

ARC LAMP.

APPLICATION FILED APR. 16, 1910.

996,849.

Patented July 4, 1911.

2 SHEETS--SHEET 1.

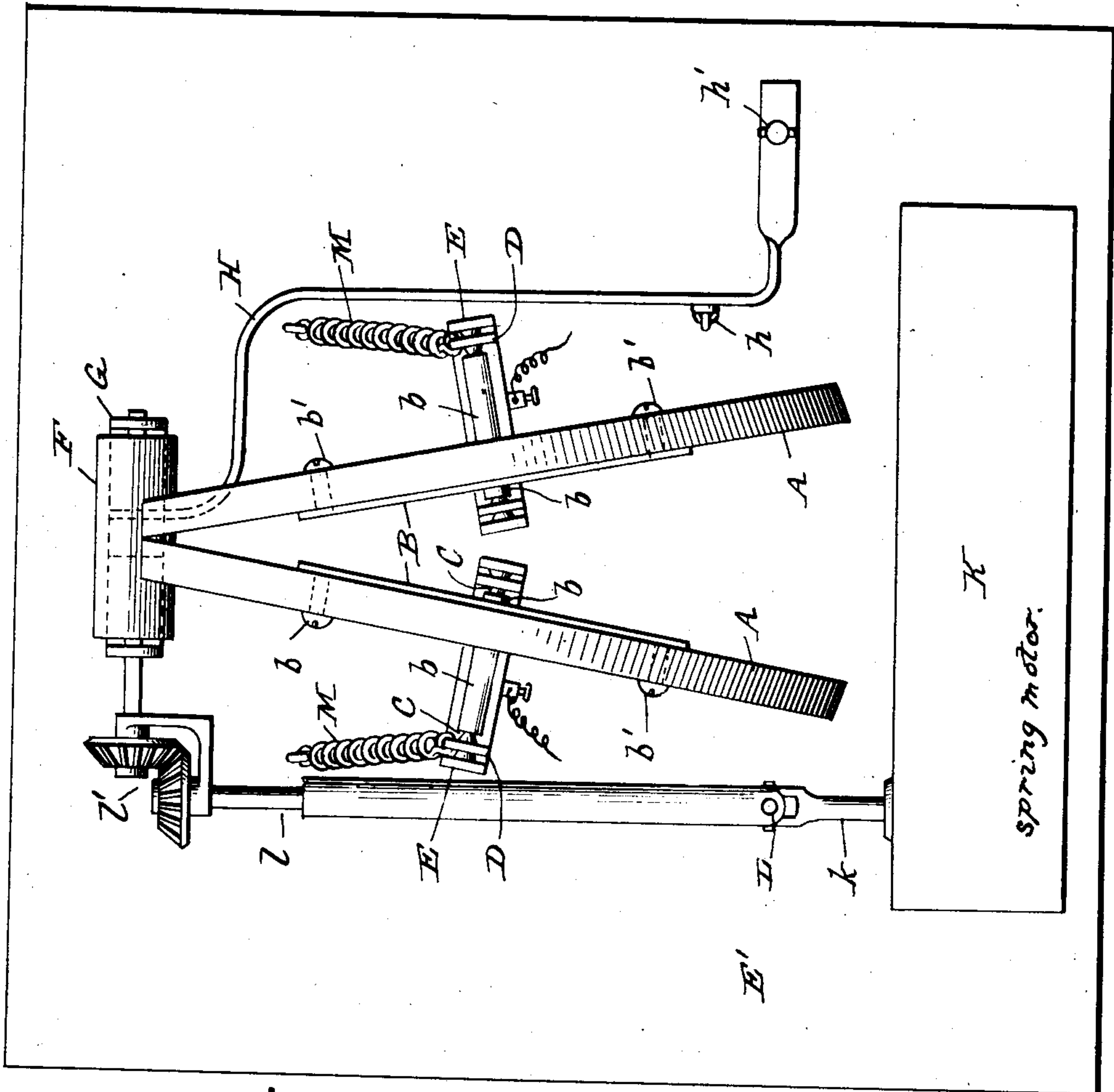


