

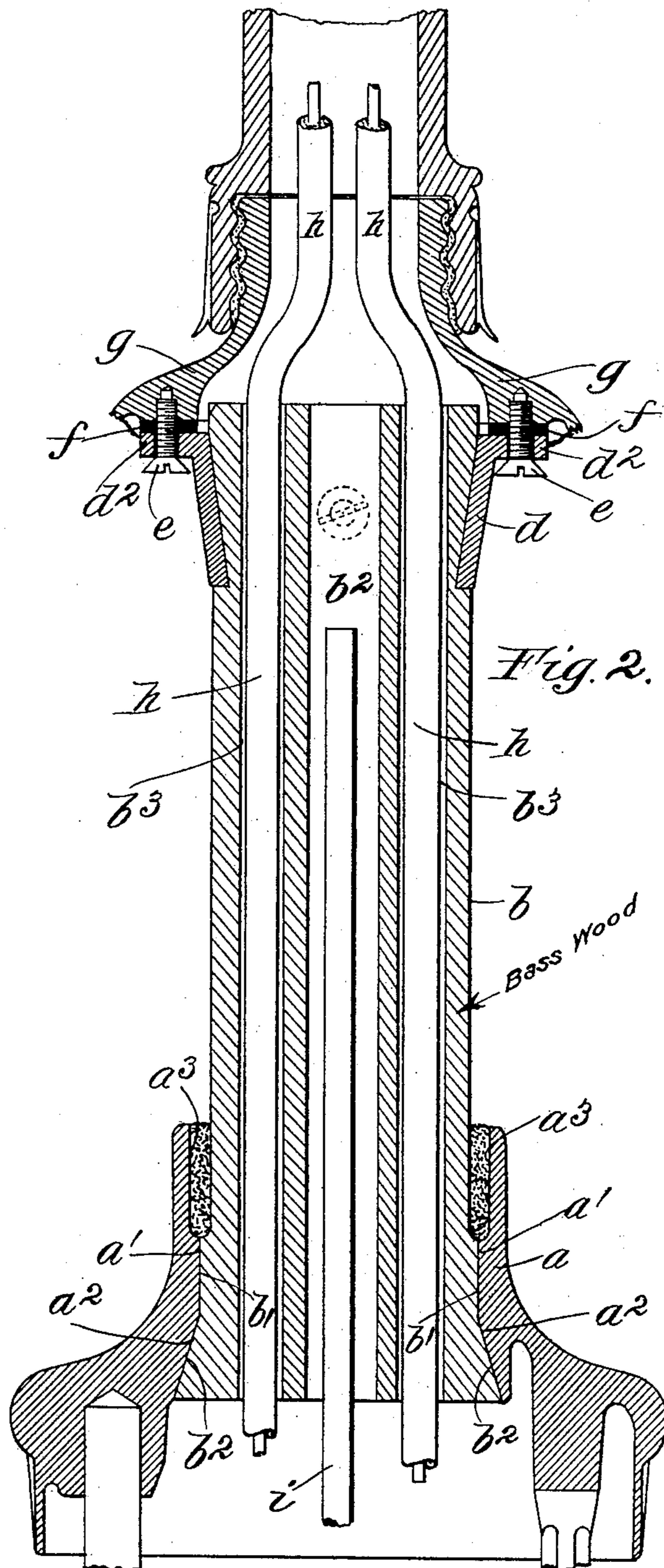
