

No. 652,580.

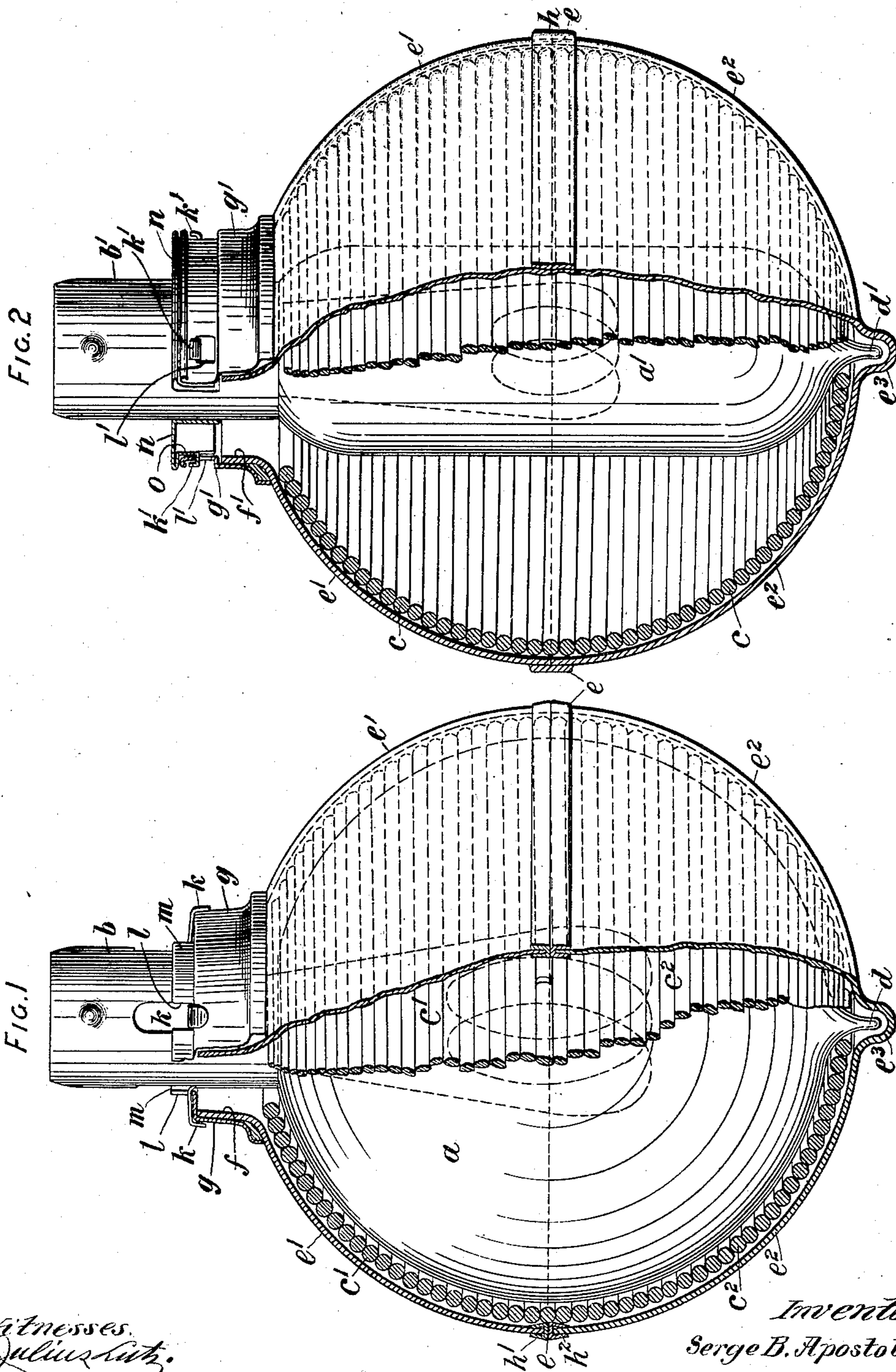
Patented June 26, 1900.

