

(No Model.)

2 Sheets—Sheet 1.

J. DU SHANE.

ELECTRIC LAMP.

No. 326,487.

Patented Sept. 15, 1885.

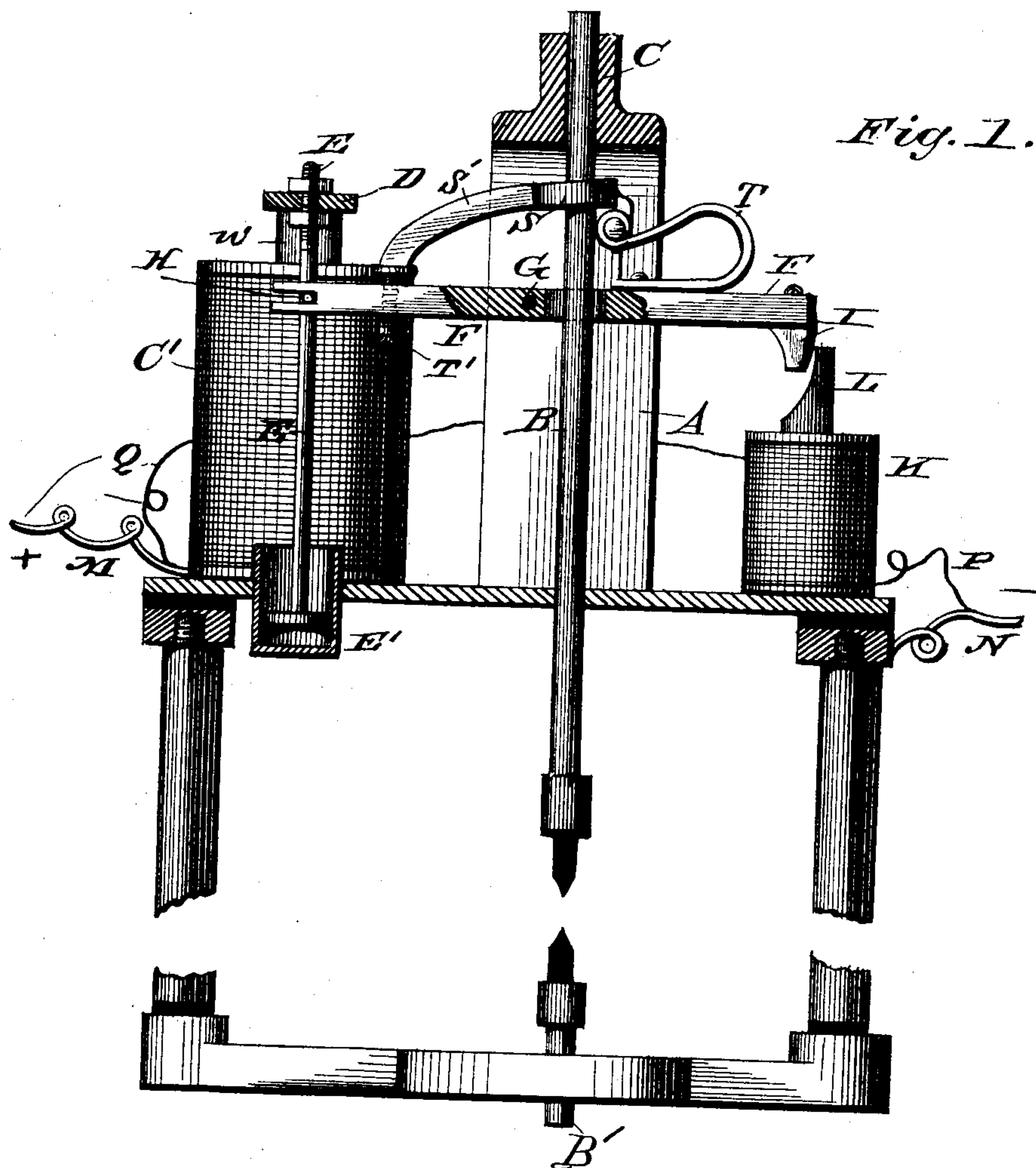
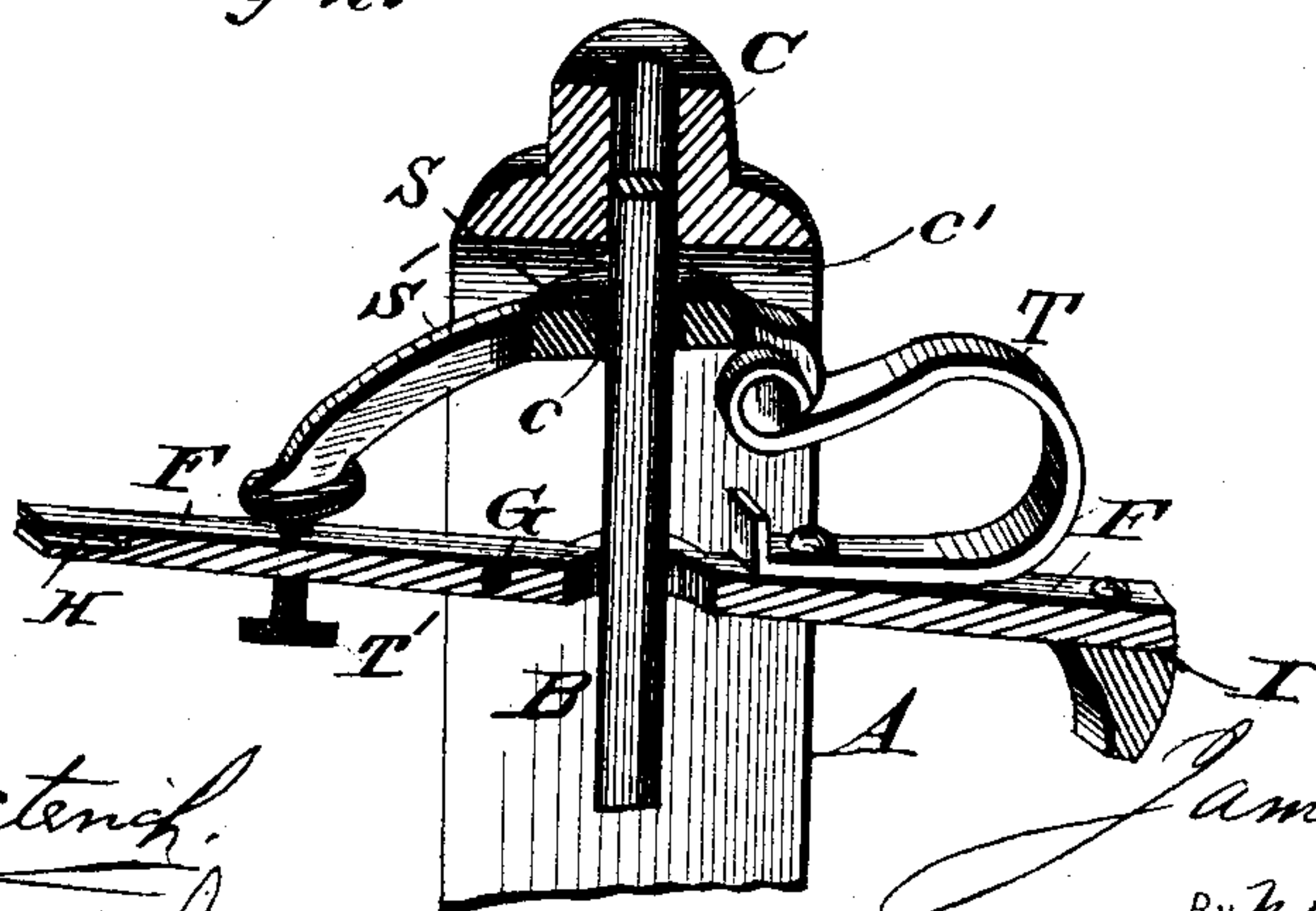


