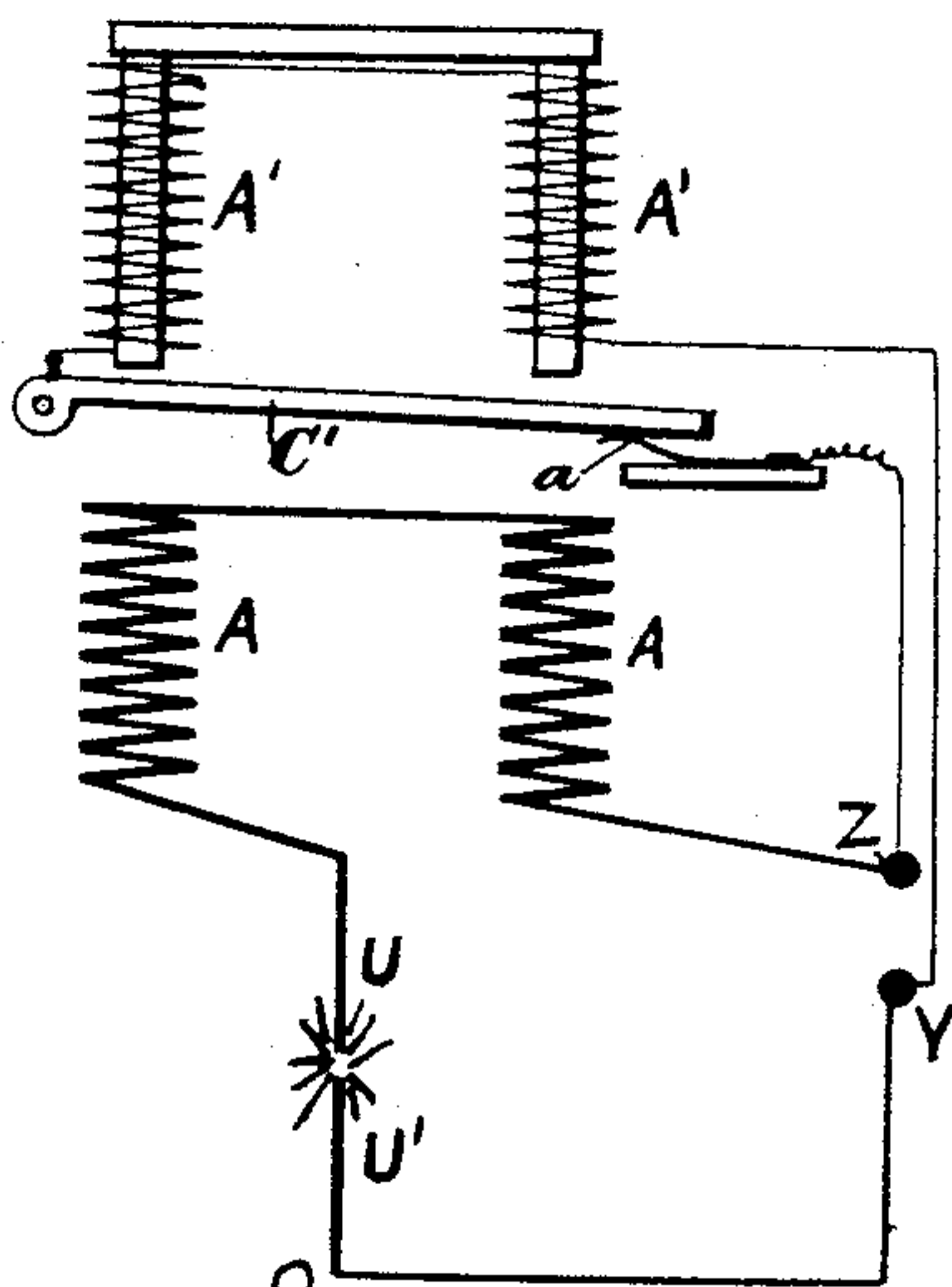


Fig. 4.



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FIG. 5.

