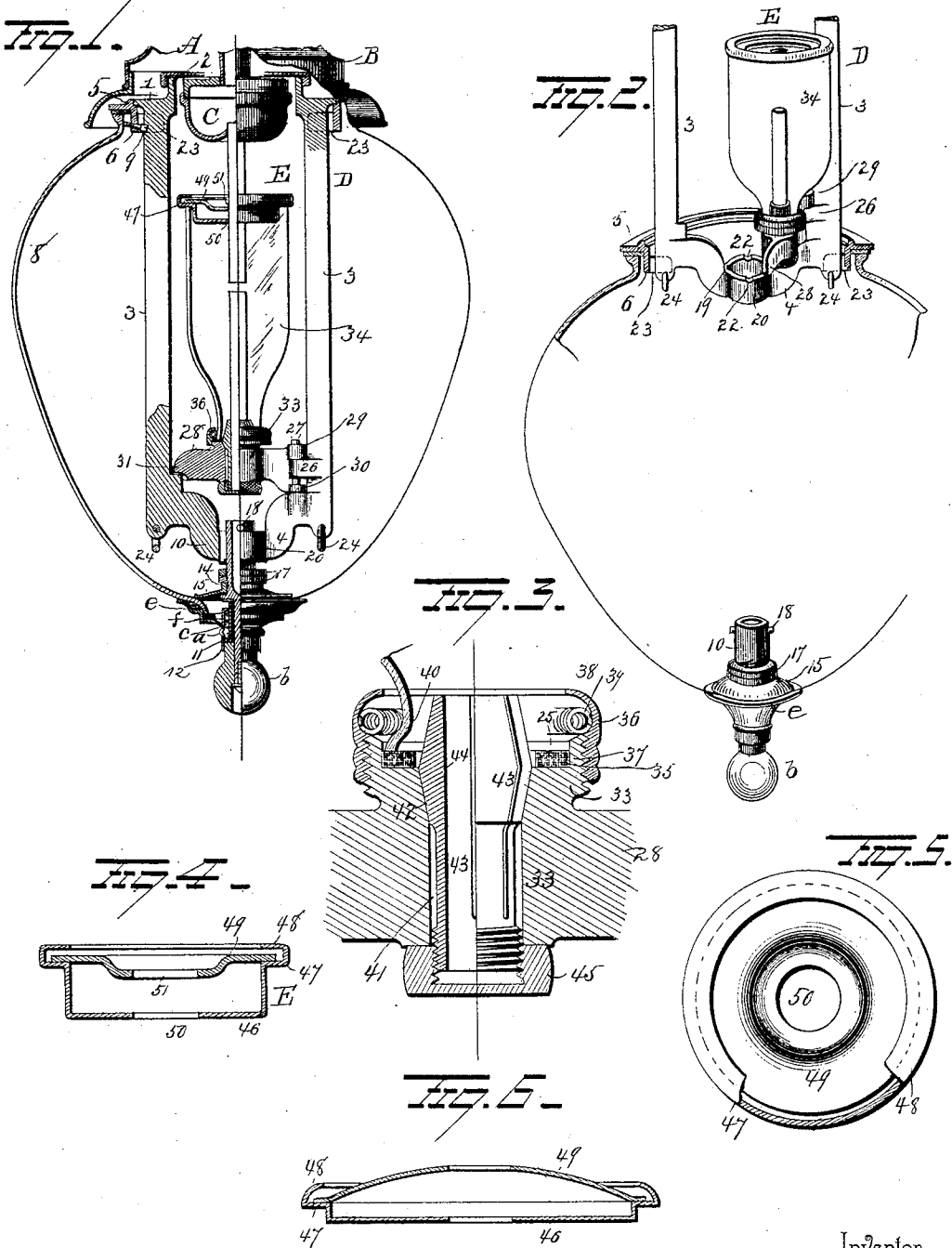


(No Model.)

G. R. LEAN.
ELECTRIC ARC LAMP.

No. 571,976.

Patented Nov. 24, 1896.



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UNITED STATES PATENT OFFICE.

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ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 571,976, dated November 24, 1896.

Application filed July 7, 1896. Serial No. 598,351. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. LEAN, a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric-Arc Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in electric-arc lamps, and more particularly to such as employ an inner arc-inclosing globe and a large outer globe, the object of the invention being to provide simple and efficient devices for holding these globes in such manner that they will be normally retained in proper positions and so that they can be readily and quickly adjusted or removed to facilitate the trimming of the lamp.