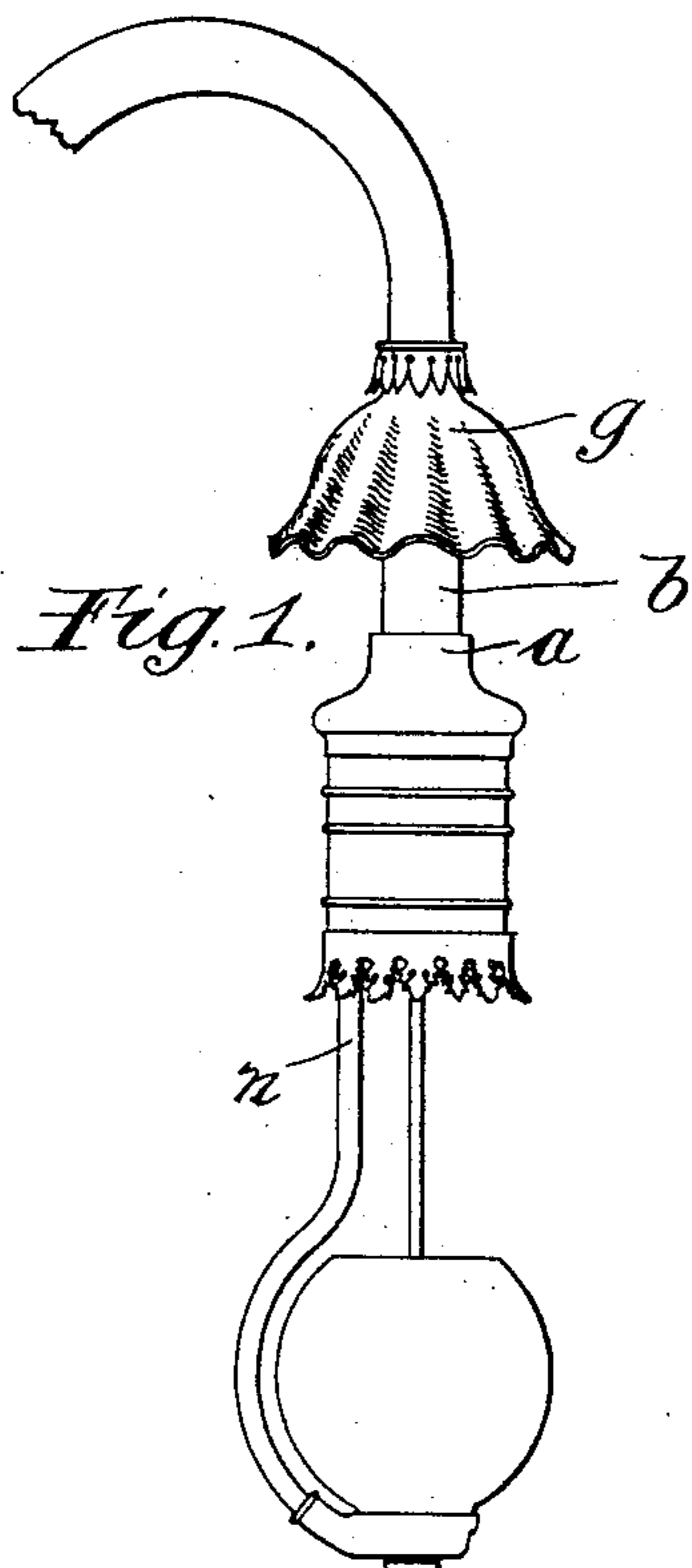
(No Model.)

