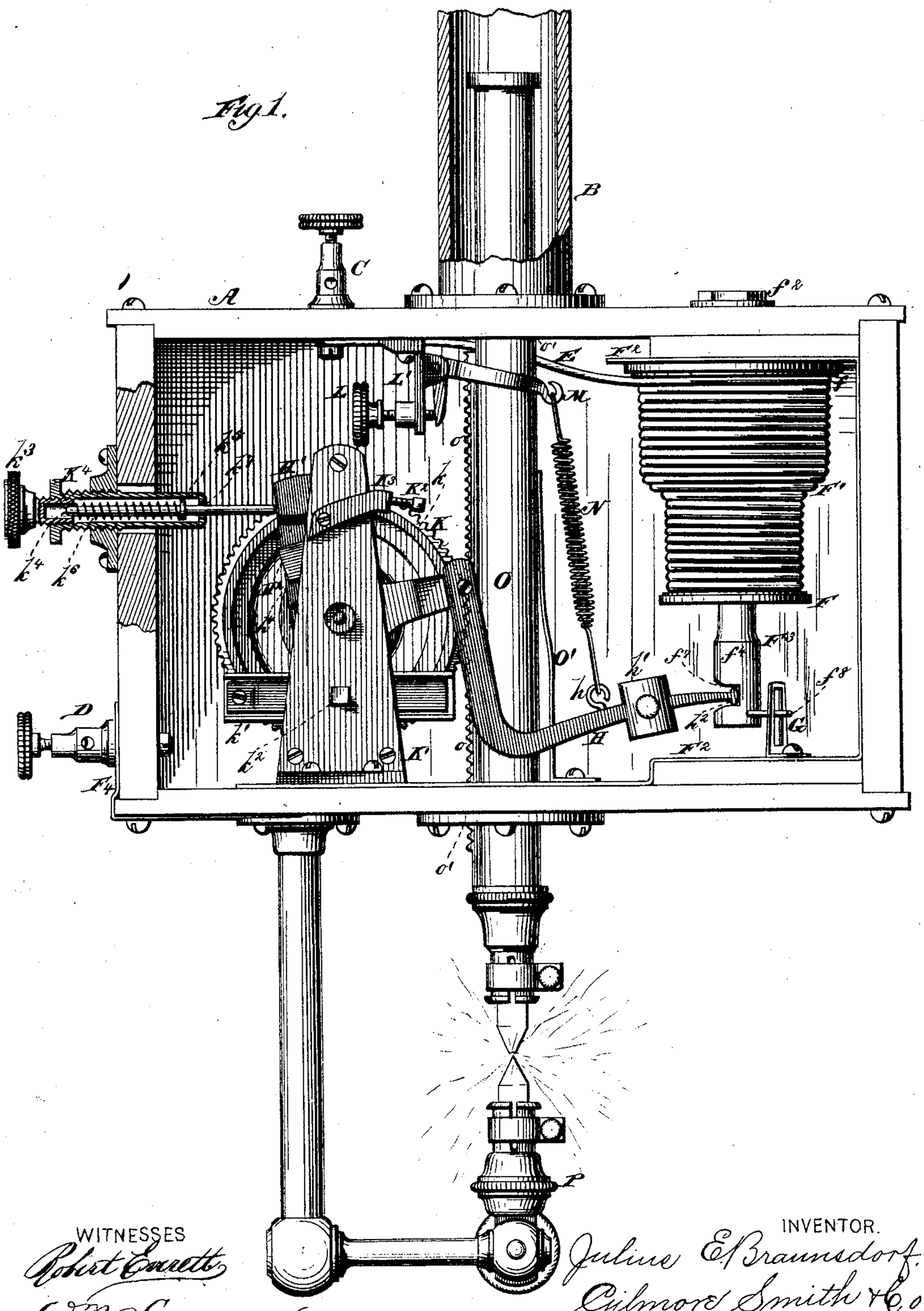
2 Sheets—Sheet 1.

J. E. BRAUNSDORF.

Regulator for Electric-Lamp.

No. 227,478. **Patented May 11, 1880.**

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 2.

