(No Model.) 2 Sheets—Sheet 1.

H. LEA.

INCANDESCENT ELECTRIC LAMP.

No. 273,554. Patented Mar. 6, 1883.

FIG 1.

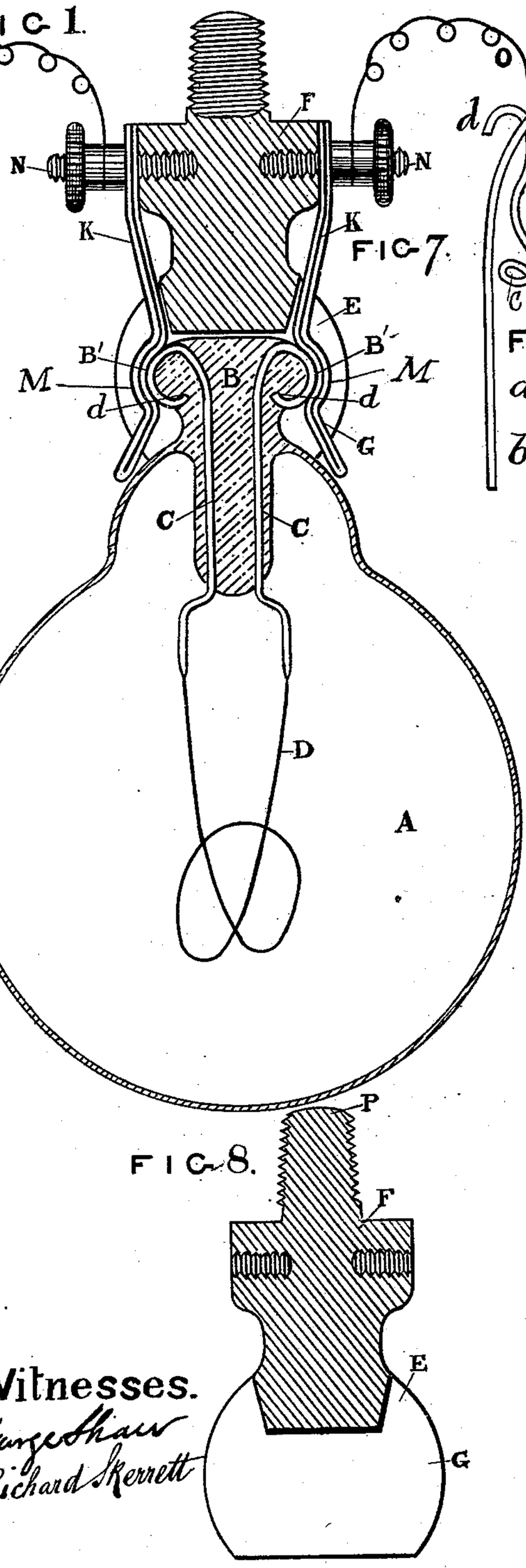
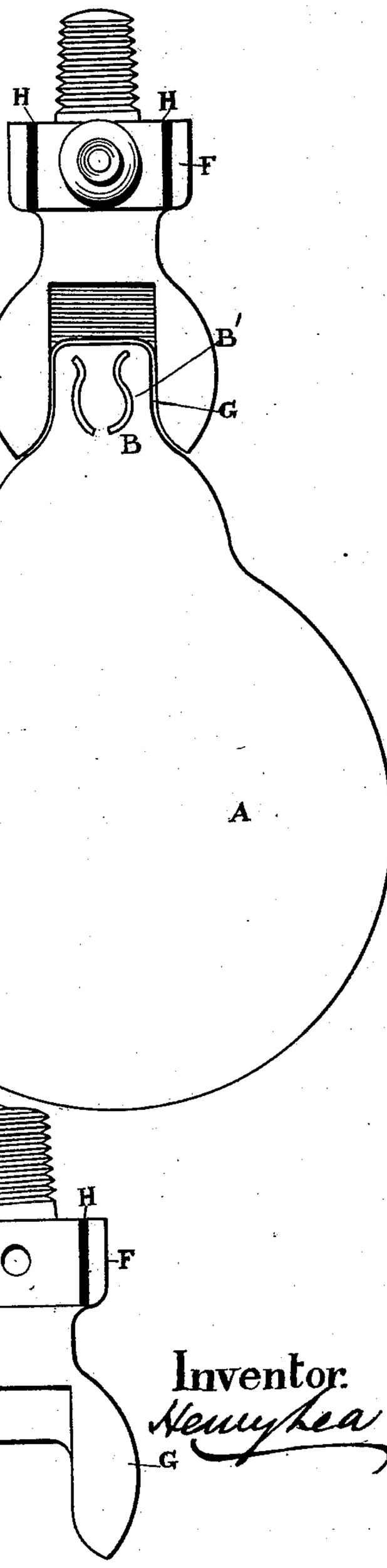