3 Sheets—Sheet 1.

E. P. WARNER & H. H. WAIT.  
ELECTRIC ARC LAMP.

No. 599,818.

Patented Mar. 1, 1898.



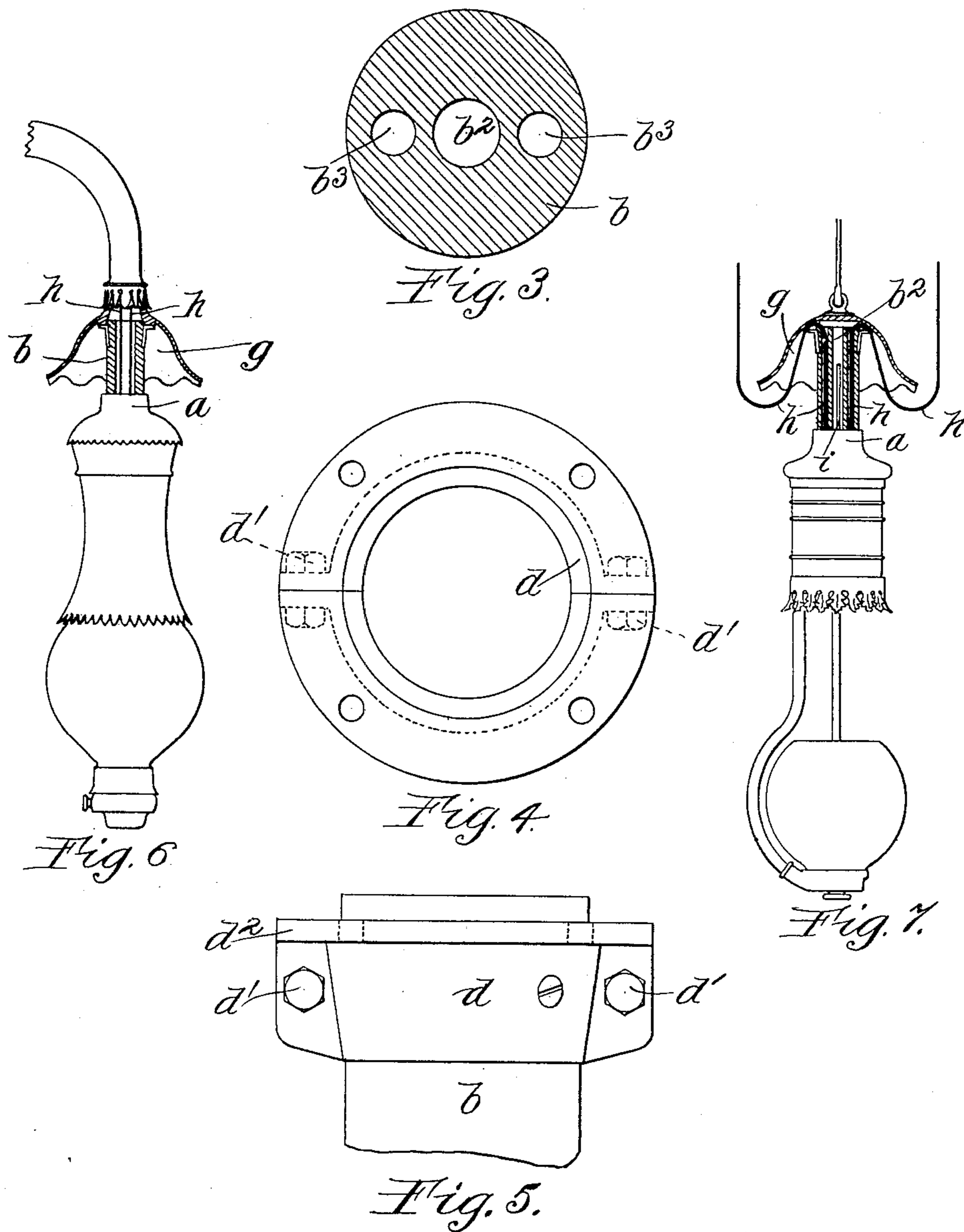
Witnesses:  
A. H. C. Danner,  
John H. Sinclair

Inventors,  
Ernest P. Warner,  
Henry H. Wait,  
By Barton & Brown  
Attorneys.

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D. M. Canner  
John H. Sinclair

Inventors:  
Ernest P. Warner,  
Henry H. Wait,  
By Barton & Brown  
Attorneys.

