

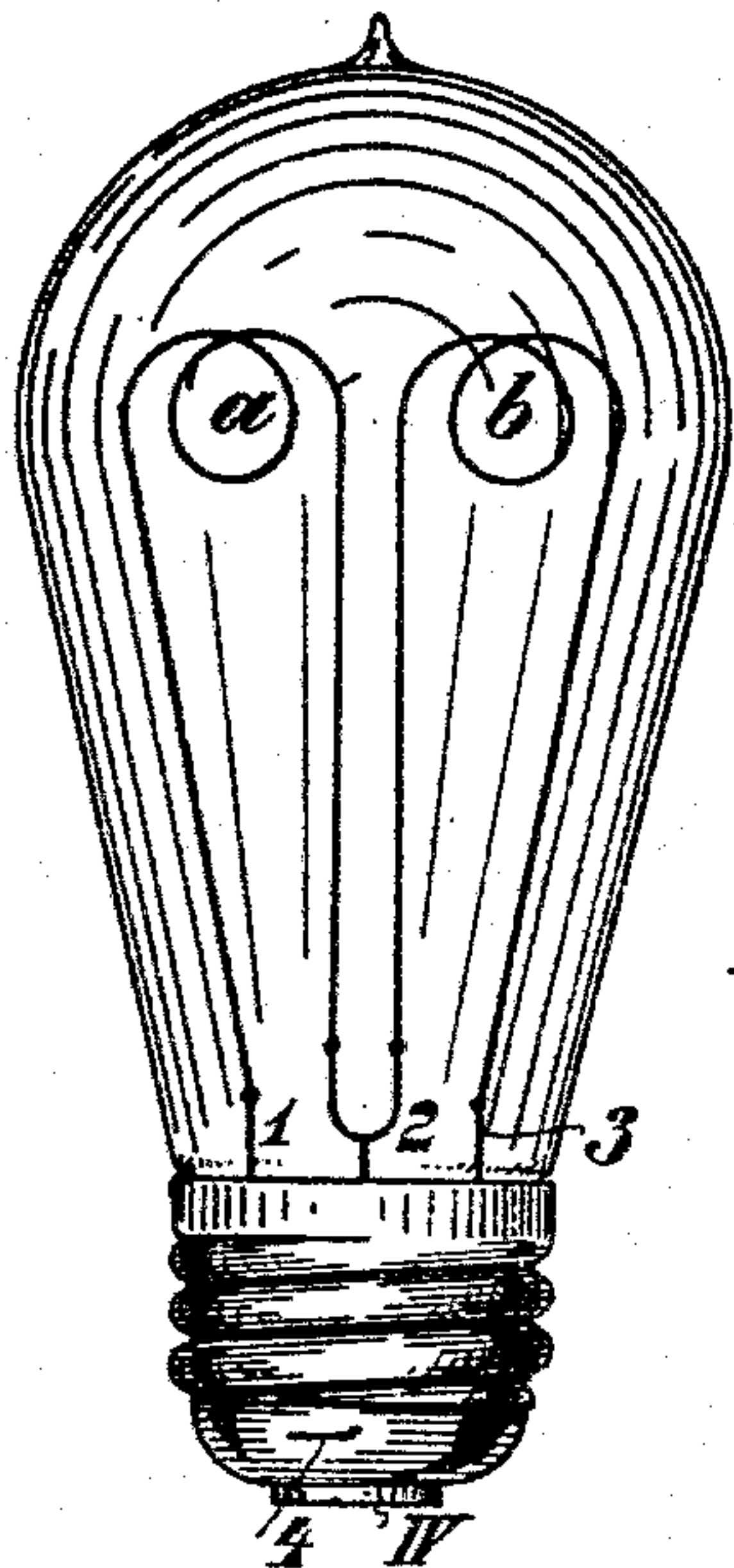
(No Model.)