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

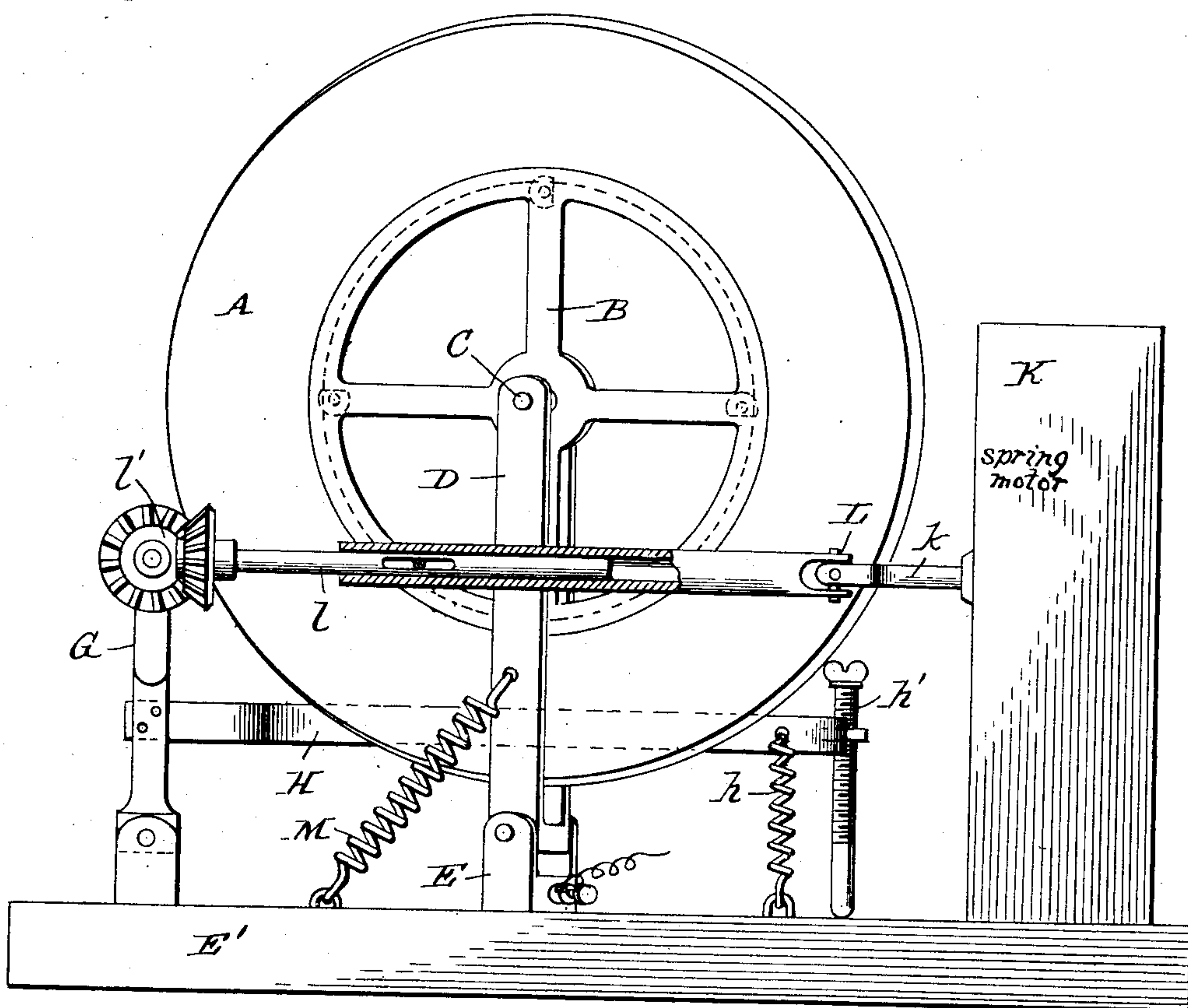
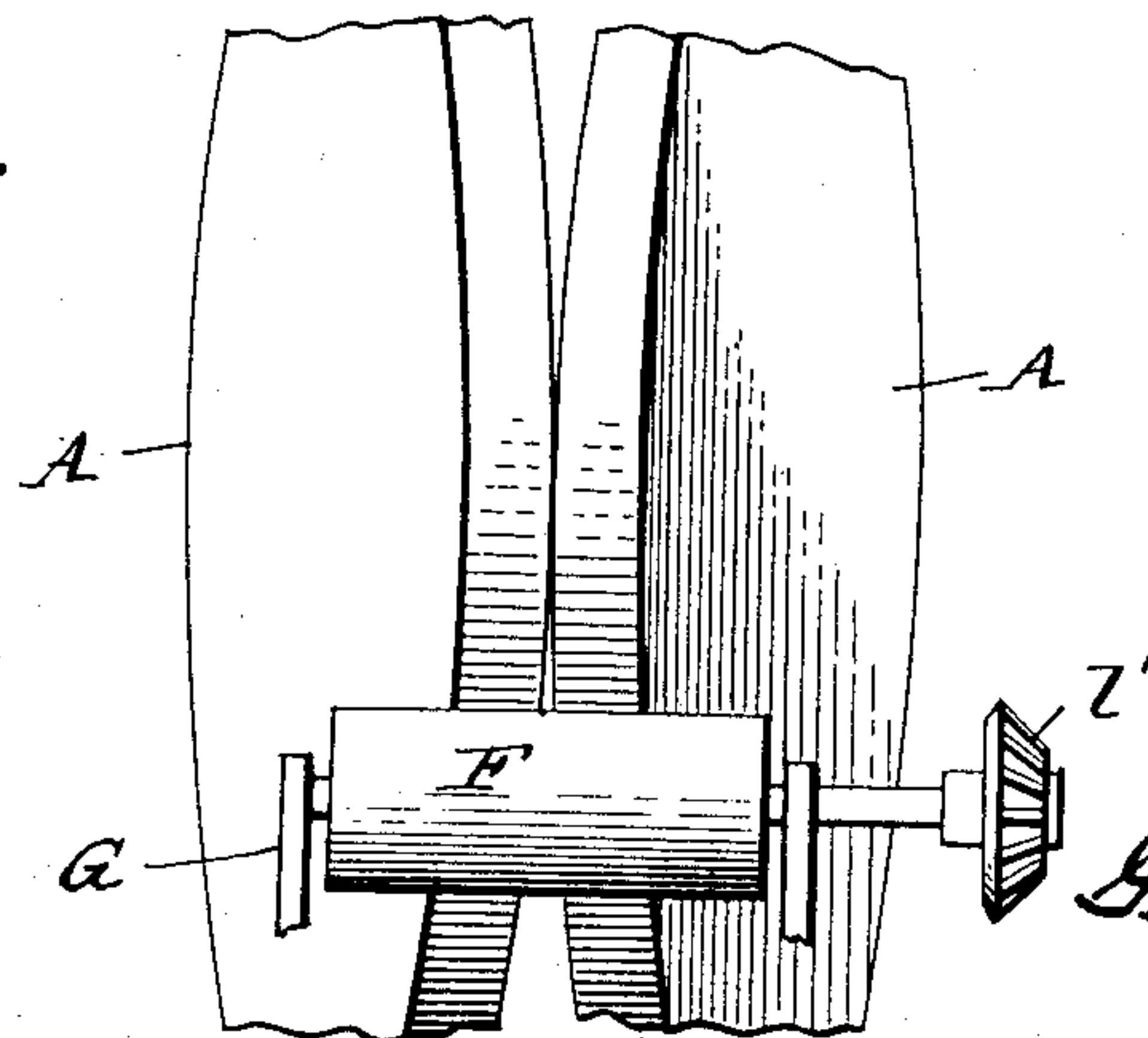