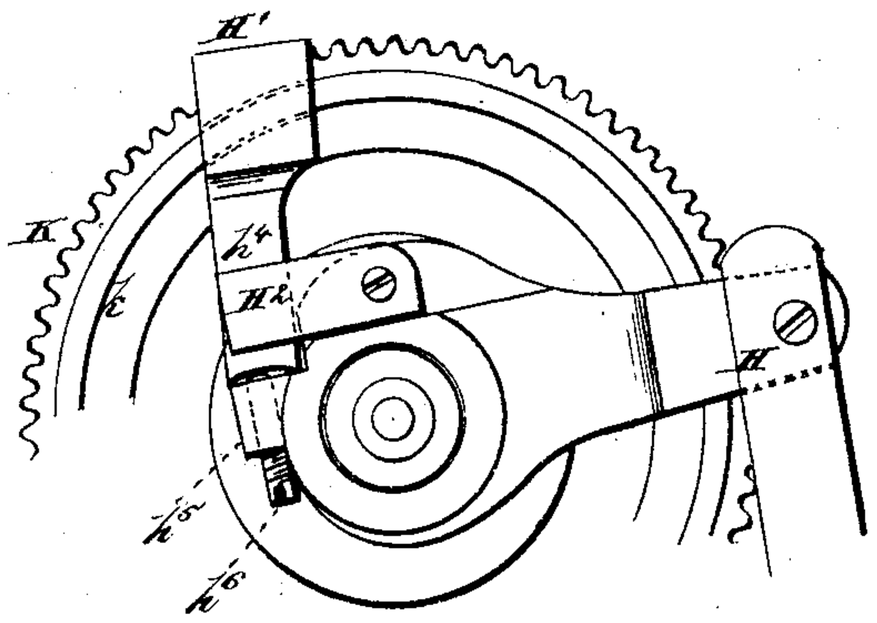


Fig. 3.

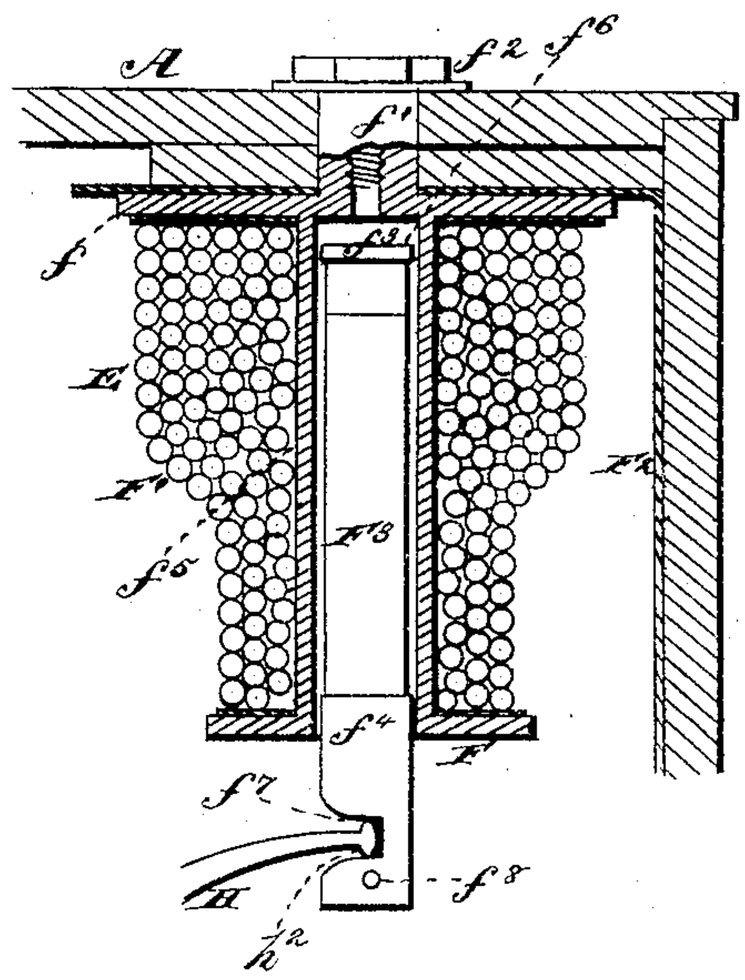


Fig. 4.