S. B. APOSTOLOFF.
ELECTRIC LAMP.

(Application filed Oct. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
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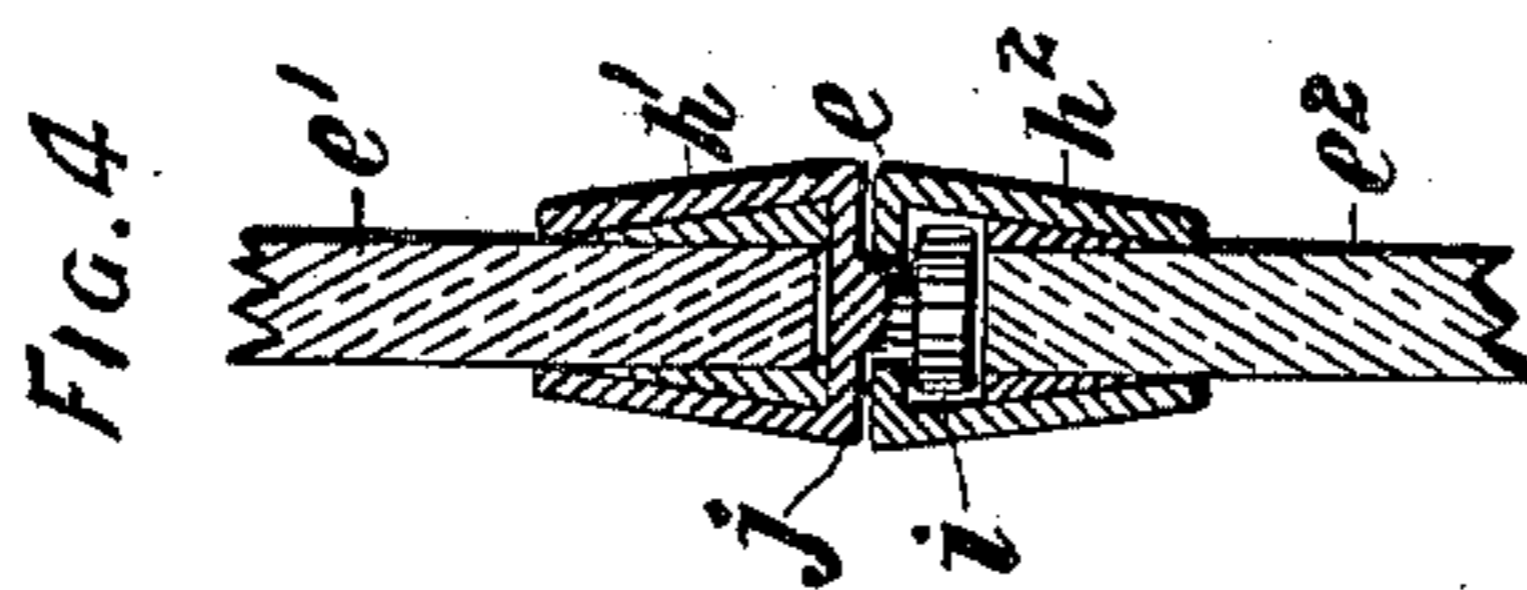