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ARC-LAMP.

996,849.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE M. GUERRANT, a citizen of the United States, residing at Danville, county of Pittsylvania, and State of Virginia, have invented certain new and useful Improvements in Arc-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

The objects of this invention are to provide an arc lamp with which the arc may be maintained in a fixed or practically fixed position and with which the rate of feed will be mechanically determined in part by the rate of consumption of the electrodes.

Further objects of the invention are to provide a practical and simple mechanical arrangement whereby circular disk or annular electrodes may be employed, the consumption confined to the peripheral areas and a clear unobstructed field maintained for the projection of the light rays from the arc.

The lamp is primarily designed for projecting apparatus such as project a picture or image on an observation screen but it is obvious may be used whenever an unobstructed light from a fixed point is desired for a long period of time and especially when it is undesirable to make manual adjustments to center the light as the electrodes are consumed or the position of the arc between the electrodes shifts about.

The invention consists primarily in an arc lamp having circular electrodes mounted to rotate on axes at an angle to each other and movable bodily in planes at right angles to said axes to establish and vary the length of the arc.

The invention further consists in controlling both the angular and bodily movements of the electrodes by the coöperation of a mechanical control and feed member with the peripheries at a point removed from the arcing point and finally the invention consists in certain novel details of construction and combinations and arrangements of parts, all as will be now described and pointed out particularly in the appended claims.

In the accompanying drawings—Figure 1 is a top plan view, somewhat diagrammatic in character, of an arc lamp embodying the present invention. Fig. 2 is a side elevation

of the same with portions broken away and in section. Fig. 3 is a detail front elevation of a portion of the two electrodes with their control and feed cylinder.

Similar letters of reference in the several figures indicate the same parts.

