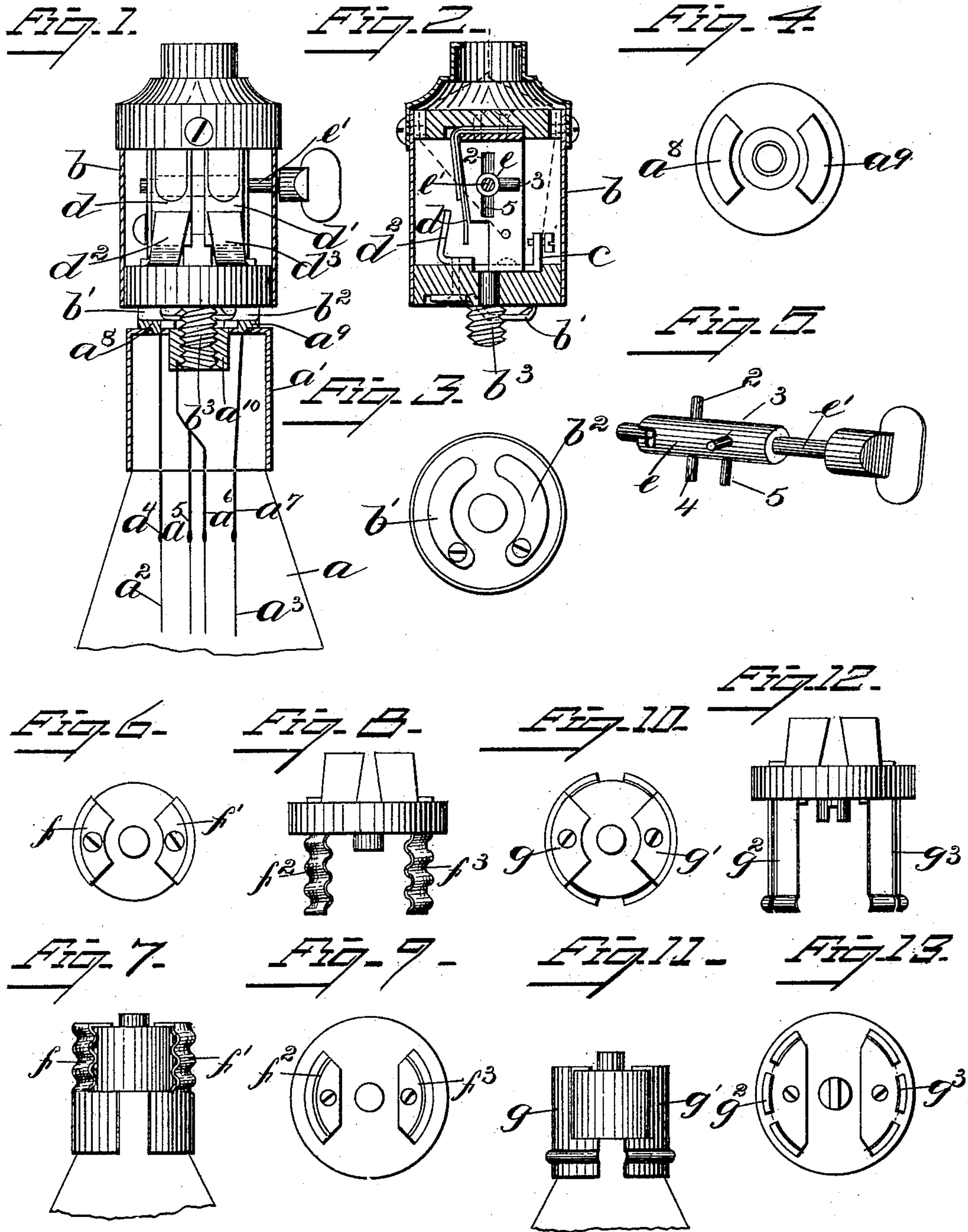


(No Model.)

C. A. BEAL.
INCANDESCENT ELECTRIC LAMP.

No. 551,357.

Patented Dec. 17, 1895.



WITNESSES.

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INCANDESCENT ELECTRIC LAMP.

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To all whom it may concern:

Be it known that I, CHARLES A. BEAL, of Abington, county of Plymouth, and State of Massachusetts, have invented an Improve-
5 ment in Incandescent Electric Lamps, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

10 This invention has for its object to improve the construction of a double-filament incandescent electric lamp, whereby either or both of the filaments may be included in circuit, whereby the double-filament lamp included
15 in this invention can be used in connection with ordinary sockets now upon the market designed for use with single-filament lamps, and whereby the lamp-socket may be used in connection with ordinary single-filament
20 lamps.

