

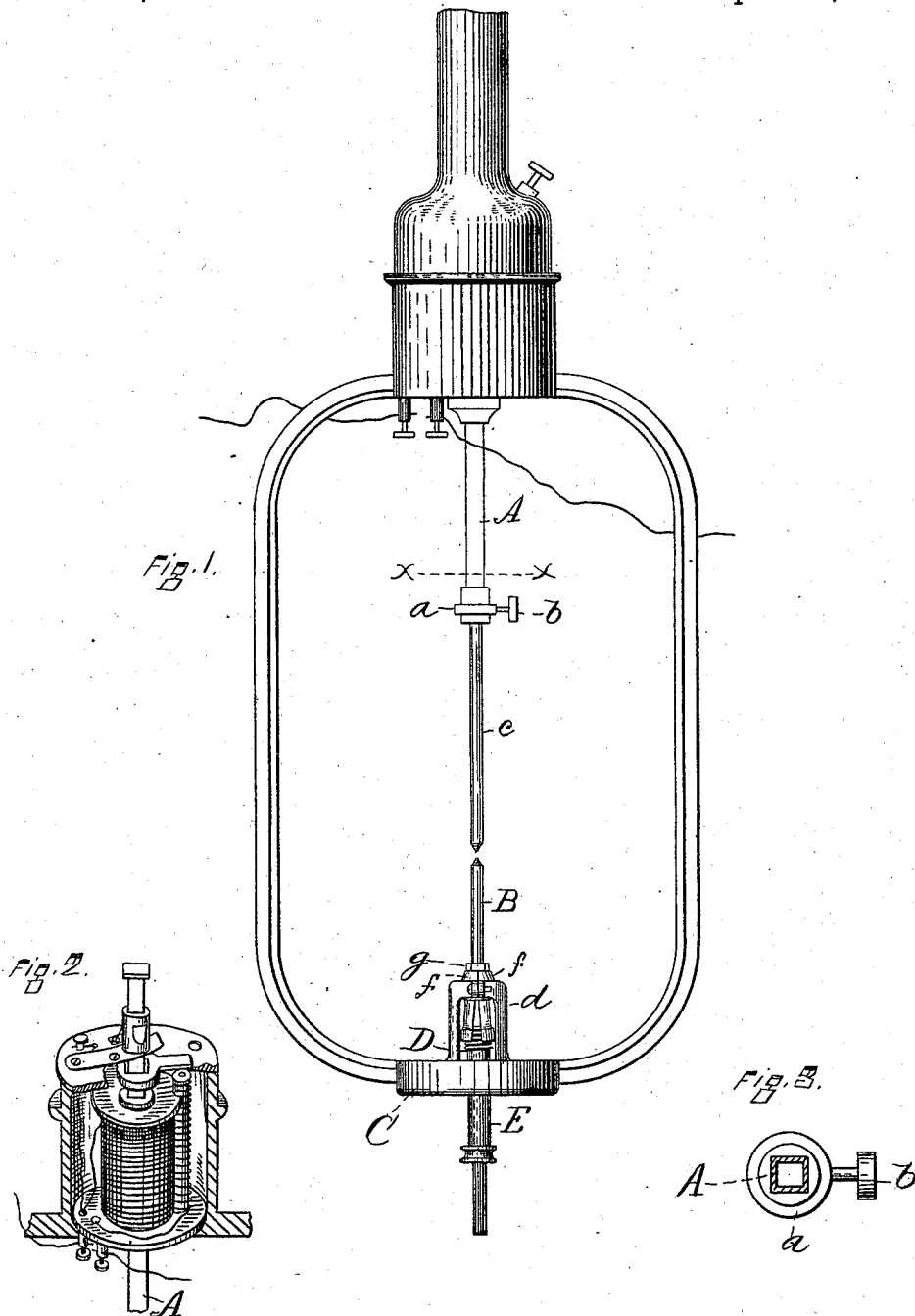
(No Model.)

2 Sheets—Sheet 1.

R. H. MATHER.
ELECTRIC ARC LAMP.

No. 305,617.

Patented Sept. 23, 1884.



Witnesses
John Edwards Jr.
Martin A. Cond.

Inventor.
Richard H. Mather.
By James Shepard
Atty.

