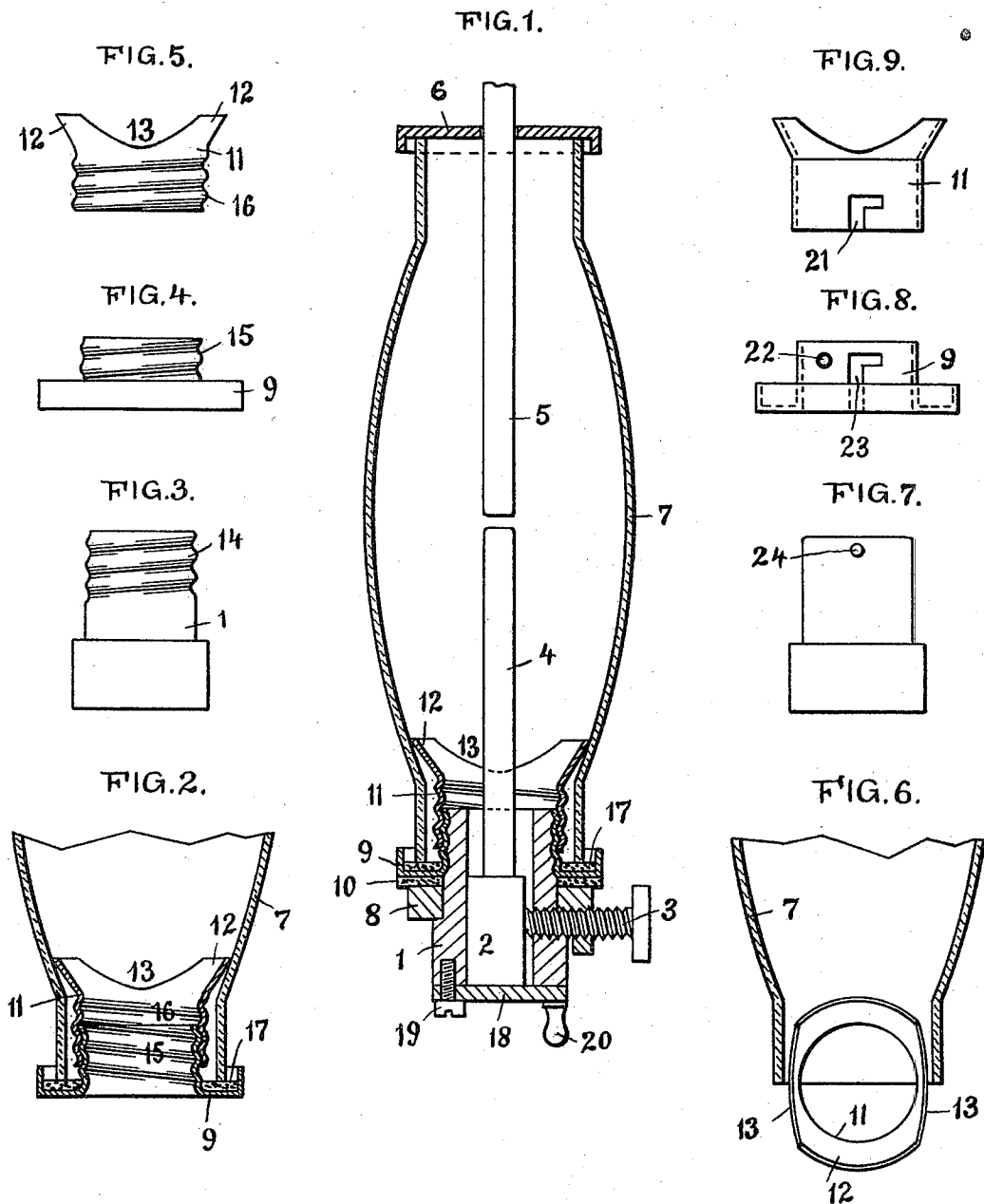


(No Model)

P. H. KLEIN, Jr.
ELECTRIC ARC LAMP.

No. 585,316.

Patented June 29, 1897.



WITNESSES:

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PHILIP H. KLEIN, JR., OF NEW YORK, N. Y., ASSIGNOR TO THE GENERAL INCANDESCENT ARC LIGHT COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 585,316, dated June 29, 1897.

Application filed March 20, 1897. Serial No. 628,411. (No model.)

To all whom it may concern:

Be it known that I, PHILIP HENRY KLEIN, Jr., a citizen of the United States, residing at New York, State of New York, have invented new and useful Improvements in Arc-Lamps, of which the following is a specification.

