

W. C. FISH & R. FLEMING.

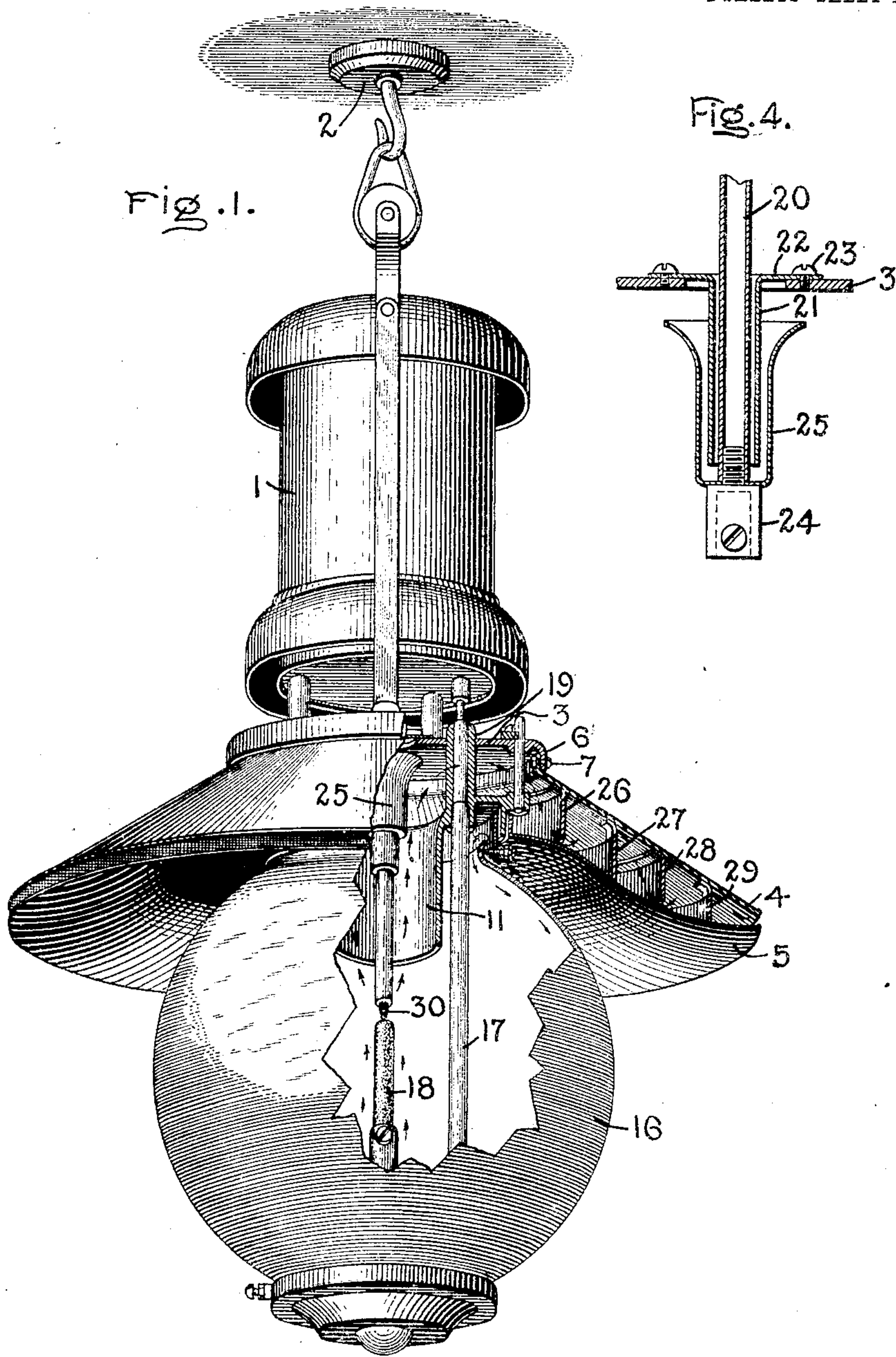
ARC LAMP.

APPLICATION FILED MAY 29, 1903.

925,166.

Patented June 15, 1909.

2 SHEETS—SHEET 1.



Witnesses:

Ewing Munnery.
Helen W. Ford

Inventors,
Walter C. Fish,
Richard Fleming,
By *Albert H. Davis*
Att'y.