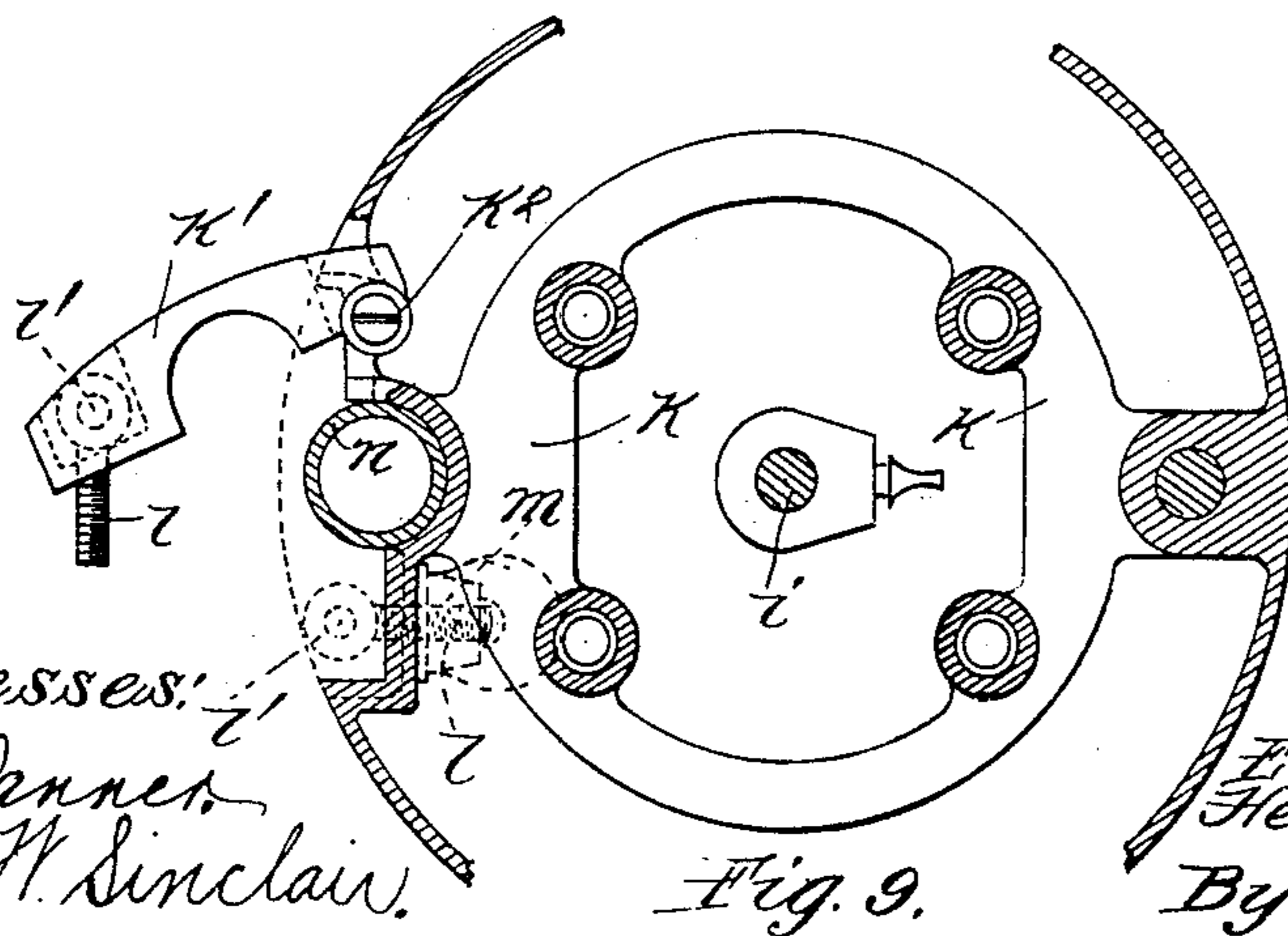
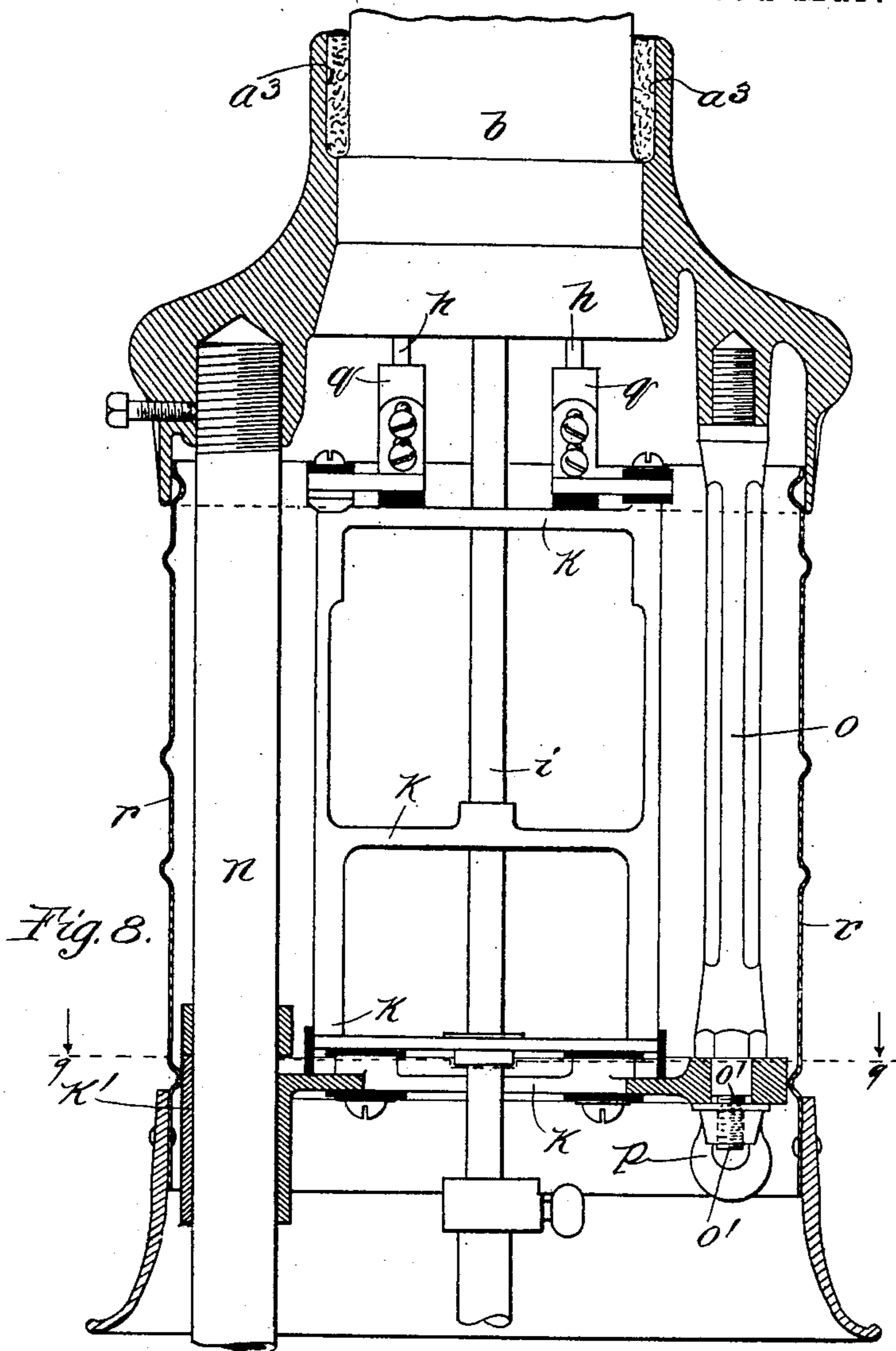
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3 Sheets—Sheet 3.