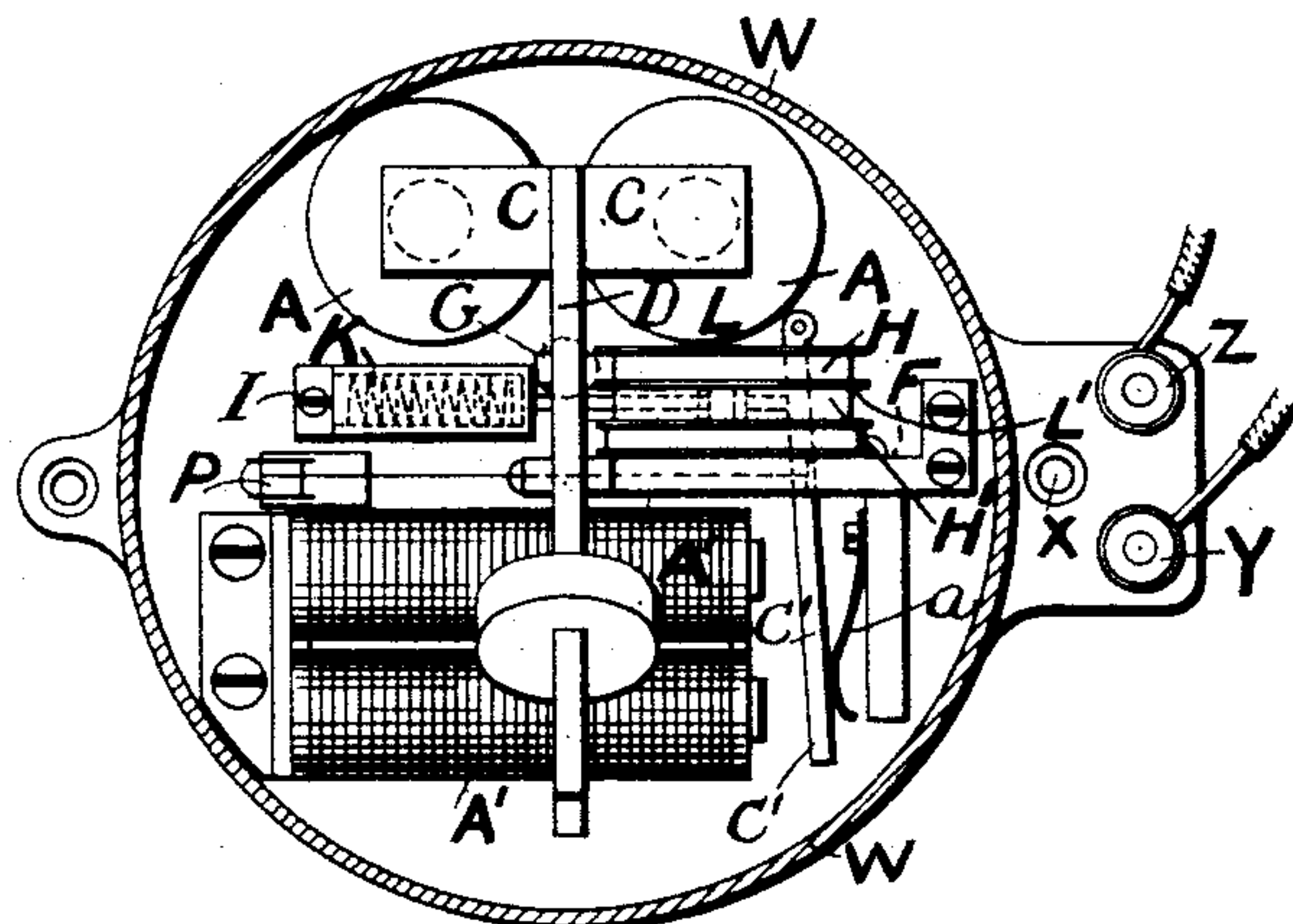
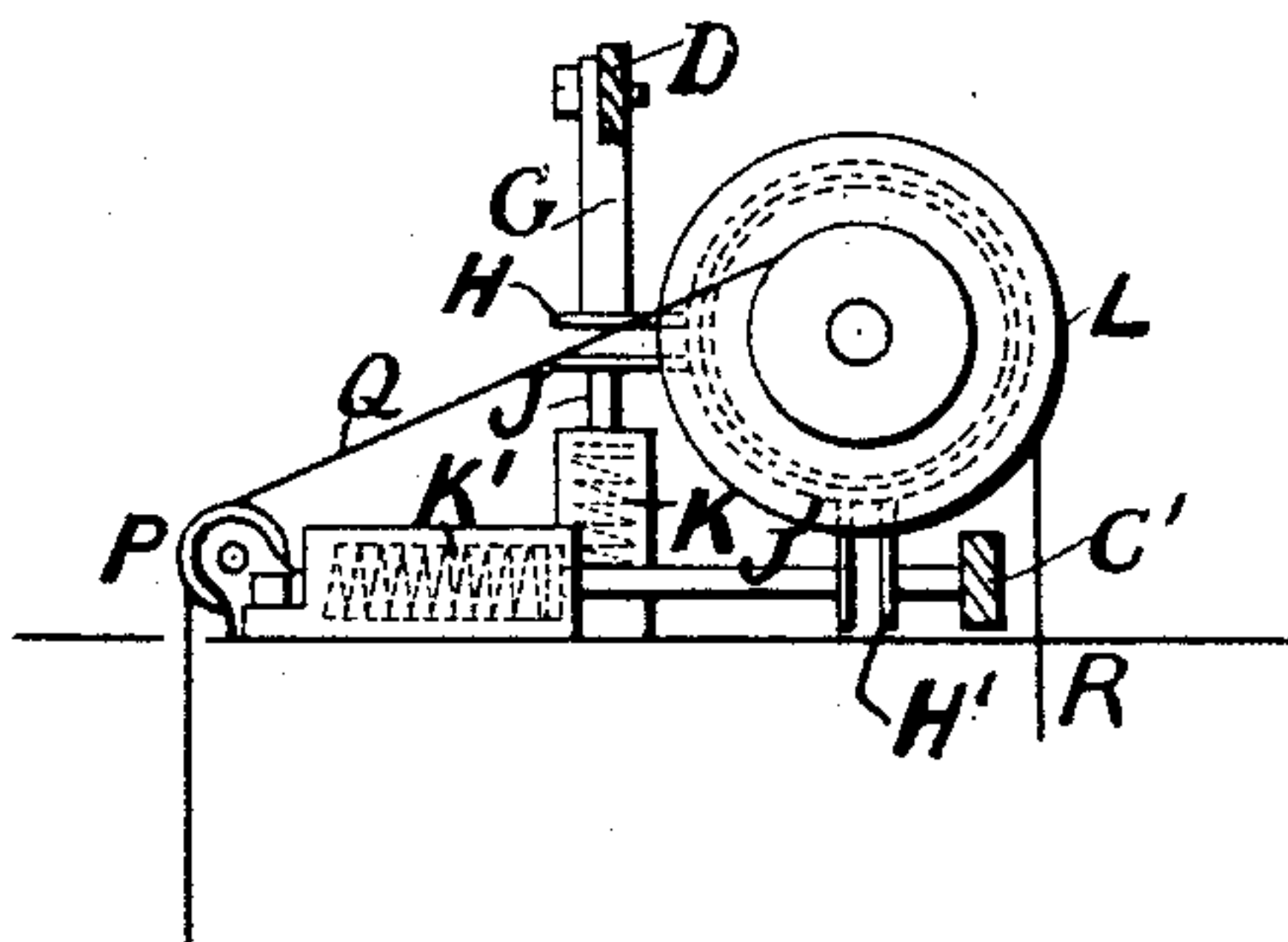


