

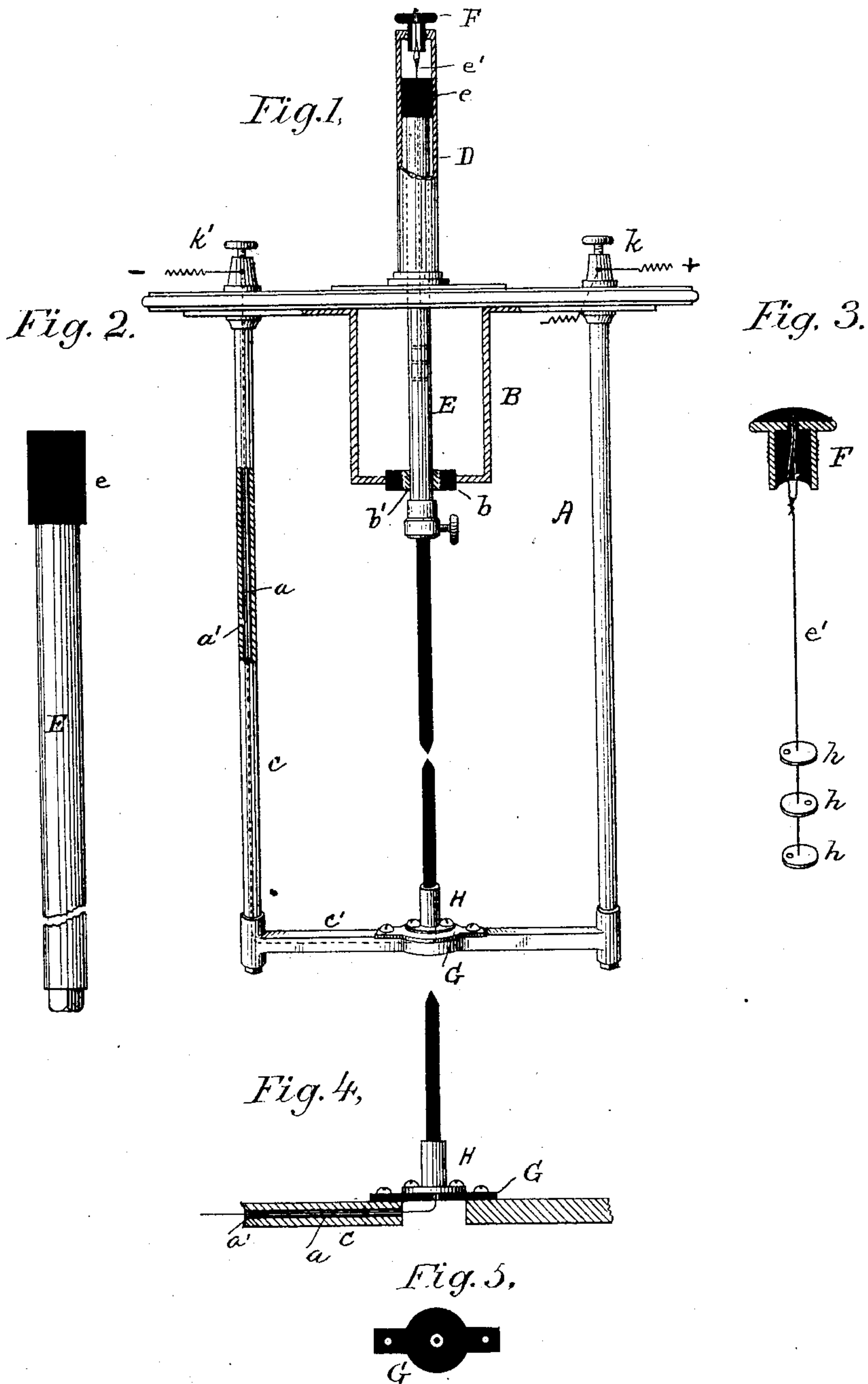
(No Model.)

M. J. O'SULLIVAN.

ELECTRIC ARC LAMP.

No. 258,466.

Patented May 23, 1882.



WITNESSES

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INVENTOR

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# UNITED STATES PATENT OFFICE.

MICHAEL J. O'SULLIVAN, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE  
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## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 258,466, dated May 23, 1882.

Application filed December 19, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL J. O'SULLIVAN, of the city of Baltimore, in the county of Baltimore and State of Maryland, have invented a certain new and useful Improvement in Electric-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 and the letters of reference marked thereon, forming a part of the same.

In arc lamps as at present constructed the lamp-frame, and the horn as well when one is used, are in electrical connection with the carbon-holders. A lamp of this kind is dangerous to handle, and is often the occasion of serious accidents.

