

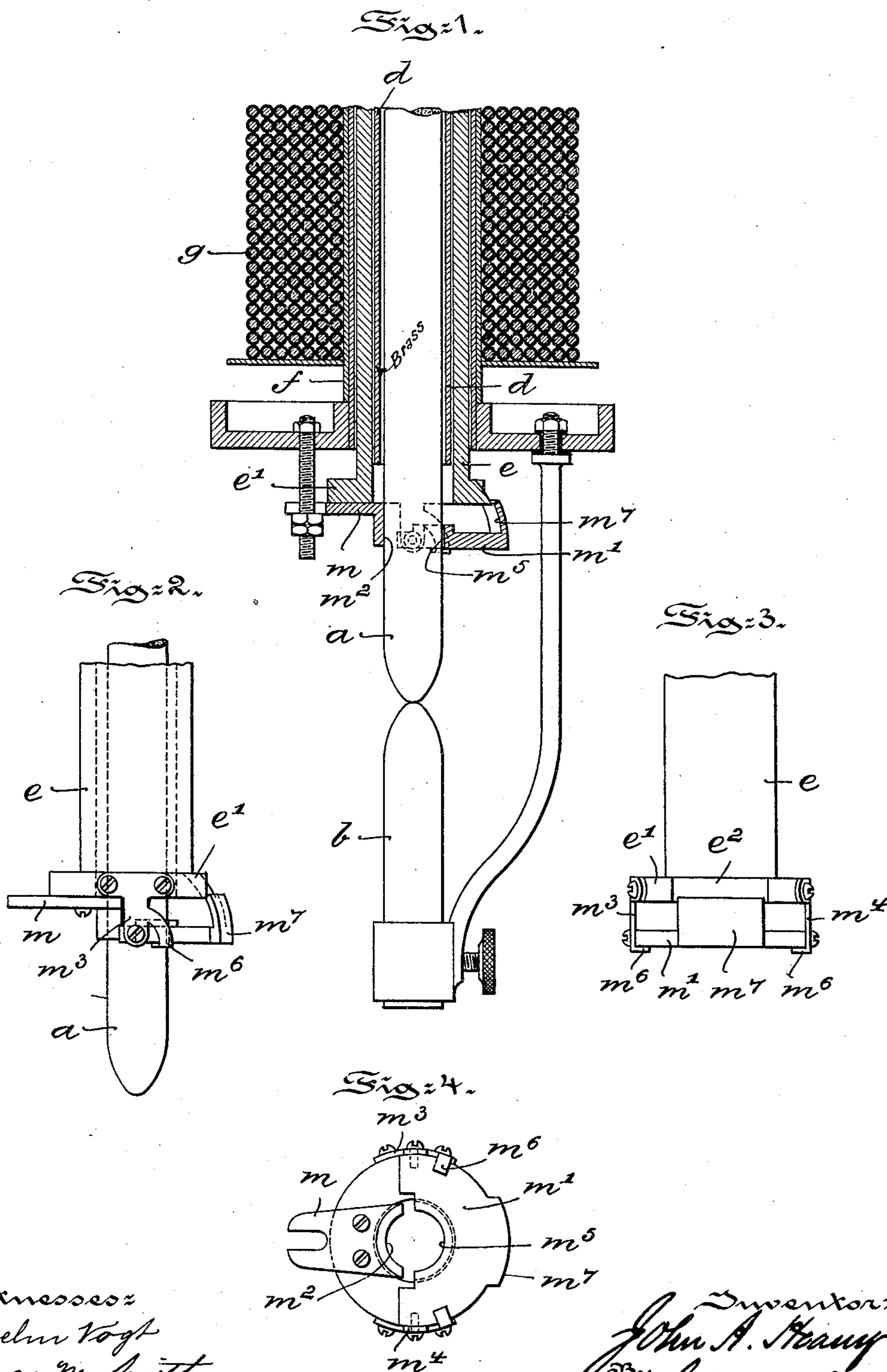
No. 678,873.

Patented July 23, 1901.

J. A. HEANY.  
ELECTRIC ARC LAMP.

(Application filed Nov. 14, 1900.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 678,873, dated July 23, 1901.

Application filed November 14, 1900. Serial No. 36,437. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. HEANY, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Carbon-Feeding Mechanism for Electric-Arc Lamps, of which the following is a specification.

My invention has relation to a mechanism for feeding one of the carbons of an electric-arc lamp, and in such connection it relates to the construction and arrangement of such a mechanism.