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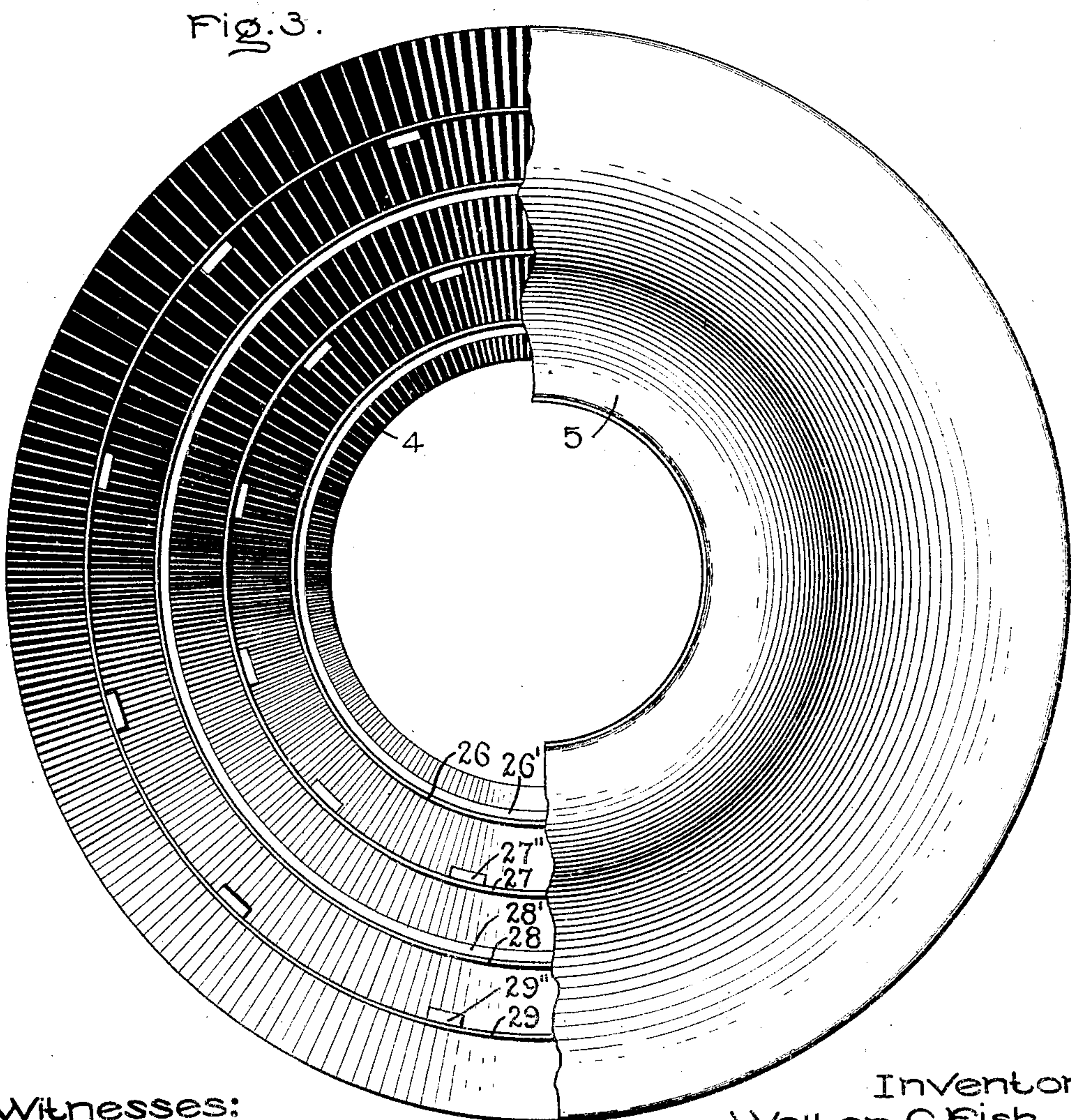
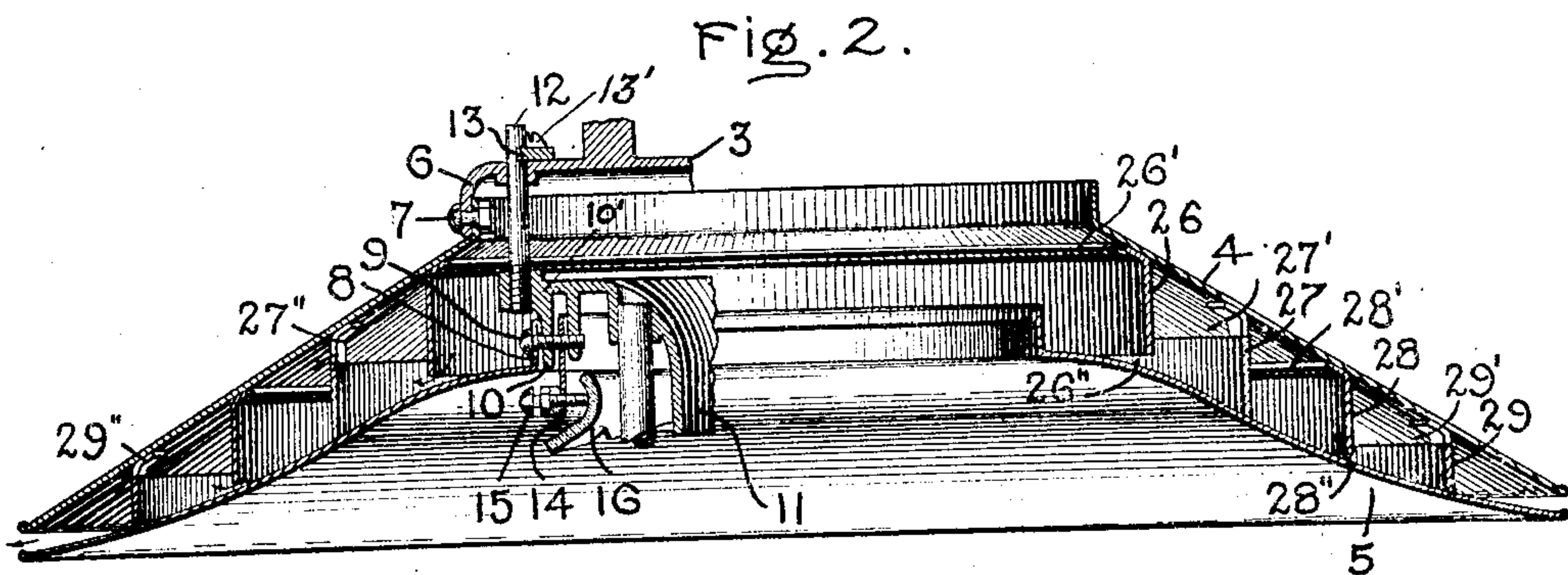
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2 SHEETS—SHEET 2.