FIG 7.

FIG 2



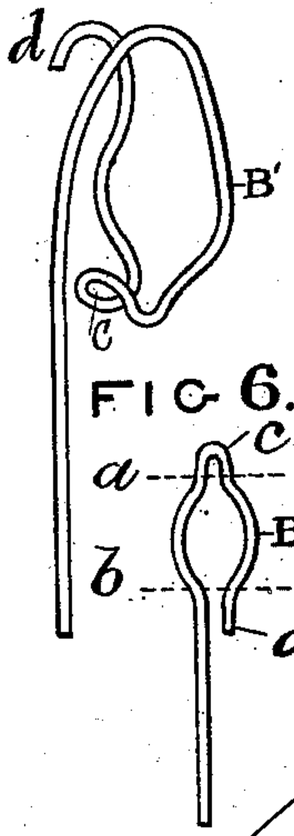


FIG 6.

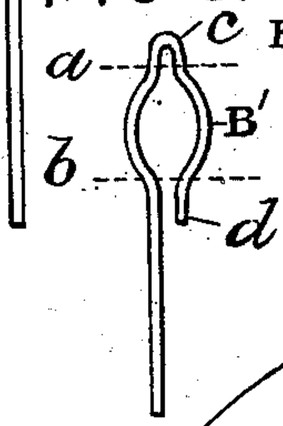
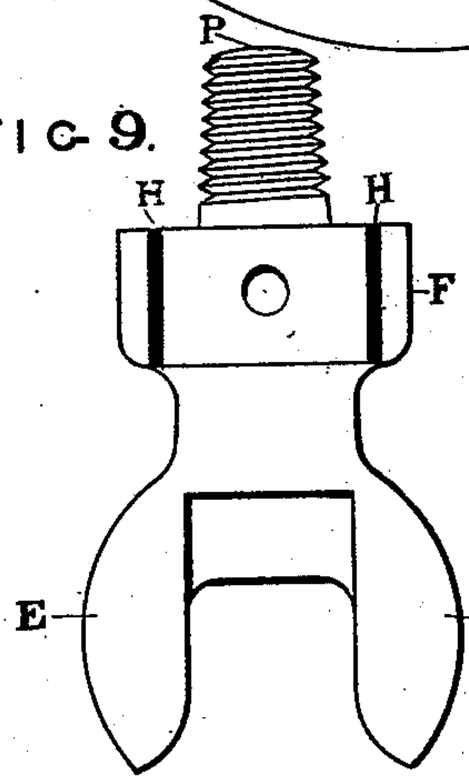


FIG 8.

FIG 9.



Witnesses.
George Shaw
Richard Skerrett

Inventor.
Henry Lea

(No Model.) 2 Sheets—Sheet 2.

H. LEA.

INCANDESCENT ELECTRIC LAMP.

No. 273,554. Patented Mar. 6, 1883.

FIG. 10.