The principal object of my invention is to provide a clutch or feeding mechanism for the carbon of an arc-lamp which shall be at all times efficient and not liable to disarrangement and shall also be of simple construction. In the accomplishment of this object there is provided a tubular solenoid-core surrounding the carbon and adapted to slide up and down on the exterior of said carbon and a magnetic clutch or feed mechanism pivotally connected to the end of the core and adapted to be raised or drawn in one direction to clutch the carbon as soon as the core is magnetized and before the core responds or moves in obedience to the solenoid-coil.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a central vertical sectional view of the feeding mechanism and auxiliary parts embodying main features of my invention, the carbons being illustrated in front elevation. Fig. 2 is a detail view illustrating in front elevation the feeding mechanism. Fig. 3 is a side elevational view of the solenoid-core and the magnetic clutch, and Fig. 4 is an underneath plan view of Fig. 3.

Referring to the drawings, *a* represents the upper carbon, which ordinarily is the one to be fed, and *b* represents the lower or stationary carbon. The upper carbon *a* slides up and down in a tube *d*, of brass or similar non-magnetic metal. Around the tube *d* is fitted the solenoid-core *e*, which, as shown, consists of a tube of magnetizable metal having at its

lower end a collar or flange *e'*. The core *e* slides up and down between the tube *d* and a concentric tube or tubes *f* under the control of the solenoid-coil *g*, which is wrapped around the outer tube or tubes *f*, as clearly illustrated in Fig. 1. The clutch for the carbon *a* consists of two members or arms *m* and *m'*, of which one, *m*, is fixed by screws or rivets to the under face of the collar *e'* of the core *e* and has a curved jaw or clamping-face *m<sup>2</sup>* resting always against the carbon *a* when the carbon is inserted in its tube *d*. The other member *m'* is adapted to rock upon suitable pivots formed in the brackets *m<sup>3</sup>* and *m<sup>4</sup>*, projecting downwardly from the collar or flange *e'*, and also carries a clamping-jaw *m<sup>5</sup>*, of curved outline. The member or arm *m'* is normally supported in a horizontal position by means of lugs or stops *m<sup>6</sup>*, formed on the brackets *m<sup>3</sup>* and *m<sup>4</sup>*, as clearly shown in Figs. 1 and 2, and when in this position the two curved jaws *m<sup>2</sup>* and *m<sup>5</sup>* lie in the same plane and form a circular opening of a diameter slightly larger than the diameter of the carbon *a*. The arm or member *m'* has at its free end an upwardly-projecting piece *m<sup>7</sup>*, formed of a magnetizable metal and adapted when the core *e* is magnetized to ride upward over a complementally-formed portion *e<sup>2</sup>* of the collar *e'* and to be seated thereon in the same manner as an armature is attracted. The movement of the armature-piece *m<sup>7</sup>* causes the member *m'* to oscillate and serves to draw its clamping-jaw *m<sup>5</sup>* into a plane at an angle to the stationary jaw *m<sup>2</sup>*. In this position of the two jaws *m<sup>2</sup>* and *m<sup>5</sup>* the carbon is tightly gripped and remains tightly gripped until the core *d* is demagnetized.

The operation of the clutch and its auxiliaries is readily understood. So long as the carbons *a* and *b* are separated sufficiently to form the arc then the coil *g* magnetizes the core *d* sufficiently to cause the movable jaw *m<sup>5</sup>* to clamp the carbon *a*, and it also has sufficient attraction for the core *e* to hold said core and carbon *a* in suspension the required distance above the lower carbon *b*. When the arc is broken by the feeding away of the carbon *a*, then the solenoid-coil *g* is cut out of circuit, the core *e* is demagnetized,

and the member  $m'$  is released to permit its jaw  $m^5$  to turn into the plane of the jaw  $m^2$ . The carbon  $a$  is thus released and feeds downward toward the carbon  $b$  to establish the  
5 arc. When the arc is established, the coil  $g$  is energized and first magnetizes the core  $e$  and then elevates it. The magnetization of the core  $e$  causes the jaws  $m^2$  and  $m^5$  to clamp the carbon  $a$  before the core  $e$  is elevated by  
10 the coil  $g$ , and hence when said core responds to its coil the carbon  $a$  has been locked to and travels with the core.

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

In an electric-arc lamp, a carbon, a solenoid-core surrounding the carbon, a solenoid-coil controlling said core and adapted to magnetize and to elevate the same, an arm carried by the under face of the core and im-

movable with respect to the same, said arm having a curved face or clamping-jaw resting against the carbon, a second arm pivoted at one end to the immovable arm and having a clamping-face at its pivoted end adapted to  
25 normally rest in the same plane as the curved face of the first arm and parallel to the lower end of the core, and an armature-piece formed on the free end of the second arm and adapted when the core is magnetized to be elevated toward said core to draw the clamping-face out of its normal position, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOHN A. HEANY.

Witnesses:

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THOMAS M. SMITH.