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Witnesses:

Ewing Rumney
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UNITED STATES PATENT OFFICE.

WALTER C. FISH AND RICHARD FLEMING, OF LYNN, MASSACHUSETTS, ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ARC-LAMP.

No. 925,166.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed May 29, 1903. Serial No. 159,249.

To all whom it may concern:

Be it known that we, WALTER C. FISH and RICHARD FLEMING, citizens of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

In the operation of certain forms of lamps such for instance as those in which luminous or flaming electric arcs are employed as the sources of light, matter is given off by the arc in the form of smoke. Suitable provision for removing the smoke from the lamp is necessary or otherwise solid matter will be deposited from the smoky gases upon the inner surface of the inclosing globe and other portions of the lamp to which it may have access. This is of course objectionable.

To provide means for removing the smoke from the lamp, without at the same time adding materially to the bulk of the lamp, we have constructed a reflector, a necessary part of the lamp, with smoke-carrying passages or channels in it. In the preferred form of our invention this combined reflector and chimney comprises two annular members or parts arranged substantially parallel to one another but separated by a space. The outer surface of one of the annular members, which may be polished, enameled or otherwise treated to smooth it, forms the reflecting surface of the lamp, and the space between the two annular pieces forms a passage for the gases given off by the lamp. The gases enter at the inner edges of the annular pieces and are discharged at or near the outer edges of the annular pieces. Where, as in the lamps designed for indoor use, the discharge of the unpurified gases from the lamp into the outer atmosphere may be objectionable, suitable means may be provided for entrapping some of the impurities in the gases in the space between the two annular parts forming the combined chimney and reflector. One of the ways in which we propose to entrap impurities, contemplates the use of baffle plates suitably arranged to cause a deposit of the heavier impurities within the chimney space.

In order to readily clean and inspect the interior of the combined reflector and chimney, we prefer to make the two parts separable.

In the form of our invention which we

have hereinafter illustrated and described, we have shown a construction in which one of the annular members can be readily removed from the lamp without disturbing the other of said members.

Our invention contemplates other improvements in the lamp, all of which will be pointed out in the claims annexed to and forming a part of this application.

For a better understanding of our invention, reference can be had to the accompanying drawings in which we have illustrated one embodiment of our invention.

In the drawing Figure 1 is an elevation with parts broken away and in section illustrating an arc lamp provided with our combined reflector and chimney; Fig. 2 is a sectional elevation of the combined chimney and reflector; Fig. 3 is a view showing the under side of the reflector shown in Fig. 2 with parts broken away; and Fig. 4 is a sectional elevation illustrating details of the construction of the lamp.