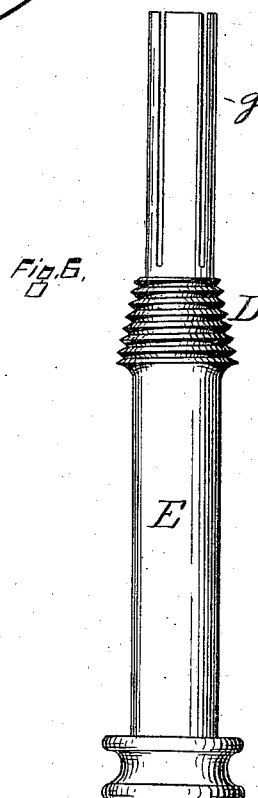
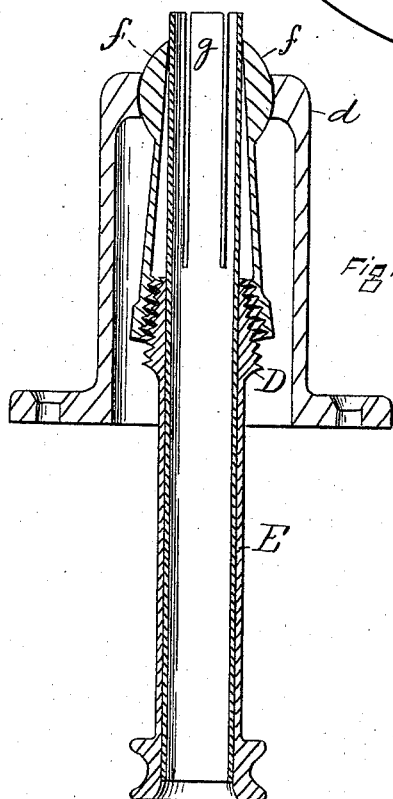
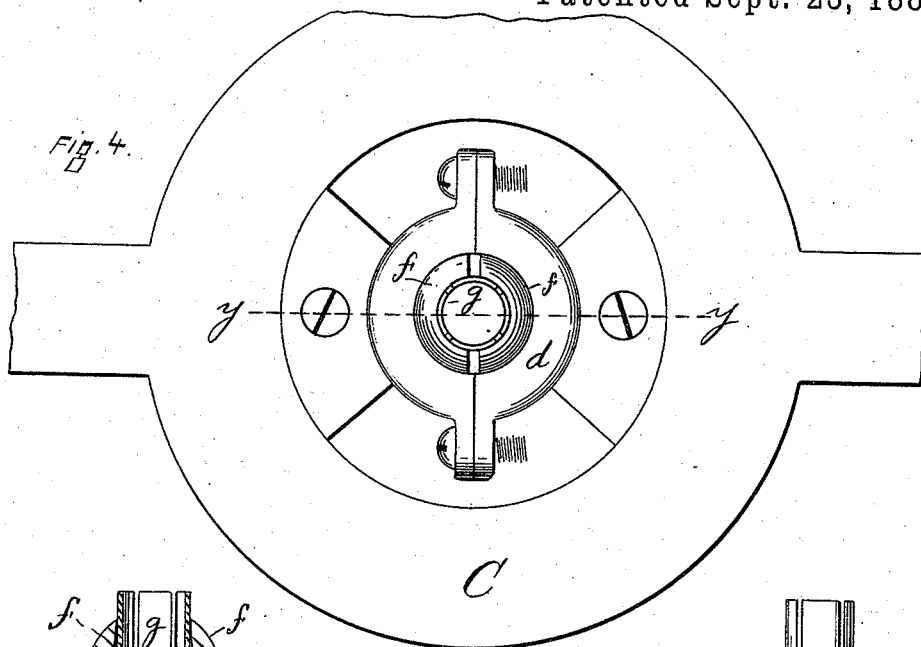
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UNITED STATES PATENT OFFICE.

RICHARD H. MATHER, OF WINDSOR, CONNECTICUT.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 305,617, dated September 23, 1884.

Application filed December 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. MATHER, a citizen of the United States, residing at Windsor, (post-office address Hartford,) in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

My invention relates to improvements in electric lamps, and particularly to the parts thereof which relate to feeding and holding the carbon-points.

The objects of my invention are to provide for a more convenient means of holding and adjusting the carbons. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved lamp. Fig. 2 is a perspective view of the feed-rod and its connections. Fig. 3 is a transverse section of said feed-rod upon line *xx* of Fig. 1. Fig. 4 is a plan view of the holder for the lower carbon, together with the lower part of the lamp. Fig. 5 is a vertical section thereof on line *yy* of Fig. 4; and Fig. 6 is a side elevation of a detached part of this holder. Fig. 3 is represented upon a scale twice the size of that employed in Figs. 1 and 2, and Figs. 4, 5, and 6 are represented upon a scale four times that employed for Figs. 1 and 2.

With the exception of the lower-carbon holder, the lamp may be constructed in accordance with any known or desired plan.