My invention consists of an improved apparatus for attaching the inner globe of an inclosed electric-arc lamp to the lower-carbon holder of said lamp, so that a practically airtight joint shall be made composed of the least number of parts, simple in arrangement, and easily placed in operative position and readily removable therefrom.

As is well known, the voltaic arc existing between the carbon points in an electric-arc lamp is inclosed in a small glass globe in that type of lamp known as the "inclosed" arc-lamp for the purpose of preventing the access of any considerable quantity of fresh air containing oxygen to the arc while in operation and otherwise protecting it from the action of air-currents. The form of so-called "globe" usually employed is not spherical, but elliptical in shape, having both ends tapered down to a diameter somewhat less than the diameter at the central portion of said globe.

It is necessary to have some simple metallic attachment to the end of said globe by which it may be fastened to the lower-carbon holder in such manner as to produce a practically airtight joint and which shall permit the expansion and contraction of the parts without cracking the glass and at the same time be capable of ready removal and reattachment in case of a breakage of the glass globe or other occasion for its renewal or cleaning.

My preferred form of apparatus for this purpose is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a vertically longitudinal section of such inclosing globe, lower-carbon holder, and attachment. Fig. 2 is a section in detail of the lower end of the globe with the thimble constituting my attaching apparatus. Fig. 3 is a detail view of the lower-carbon holder. Fig. 4 is a detail view of the lower part of my detachable two-part thimble. Fig. 5 is a detail view of the upper half of the same.

Fig. 6 is a detail sectional view of the lower half of the globe, showing the upper half of the two-part thimble in position for withdrawal. Fig. 7 is a detail view of the carbon-holder, showing a modified form of attachment for the thimble. Figs. 8 and 9 are detail views, respectively, of the two parts of my thimble with a modified method of attaching them one to the other.

Throughout the drawings like reference-figures refer to like parts.

1 represents the carbon-holder. 2 is any form of carbon-clamp within said carbon-holder.

3 is the set-screw mounted in the carbon-holder and pressing against the carbon-clamp.

4 is the lower carbon, and 5 the upper carbon, the latter passing through any suitable cover 6 for the upper end of the inner globe 7.

8 (see Fig. 1) shows in cross-section the lower cross-bar of the lamp-frame in which the carbon-holder 1 is seated.

9 is the lower half of the two-part thimble by means of which the globe is attached to the lower-carbon holder. This rests on the packing-ring 10, of asbestos or other suitable material, and in the form shown in Fig. 1 is attached to the carbon-holder by means of the screw-thread 15, which meshes with the corresponding screw-thread 14 on the upper end of said carbon-holder.

11 is the upper half of said two-part thimble, having its outer end flared or extended, as shown at 12, while diametrically opposite portions 13 13 of said flared or extended portions are cut away in order to permit the withdrawal of the thimble through the end portion of the globe, which has a reduced diameter. This upper half of the two-part thimble has a screw-thread 16, which meshes with the thread 15 on the lower half.

17 is a packing-ring sustained on the annular flange or enlarged portion at the lower end of the part 9 of the two-part thimble, upon which packing-ring the lower end of the glass globe is forced by the drawing together of the two parts composing the said thimble.

18 represents a sliding cover for the bottom-

carbon holder 1, which is pivoted at 19 there-
to and may be slid back and forth for the re-
moval of the lower carbon by the handle 20.

It is evident that the two parts of the thim-
ble constituting the leading feature of my in-
vention may be attached one to the other by
other means than the screw-threads shown.
I have illustrated one instance of such alter-
native method of fastening, although many
others will occur to those skilled in the art.

The form illustrated appears in Figs. 8 and
9 and consists of a form of what is commonly
known as the "bayonet-joint." The pin 22
on the lower half 9 of the thimble enters the
slot 21 on the upper half 11 of the thimble
and catches in the right-angled portion of
said slot when the two parts of the thimble
are twisted one upon the other in the well-
known way. The thimble thus formed might
be screwed to the lower-carbon holder in the
same manner as shown in Fig. 1, or it might
also be attached to such lower-carbon holder
by a similar bayonet-joint formed by the pin
24 on said lower-carbon holder engaging with
the right-angled slot 23 in the lower half 9 of
the two-part thimble.

Many similar variations in the method of
attachment might be worked out without de-
parting from the broad idea of a two-part
thimble which shall have enlarged ends, so
that when the two parts are assembled in po-
sition they will bear against the inner side of
that portion of the globe reduced in diameter
and against the outer end thereof by virtue
of such assembling of the parts and press
against the glass globe with sufficient force
to constitute a joint sufficiently air-tight for
the purposes of an inclosed arc-lamp.

The method of operating my invention is
evident from the foregoing description.