Referring to the drawings, 1 represents an arc lamp suspended from a fixed support at 2. The lamp is provided with a horizontal platform or partition 3 through which the movable upper electrode or mechanism for moving it passes. The combined chimney and reflector as well as the globe are carried from this platform 3.

The combined reflector and chimney comprises a pair of substantially parallel annular pieces or members 4 and 5. Preferably the members 4 and 5 are formed out of sheet metal which may be stamped into the desired form. As is clearly shown in Fig. 2, the members 4 and 5 are both conical but are so shaped that the distance between the inner edges of the members is greater than the distance between the outer edges. The upper member 4 is secured to a down turned flange 6 of the platform 3 in any suitable manner as by bolts 7. The under surface of the lower member 5 which may be polished, painted, enameled, or otherwise treated to give it a polished appearance, forms the reflecting surface of the lamp. At the inner edge of the member 5 an upwardly extending cylindrical flange 8 is formed. Bolts 9 passing through this flange secure the member 5 to a flanged portion 10 which extends downward from the outer periphery of an annular platform member 10'. The platform member 10' which is parallel to but separated

from the platform member 3, has a tubular portion 11 projecting from its inner periphery. Three or more rods or bolts 12 which may be threaded into the platform member 3. Latches 13, each pivoted to the member 3 by a screw or bolt 13" are provided for detachably securing the rods 12 which are notched to receive the latches, and through the rods 12 the members 5 and 11, to the platform 3.

A cylindrical member 14 secured to the member 10' by the screws 9 has threaded through it a plurality of screws 15 by means of which the globe 16 of the lamp is held in place. The conductor 17 which carries current to the lower electrode 18 of the lamp is shown as passing through an integrally formed tubular lug or boss 19 extending upward from the member 11. This boss 19 fits an aperture in the platform 3.

To obtain a frictionless passage of the electrode-carrying rod or member 20 through the aperture in the platform 3 and at the same time to prevent passage of gas from the lamp through such aperture, we have devised the arrangement shown in Fig. 4. In this construction a tubular member 21 having an integrally formed flange 22 surrounds the electrode-carrying device 20. The flange 22 is secured to the platform 3 by screws 23 in such manner as to form a tight joint, and the body of the member 21 extends downward from the platform 3 for some distance. The diameter of the bore of the tubular member 21 is somewhat greater than the diameter of the electrode-carrying rod 20 and the parts are so arranged that the electrode-carrying rod does not contact with the inner wall of the member. The electrode-carrying device has an inverted jar-shaped member 25 mounted upon it just above the upper electrode 24 which is held in place in any desired way. In the normal operation of the lamp, the members 25 and 21 telescope within one another as shown in Fig. 4.

When it is desired to collect a comparatively large amount of the heavier impurities contained in the gases from the lamp in the space between the members 4 and 5, a plurality of annular baffle plates 26, 27, 28 and 29 are employed. The baffle plates 26 and 28 are formed with flanges 26' and 28' which abut against and may be secured to the inner surface of the member 4. The bodies of the baffle plates 26 and 28 are cylindrical. The cylindrical portions, however, are not long enough to extend between the plates 4 and 5 so that spaces 26" and 28" exist between the under edge of the baffle plates 26 and 28 and the upper surface of the member 5. The lower edges of the baffle plates 27 and 29 rest against the upper surface of the member 5. The bodies of these plates are cylindrical but are of a length insufficient to

extend between the plates 4 and 5. This leaves spaces 27' and 29' respectively between the upper edges of the plates and the under surface of the member 4. In the form of our invention we have illustrated in the drawings, integrally formed upwardly projecting lugs 27" and 29" form means by which the plates 27 and 29 may be secured to the upper member 4.

In the operation of our lamp, air passes into the globe 16 through the annular space between the upper edge of the globe and the supporting member in the direction of the arrows shown in Fig. 1. This passes down along the inner surface of the globe and then upward along the electrodes 18 and 24 carrying the products from the arc 30 up through the tubular member 11. The upper end of the tubular portion 11 is flared outward as clearly shown in the drawing. The upper end of the telescoping member 25 is also flared outwardly. The result is that the natural course for the gases passing through the tubular member 11 is into the space between the members 4 and 5. The arrows in Fig. 1 indicate the path traversed by the gases as they pass up through the tubular portion and out through the chimney.