A. ZOBEL.  
ELECTRIC LAMP.

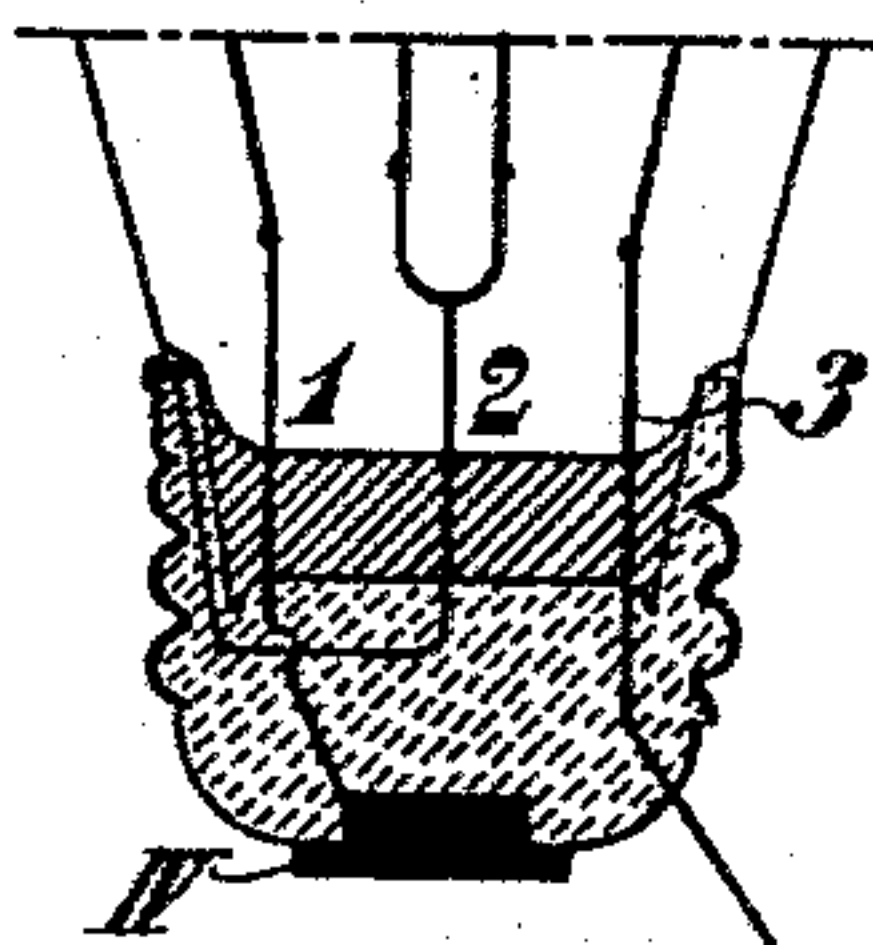
No. 511,229.

Patented Dec. 19, 1893.