The upper half 11 of the two-part thimble,
being turned so that its axis is at right angles
to the axis of the glass globe, is introduced
through the lower end of said glass globe, as
shown in Fig. 6, the cut-away portions 13 13
allowing such admission. When in place,
the said part of the thimble is turned so that
its axis is parallel to or coincident with the
axis of the globe. When the flaring part 12
comes to a seat on the inwardly-tapering part
of the glass globe, the lower half of the thim-
ble 9 is then inserted in position and the two
parts are assembled by fastening them to-
gether through the screw-threads 15 16, as
shown in the preferred form of the invention,
or by such other means of attachment as are
illustrated in Figs. 8 and 9 or may be substi-
tuted therefor. This operation causes the
two parts of the thimble to be drawn together
until the upper enlarged end is securely seated
against the inner tapering portion of the
globe, while the packing-ring 17, carried by
the outer enlarged end of the thimble, is forced
up against the end of said glass globe. The
thimble being thus in place, the same is at-
tached to the lower-carbon holder 1 by screw-
ing it to the thread 14 or by means of the

bayonet-joint illustrated in Figs. 7 and 8.
This attachment forces the lower end of the
thimble down on the packing-ring 10 and com-
pletes the air-tight joint of the globe to the
cross-bar 8 and lower-carbon holder 1.

In case the globe is broken and a new one
must be inserted the thimble can be readily
withdrawn by a lamp-cleaner by reversing
the operations above described and reinserted
in a new globe. No cement or other rigid
fastening being employed, the parts may ex-
pand and contract under the varying condi-
tions of temperature consequent upon the
lighting and extinguishing of the lamp and
the change of seasons without fracturing the
glass.

The advantages of the invention are evi-
dent, the same being simplicity, cheapness,
compactness, and effectiveness.

It is evident that in the ordinary form of
globe illustrated, in which both ends are ta-
pered down, it is a difficult problem to design
an arrangement of interior thimble which
can be introduced, withdrawn, and made tight
in position without the employment of tools
or the use of cement. This my invention ac-
complishes in a most simple manner. Fur-
thermore, the feature of the design of the
parts of the thimble that it is entirely con-
tained within the globe, excepting, of course,
the enlarged lower part or flange which pro-
jects and bears against the end of the globe,
all of which is an important part of my in-
vention, results in a compactness of structure
and a saving in material and in the length of
the entire apparatus, which constitutes a valu-
able improvement.

It is understood, of course, that the details
of construction may vary without departing
from the broad principle of the invention as
herein set out.

Having therefore described my invention,
what I claim as new, and desire to protect by
Letters Patent, is—

1. In combination with the supporting-
frame of an electric lamp, and a globe for
said lamp, which globe has a portion with re-
duced diameter toward that extremity by
which it is to be attached to the lamp-frame,
of a two-part thimble located within said
globe, provided with means of attachment to
the lamp-frame, and with enlarged ends
which, when the said parts of the thimble
are assembled in position, bear against the
inner side of that portion of the globe re-
duced in diameter, and against the outer end
respectively, substantially as described.

2. The combination of the supporting-frame
of an electric lamp, and a globe for said lamp,
which globe tapers toward that extremity by
which it is to be attached to the lamp-frame,
of a two-part thimble located within said
globe, provided with a screw-thread by which
it may be screwed onto the lamp-frame, and
with enlarged ends which, when the said parts
of the thimble are assembled in position, bear
against the inner tapering portion of the globe

and its outer end respectively, substantially as described.

3. In combination with the supporting-frame of an electric lamp, and a globe for
5 said lamp which globe has a portion reduced in diameter toward that extremity by which it is to be attached to the lamp-frame, of a two-part thimble located within said globe, provided with screw-threads by which said
10 parts may be screwed together, and also provided with means by which said thimble may be attached to the lamp-frame, said thimble having enlarged ends, which when its parts are assembled in position, bear against the
15 inner side of that portion of the globe which is reduced in diameter and against its outer end respectively, substantially as described.

4. In an electric lamp the combination of the frame, the globe which has that end by
20 which it is to be attached to the frame reduced in diameter, and the two-part thimble by which said globe is to be attached to said

frame, the inner part of said thimble being flared outwardly so as to bear against the inner side of that portion of the globe which
25 is reduced in diameter, when the axes of thimble and globe are parallel, but having diametrically opposite portions of said flaring part cut away to permit the passage of this part of the thimble into and out of the
30 globe when its axis is turned at right angles to that of the globe, substantially as described.

5. In an arc-lamp a support for one of the carbons, a globe, a sheath screwing onto said support, and a fastener for said globe screw-
35 ing onto said sheath, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

PHILIP H. KLEIN, JR.

Witnesses:

HENRY J. HALL,
HARRY E. BAILEY.