A lamp-socket made in accordance with this invention has a central contact-piece to which one of the line-wires may be connected, and two independent side contact-pieces properly
25 insulated from each other and from the central contact-piece, and two circuit-closers located between the other line-wire and said side contact-pieces, and an operating device for said circuit-closers, whereby either one of
30 them may be operated, although in addition said operating device may have the capability of operating both of said circuit-closers simultaneously or successively, in such manner that both filaments may be included in
35 circuit at the same time.

The double-filament lamp will have a central contact-piece with which one of the limbs of each filament will be connected, and two independent side contact-pieces insulated
40 from each other and from the central contact-pieces, with which the other limbs of said filaments will be connected, and said contact-pieces are adapted to engage the contact-pieces on the lamp-socket and thereby estab-
45 lish electrical connection when the parts are united.

The central and side contact-pieces on the lamp-base may be differently constructed to fit different sockets, and the central and side
50 contact-pieces on the socket may be differently constructed to fit different lamps.

So far as the socket is concerned, my inven-

tion is limited to one wherein the central and side contact-pieces may, in addition to properly co-operating with a special form of dou-
55 ble-filament lamp, also properly co-operate with an ordinary or well-known form of single-filament lamp, so that in cases where the double-filament lamp is burned out or other-
60 wise incapacitated, and a new double-filament lamp is not readily accessible, an ordinary single-filament lamp may be utilized; and so far as the lamp is concerned my invention is limited to one wherein the central and side
65 contact-pieces may, in addition to properly co-operating with the special form of socket designed for it, also properly co-operate with an ordinary or well-known form of socket designed for use with single-filament lamps, so
70 that in cases where the single-filament lamp is burned out, and a new single-filament lamp is not readily accessible, the double-filament lamp of my invention can be used at one of its degrees of brilliancy. Thus a socket pro-
75 vided with contact-pieces arranged in the manner to come within the spirit and scope of this invention will have this double capability of receiving either a double or single filament lamp, and in either case the connections are such that either form of lamp may
80 be properly included in the circuit, and a lamp provided with contact-pieces arranged in the manner to come within the scope and spirit of my invention will have the double capability of use with a socket designed for
85 either a double or single filament lamp.

Figure 1 shows in vertical section an incandescent lamp and base embodying this invention; Fig. 2, a vertical section of the socket, taken on the dotted line xx , Fig. 1; Fig. 3,
90 an under side view of the socket shown in Fig. 2; Fig. 4, a top view of the lamp-base shown in Fig. 1; Fig. 5, a detail of the switch-plug for operating the circuit-closers; Fig. 6, a plan view of a modified form of lamp-base; Fig. 7,
95 a side view of the same; Fig. 8, a side view of a modified form of socket; Fig. 9, an under side view of the same; Fig. 10, a plan view of another modified form of lamp-base; Fig. 11, a side view of the same; Fig. 12, a side
100 view of another modified form of socket; Fig. 13, an under side view of the same.

The bulb a has a ferrule or base a' , and contains two filaments a^2 a^3 and four leading-in

wires $a^4 a^5 a^6 a^7$, to which the filaments $a^2 a^3$ are joined. The leading-in wires $a^4 a^7$ extend to flat curved side contact-plates $a^8 a^9$, secured to the outer end of the ferrule or base a' , and the leading-in wires $a^5 a^6$ extend to the internally screw-threaded central contact-piece a^{10} , either by being joined together, as represented in Fig. 1, or they may be separately led to such central contact-piece.

The socket b has secured to it a central screw-threaded stem or contact-piece b^3 , and also two flat side contact springs or plates b' b^2 , which, when the central contact piece or stem is screwed into the central contact-piece a^{10} , bear upon the flat side contact-plates $a^8 a^9$. Inside the socket one of the line-wire connections is made by the binding-post c , which is metallically connected with the central contact-stud b^3 . The other line-wire connection is made with two contact-pens $d d'$, secured to the insulating framework and adapted to be moved into contact with the studs or projections $d^2 d^3$, also secured to the insulating-frame and metallically connected with the contact-pens $b' b^2$.

A compound switch is provided, (see detail, Fig. 5,) consisting of a sleeve e , mounted upon and adapted to be rotated by a shaft e' , to which the finger-piece is attached, said sleeve having projecting therefrom a stud 2 designed to press the contact-pen d into engagement with the projection d^2 , and a stud 3 designed to press the contact-pen d' into engagement with the projection d^3 , and two studs 4 5 designed to press the contact-pens $d d'$ into engagement with the projections $d^2 d^3$. When the stud 2 is brought into action, the current has a course through contact-pen d , projection d^2 , contact-spring b' , contact-plate a^8 , leading-in wire a^4 , filament a^2 , leading-in wire a^5 , central piece a^{10} , screw-threaded stud b^3 to binding-post c , and at such time it will be seen that electric connection with the other filament is broken at or between $d' d^3$. When the stud 3 is brought into action, electric connection is made between the parts $d' d^3$, and broken between the parts $d d^2$, and hence filament a^3 is included in the circuit. When the studs 4 and 5 are brought into action, all electric connections are made, and both filaments included in circuit. Thus it will be seen that either or both filaments may be included in circuit.