A further object is to provide a simple and efficient cover for the arc-inclosing globe, adapted to accurately conform to irregularities of the upper carbon and to permit the escape of gas from the inner or arc-inclosing globe when the pressure therein becomes excessive.

A further object is to produce a simple and efficient holder for the lower carbon of an arc-lamp.

With these objects in view the invention consists in the combination, with a depending arm and a yoke at the lower end of said arm, of an outer-globe holder removably connected to said yoke and an inner or arc-inclosing globe holder hinged to said arm above the yoke.

The invention further consists in the combination, with the frame of an arc-lamp, of an arm hinged thereto and globe-holder and a carbon-holder carried by said hinged arm.

The invention also consists in the combination, with an arc-inclosing globe, of a cover for said globe, comprising two parts, one part being adapted to rest upon the upper edge of the globe and to have a lateral movement thereon and the other part being adapted to rest upon the first-mentioned part and to have a lateral movement thereon, both of said parts having holes for the passage of the upper carbon of the lamp.

The invention also consists in certain novel features of construction and combinations and arrangement of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, partly in section, illustrating my improvements. Fig. 2 is a view showing the outer globe lowered and the inner globe swung laterally to facilitate trimming the lamp. Fig. 3 is a detail sectional view showing the carbon-holder and inner-globe holder. Figs. 4 and 5 are enlarged detail views of the cap or cover of the inner or arc-inclosing globe. Fig. 6 is a view of a modification of said cap or cover.

A represents a portion of the upper framework of an electric-arc lamp, B the lower portion of the lamp-casing, and C the brush-holder for the upper carbon of the lamp. The upper framework of the lamp supports a depending globe-frame D, which comprises a ring 1, having a flange 2, secured to the upper lamp-frame A, integral arms 3, depending from said ring, and a yoke or arm 4, connecting the lower ends of the depending arms 3. A ring 5, having a depending flange 6, encircles the ring or annular portion 1 of frame D, and has an air-tight bearing against the same. A suitable packing is placed under the ring 5, and against this packing the upper edge of the outer globe 8 bears, being retained properly in engagement therewith by means of set-screws 9 passing through the flange 6 on said ring.

The lower end of the globe 8 is made with an opening through which a bar 10 passes. A sleeve 11 encircles and is insulated from a portion of the bar 10, and said sleeve is inclosed by a loose sleeve 12, having an external shoulder or enlargement *a*. A knob *b* is mounted on the lower end of bar 10 and freely enters the lower end of the sleeve 12. A spring *c* is disposed within the sleeve 12 and bears at its respective ends against the upper end of knob *b* and a flange *d* at the upper end of sleeve 12.

A dished plate *e*, having an opening therein, encircles the sleeve 12 and bears at its lower edge against the shoulder or enlargement on said sleeve, the upper edge of said dished plate bearing against the under face of the

globe 8. The dished plate *e* is also made with an annular shoulder, on which an asbestos ring *f* is disposed, and on said ring the lower edge of the globe rests.

5 The bar 12 is provided at a point between its ends with a flange 14, which serves as a rest or support for an annular disk 15, preferably screwed on said bar, the periphery of said disk bearing against the inner face of
10 the globe and constituting, with the part *e*, a means for locking or clamping the globe to the bar 12 and retaining the globe in proper position.

In order to prevent the displacement of the
15 annular clamping-disk 15, it will be held in place by means of set-collars 17. The upper portion of the bar 12 (which may be made hollow) is provided at or near its upper extremity with laterally-projecting pins 18,
20 adapted to pass through slots 19 made in the inner wall of a hollow boss 20 between the ends of the arm or yoke 4. When the bar 12 shall have been thus passed up through the boss 20, the globe ring or collar 5 will bear,
25 air-tight, against the ring 1 of the globe-frame D.

A quarter-turn of the bar 12 will cause the pins 18 to enter notches 22 in the upper edge of the boss 20, and thus the outer globe 8 will
30 be supported in position and will be normally air-tight both above and below. Should the pressure within the globe 8 become excessive, said globe will descend against the resistance of the spring *c*, when the gas can escape
35 through the upper end of the globe.