I have represented in Fig. 2, in connection with the feed-rod A, parts of the lamp like those shown in my Patent No. 268,254, dated November 28, 1882; but it is applicable to other lamps, and in fact I have already applied it to a lamp of a different construction.

The only change necessary in the feeding device and its clutch in order to adapt it for working with my rod is to change the embracing-sockets therein, through which the rod passes, from the round form to the square form corresponding to the cross-section of my feed-rod. This feed-rod is provided with the usual socket, *a*, and fastening-screw *b* for holding the upper carbon *c*. I employ spring-jaws and clamping mechanism for holding the lower carbon, B.

Upon the base C of the lamp-frame I secure an upwardly-projecting socket, *d*, preferably in two halves, and secured together by screws or rivets, as shown. In the upper end of this socket I form a round hole with concave sides, and within said hole I place the clamping-jaws *f*, having ball-shaped projections upon their upper ends, and an interior thread at their lower ends, as shown most clearly in Fig. 5. I prefer to make these jaws first in the form of a tube, which, after shaping and threading in substantially the form shown, is split lengthwise, and sufficient stock is removed from the inner faces of the clamping-jaws to allow them to come together properly.

g designates spring-jaws, which are formed by splitting the upper end of a tube, and below said jaws is a tapering cone, D, threaded on its exterior. Below this cone is the handle E. These jaws *g*, the cone D, and the handle E may all be formed in one and the same piece, or the cone and handle may be formed in one piece, and the tube for forming the jaws *g* may be formed of a separate piece and inserted within the handle, as shown, the handle of course being hollow for the admission of the carbon B. In order to insert the lower carbon-point, I either wholly remove the spring-jaws *g* and the handle E or I unscrew the cone enough to loosen the jaws. The carbon is then slipped upward in between the spring-jaws *g*, when, if properly constructed, they will bear upon the carbon with sufficient friction to hold it at the desired elevation within the jaws, but loosely enough so that it may readily be raised or lowered at pleasure. The handle is then revolved to turn the tapering cone in between the lower ends of the clamping-jaws, so as to force said lower ends apart and force their upper ends toward each other and upon the spring-jaws *g*, press said jaws upon the carbon, and hold it firmly in place. Forcing the cone thus into the jaws also has the tendency to make the ball-shaped portion of the jaws bear upon the concave walls of the socket with sufficient force to hold the jaws in whatever position they may be set. The concave walls in the upper end of the socket *d* are of sufficient breadth to hold the jaws in place by their ball-shaped ends, and

at the same time allow them to rock or tip therein in the well-known manner of a ball-and-socket joint or other form of universal joint. This enables the jaws to be rocked or tipped so as to bring the lower carbon directly underneath the upper carbon. By the employment of this clamping mechanism for the lower carbon it can be inserted from below the base of the lamp, while the handle also extends below the lamp and may be operated from that point, whereby the holder is operated much more conveniently than it could be in case it was necessary to reach above the base of the lamp-frame to fasten the carbon in place.

It will also be seen that it is necessary to manipulate a single mechanism only in order to simultaneously fasten in position the carbon-holding jaws and the members of the universal joint.

While I prefer to employ the spring-jaws *g* for receiving the carbon, it is evident that the jaws *f* may be made to impinge directly upon the carbon instead of the jaws *g*, which construction would utilize a portion of the advantages of my invention and would be a great improvement upon the old set-screw and socket for electric lamps.

I am aware that a prior patent shows an electric lamp in which a friction-clutch feed having an embracing socket is combined with a feed-rod which is square in cross-section,

and that other patents show a lower-carbon holder having jaws which are forced together by a screw sleeve or nut, also lamps in which the lower-carbon holder is mounted on a universal joint. All of said prior art is hereby disclaimed.

I claim as my invention—

1. The combination of the frame of an electric lamp, a carbon-holder having jaws for clamping the carbon, a universal joint which connects the carbon-holder with the lamp-frame, and a single mechanism consisting of the handle *E*, having cone *D* for simultaneously fastening in position the jaws and joint, substantially as described, and for the purpose specified.

2. The combination of the tapering-cone *D*, threaded on its exterior, the handle *E*, the jaws *f*, having ball-shaped projections upon their upper ends, and a socket in which said jaws are mounted, substantially as described, and for the purpose specified.

3. The combination of the spring-jaws *g*, cone *D*, the jaws *f*, acting upon said spring-jaws, and the socket within which said jaws *f* are mounted, substantially as described, and for the purpose specified.

RICHARD H. MATHER.

Witnesses:

HIRAM WILLEY,
CHAS. A. SAFFORD.