E. P. WARNER & H. H. WAIT.  
ELECTRIC ARC LAMP.

No. 599,818.

Patented Mar. 1, 1898.



Witnesses:  
A. H. Warner,  
John H. Sinclair.

Inventors  
Ernest P. Warner,  
Henry H. Wait,  
By Barton & Brown  
Attorneys.

# UNITED STATES PATENT OFFICE.

ERNEST P. WARNER AND HENRY H. WAIT, OF CHICAGO, ILLINOIS, ASSIGN-  
ORS TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 599,818, dated March 1, 1898.

Application filed March 16, 1897. Serial No. 627,792. (No model.)

*To all whom it may concern:*

Be it known that we, ERNEST P. WARNER and HENRY H. WAIT, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric-Arc Lamps, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to electric-arc lamps, having in mind more particularly that class commonly used for street-lighting.

Trouble has frequently been experienced during wet weather by leakage of current to ground, and the metallic carbon-rod sheath, by which it is a common practice to suspend the lamp, frequently forms a conductor through which this leakage occurs.

Our invention contemplates an improved structure whereby the possibility of trouble from this source is greatly decreased, if not absolutely prevented.

Our invention further contemplates an improved construction of the lamp-frame, whereby the operating mechanism may be readily removed for repairs or other purposes without the necessity of taking down the whole lamp from its support. A considerable economy of time and labor is thus effected, together with increased convenience in handling.

Generally speaking, our invention consists in an improved construction wherein the lamp is provided with a sheath formed of insulating material united with its roof and forming a vertical extension thereof, by which sheath the lamp is adapted to be suspended, said sheath being provided with one or more bores or conduits extending longitudinally there-through and communicating with the interior of the lamp-frame through an opening in said roof, through which bore or conduit the conducting-wire may be passed to the operating mechanism in the interior of the lamp without exposure to the weather or to any grounded metallic parts or conductors. When used in connection with arc-lamps in which the car-

bon is suspended by a feed-rod, said sheath also serves to protect the upper portion of said feed-rod. The insulating sheath or chimney is itself preferably protected from moisture by a hood or canopy, thus affording increased immunity against any passage of current to ground.

Further details of our invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 shows an elevation of an arc-lamp protected after the manner of our invention. Fig. 2 is a sectional view of the insulating-sheath and adjacent parts. Fig. 3 shows the sheath in cross-section. Fig. 4 is a plan view of a clamping-collar which we prefer to employ in securing the sheath to the canopy. Fig. 5 is an elevation thereof. Fig. 6 illustrates our invention as applied to a "chain-feed" lamp in which a long carbon rod is not used. Fig. 7 shows our invention applied to a lamp of the kind shown in Fig. 1, but suspended by a rope instead of directly united with the lamp-post. Fig. 8 is a vertical sectional view of a portion of the lamp of our invention, showing our improved means for removing the operating mechanism from the frame. Fig. 9 is a sectional view on line 9 9 of Fig. 8, some of the parts being removed and others being slightly changed in position, showing the supports for the operating mechanism in readiness to be removed from the frame.

Like letters refer to like parts throughout the several figures.

The roof of the lamp-frame is shaped to form a hole or socket  $a$ , in which the lower end of the sheath  $b$  is retained. We preferably make the latter of basswood treated thoroughly with asphaltum. It is provided with an enlarged end at the bottom and when introduced into the socket from below is driven upward until the faces  $b'$   $b^2$  come into engagement with complementary parts  $a'$   $a^2$  of the socket, forming a very tight joint. The socket is provided with a recessed portion  $a^3$ , where the sheath emerges therefrom, thus forming an annular channel into which oakum, cotton, or other packing should be

tamped and the junction coated with marine glue. The upper end of the sheath is recessed, as shown, to provide an engaging surface or seat for the collar  $d$ , which is formed  
 5 in two parts united by screws or bolts  $d' d'$ , thus clamping the sheath very firmly. A flange  $d^2$  extends around the upper edge of the collar.

The canopy  $g$  is secured to the lamp-post  
 10 in a well-known manner, and the collar is fastened to its under side by screws  $e$ , passing through the flange  $d^2$ . Rubber washers  $f f$  are interposed between the flange and the canopy, and by reason of the compressibility  
 15 the lamp may be adjusted in a correct vertical position by tightening or loosening one or another of the screws  $e$ . The sheath now closes the passage from the post into the hood and forms a closed chamber therewith.

20 A hole  $b^2$  is provided throughout the length of the sheath in which the upper portion of the carbon rod  $i$  is inclosed, and the conductors  $h h$  from the street-mains are led through the lamp-post and to the operating mechanism through ducts  $b^3 b^3$ , provided in the wooden  
 25 sheath. The latter thus serves at the same time as a conduit for the conductors, a protecting-sheath for the carbon rod, and means for thoroughly and completely insulating  
 30 the lamp-frame from the metallic post and ground.

In cases where a "ribbon-feed" lamp is employed, there being no carbon rod, the hole  $b^2$  may be omitted, the construction being  
 35 otherwise practically unchanged.