The depending arms 3 of the globe-frame are adapted to form guideways for guides 23, projecting inwardly from the globe ring or collar 5 at diametrically opposite points.
40 When it is desired to lower the outer globe, it is simply necessary to turn the bar 12 so that the pins 18 will aline with the slots 19 in the boss 20. The bar 12 can then be withdrawn from the boss 20 and the globe will be
45 guided in its downward movement by the guides 23. When the guides 23 reach the lower ends of the arms 3, they will engage rings or stops 24, secured to said arms, and thus the globe will be supported in its lowered position.
50

One of the arms 3 of the globe-frame D is made with an inwardly-projecting perforated lug 26 for the reception of a hinge-pin 27, by means of which an arm 28 is hinged to the
55 frame, said hinge-pin passing through perforated bosses 29 30 on one end of said arm. The bosses 29 30 are so arranged relatively to each other and to the lug 26 which enters between them that the arm 28 can have a slight
60 vertical movement, whereby its free end can be made to engage a tooth 31 on the opposite arm of the frame D or to be disengaged therefrom, said free end of the arm 28 being made with a recess 32 for the reception of the
65 tooth 31.

The arm 28 is made between its ends with an enlargement which constitutes a base 33

for the holder of an arc-inclosing globe 34 and also for the reception of the lower-carbon holder. The base of the inner-globe holder
70 is made with a recess 25, in which a packing-ring 35 is placed for the reception of the lower edge of said inner globe. A cap or collar 36 is adapted to screw on the portion 37 of the base 33 and is provided at its upper edge with
75 an inwardly-projecting curved flange or annular lip 38. Above the annular screw-threaded portion 37 of the base 33 and within the curved lip or flange 38 an annular coiled spring 39 is placed.
80

When the lower end of the inner globe is seated on the packing-ring 35 and the cap 36 is screwed down, the curved flange or lip 38 will cause the spring-ring 39 to be contracted and bear on the shoulder 40 of the globe, thus
85 forcing the edge of the latter tightly against the packing-ring 35.

The base 33 is made with an opening 41, extending entirely through the same, said opening having a tapering wall 42 at its upper
90 end. Within the opening 41 a lower-carbon holder, made in the form of a split sleeve 43, is placed and provided with a tapering outer wall 44 near its upper end to bear against the tapering wall 42 of the opening 41.
95 The lower end of the sleeve or holder 43 is screw-threaded and projects below the lower face of the base or enlargement 33. A nut 45 is screwed on the screw-threaded end of the sleeve or holder 43 and adapted to bear against
100 the under face of the base 33. From this construction and arrangement of parts it will be seen that when the nut 45 is unscrewed or loosened the sleeve or holder 43 can be moved
105 upwardly and allowed to expand for the reception of the lower carbon of the lamp. When the carbon shall have been placed in the sleeve or holder, the nut 45 will be screwed up and the engagement of the tapering wall
110 of said sleeve with the tapering wall of the opening in the base will cause said sleeve to be contracted and tightened on the carbon, thus holding the latter firmly in proper position.

When it is desired to trim the lamp, the
115 outer globe will first be lowered in the manner above explained. The arm 28 will be raised slightly, so as to release its free end, and then said arm will be swung out of the frame D, thus bringing the inner globe, its
120 holder, and the lower-carbon holder in a convenient position to be manipulated by the trimmer.

In the type of lamp to which my invention relates it is important that the inner or arc-inclosing globe be manipulated normally air-
125 tight. I have above explained how the globe is closed air-tight in its holder. The upper end of the inner or arc-inclosing globe is closed by means of a cover E. This cover comprises a dished plate 46, adapted to enter the
130 upper end of the globe 34, and having an annular shoulder 47 to rest upon the upper edge of said globe and be capable of a lateral move-

ment thereon. From the outer edge of the annular shoulder 47 an upwardly and inwardly projecting flange 48 projects. A concave disk 49 is disposed over the disk 46 and rests at its periphery on the shoulder 47, immediately under the curved annular flange 48, said concave disk 49 being of such diameter as to be permitted to have a lateral movement on the shoulder 47. The plate 46 and disk 49 are provided, respectively, with holes 50 51, through which the upper carbon 52 of the lamp neatly passes.

By constructing and arranging the cap or cover for the inner or arc-inclosing globe in the manner above explained the carbon can pass snugly through both holes and still allow for irregularities in both the globe and the carbon. By making the dished plate 46 deep and the disk 49 concave the carbons can be more completely consumed than if the cap were flush with or above the top of the globe, the carbon-sheath being allowed to partially enter the globe before touching the cap. The dished plate 46 might, if desired, be made more shallow, and the disk 49 might be made convex, as shown in Fig. 6.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is--

1. In an arc-lamp, the combination with a depending arm, and a yoke at the lower end of said arm, of an outer-globe holder removably connected to said yoke, and an inner or arc-inclosing globe holder hinged to said arm above the yoke.