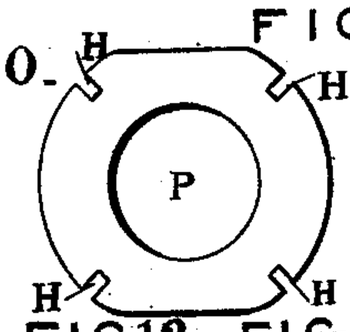


FIG. 11.

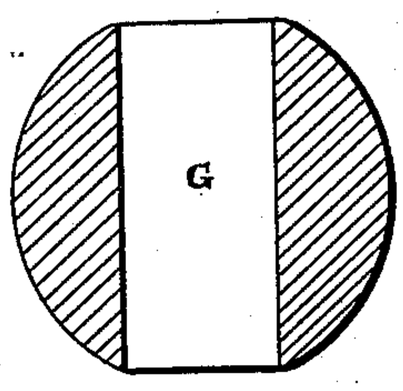


FIG. 5.

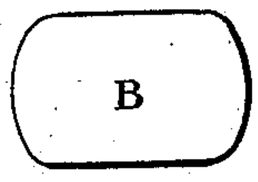


FIG. 12.

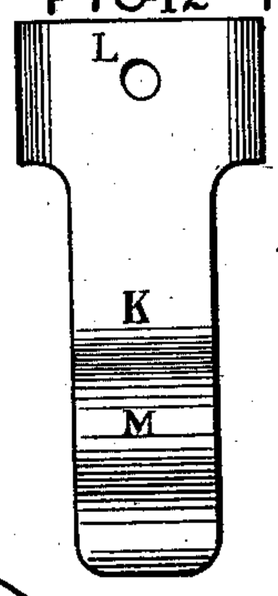


FIG. 13.

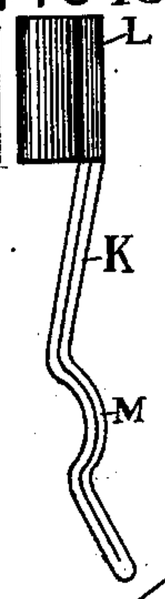


FIG. 3.

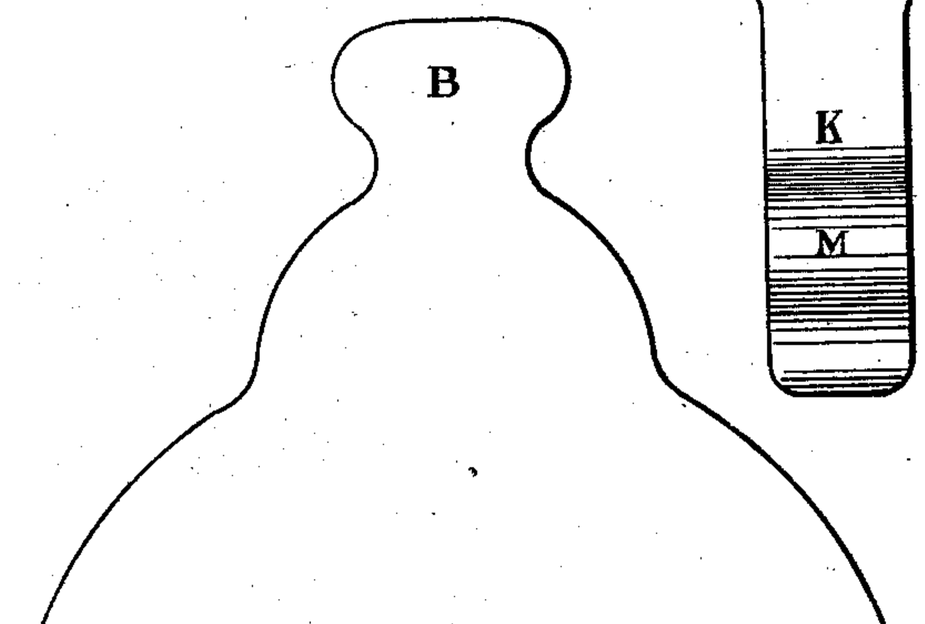


FIG. 4.