The object I have in view is to remedy the above-named defect, and also to accomplish this object without necessitating material changes in the form or construction of existing types of lamps.

To this end I combine with the lamp-frame a lower-carbon holder which is insulated from the frame, and an insulated covered connecting-wire leading from the proper lamp terminal to said holder. I thus isolate the frame from the lower-carbon holder and its electrical connections and render it perfectly safe to handle. I also combine the upper or movable carbon rod or holder and the horn which surrounds and receives the upper end of the same in such manner that the horn will be insulated and out of electrical contact with the rod, and in lamps in which the said holder has a tubular prolongation constituting the body or cylinder and a moving element of the dash-pot I suspend the plunger member of the dash-pot from a plug of hard rubber or other non-conductor material fitted to the horn, so as to effectually prevent electrical connection from that source, and I further insulate the said holder from the feed mechanism containing box or case through which it passes. In this way I obtain a lamp which can be handled with entire safety, and which will endanger neither life nor property.

In the accompanying drawings, Figure 1 is a sectional elevation of so much of an arc lamp

as needed for the purposes of explanation. Fig. 2 is a view on enlarged scale of the dash-pot cylinder forming part of the upper-carbon holder. Fig. 3 is a view on like scale of the plunger, with the plug from which it is suspended in section. Fig. 4 is a sectional elevation of the lower-carbon holder, with its insulating supporting bridge-tree and parts of the lamp-frame adjoining the same. Fig. 5 is a plan of the bridge-tree.

The frame A of the lamp is of the usual configuration. The terminals are indicated at  $k$   $k'$ —the latter electrically connected in the usual way with the upper-carbon holder E and the former in electrical connection with the lower-carbon holder H. The conducting-wire which leads from the terminal  $k$  to the holder H is shown at  $a$ , covered with rubber or other insulating material,  $a'$ , and extending through the limbs  $c$   $c'$  of the frame, which are made hollow or tubular for this purpose. This is the preferred arrangement, inasmuch as the wire while insulated from the frame is covered by the latter throughout its length. The lower-carbon holder H is also insulated from the frame by a bridge-tree, G, of hard rubber or other suitable material, upon which the holder should be secured in a manner to permit of the usual adjustments. In this way I entirely insulate the frame, so that it may be handled with entire safety while the lamp is running. The horn D is made fast to the usual wooden plate and spans the top of the frame. Within it is, as usual, the tubular carbon-holding rod E, which forms the cylinder and moving member of the dash-pot, and is designed to be filled with glycerine or other suitable liquid. Within it is the plunger, consisting in this instance of disks  $h$ , fast to the plunger-rod  $e'$ , which is suspended from a plug, F, made of hard rubber or other non-conducting material, which is screwed into the top of the horn, as indicated in Fig. 1. In this way—that is to say, by the employment of a non-conducting or insulating plug as the means for suspending the plunger—the carbon-holder is effectually insulated from the horn, which latter is thus free from any electrical change.

In order to more effectively insure the insu-



lation of the horn, the enlarged overflow *e* on top of the cylinder *E* is made of hard rubber or some other suitable non-conducting material, so that in event of accidental contact between the two there can be no possible electrical connection between the horn and the holder through that intermediary. The case which contains the usual carbon feed and regulating mechanism is indicated at *B*. I have not deemed it necessary to show said mechanism, inasmuch as the same is well known and forms no part of my invention. At the point where the carbon-holder passes out from and below the case I provide, instead of the usual bearing, an insulated bearing, consisting in this instance of the hard-rubber washer *b*, provided with a metallic lining, *b'*. If more than one bearing be provided for the carbon, each of them should be insulated from the case in this or some similar manner.

What I claim as my invention is—

1. In an arc lamp, the combination, with the movable upper-carbon holder, of a horn insulated from electrical connection with said holder, and other parts which may be embraced in the lamp-circuit, substantially as hereinbefore set forth.

2. The non-conducting or insulated plug *F*, in combination with the horn, the holder *E*, and the plunger, substantially as and for the purposes hereinbefore set forth.

3. The holder *E*, surmounted by a non-conducting overflow, *e*, in combination with the plunger, the non-conducting or insulated plug *F*, and the horn, substantially as hereinbefore set forth.

4. The combination of the movable upper-carbon holder, the case or box *B*, provided with insulated bearings at the point or points where the holder has contact with said case, and the lower-carbon holder, insulated also from said case, substantially as and for the purposes set forth.

5. In an arc lamp, the combination, with the carbon-holders and other parts embraced in the lamp-circuit, of the horn and the frame, insulated from said parts, substantially as and for the purposes set forth.

MICHAEL J. O'SULLIVAN.

Witnesses:

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