Fig. 2.



WITNESSES

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Fig. 3.

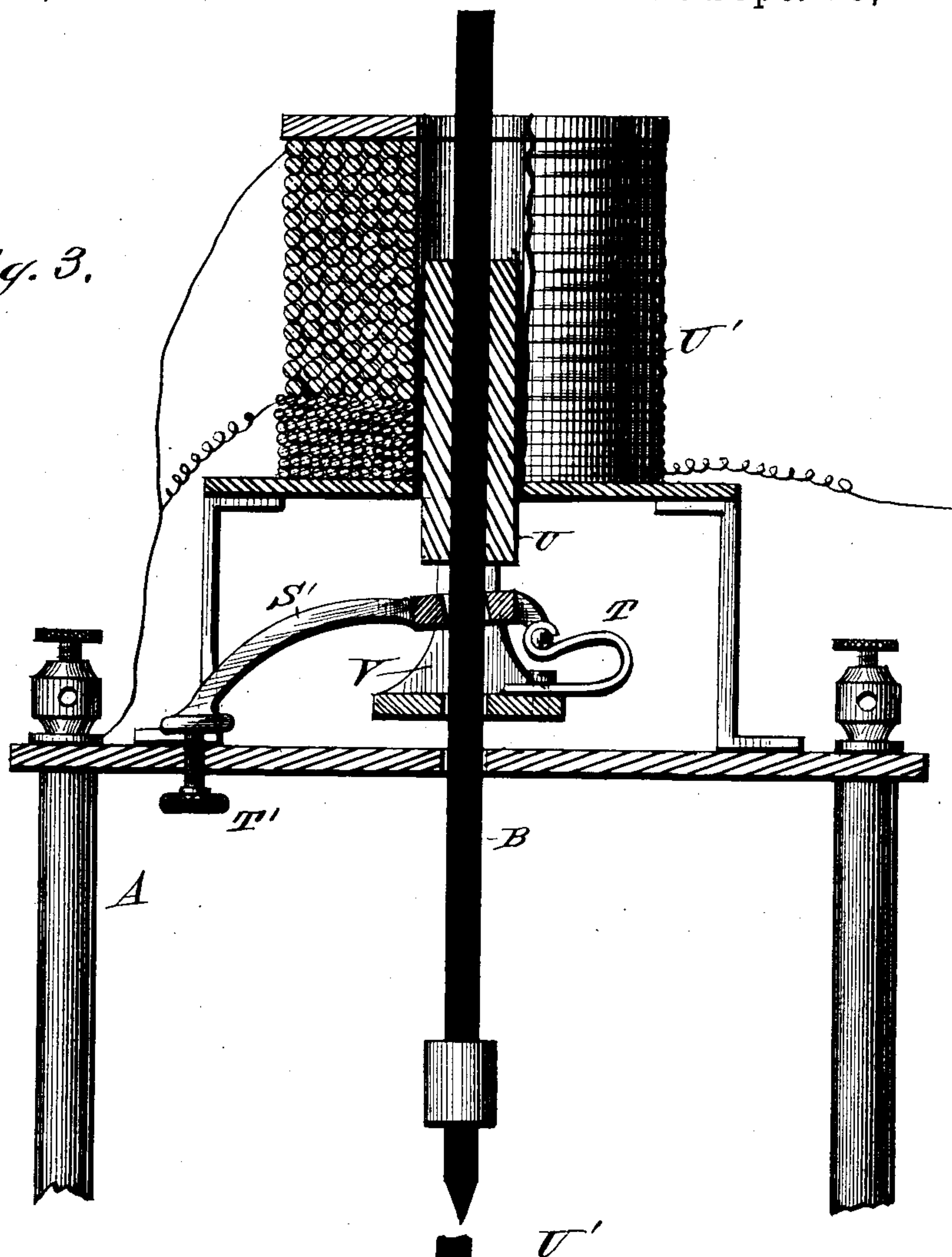
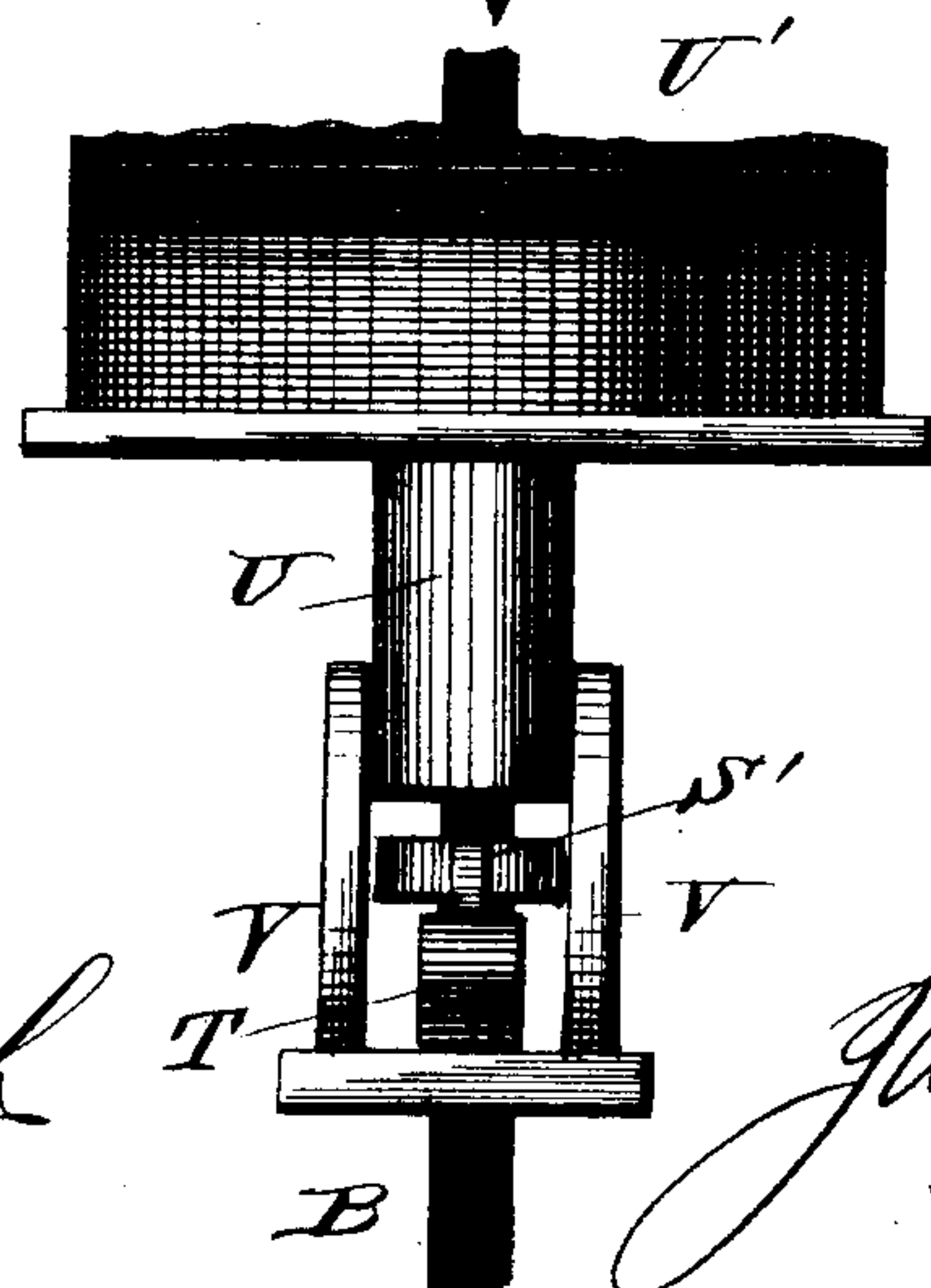