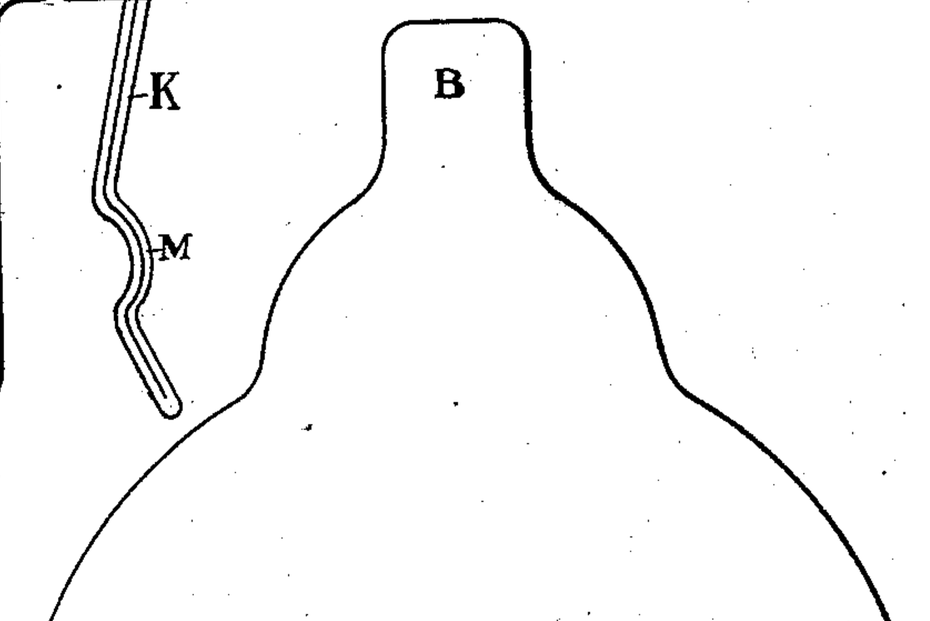


FIG. 15.

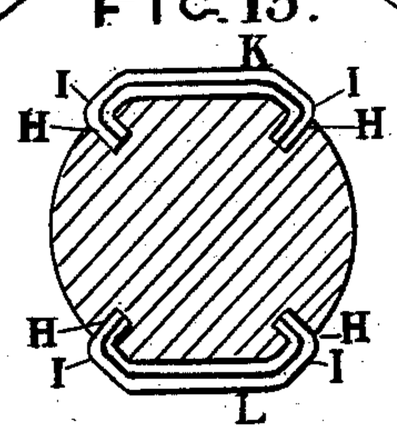
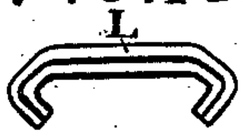


FIG. 14.



Witnesses.
George Shaw
Richard Skerrett

Inventor.
Henry Lea

UNITED STATES PATENT OFFICE.

HENRY LEA, OF BIRMINGHAM, COUNTY OF WARWICK, ENGLAND.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 273,554, dated March 6, 1883.

Application filed November 14, 1882. (No model.) Patented in England May 9, 1882, No. 2,186; in Belgium October 2, 1882; in France October 2, 1882, and in Germany October 6, 1882.

To all whom it may concern:

Be it known that I, HENRY LEA, a subject of the Queen of Great Britain, residing at Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in Incandescent Electrical Lamps, (for which I have received Letters Patent in Great Britain, dated May 9, 1882, No. 2,186; in Belgium, dated October 2, 1882; in France, dated October 2, 1882; in Germany, dated October 6, 1882,) of which the following is a specification.