2. In an arc-lamp, the combination with two depending arms and a yoke connecting the lower ends of said arms, of an outer-globe holder removably connected to said yoke, an inner or arc-inclosing-globe holder hinged to one of said depending arms above the yoke and constructed to be locked to the other depending arm, substantially as set forth.

3. In an arc-lamp, the combination with depending arms, of a ring at the upper ends of said arms, a yoke at the lower ends of said arms, an outer-globe holder removably attached to said yoke, an outer globe, a collar secured to the upper end of said globe and adapted to bear against said ring, and an inner-globe holder hinged between said depending arms above the yoke, substantially as set forth.

4. In an arc-lamp, the combination with a frame, of an arm hinged at one end thereto, and a globe-holder and a carbon-holder carried by said hinged arm, substantially as set forth.

5. In an arc-lamp, the combination with a frame, of a globe-holder hinged thereto and

a carbon-holder disposed within and carried by the globe-holder, substantially as set forth.

6. In an arc-lamp, the combination with a frame having depending arms, of an arm hinged at one end to one arm of the frame and adapted at its other end to engage a tooth or catch on the other arm of the frame, said hinged arm being adapted to support a globe-holder and a carbon-holder, substantially as set forth.

7. In an arc-lamp, the combination with a frame having depending arms, of an arm hinged to one of said arms of the frame so as to be capable of a vertical and a swinging movement, the free end of said hinged arm being adapted to engage and become locked to the other depending arm of the frame, substantially as set forth.

8. In an arc-lamp, the combination with a base having an opening therein, a portion of said opening being tapering, of a collapsible sleeve or holder in said opening and having a tapering portion to bear against the tapering portion of said opening, said sleeve or holder having a screw-threaded lower end adapted to project below said base, and a nut adapted to screw on said lower end of the sleeve or holder and bear against the lower face of said base, substantially as set forth.

9. The combination with an inner or arc-inclosing globe, of a cover therefor comprising two pieces, one upon the other and both adapted to be permitted to have lateral motion, substantially as set forth.

10. The combination with an inner or arc-inclosing globe, of a cover therefor, said cover comprising a dished plate adapted to enter the globe and having a shoulder to rest and have a lateral movement on the upper edge of the globe, and a disk adapted to rest and have a lateral movement on said shoulder, said plate and disk having alined openings for the passage of the upper carbon of the lamp, substantially as set forth.

11. The combination with an inner or arc-inclosing globe, of a cover made in two pieces, one piece being a dished plate having a perforation and adapted to be capable of lateral movement on the globe, and the other piece being a concave disk having a perforation and adapted to be supported by the dished plate so as to be capable of lateral movement, substantially as set forth.

12. The combination with an inner or arc-inclosing globe, of a cover comprising two pieces having alined perforations and adapted to have lateral movement relatively to the globe and relatively to each other, one of said pieces having an annular shoulder to rest on the globe and to receive the edge of the other piece, and a curved annular lip or flange projecting from the periphery of said shoulder and terminating over the last-mentioned disk, substantially as set forth.

13. In an arc-lamp, the combination with a frame and a movable bar depending there-

from, of a globe having a close fit at its upper edge with the frame, and a clamp attached to said depending bar, and engaging the inner and outer faces of the globe, the inner member of said clamp being secured to said bar and the outer member of said clamp being yieldingly mounted on said bar, substantially as set forth.

14. The combination with a frame, and a bar attached to the lower end thereof, of a plate on said bar adapted to engage the inner face of the globe, a spring-sustained sleeve on said bar, a plate supported by said sleeve and bearing against the under face of the globe, and a ring at the upper end of the globe and having a close fit against the frame, substantially as set forth.

15. The combination with a frame, a globe and a bar attached to the frame, of a plate mounted on said bar and bearing against the inner face of the globe, a spring-sustained plate bearing against the under face of the globe, a yielding ring between the lower edge of said globe and the spring-sustained plate, and a ring at the upper end of the globe and having a close fit with the frame, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE R. LEAN.

Witnesses:

D. W. ROCKWELL,
J. M. SEE.