As it will be readily perceived by those skilled in the art, the arrangement of the baffle plates is such that a large proportion of the comparatively heavy impurities carried by the gases will be deposited in the V-shaped troughs formed between the upper side of the member 5 and the inner side of the annular baffle plates 27 and 29, though under certain conditions the impurities may be deposited all over the surface of the members 4 and 5 and the baffle plates 26, 27, 28 and 29. The sharp turns, and the narrow and the long path which it would be necessary to follow, prevent the passage of material quantities of the gases through the telescoping member into the space above the platform 3.

When it is desired to remove the matter condensed or deposited from the smoke in the space between the members 4 and 5 it is only necessary to turn the latches which secure the bolts in position and remove the globe and the member 5. This allows the inner portions of the chimney to be cleaned with ease.

While we have described somewhat in detail the best form of our invention now known to us, it will readily be seen that many changes may be made in the form of our invention without in any way departing from its spirit.

What we claim as new and desire to secure by Letters Patent of the United States, is—

1. In an arc lamp, electrodes between which an arc is maintained, a combined reflector and chimney structure comprising a pair of dished members each having a central aperture, said members being spaced

apart to form a passage between them extending from the apertures in them to their peripheries, said structure being placed relative to the arc so that one side of said structure serves as a reflector for light from the arc, and means for directing the arc products into the inner end of said passage for discharge at the peripheral end thereof.

2. In an arc lamp, a pair of electrodes between which an arc is maintained in the normal operation of the lamp, a combined chimney and reflector comprising a pair of members spaced apart to form an outwardly extending passage between them, and means for directing the volatilized products of the arc into the inner end of said passage and toward the outer end thereof, one of the members being arranged relative to the arc to reflect the light therefrom.

3. In an arc lamp, a pair of electrodes between which an arc is maintained in the normal operation of the lamp, a reflector containing an outwardly extending series of chambers, means for directing the products of the arc into the inner end of the series of chambers and toward the outer end thereof, said reflector being formed of detachably connected parts, whereby the passages for the arc products may be opened for inspection and cleaning.

4. In an arc lamp, the combination of arc electrodes with a double walled reflector enclosing an outwardly extending chimney space open at the center for the reception of the products of combustion, and open at the periphery for the discharge of said products.

5. In an arc lamp, the combination of arc electrodes with a double walled reflector enclosing an outwardly extending chimney space open at the center for the reception of the products of combustion, and open at the periphery for the discharge of said products, and a tortuous path for said products within the said chimney space.

6. In an arc lamp, electrodes between which an arc is maintained, a combined reflector and chimney structure comprising a pair of annular dished members spaced apart to form a chimney passage between them extending from the inner curved edges of the members to their peripheries, said structure being placed relative to the arc so that one side of one member serves as a reflector for the light from the arc, and means for directing the arc products into the inner end of said passage for discharge at the outer end thereof.

7. In an arc lamp, a pair of annular approximately horizontal members spaced apart, separate means for securing each of said members in fixed relation to the arc

lamp structure, one of said members being readily releasable to permit the removal of the corresponding member, and means for directing the arc products into the inner end of the space between said members for discharge at the peripheral end thereof.

8. In a lamp, a combined reflector and chimney, comprising a pair of annular pieces separated by a space in which smoke-condensing chambers are located, and means for detachably connecting the said annular pieces to the lamp whereby one of the pieces may be removed to give access to the smoke-condensing chambers without removing the other of said pieces.

9. In an arc lamp, a platform, an annular disk secured thereto, and a second annular disk detachably secured to said platform, the disks being separated to form a space in which smoke may be condensed.

10. In an arc lamp, a pair of apertured platform members separated by a space, an electrode mechanism passing transversely through the apertures in said members, and a pair of annular members separated by a space but extending side by side and approximately at right angles to the electrode feed mechanism with their inner peripheries in proximity to the outer peripheries of the first mentioned members.

11. In an arc lamp, a platform, an electrode mechanism passing through an aperture in said platform, a second platform separated from the first by a space, said second platform being apertured for the passage of said electrode mechanism, a combined reflector and chimney for the arc products comprising two annular members separated by a space, the inner peripheries of said annular members being in proximity to the outer peripheries of the platform, and means comprising telescoping tube sections for preventing the passage of arc products through the aperture in the upper platform.

12. In an arc lamp, a platform, an arc enclosing globe with an opening in its upper end, the upper end of said globe being separated from said platform by a space, and a reflector formed with a chimney passage, said reflector being so arranged that one end of the chimney passage leads from the space between the upper end of said globe and said platform.

In witness whereof, we have hereunto set our hands this 27th day of May, 1903.

WALTER C. FISH.
RICHARD FLEMING.

Witnesses:

DUGALD MCK. MCKILLOP,
JOHN O. McMANUS.