My invention has for its object to facilitate the connecting and disconnecting of incandescent electrical lamps to and from the brackets or supports carrying them, and to simultaneously effect the connection of the carbon filament of the lamp with the disconnection of the said carbon filament from the electrical conductors by which electricity is supplied to the lamp.

An incandescent electrical lamp as ordinarily constructed consists of a filament of carbon inclosed within an exhausted glass globe, and connected with two platinum wires passing through the globe, the said wires serving to connect the carbon filament with external conducting-wires which supply the current of electricity by which the filament of carbon is made incandescent. A mechanical holder carries the globe and the conducting-wires, binding-screws, and other appliances.

My improvements consist in simplifying the holder and parts connected therewith, so as to facilitate the removal and replacement of the lamp when required.

In an incandescent electrical lamp made according to my invention the hollow glass globe is surmounted by a hollow neck, the upper end of which has the form of a transverse T-shaped head, at each extremity of which one of the aforesaid conducting-wires is brought out and bent into a small loop, which is folded down and pressed closely against the glass. The holder consists of a body of any suitable non-conducting material, two metallic springs, and two binding-screws. The tails of the springs are bent into such a form and placed at such a distance apart as to grip and hold securely the head of the globe when forced up between them, and at the same time to form metallic contact between each spring and the platinum wire upon which it presses. The springs are attached to each side of the holder near its upper end, each spring being suitably folded into notches formed in the holder, and being held in position by a binding-screw screwing into the substance of the holder. The lower portion or tail of each spring occupies a vertical groove in the side of the holder, and a transverse groove in the bottom of the holder unites the two vertical side grooves. The width of the transverse groove is no greater than will admit the shorter axis of the T-shaped end of the lamp-globe, and when the lamp is pushed upward from below its head is forced between the tails of the springs, the lamp being thus suspended, and electrical contact simultaneously made. The holder is attached to a bracket or pendant by screwing or otherwise. The oblate form of the T-shaped head prevents the possibility of inserting it into the holder in a wrong direction, and also prevents the possibility of turning the globe and the platinum loops out of contact with the springs when once the globe is in position.

I will now proceed to describe, with reference to the accompanying drawings, the manner in which my invention is to be performed.

Figure 1 represents a vertical section of an incandescent electrical lamp constructed according to my invention, and Fig. 2 is an elevation of the same with the springs removed, the section, Fig. 1, being taken in a plane at right angles to that of the elevation, Fig. 2. The other figures represent separate parts and details of the lamp, as hereinafter explained.

The same letters of reference indicate the same parts in several figures of the drawings.

A is the exhausted glass globe of the incandescent lamp, shown separately in elevation in Figs. 3 and 4, and plan of top in Fig. 5. The solid head B of the globe A contains the usual platinum wires, C C, to which are attached the two extremities of the carbon filament D. The outer end of each platinum wire C projects from one of the extremities or poles of the solid head B, and is bent into the form of a loop, B′, which is folded down close to the glass, the extreme end of the wire of the loop

being caused to re-enter the glass of the solid head, as shown at *d*, Fig. 1, for the purpose of affording a more secure attachment. By preference the loop is made as shown in Fig. 6, and being folded at the dotted lines *a b*, the smaller loop, *c*, and the end *d* of the wire are made to re-enter the glass of the solid head, whereby the security of the attachment is still further increased. Fig. 7 represents, on a larger scale, the configuration of the platinum wire B′ after it has been bent and fixed in the head B of the globe A.