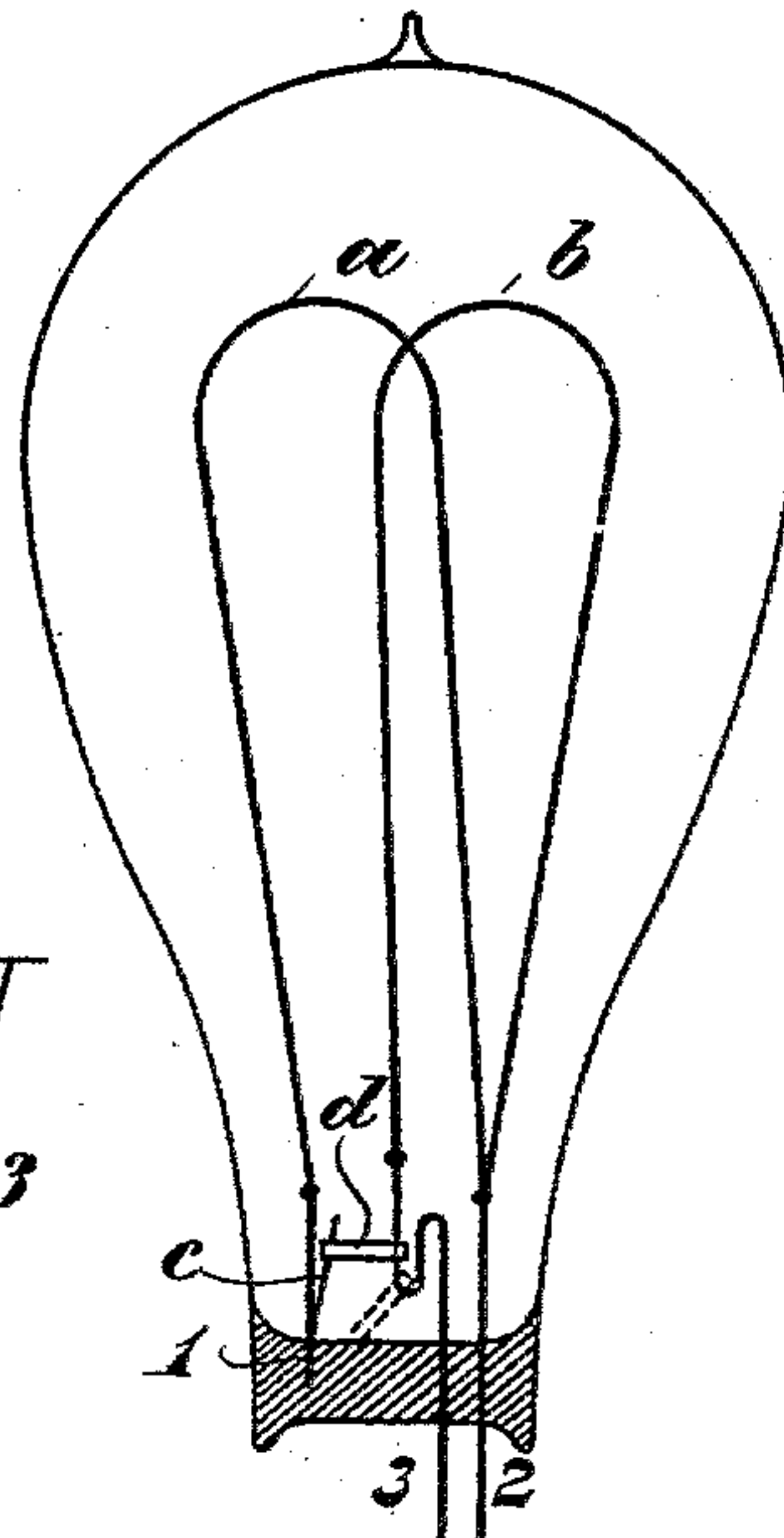
*Fig. 1.*



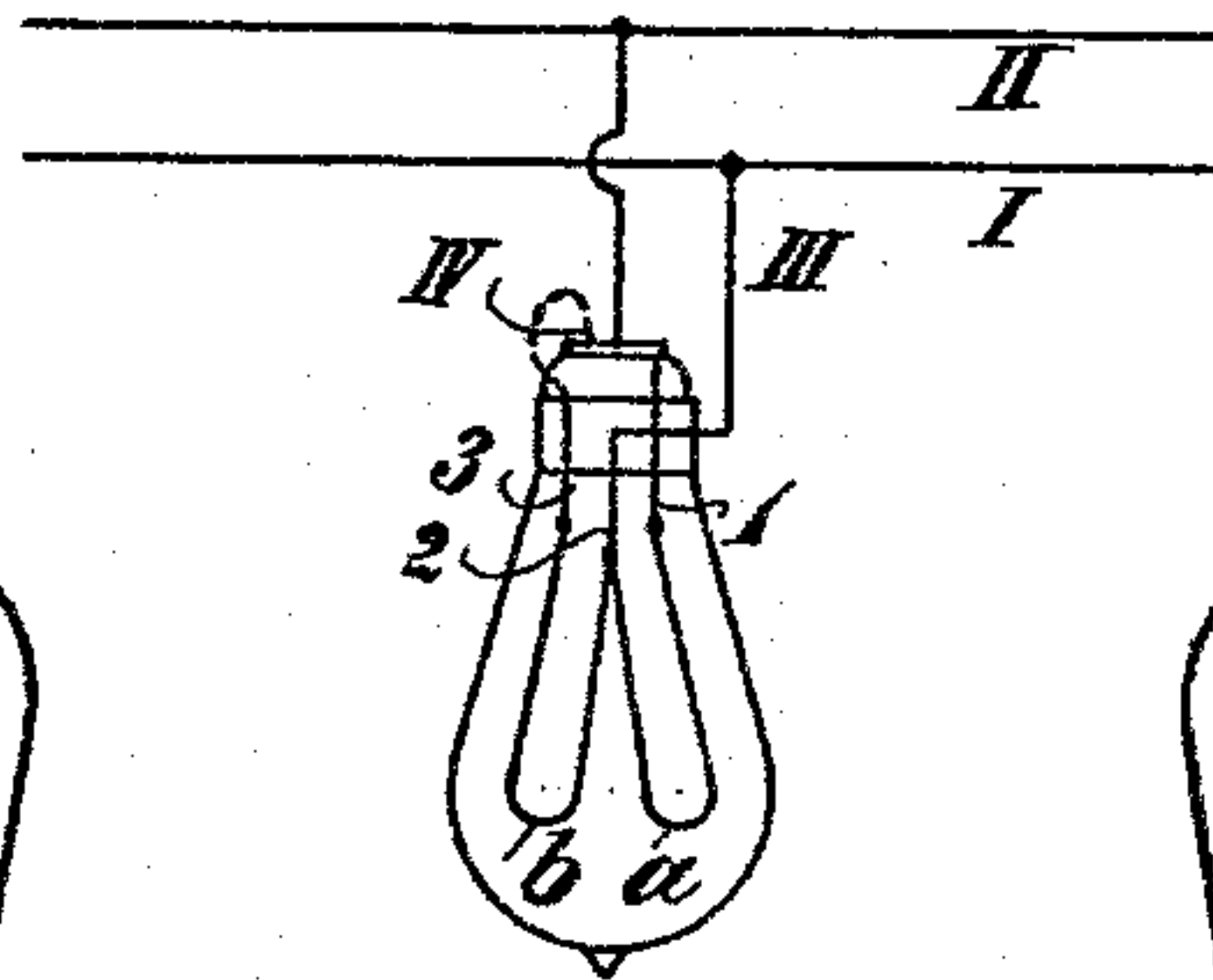
*Fig. 2.*



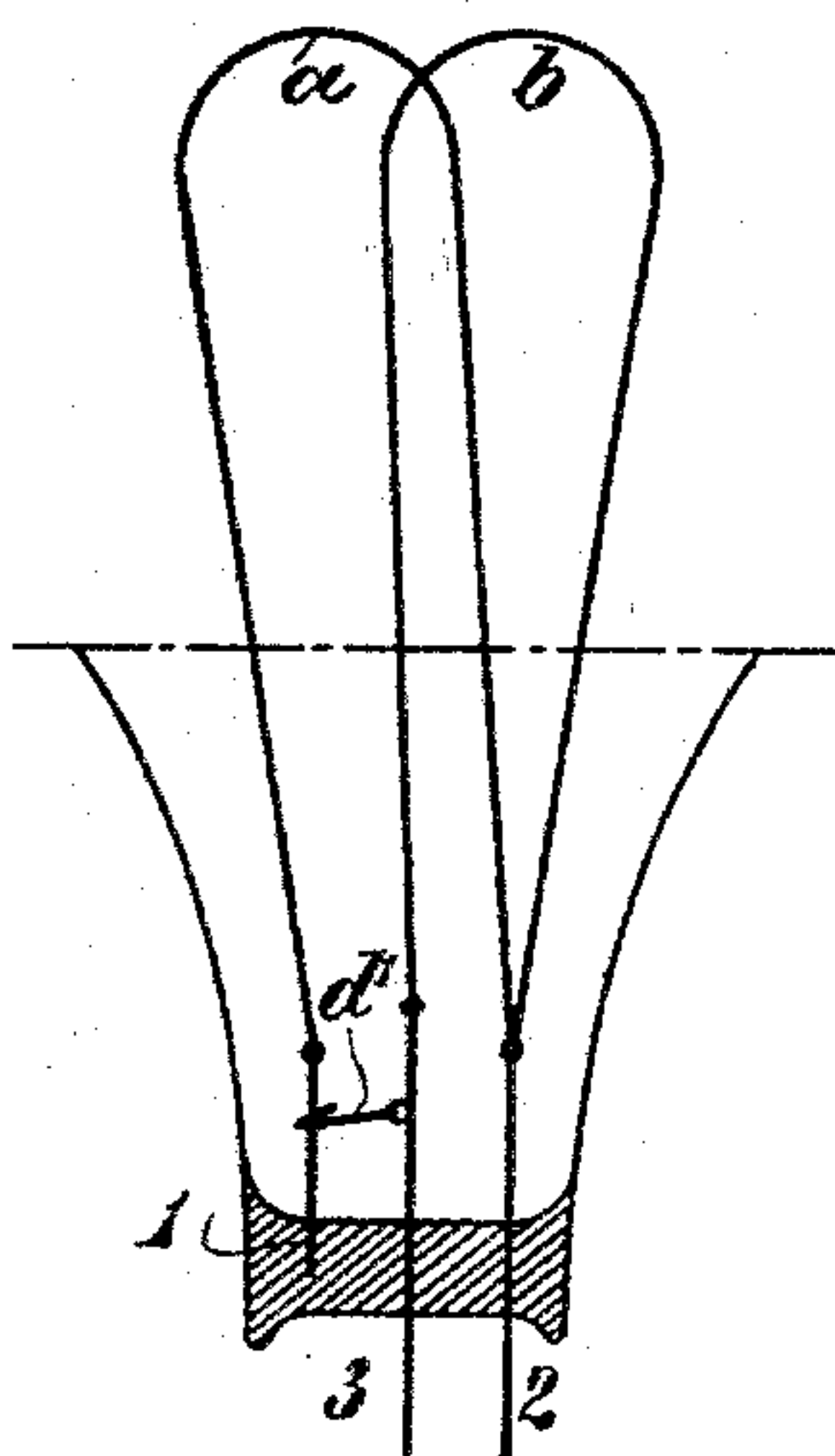
*Fig. 4.*



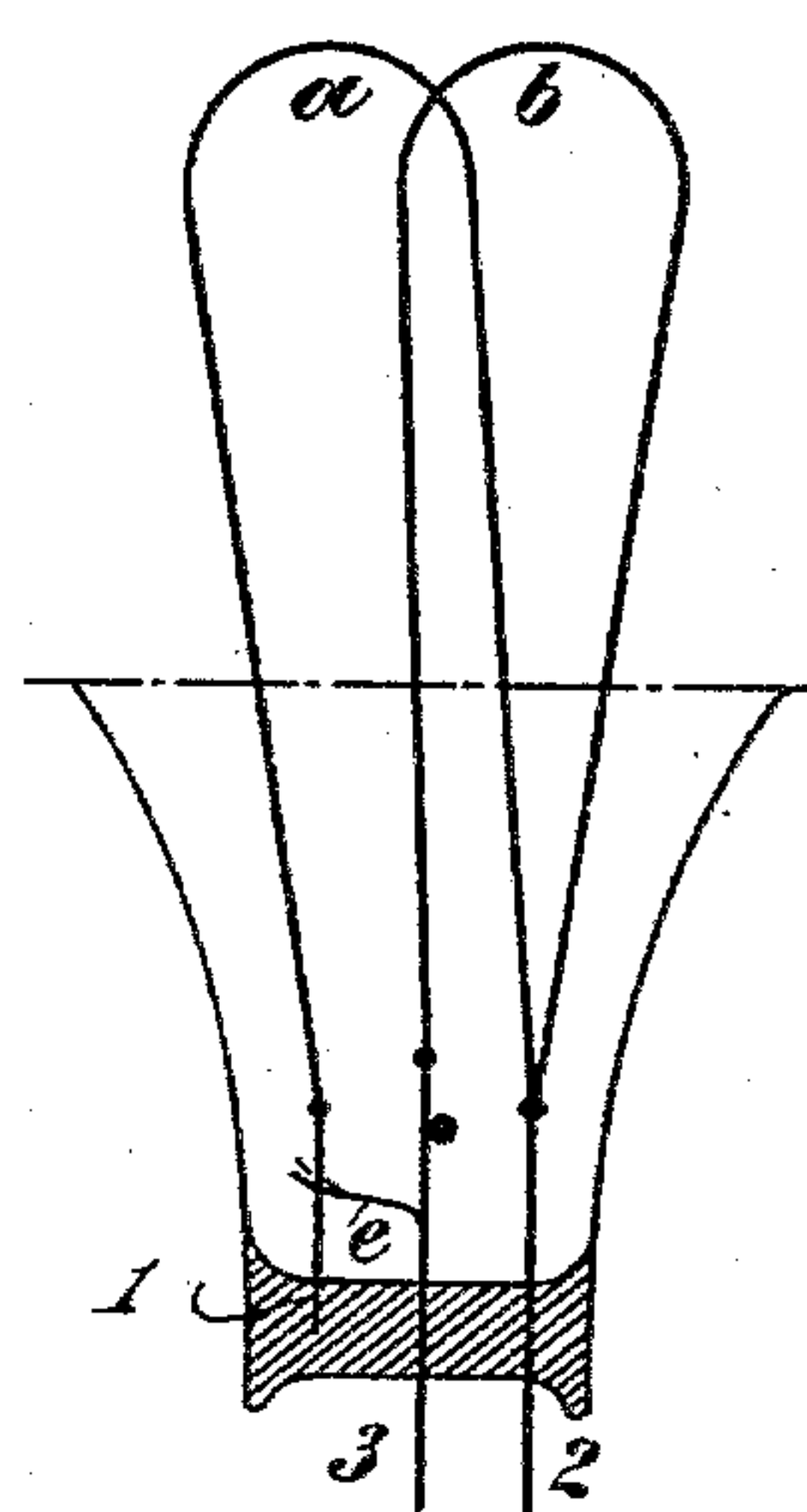
*Fig. 3.*



*Fig. 5.*



*Fig. 6.*



Attest:

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Atty.



# UNITED STATES PATENT OFFICE.

ALBERT ZOBEL, OF MUNICH, GERMANY.

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 511,229, dated December 19, 1893.

Application filed February 15, 1893. Serial No. 462,520. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT ZOBEL, a subject of the King of Württemberg, residing at Munich, Bavaria, in the Empire of Germany, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

The present invention relates to incandescent electric lamps and its object is to so arrange each lamp that a burned out or otherwise injured filament will be at once replaced by another filament without further manipulation.