FIG. 6.



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UNITED STATES PATENT OFFICE.

JOHN KENT, OF LONDON, ENGLAND.

ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 439,011, dated October 21, 1890.

Application filed July 26, 1890. Serial No. 360,061. (No model.) Patented in England August 13, 1889, No. 12,795.

To all whom it may concern:

Be it known that I, JOHN KENT, a subject of the Queen of Great Britain, residing at Railway Approach, London Bridge, London, England, have invented new and useful Improved Means and Appliances for Feeding the Carbons of Arc Lamps, (patented in Great Britain, No. 12,795, dated August 13, 1889,) of which the following is a specification.

The object of this invention is to fit appliances to the frames of arc lamps for feeding the carbon in positively-regular order to produce uniformity and steadiness of light; also, to reduce the cost of such lamps and simplify the mechanism, as well as to effect a reduction in the weight and consequent bulk of such lamp.

To accomplish these objects, my invention involves the features of construction and the combination or arrangement of devices and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 of the annexed drawings is an elevation of the appliances for operating the carbons of an electric-arc lamp. Fig. 2 is a similar view at right angles to Fig. 1. Fig. 3 is a plan of the appliances. Fig. 4 is a diagram of the connections in which the main circuit-coils are shown in series with the carbon pencils with a shunt taken from the terminals. Figs. 5 and 6 show a modification.

A A are the main-circuit coils, of the ordinary construction.

B B are the movable cores, attached to the yokes C C.

D is a bridge piece or beam to which the yokes C C are loosely jointed; E, the pivot on which the beam rocks on the upright F.

G is a depending leg of the beam D; H, segmental feeding-board; I, hollow pedestal; J, pin in pedestal; K, spring supporting the pin; L, band-wheel; M N, cord wheels or rollers of different diameters on same axle as L; P, guide-wheel for cord of lower carbon; Q, cord of same; R, cord of upper carbon; S S, guide-plates; T T, upright bars; U U', upper and lower carbons; A' A', shunt-coils; B' B', core of shunt-coils; W W, box containing mechanism; X, suspension-link; Y Z, terminal posts.