The holder consists of a globular body, E. (Shown separately in sectional elevation in Fig. 8, and elevation in Fig. 9, and plan and section in Figs. 10 and 11.) The said body E is surrounded by a nearly cylindrical head, F. A transverse slot, G, in the globular body receives the solid head B of the glass globe, and four small slits, H, in the cylindrical head receive the turned-in upper ends of the springs K K. Fig. 12 represents one of these springs in front elevation, and Fig. 13 represents the same in side elevation. Fig. 14 represents a plan of the top of the spring. Fig. 15 is a sectional plan of the head of the holder, with the springs in their places on the said holder. Each of the said springs consists of a transverse head, L, bent to fit the flattened side of the nearly cylindrical head F of the holder, and hooked at I I to enter the slits H H. The tail M of the spring is curved, as shown in Figs. 1 and 13, so as to fit one pole of the lamp-head B. Each spring is by preference made of two or more thicknesses of metal, whereby greater elasticity is obtained; but a single thickness may be used, if desired.

N N are two binding-screws, which serve the double purpose of securing the springs to the head of the holder and of attaching the fine wire leads or conductors O O by which the current of electricity is conveyed through the lamp.

P is a screwed stem by which the lamp may be attached to a bracket or pendant or other ornamental fitting.

In order to place the exhausted globe A of the incandescent lamp in the holder, the head B of the globe is forced between the blade-springs K K, where it is held in position by the poles of the said head entering the bows of the springs. Metallic or electrical contact is at the same time made between each spring and the platinum wire loop, upon which it bears, and the electrical current is thus directed through the carbon filament D in the globe A of the lamp. To withdraw the head of the globe, it is only necessary to depress it out of the holder, in doing which the head of the globe forces asunder the blade-springs and becomes liberated therefrom.

I do not limit myself to the precise form or arrangement of the parts shown in the drawings. The body of the holder, for example, may be made wholly cylindrical or wholly rectangular, or partly cylindrical, globular, and rectangular. The expanded head L of the springs K K may be dispensed with, and the springs may be secured to the head of the holder by the binding-screws only.

Holders made according to my invention are inexpensive, and can be conveniently made by machinery, and incandescent electrical lamps having my improvements can be quickly removed and replaced even in the dark without risk of mistake or accident.

Having now described the nature of my invention and the manner in which the same is to be performed, I wish it to be understood that I claim as my invention of improvements in incandescent electrical lamps—

1. The combination, with a holder provided with a slot and clamping or supporting devices, as specified, of the globe of an incandescent electric lamp provided with a T-shaped head, substantially as described.

2. The combination, with the slotted holder and clamping-springs, of the globe provided with a T-shaped head, substantially as described.

3. In combination with the globe having a solid head with flat sides and bulging ends, the holder having a slot, as described, for the reception of said head, and provided with bent springs at the open ends of said slot which clamp the bulging ends of said head when the globe is in place, substantially as described.

4. The globe for incandescent electric lamps provided with a solid head having the conducting-wires embedded therein and leading to the interior of the globe, the upper portions of said wires passing for a suitable distance over the outer surface of said head and their extremities again entering the material whereof it is composed, substantially as described.

5. The combination of the globe having a T-shaped head, the conducting-wires projecting above the surface of said head, the slotted holder and devices thereon for making electrical contact with said wires, substantially as described.

6. The globe provided with a solid head through which the conducting-wires pass, said wires having their outer or projecting portions looped, as explained, and pressed closely against the surface of the head and having their extremities and the ends of the loops embedded therein, in combination with a holder provided with springs adapted to clamp said head and make electrical contact with said wires, substantially as described.

7. The combination of the globe with oblong or T-shaped head, the wires leading to the interior of the globe and projecting above the surface of said head, the holder having a slot adapted to receive said head, the metal springs for embracing said head and making electrical contact with said wires and the line or main wires connec ed with said springs, substantially as described.

8. The combination of the globe having a solid T-shaped head and conducting-wires passing through the same and bent over its outer surface with a holder having a slot of just sufficient width to admit the shorter diameter of said head, and provided with springs at the ends of said slot, which clamp said head and support the globe when the latter is in place, and also make electrical contact with said wires, substantially as described.

HENRY LEA. [L. S.]

Witnesses:

GEORGE SHAW,

RICHARD SKERRETT.