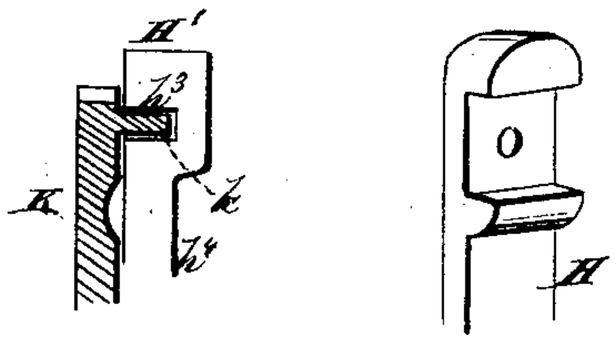
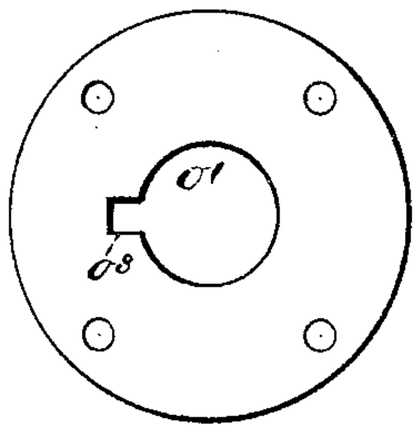


Fig. 5.



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UNITED STATES PATENT OFFICE.

JULIUS E. BRAUNSDORF, OF PEARL RIVER, NEW YORK.

REGULATOR FOR ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 227,478, dated May 11, 1880.

Application filed May 31, 1879.

To all whom it may concern:

Be it known that I, J. E. BRAUNSDORF, of Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in the Lamp for a Dynamo-Electric Machine; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of an interior view, partly in section, of my lamp for dynamo-electric machines, and Figs. 2, 3, 4, and 5 are detail views.

Identical parts in the drawings are designated and referred to by the same letters.

My invention relates to electric lamps; and it consists in devices by which an electric current automatically stops the gravitating descent of the upper or positive carbon-holder and separates the carbon points a positive distance, which distance is made adjustable, as will herein more fully appear.

The principal difficulty that has to be overcome in the practical operation of electric lamps I have found to be in maintaining the proper relative positions of the carbon points. The distance between the points when the light is in operation should be from one-thirty-second part to one-fourth of an inch, the distance varying to suit the strength of the electric currents and the magnitude of the light.

The consumption of the carbon points and the consequent increasing of the distance between them which is continually going on necessitate an automatic adjustment of their relations to each other by means of an agent that shall be controlled by the varying conditions of the light. This can be accomplished by submitting this agent to the control of the current of electricity which causes the light, as when the points are separated by being consumed the electric currents of the light are weakened or wholly suspended. My purpose is to utilize this weakening or suspension of the electric currents so as to cause the carbon points to approach each other and be separated a positive distance predetermined by the operator, thus producing a certain and uniform light.

I accomplish these purposes by the following-described mechanism:

A represents the case of the lamp, which contains its mechanism and supports the carbon-holders. The case may be attached to the ceiling or wall by means of the tube B.

C is the positive, and D the negative, binding-post. E is an insulated wire, which is attached to that portion of the binding-post C which extends inside of the case, and is coiled about the shell F, forming the magnet F′. The flange *f* of the shell comes in contact with the plate F^2, which is extended around upon the inner surface of the case in such a manner as to connect with all of the mechanism of the lamp, thus fully charging the mechanism with electricity.

The thimble *f′* projects from the flange *f* and passes through the case and receives the nut f^2, which holds the magnet in position.

F^3 is an armature provided with the bearing-surfaces f^3 f^4, which freely play in the hollow stem f^6 of the magnet. When the magnet is charged this armature is raised up and the upper end, f^3 engages the flange *f*, and is retained there by the electric currents. This armature is provided with the recess f^7 and the arm f^8. The arm is to play in the slot of the standard G. By this means the armature is prevented from turning, and the notch or recess f^7 is at all times in position to retain the lever H and operate the same.

K is a spur-wheel, which is supported by the standards K′, and provided with the annular projection *k* and the cross-piece *k′* on the standard K′, which cross-piece forms a brake, and is regulated by the set-screw k^2.

The lever H is hinged upon the shaft of the spur-wheel, the other end being provided with the hook *h*, the adjustable weight *h′*, and the head h^2, which operates in the recess f^7 of the armature.

H′ is a clutch provided with a curved recess, h^3, and an arm, h^4. The arm h^5 of the lever H extends slightly beyond the journal of the spur-wheel, and has the set-screw h^6, upon which the arm h^4 of the clutch rests. This set-screw is for adjusting the position of the clutch by raising or lowering it.