In the arrangement as preferably constructed the canopy  $g$  is intended to be permanently secured to the lamp-support. It is to this canopy that the lamp is attached, as we have  
 40 already stated, by means of the collar, through which the screws  $e e$  are inserted. We have found that an insulating-section, forming at the same time a protecting-sheath for the wires and a mechanical support for the lamp,  
 45 serves to effectually insulate the lamp from the post.

In Fig. 6 we have shown but one duct for the reception of the conductors  $h h$ , a long carbon rod not being employed in this style  
 50 of lamp.

Referring to Figs. 8 and 9, the frame  $k$ , which supports the operating mechanism of the lamp, is secured to the frame in the following manner: The pipe  $n$ , which forms a part  
 55 of the supporting-framework of the lamp, is engaged by a clamp  $k'$ , pivoted at  $k^2$  to the part  $k$ . A bolt  $l$  is pivoted at  $l'$  to the clamp  $k'$  and is adapted to be engaged by a thumb-nut  $m$  (shown in dotted lines in Fig. 9) to secure the clamp  $k'$  in engagement with the  
 60 pipe  $n$ . A post  $o$  is mounted upon the frame, as shown in Fig. 8, and is provided with a threaded extension  $o'$ , adapted to be engaged by a thumb-nut  $p$ , between which and the  
 65 post a portion of the part  $k$  is rigidly held.

Binding-posts  $q q$  are provided upon the upper part of the frame  $k$ , to which the conductors  $h h$  are secured.

To remove the operating mechanism as a whole from the frame of the lamp it is only  
 70 necessary to slide the casing  $r$  downward and unscrew the thumb-nut  $m$  from bolt  $l$ , when the clamping portion  $k'$  may be turned upon its pivot  $k^2$  into the position shown in Fig. 9. When the thumb-nut  $p$  is removed from the  
 75 extension  $o'$  and the conductors  $h h$  released from binding-posts  $q q$ , the operating mechanism is completely detached from the rest of the lamp and may be removed at pleasure. The work of placing the operating mechanism  
 80 in position is performed with equal facility.

The canopy may be dispensed with in certain cases or varied with relation to the insulating section or sheath while other features  
 85 of our invention are retained.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an electric-arc lamp, the combination  
 90 with the lamp-frame, of an insulating-chimney therefor, from which the lamp may be suspended, and which is rigidly secured to the lamp, and a duct or ducts in said chimney adapted to receive the carbon or feed rod  
 95 and the conductors leading to the operating mechanism, substantially as described.

2. The combination with the framework of an arc-lamp, of an extension or post  $o$  provided thereon, a frame  $k$  supporting the operating mechanism and removably mounted  
 100 upon said post, and a clamping portion  $k'$  upon said frame  $k$  adapted to removably clamp the same to a portion  $n$  of the framework of the lamp, whereby the frame  $k$  and  
 105 the operating mechanism supported thereby may be removed as a whole from the main framework of the lamp, substantially as described.

3. In an electric-arc lamp, the combination  
 110 with a lamp-frame, of lamp mechanism contained within the same, a roof for the frame for affording protection to the lamp mechanism within the frame, said roof being provided  
 115 with an opening, a sheath formed of insulating material united with the aforesaid roof and forming a vertical extension thereof, said sheath being provided with a bore or duct extending longitudinally therethrough and communicating with the interior of the lamp-  
 120 frame through said opening in the roof, and conducting-wire protected by and passing through said sheath into the interior of the lamp-frame and connected or adapted to be connected in circuit with the operating mechanism  
 125 of the lamp, said sheath being constructed to support or suspend the lamp, substantially as described.

4. The combination with an arc-lamp, of a chimney of insulating material by which the  
 130

lamp is supported, ducts therein adapted to  
receive and protect the carbon or feed rod  
and the conductors leading to the lamp, and  
a hood or canopy adapted to protect said in-  
5 sulating-chimney from moisture, substan-  
tially as described.

In witness whereof we hereunto subscribe

our names this 17th day of February, A. D.  
1897.

ERNEST P. WARNER.  
HENRY H. WAIT.

Witnesses:

D. W. C. TANNER,  
E. L. MAUERMANN.