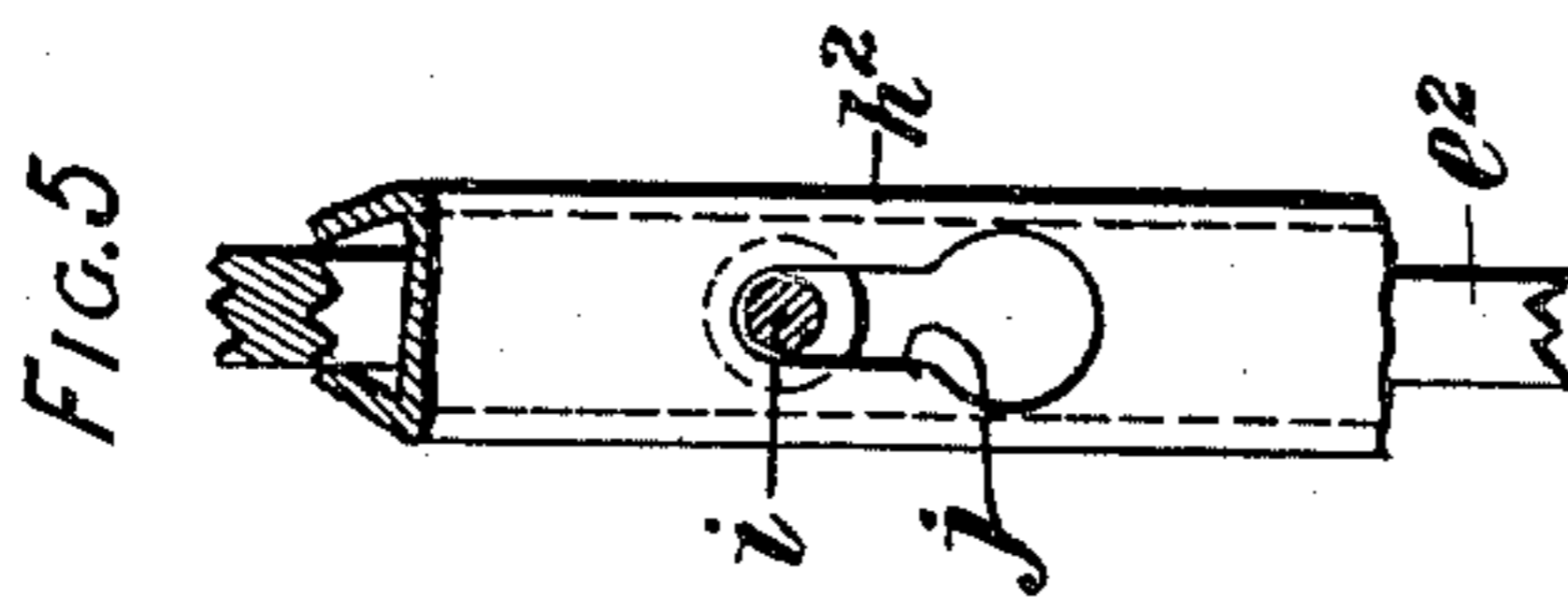
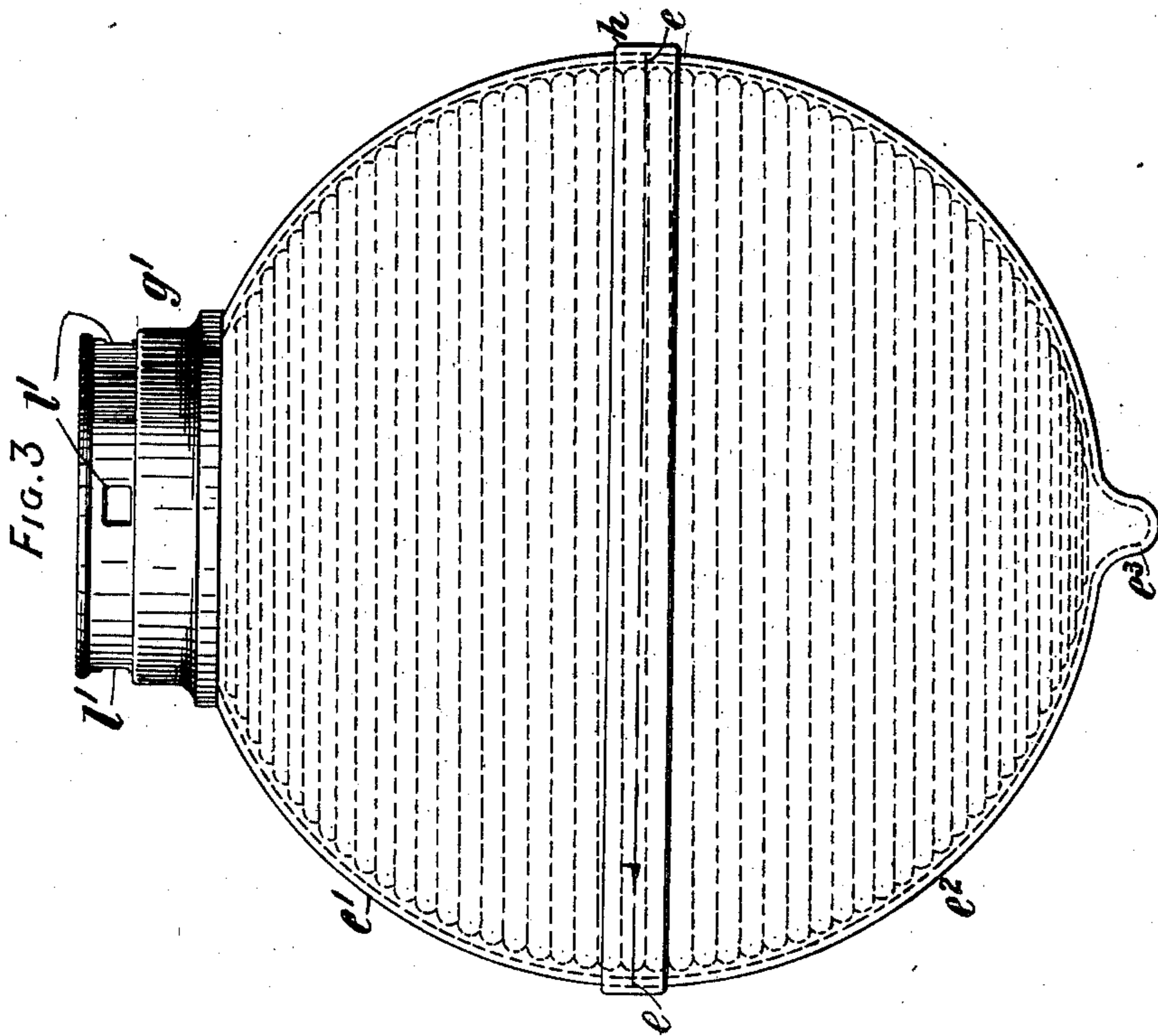
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UNITED STATES PATENT OFFICE.