H^2 is a plate attached to the lever H, which extends over the arm of the clutch and assists in holding it in position. K^2 is a set-screw,

which passes through the arm K^3 and engages the clutch. The office of this screw is to regulate the length of gripe which the clutch is to take on the annular projection *k*.

K^4 is a thimble, which is inserted into the wall of the case and provided with the hollow thumb-screw k^3. The stem k^4, provided with the annular projection k^5 and spiral spring k^6, is placed in this thimble. The annular projection serves as a stop to prevent it from passing out of the contracted opening k^7, and also as a base for the spiral spring. By turning the thumb-screw the tension of the spring can be regulated. The thimble is set in a threaded rose, by which means its position is adjustable. The inner end of this stem k^4 bears against the clutch and returns it to position for griping and turning the spur-wheel when the armature is raised.

L is a thumb-screw which works in the hanger L′ and engages the short-angled arm of the lever M. N is a spiral spring which connects the lever M with the hook *h* of the lever H. The office of this thumb-screw and its connections with the lever H is to adjustably support more or less of the weight of the armature and lever with its adjustable weight.

These adjustable features of the lamp are made in view of regulating the lamp to suit currents of electricity of different strength.

O is the holder of the carbon point of the positive current, and it is provided with the rack *o*, which engages the spur-wheel K and plays freely in its bearings *o′*. The rack *o*, playing in the notches o^3, retains the rack in proper relations with the spur-wheel.

O′ is a copper or other suitable plate, which is attached to the charged plate F^2, and its other end held in positive connection with the carbon-holder O, by which means the electric current is conducted to the carbon point.

F^4 is a copper or other suitable plate, which extends from the negative binding-post D upon the outside of the case to the carbon-holder P, which holds the carbon point of the negative current. These carbon-holders are provided with the usual flexible joints to enable the carbon points to be suitably set in relation to each other.

The operation of my invention is as follows: The operator having made the proper connections and the light being in operation, the armature F^3 is held by the electric currents in its elevated position against the plate or flange *f*. As the space between the carbon points is increased by the consumption of the carbon points, the current of electricity is weakened, and the weighted lever H forces the armature from the plate of the magnet. The downward movement of the armature and the free end of the lever H causes the shoulder h^5 to be released from the bearing upon the arm h^4 of the clutch H′. Upon this the stem k^4, pressing against the clutch, frees the clutch from the annular projection of the spur-wheel, and the brake being properly set, the carbon-holder O gravitates downward, bringing the carbon points into nearer relation, when, the currents of electricity being restored, the armature is raised to contact with plate *f*, and the lever H being carried up, the shoulder h^5 engages the arm h^4 of the clutch, which gripes the annular projection of the spur-wheel, arrests the downward motion of the carbon-holder, and raises it an amount determined by the position of the thumb-screw k^2, which regulates the length of gripe or hold which the clutch is to have. By this means any desired space between the carbon points can be automatically secured by the operation of the electric currents, and a constant and uniform light produced.

By means of the adjustable weight *h′*, thumb-screw L, lever M, and spring N, I am enabled to regulate the action of the armature to be operated by electric currents of different strength.

Having thus described my invention in connection with the mechanism of an electric lamp, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric lamp, the lever H, provided with the adjustable weight *h′*, and hook *h*, and shoulder h^5, in combination with the armature F^3 and clutch H′, as and for the purposes substantially as set forth.

2. In an electric lamp, the clutch H′, provided with the arm h^4, in combination with the set-screw k^3, stem k^4, and set-screw h^6, as and for the purposes substantially as set forth.

3. In an electric lamp, the spur-wheel K, provided with the annular projection *k*, in combination with the clutch H′, lever H, armature F^3, and the carbon-holder O, provided with the rack *o*, as and for the purposes substantially as set forth.

4. In an electric lamp, the spur-wheel K, provided with the annular projection *k*, in combination with the clutch H′, as and for the purposes substantially as set forth.

5. In an electric lamp, the spur-wheel K, provided with an annular projection, *k*, in combination with the carbon-holder O and the clutch H′, as and for the purposes substantially as set forth.

6. In an electric lamp, the combination, with a movable carbon-holder and a circular revolving rim connected therewith, of a friction dog or clutch arranged and adapted to engage with said rim, and a releasing abutment or step for throwing the clutch out of contact with the rim, substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JULIUS E. BRAUNSDORF.

Witnesses:

HENRY TIGGE,

JAMES SENER.