The operation is as follows: The current,

in passing round the main-circuit coils A A, draws down the cores B B, and with them the beam D and depending leg G, which presses on one free end of the band H, causes it to bind the wheel L and draw it round, and give off the cord Q from the wheel N, whereby the lower carbon pencil U' is lowered. The other wheel M is simultaneously rotated to wrap the cord R on wheel M and lift the upper carbon pencil U the required distance to strike the arc. Should the arc resistance become too great, owing to the wearing away of the carbons, more current passes round the shunt-circuit coils A' A', draws down the core B' B' of said shunt-coils, releasing the grip of the band H on the wheel L, allowing the carbon pencils U U' to approach each other and adjust themselves to the necessary distance to suit the current. When the depending leg G puts pressure on the free end of the band H, the other end is forced to put a pressure on the spring-pin J to insure the full grip of the band H on the wheel L, which spring K retains a certain amount of pressure on the return motion of the band H to prevent the cord-wheels M N rotating and the carbon pencils coming unnecessarily close together as to destroy the arc. Thus the arc is kept uniform and the light steady.

Instead of arranging the main and shunt circuit coils as solenoids, exerting a differential pull upon one beam or rocker, according to the current fluctuations, and feeding the lamp by gravity, as seen in Figs. 1, 2, and 3, I may feed the lamp by the positive action of a clutch-feed; and to this end I arrange the coils as electro-magnets, operating two rockers or beams, each rocker or beam operating a separate brake-band arranged on wheels fixed to a common spindle, the whole apparatus operating as follows, and as will be understood by referring to Figs. 5 and 6: Upon the current flowing around the coils A A the armature C and rocker or beam D is drawn down, and the depending leg G closes the brake-band H upon the wheel L, causing same to move round the necessary distance for striking the arc in the manner before described. When the electro-motive force rises, owing to the lengthening of the arc through the wearing away of the carbons, a portion of the current passes around the shunt-coils A' A' and

attacks the armature C', and the pin G' closes the brake-band H' upon the wheel L'. This acts against the tension of the spring-rod J', and by overcoming the grip of the brake H' turns the wheel L and also the wheels M and N, these being in one casting with the wheel L', in the direction required for closing the carbons and shortening the arc until the normal resistance is attained. Then the depending leg G closes the band H upon the wheel L, and holds the same securely in this position until the current becomes again weak, owing to increased resistance. The armature then rises slightly and allows the shunt-coil armature to overcome the slackened grip of the band H.

Upon the back of the armature C' is arranged a spring-contact a, so that as the armature is drawn forward the circuit is broken around the shunt-coils A' A', and the armature returns, allowing the brake H' to take a fresh grip upon the wheels to turn the same in its next movement. From this it will be understood that the operations of striking the arc and feeding the carbons are distinct. By this means I overcome the distinctive peculiarities incident to the series or parallel method of connecting arc lamps, and am enabled, moreover, to produce a compact unifocal positive-feed arc lamp.

What I claim, and desire to secure by Letters Patent, is—

1. In an electrically-controlled arc lamp, the combination, with the upper and lower carbon-carriers and their operating-cords, of feed-wheels mounted on the same shaft and round which the cords extend in reverse directions, a wheel-gripping band, a spring-pin acting on one end of the gripping-band, and means operating on the opposite end of the band for turning the wheels to release one cord and wind the other to separate the carbons, substantially as described.

2. In an electrically-controlled arc lamp,

the combination, with the carbon-carriers, their operating-cords, and the feed-wheels mounted on a single shaft and round which the cords extend in reverse directions, of the gripping-band, the spring-pin acting on one end of the band, the magnets having movable cores provided with yokes, and the rocking bridge piece or beam pivoted between its ends, connected with the yokes and having a depending leg to act on the other end of the gripping-band, substantially as described.

3. In an electrically-controlled arc lamp, the combination, with the carbon-carriers, their operating-cords, and feed-wheels mounted on the same shaft and round which the cords extend in reverse directions, of a gripping-band wheel on the shaft of the feed-wheels, a gripping-band extending round the gripping-band wheel, a spring-yielding pin for acting on one free end of the gripping-band, the magnets, and a rocking bridge piece or beam having a depending leg to act on the other free end of the gripping-band for rotating the feed-wheels and winding and unwinding the respective cords, substantially as described.

4. In an electrically-controlled arc lamp, the combination, with the carbon-carriers, of the magnets A, weighted armature C, depending leg G, break-board H, main-current magnets A', armature C', and gripping-band H', controlled by the latter, substantially as described.

In witness whereof I have hereto signed my name, in the presence of two subscribing witnesses, this 31st day of October, 1889.

JOHN KENT.

Witnesses:

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