The object is also to make the lamp capable of an enhanced incandescence.

It is the object of this invention, furthermore, to produce the above results without making any appreciable changes on the lamp or its globe.

For this purpose my invention, which may be applied to the globes of all the existing incandescent systems, consists in the means, features and combination of parts hereinafter described and pointed out in the claims.

In the drawings accompanying this specification—Figure 1 represents a side elevation of an incandescent lamp with two filaments; Fig. 2 a vertical central section through the lamp socket; Fig. 3 a diagram illustrating the arrangement when the lamps are connected in parallel; and Figs. 4, 5 and 6 sectional views of a modified form of lamp.

As already stated, the incandescent or glow-lamps, under my invention, are provided with two or more filaments in such a manner that they may be successively thrown into circuit. For a two-filament glow-lamp three conducting wires, 1, 2 and 3, are arranged in the lamp socket. Two of these (1 and 2) are connected with the filament, *a*, in the usual manner. The wire, 2, moreover, as well as the platinum wire, 3, is connected with the second filament, *b*. The third connecting wire, 3, projects from the lamp and is insulated by the gypsum of the socket. (See 4, in Fig. 1.)

Referring now to Fig. 3 and assuming that the filament *a*, is in circuit, it will be noted that the current passes from the main conductor, I, through the wire, III, to the socket thence to wire, 2, through the filament, *a*, through the platinum wire, 1, to the second part of the socket thence passing out to the

main conducting wire, II. If, however, the filament, *a*, is burned out or broken, then the third conducting wire, 3, is soldered onto the contact-plate, IV, of the socket as indicated in Fig. 3 in dotted lines. The current now passes from the conductor, I, through connecting wire, III, to the platinum wire, 2, through the filament, *b*, and the conducting wire, 3, back to the main conductor, II. The filament, *b*, will hence be rendered incandescent. The third platinum wire may also be secured to the contact-plate of the socket when it is desired to enhance the incandescence of the glow-lamp. This causes both filaments to glow and the lighting power of the lamp will now amount to thirty-two candle power if it was sixteen with the single filament.