SERGE BERDITSCHESKY APOSTOLOFF, OF LONDON, ENGLAND, ASSIGNOR
TO THE SPIRAL GLOBE, LIMITED, OF SAME PLACE.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 652,580, dated June 26, 1900.

Application filed October 10, 1899. Serial No. 733,129. (No model.)

To all whom it may concern:

Be it known that I, SERGE BERDITSCHESKY APOSTOLOFF, engineer, a resident of 5 Fenchurch street, in the city of London, England, have invented new and useful Improvements in Electric Lamps, (for which an application for patent has been filed in Great Britain, dated March 20, 1899, No. 6,054, and in France, dated September 19, 1899, No. 280,720,) of which the following is a full, clear, and exact description.

This invention relates to means of combining with an electric incandescence lamp a light refracting and diffusing medium composed of a glass rod spirally wound, so as to form an envelop wholly surrounding the bulb and screening the filament; and the invention consists in inclosing said medium between the lamp-bulb and an outer protective globe in such manner that the elements so combined form one integral structure capable of being handled as a single piece and of being secured to the lamp-socket or removed therefrom with the same facility as an ordinary incandescence lamp, while the light refracting and diffusing medium is completely protected against injury and, together with the protective outer globe, remains available for use with an indefinite succession of lamps.

The lamp itself would preferably be one having a bulb of cylindrical form in order to facilitate its introduction into and removal from the globe and the refracting envelop; but the lamp may have a bulb of spherical, pear-shaped, or other form, if so desired. In any case the outer globe is made in halves of substantially-hemispherical form united along their meeting edges. In the case of a lamp whose bulb is cylindrical or of a diameter not materially greater than that of the cap the junction is preferably a permanent one, since the form of the bulb permits of its being introduced into and withdrawn from the globe and envelop through an opening provided in the top thereof for this purpose.