The electrodes A may both be carbon, of the usual composition, and are in disk or annular form removably mounted on centrally arranged carriers B by means of screws *b'* or other suitable fastenings. As a convenient means for supporting the electrodes on a central journal or axis, the carriers may be provided with hub-like extensions *b*, which at the ends coöperate with conical pivot pins C, mounted in the arms of hangers D. The hangers are each pivotally mounted in a bracket E on an axis preferably parallel with the axis of the electrode, whereby, in addition to its angular movement about its own center, each electrode may be moved bodily in a plane at right angles to said central axis.

The brackets and other parts of the lamp are conveniently mounted on a base E of insulating material and the circuit connections may be made with said brackets. The brackets are so adjusted on the base that the electrodes may be moved toward and from each other preferably in intersecting planes usually forming an acute angle, as shown in Fig. 1, whereby as the electrodes are moved bodily by swinging the hangers they may be caused to contact at one point of their peripheries as, for instance, when the arc is to be established and by a bodily movement in the opposite direction they may be separated to the distance desired for the length of the arc.

To control the movement of the electrodes a feed and control device in the form of a refractory non-conducting cylinder F is provided against which the edges of the electrodes are adapted to rest in the same plane parallel with the axis of the control member or cylinder F preferably at a point slightly removed from the arcing point. The feed and control device, or cylinder is journaled in a pivoted hanger G to move toward and from the brackets carrying the electrodes and the movements of the hanger are preferably controlled by a lever arm H having a spring *h* for holding the hanger advanced and an adjustable stop such as the set-screw *h'* for limiting and regulating the movement.

Obviously, as the electrodes rest against the control cylinder, a bodily movement of the cylinder in one direction will allow the electrodes to touch and a movement in the opposite direction will separate the electrodes and, by means of the adjustable stop, the space and length of arc may be regulated with great accuracy.

In addition to its bodily movement to control the relative positions of the electrodes, the control cylinder is adapted to be rotated and by frictional contact with the peripheries of the electrodes rotate the latter so as to distribute the consumption uniformly. The rotation of the cylinder is conveniently effected by a motor which may be a clock motor indicated diagrammatically at K, the power shaft $\frac{1}{2}$ of which is connected through a universal joint L, telescoping connection $\frac{1}{2}$ and bevel gears $\frac{1}{2}$ with the shaft of the cylinder. Springs M or any well known means may be employed for holding the electrodes with their peripheries against the control and feed cylinder and inasmuch as the control and feed is effected by contact with the peripheries of the electrodes, it is obvious that the relative positions of the electrodes at the arcing point will be maintained until they are practically consumed. The consumption of one electrode more rapidly than the other, while resulting in a corresponding decrease in its diameter, does not materially change the relation of the electrodes at the arcing point, for each continues to rest against the control and feed cylinder and the peripheral speed of rotation is the same regardless of the diameter.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is—

1. In an arc lamp, circular electrodes journaled on axes at an angle to each other and bodily movable in intersecting planes, and a driven control and feed member against which the peripheries of said electrodes rest.

2. In an arc lamp, circular electrodes journaled on axes at an angle to each other, and bodily movable in intersecting planes, and a bodily movable motor driven control member against which the peripheral portions of said electrodes rest, whereby their relative positions and rotation are controlled.

3. In an arc lamp, the combination with

circular electrodes journaled on axes at an angle to each other and bodily movable in intersecting planes, of a bodily movable control member of refractory non-conducting material against which the peripheral portions of said electrodes rest in proximity to the arcing point, whereby their relative positions and rotation are controlled.

4. In an arc lamp, the combination with a rotary bodily movable control member, of circular electrodes bodily movable in intersecting planes to contact with the periphery of the control member in the same plane parallel with the axis of said control member, and means for yieldingly holding the peripheries of the electrodes in contact with the control member whereby their relative position is determined.

5. In an arc lamp, the combination with a rotary bodily movable control member, of circular electrodes freely journaled on central axes and bodily movable in intersecting planes to bring their peripheries into juxtaposition at the arcing point and in contact with the periphery of the control member in the same plane parallel with the axis of the control member, and whereby their relative positions are determined.

6. In an arc lamp, the combination with a motor driven rotary control member, of circular electrodes freely journaled on central axes and bodily movable in intersecting planes to bring their peripheries into juxtaposition at the arcing point, and into contact with the periphery of the control member in the same plane parallel with the axis of the control member, and means for moving said control member bodily to vary the distance between the electrodes.

7. In an arc lamp, the combination with circular electrodes freely journaled on central axes, and pivoted hangers in which the electrodes are journaled, of a rotary control member against which the peripheries of the electrodes rest, a pivoted hanger in which the control member is journaled, means for adjusting the last mentioned hanger, and means for rotating the control member.

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