Figs. 4, 5 and 6 show one form of carrying my invention into effect. In this construction the conducting wires 2 and 3, only are fused into the base of the glass globe. These two conducting wires are connected by a carbon filament, *b*, in the interior of the globe in the usual manner. At some distance from the two wires, 2 and 3, a third wire, 1, is fused into the glass base of the lamp globe, in such a manner that it projects only into the interior and extends only to about one-half of the thickness of the glass base, so that the perfect hermetic sealing of the lamp globe will not be interfered with. This wire, 1, is connected with one of the connecting wires, for example 2, by a filament, *a*. A wire projecting to the exterior, as in the first construction, represented in Fig. 1, is entirely omitted in this construction, and the substitute filament is here thrown into circuit in a different manner, as described below. A loose contact device within the lamp bulb, which may be in the form of a plate, as shown at *d*, in Fig. 4, or a hook, as shown at *d'*, at Fig. 5, or a fork, *e*, Fig. 6, is arranged on the wire, 3, which, for this purpose, may be provided with a double bend (Fig. 4), or a ring (Fig. 5).

In the first case, that is, where a contact-plate, *d*, is employed, the third wire is preferably provided with a small piece of spring wire, *c*, (Fig. 4.) The contact-plate, *d*, is of metal and is suspended on the wire, 3, by a perforation, through which the said wire passes. The edge of the plate is provided with notches.



Ordinarily, the filament, *b*, is employed, the current passing through wire, 2, through the filament, *b*, to the conducting wire, 3. When, however, the second filament, *a*, is to be thrown into circuit, the lamp is reversed and so shaken or manipulated that the contact-plate, *d*, is wedged in between the wires, 3 and *c*. (See full lines in Fig. 4.) In this manner an electric connection is established between the wires, 3 and *c*, and therefore also between the conducting wires, 2 and 3, through the filament, *a*. The position of the metal plate, *d*, is assured by the notches provided in its edge. If, now, a current is carried through the lamp in its changed condition both filaments are caused to glow if the filament, *b*, is intact, the current entering at 2, and being distributed over the two filaments, *b* and *a*, from the first of which passes directly to the wire 3, while from the latter filament, *a*, it reaches the wire, 3, only after it has passed through the wires, 1, *c* and the contact-plate, *d*. If, however, the filament, *b*, is broken or burned out the current passes only through the latter circuit.

In the modification shown in Fig. 5, a small hook, *d'*, of conducting material is substituted for the contact-plate *d*. Similarly to the plate, *d*, the hook, *d'*, is arranged so as to be easily movable on the wire, 3, and adapted to engage the wire, 1, by a suitable reversal and manipulation of the glow-lamp. In Fig. 6, the same purpose is accomplished by a wire, *e*, split at its end and attached to the conducting wire, 3. This forked wire, *e*, is bent in such a manner that its forked end will snugly fit against the wire, 1, and thus establish the connection between the wires, 1 and 3, by a blow suitably imparted to the lamp.

What I claim, and desire to secure by Letters Patent, is—

1. In an electric glow lamp, the combina-

tion, with a lamp socket, of a pair of conducting wires extending through the lamp socket, a third conducting wire inserted in the socket and projecting into the lamp, a filament connecting the pair of conducting wires, a second filament connecting the second wire of the pair with the third wire, and a contact device within the lamp bulb and arranged to connect the third wire with the second wire of the pair, substantially as set forth.

2. In an electric glow lamp, the combination, with a lamp socket, of a pair of conducting wires extending through the lamp socket, a third conducting wire inserted in the socket and projecting into the lamp, a filament connecting the pair of conducting wires, a second filament connecting the second wire of the pair with the third wire, and a loose contact device within the lamp bulb and arranged to connect the third wire with the second wire of the pair, substantially as set forth.

3. In an electric glow lamp, the combination, with a lamp socket, of a pair of conducting wires extending through the lamp socket, a third conducting wire inserted in the socket and projecting into the lamp, a filament connecting the pair of conducting wires, a second filament connecting the second wire of the pair with the third wire, and a loose contact plate suspended from the second wire located within the lamp bulb, and arranged to be brought into contact with the second wire of the pair, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ALBERT ZOBEL.

Witnesses:

ALBERT WEICKMANN,  
C. MAYER.