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES DU SHANE, OF SOUTH BEND, INDIANA.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 326,487, dated September 15, 1885.

Application filed December 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES DU SHANE, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Electric Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The invention relates to electric arc-lamps; and its object is to provide means whereby the automatic feed of the upper carbon will be made more gradual, regular, and easy than has heretofore been accomplished, and a steadier and more uniform light consequently given.

The invention consists, essentially, in the construction and arrangement of a ring-clutch that controls the descent of the upper carbon, as hereinafter explained, and also in the construction and arrangement of certain parts, hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents a vertical sectional view of that modification of my invention in which the clutch is attached to a lever operated by a main magnet and shunt-magnet. Fig. 2 is a detailed sectional view of the clutch and lever, more clearly showing its method of operation. Fig. 3 represents a modification in which the clutch is upheld by the core of a magnet and is released or tripped by its lever striking on a part of the lamp-frame; and Fig. 4 is a detached view, showing more clearly the attachment of the clutch to the core of the magnet.

Referring to the accompanying drawings by letter, A designates the frame of the lamp; B, the upper carbon or its tube passing through the guide-canal C at the upper part of the lamp-frame, and B' the lower carbon or its tube connected to the lower part of the lamp-frame.

C' designates a solenoid coil, two of which are used, one only showing in the drawings, as the other is cut off, the view being in section. These solenoids have the cores *w*, which are united at the top by the transverse bar D.

E is a rod depending from the center of the rod D, where it is secured by nuts, as shown,

and having on its lower end a piston working in the cylindrical dash-pot E'.

F is a transverse lever fulcrumed at G on the lamp-frame. One end of the lever H is bifurcated, the arms of the bifurcation inclosing a pin secured to the rod E, and the other end has depending from it an armature, I, the outer face of which is made on the arc of a circle, having the point G as center.

K is the shunt-coil having the core L, which has its upper end curved in a corresponding manner to the armature I to allow the lever F a longer range of motion.

The main current is from the wire M through the coils C' to the upper carbon, thence through the carbons to the wire N. The shunt-current is through the wire Q to the coil K, and thence through the wire P to the wire N, as shown in Fig. 1.

S is a ring-clutch surrounding the upper carbon and tube, and having the arm or lever S' formed upon it and standing toward the coils C. The opposite side of the ring-clutch is united by a joint to the curved spring T, which is bolted to the lever F on the side toward the coil K. The carbon or tube passes loosely through the clutch which binds thereon on the side toward the coil K at the point *c'* on the upper edge of its opening *h*, and on the side toward the coils C at the point *c* on the lower edge of its opening.

The arm S' of the clutch is unsupported when the clutch is holding firmly, but is brought to bear against the upper surface of the lever F, or the point of the adjusting-screw T', when the clutch releases.

In Figs. 3 and 4 the core U of the coil U' surrounds the upper carbon, and the spring T is bolted to a plate through an opening in which the carbon passes, and which is supported by the arms V, secured to the end of the core on each side of the carbon. The clutch is identical with that shown in Figs. 1 and 2; but the lever F is omitted, and the arm S' rests either on the lamp-frame or on the adjusting-screw T', passing therethrough.

The action of the clutch in both modifications is the same. As the carbon falls it carries down with it the clutch spring and arm S', till the latter impinges on and is lifted by the screw T', running through either the lever

F or the lamp-frame. The clutch will then tend to set level; but the spring T will tend to rise and will cause the edge c' to bind on the carbon with a gradually-diminishing force, and the carbon, instead of passing down with an intermittent motion, slides down smoothly and continuously and gives a more steady light.

In the modification shown in Fig. 1 it is plain that the dropping of the arm of the lever F on the side of the shunt-coil K would release the clutch when the said arm had moved down far enough; but by pivoting the lever at G, I raise the arm adjacent to the coil C', and lift the arm S', so that beside hastening the releasing of the clutch the arm of the lever on the shunt side has not to move through so large an arc to effect the releasing. In other words, the clutch is dropped on the shunt side and lifted on the opposite side, and is consequently so much the more sensitive.

The nearer the fulcrum-point G is to the coils C the farther the said coils lift the spring T with the same motion, and consequently the less distance they depress their cores w the quicker they will strike the arc. By placing the fulcrum-point at G the longer arm of the lever is toward the coil K, which consequently makes up in leverage what it wants in original power as compared with the coils C.

Having thus described my invention, I claim—

1. In an electric lamp, the clutch-ring surrounding the upper carbon, supported on one

side by a curved spring, to which it is united by a hinge-joint or pivot, and having an arm on the side opposite the spring adapted to strike against a proper point of the lamp as the clutch-ring, arm, and spring descend with the carbon, thus tending to release the clutch, substantially as specified.

2. In an electric arc-lamp, the combination, with a lever actuated by the main coil and the shunt-coil, and fulcrumed at one side of the carbon rod, of the spring located on the opposite side of said rod and supporting the clutch at one end, while the other end rests upon the lever, whereby the movement of the carbon is controlled, substantially as specified.

3. The combination, in an electric lamp, of the ring S, provided with the arm S', adapted to strike against a proper point as the clutch descends, and the spring T united by a hinge-joint to the ring of the clutch, substantially as specified.

4. The combination, with the carbon rods, the lamp-frame, and the lever F, pivoted at G, and actuated by the coils C' and K, of the spring T and the clutch-ring S, provided with the arm S', substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES DU SHANE.

Witnesses:

WILLIS A. BUGBEE.

CHAS. W. WILEY.