In the case, however, of a lamp having a spherical or otherwise-shaped bulb (or a bulb whose diameter considerably exceeds that of the cap) such a lamp cannot conveniently be so introduced into or removed from the globe

and refracting envelop, which must therefore be applied to the lamp from opposite ends, and in this case the joint between the halves of the globe is closed by means of a locking device adapted to be secured after the lamp-bulb and its cap have been inserted from below and adjusted in position in the upper half of the globe. The refracting envelop, of spirally-wound glass rod, would usually be made in halves, which in the latter of the two cases just described would be separable, but in the former case may be permanently united to form one continuous spiral before being inclosed within the outer globe.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a side elevation, partly in section, illustrating the invention as applied to an incandescence electric lamp having a spherical bulb. Fig. 2 is a similar view illustrating the invention as applied to a lamp having a cylindrical bulb. Fig. 3 is a separate view of the light refracting and diffusing medium with the inclosing globe as used with a cylindrical lamp, the lamp itself being omitted. Figs. 4 and 5 are cross-sectional and face views, drawn to an enlarged scale, of a portion of the outer globe, illustrating a mode of joining the separate parts together.

Referring to Fig. 1, *a* is the spherical bulb of an incandescence lamp, of which *b* is the metal cap, as usual. The light refracting and diffusing medium consists of an envelop formed of a spirally-wound rod of glass made in separate halves *c'* *c*², corresponding to the upper and lower hemispheres of the lamp-bulb and together constituting a continuous spiral adapted in the case of a spherical bulb to lie close to the bulb *a* of the lamp, the upper half *c'* of the spiral having an axial aperture to give passage to the cap *b* of the lamp, while the lower half *c*² is adapted to be centered on the point *d* of the lamp-bulb, so as to be held steadily in position.

The outer protective covering consists of a globe, of glass or other suitable translucent material, of a size to closely surround the glass spiral, and is made in two parts *e'* *e*², corresponding to those of the spiral envelop

$c' c^2$. The upper part e' is formed with a neck f , upon which is cemented a metal ferrule g , adapted to fit over the cap b of the lamp, and the lower part e^2 is preferably formed with a central concave nipple e^3 to accommodate the projecting point d of the bulb, while permitting the body of the globe to lie close up to and support the spiral throughout practically its whole extent. The two parts e' and e^2 of the globe may be secured to one another by any suitable kind of joint, so as to form either a temporary or permanent closure. In view of the fact that it is desirable to preserve the refracting medium and outer globe intact for future use after the removal of a worn-out lamp the joint e is made detachable in the case of a spherical bulb, for which purpose the two parts $e' e^2$ of the globe may be provided with metal rims $h' h^2$, lapped around and secured with suitable cement to their meeting edges, as shown more clearly in the enlarged views, Figs. 4 and 5, the one rim, as h' , carrying two or more pins i , adapted to enter and engage with bayonet-slots j in the other rim.

The mode of applying the refracting medium and outer globe to the lamp is as follows: The upper half c' of the spiral envelop is passed over the cap b of the lamp, so as to rest on the shoulders of the bulb a . The upper part e' of the outer globe is then passed over the cap in the same way, so as to inclose the spiral c' , and is secured in position by means of two or more metal tongues k , stamped out from or attached to the cap b , the tongues being bent outward and downward over the upper end of the ferrule g , so as to prevent separation of this part of the globe from the lamp, the tongues engaging between the sides of notches l in the upstanding portion m of the ferrule g , so that when the lamp is grasped for the purpose of rotating the lamp when fitting the latter into or removing it from its socket the envelop and lamp are caused to turn together as one. The lower half c^3 of the spiral is now placed over the lower hemisphere of the lamp-bulb a , and the corresponding part e^2 of the outer globe is fixed in place by means of the pin-and-slot locking device above described or otherwise, when the lamp is ready for use. A strip of metal foil, paper, or other material may, if desired, be pasted over the joint e between the halves $e' e^2$ of the globe for the purpose of excluding dust and preventing the unauthorized removal of the envelop.

It will be observed that when the invention is applied to a lamp having a bulb of spherical or other shape whose equatorial diameter is large relatively to that of the cap, as in the case illustrated in Fig. 1, it is necessary that the two halves of the spiral envelop and also those of the outer globe should be separable, owing to the fact that both the spiral and globe must necessarily be superposed upon the lamp-bulb in separate halves and from opposite ends, as above described,

and must be removed from the lamp in like manner.

Figs. 2 and 3 illustrate an arrangement of spiral envelop and globe applicable to a lamp having a cylindrical bulb, the use of which enables the spiral and globe to be built up independently of the lamp, so as to form one integral structure which is complete in itself and may be applied to or removed from the lamp without separation of the component parts of such structure. In Fig. 2, a' is the cylindrical bulb of the lamp, b' being the cap. The refracting medium is composed, as before, of a glass rod spirally wound, so as to form a sphere, the spiral c being either continuous or in halves to suit the convenience of manufacture, the two parts being in the latter case preferably united by fusing the ends together or otherwise, so as to render the spiral virtually continuous. The upper hemisphere of the spiral envelop has an axial opening of a size to permit the passage of the bulb a' , and the lower end of the spiral is adapted, as before, to be centered upon the point d' of the bulb. The outer globe, which is adapted to closely embrace the spiral c , so as to form the support for the latter, is made, as before, in two parts $e' e^2$, which after being superposed upon the spiral c are united at the joint e between their meeting edges by means of a silicate, Canada balsam, or other suitable cement or by an equatorial band h , of plastic glass. The upper part e' of the globe terminates, as before, in a neck f' , cemented into a metal ferrule g' of a diameter to permit of it being passed up over the bulb a' . The cap b' of the lamp is provided with a flange n , whose diameter is slightly greater than that of the ferrule g' , so as to act as a stop for the latter in order to prevent the lamp-bulb being inserted too far within the envelop. An annular rim o projects from the under side of the flange n and fits within the ferrule g' , so as to center the envelop upon the lamp, the envelop being secured in position and compelled to turn as one with the lamp when the latter is inserted in or removed from its socket by means of two or more tongues k' , (formed by slitting the rim o ,) which are bent outward and upward through holes l' in the upper part of the ferrule g' .

In the case of the arrangement last described and illustrated in Figs. 2 and 3 it will be seen that the glass spiral c and outer globe $e' e^2$ may be built up apart from the lamp proper, so as to form an envelop complete in itself, as shown in Fig. 3, and capable of being applied to or removed from a lamp having a cylindrical bulb (or a bulb whose greatest diameter does not materially exceed that of the cap) without the necessity of separating the envelop into its component parts, as in the first case.

It is to be understood that the invention is not limited to the precise details of construction described in the foregoing specification and illustrated in the drawings, as such de-

tails may be varied to suit the requirements of different circumstances without departing from the spirit of the invention.

Having now particularly described and as-
5 certain the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with an electric incandescence lamp, of a pair of hollow hemispherical or cup-shaped segments of translucent material halved together and secured to one
10 another so as to constitute a globe or cover wholly inclosing the bulb, and a solid translucent light refracting and diffusing medium
15 contained in the space between the bulb and the globe and screening the filament, substantially as specified.

2. An electric incandescence lamp, comprising an exhausted bulb containing the filament, a pair of hemispherical or cup-shaped segments of translucent material together
20 constituting a globe or cover wholly inclosing the bulb, and a pair of hollow hemispherical or cup-shaped segments of a spirally-wound
25 glass rod together constituting a light refracting and diffusing medium interposed between the bulb and the globe or cover, substantially as specified.

3. The combination with an electric incandescence lamp, of a light refracting and diffusing medium consisting of a glass rod spirally wound so as to envelop the bulb, and a globe or cover of translucent material wholly
30 surrounding the medium and halved together, the upper part of the globe or cover being provided with means of attachment to the cap of the lamp so as to form therewith a single integral structure, and the two halves of
35 the globe or cover being secured to one another by a locking device located at the rims and capable of being unfastened for the purpose of withdrawing the bulb, substantially as specified.

4. The combination with an electric incandescence lamp comprising an exhausted bulb containing the filament, an outer translucent globe or cover made in halves separable for the purpose of withdrawing the bulb and an
45 interposed light refracting and diffusing medium, of two or more tongues integral with the cap of the bulb and a ferrule on the upper half of the globe or cover adapted to be engaged by said tongues so as to lock together the bulb and the globe or cover, substantially as specified.
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5. The combination with an electric incandescence lamp, of a translucent globe or outer cover for the lamp-bulb made in halves permanently jointed together, and a light refracting and diffusing envelop formed of a spirally-wound glass rod and contained within the said globe, said globe or cover being provided with an opening for the insertion and removal of the lamp-bulb and with means
60 whereby the bulb when in place may be connected to the globe or cover so that the two

form a single integral structure, substantially as specified.

6. The combination with an electric incandescence lamp comprising an exhausted bulb
70 containing the filament, an outer translucent globe or cover and an interposed light refracting and diffusing medium, of a flange integral with the cap of the bulb and provided with tongues, and a ferrule on the globe or
75 cover adapted to be engaged by said tongues so as to lock together the bulb and the globe or cover, substantially as specified.

7. The combination with an incandescence-electric-lamp bulb, of a light refracting and
80 diffusing medium arranged to surround the bulb, and a globe or cover made in two sections arranged to be secured together and adapted to inclose the light refracting and diffusing medium, the upper section of the
85 globe being attached to the cap of the lamp-bulb, substantially as described.

8. The combination with an incandescence-electric-lamp bulb, of a light refracting and diffusing medium of approximately-globe
90 shape formed of a spirally-wound glass rod and having an opening in its top, through which the lamp-bulb may be inserted and an opening in its bottom through which the point of the bulb may extend, and a globe or cover
95 made in two hemispherical sections arranged to be secured together and adapted to inclose the light refracting and diffusing medium, the upper section of the globe being attached at its top to the cap of the lamp-bulb, and the
100 lower section being provided in its bottom with a depression to receive the point of the lamp-bulb, substantially as described.

9. The combination with an incandescence-electric-lamp bulb, of a light refracting and
105 diffusing medium of spirally-wound glass arranged to surround the bulb, the said medium having an opening in its bottom through which the point of the lamp-bulb extends and a globe or cover made in two hemispherical
110 sections arranged to inclose the light refracting and diffusing medium, the lower section of the globe being provided with a depression in its bottom to receive the point of the lamp-bulb, substantially as described.
115

10. The combination with an electric incandescence lamp, of a light refracting and diffusing medium formed of a spirally-wound glass rod, and a globe or cover made in two hemispherical sections arranged to be secured
120 together at their rims, the upper section of the globe being formed with a neck, a ferrule secured to the neck and adapted to fit over the cap of the lamp-bulb, and means for locking the cap of the lamp-bulb and the said ferrule together, substantially as described.
125

11. The combination with an electric-incandescence-lamp bulb containing the filament, of an outer translucent globe or cover having a neck provided with a ferrule of such
130 diameter as to permit of being passed over a cylindrical lamp-bulb, an interposed light re-

fracting and diffusing medium having a corresponding opening, and a locking connection between the ferrule of the globe and the cap of the lamp-bulb, substantially as described.

- 5 12. The combination with an incandescence lamp, of a solid translucent light refracting and diffusing medium, and an inclosing globe or cover also of translucent material and made in halves, the light refracting and diffusing

medium and the globe or cover, both wholly 10 surrounding the lamp-bulb, substantially as described.

Signed by the said SERGE BERDITSCHESKY APOSTOLOFF this 28th day of September, 1899.

SERGE BERDITSCHESKY APOSTOLOFF.

In presence of—

GEO. J. B. FRANKLIN,
JOSEPH LAKE.