The many advantages of a double-filament lamp constructed in such manner that the filaments may be separately included in the circuit, or, if desired, both included in circuit, are obvious. As two filaments are herein shown, two circuit-closers are provided, adapted to be operated by the switch-plug or finger-piece, and two electric connections between the lamp and socket; but there will be as many electric circuit-closers and electric connections provided as there are filaments.

In Figs. 1 to 3 I have herein shown my improvements as applied to a lamp and socket of well-known form.

Referring to Figs. 6 to 9 I have shown my improvements applied to another well-known form of lamp and socket. In these figures the lamp-base has a central contact-piece and two separate metallic side pieces $f f'$, and the lamp-socket has a central contact-piece and two corresponding side contact-plates $f^2 f^3$, being substantially the equivalent of the side contact-plates $a^8 a^9$ and side contact-pens $b' b^2$ shown in Fig. 1.

In Figs. 10 to 13 I have represented my improvements as applied to another well-known form of lamp and socket, the lamp-base having a central contact-piece and two metallic side contact-pieces $g g'$, and the socket having a central contact-piece and two side contact-plates $g^2 g^3$, being substantially the equivalent of the central contact-pieces and the pieces $a^8 a^9 b' b^2$ shown in Fig. 1.

By providing the socket such as shown in either figure of the drawings it will be seen that a double-filament lamp may be connected thereto, and proper circuit-closers made whereby either or both of the filaments may be included in circuit, and furthermore that the sockets shown may receive any well-known or ordinary form of single-filament lamp without change of construction, and the proper circuit connections made. Thus if a building is fitted up with the double-filament sockets having a central contact-piece and two side contact-pieces, as herein shown, and any of the double-filament lamps should burn out or otherwise become incapacitated, and new double-filament lamps should not be readily accessible or if for any reason double-filament lamps should not be desired, then in such case, without change or alteration of the socket provided with contact-pieces arranged in the manner herein shown, ordinary single-filament lamps may be connected with said sockets in usual way. Thus it will be seen that the central contact-piece, as well as the side contact-pieces, may be differently constructed, and may receive and properly co-operate with either double or single filament lamps, and only when so constructed does the socket come within the spirit and scope of my invention. Also, the central contact-piece as well as the side contact-pieces of the lamp may be differently constructed and may properly co-operate with sockets designed for double-filament lamps or those designed for single-filament lamps, and only when so constructed does the lamp come within the spirit and scope of my invention.

To enable the lamp, and also the socket, to practically fulfill all the purposes herein designed, the two side contact plates or pieces, which are insulated from each other, should lie in the same concentric circle around the central contact-piece.

I claim—

1. A socket for a double or single filament lamp having a central contact piece and two side contact pieces insulated from each other, and located in the same concentric circle

around the central contact piece, one of the line wires being connected with said central contact piece, and two independent circuit closers $d-d^2$, $d'-d^3$, the parts d , d' , being connected with the other line wire and the parts d^2 , d^3 thereof being connected respectively with said two side contact pieces, and means for operating either of said circuit closers, substantially as described.

2. A socket for a double or single filament lamp having a central contact piece and two side contact pieces, one of the line wires being connected with said central contact piece, and two circuit closers located between the other line wire and two side contact pieces, the cylinder e having thereon stud 2 for operating one of said circuit closers, and stud 3 for operating the other circuit closer, and studs 4, 5, for operating both circuit closers, and means for turning said cylinder, substantially as described.

3. The socket for a double or single filament lamp having a central screw threaded contact stud b^3 with which one of the line wires may be connected, two independent contact plates b' , b^2 , insulated from each other, two independent circuit closers $d-d^2$, $d'-d^3$, the parts d^2 , d^3 , thereof being respectively connected with said contact plates b' , b^2 , and the parts d , d' , thereof being connected with the other line wire, substantially as described.

4. A double filament lamp having a central contact piece to which one of the limbs of each filament is connected, and two side contact pieces insulated from each other to which the other limbs of said filaments are connected, said contact pieces lying in the same concentric circle around the central contact piece, substantially as described.

5. A double filament lamp having a central screw threaded socket a^{10} to which one of the limbs of each filament is connected, and two side plates a^8 , a^9 , insulated from each other to which the other limbs of said filaments are connected, said contact pieces lying in the same concentric circle around the central socket, substantially as described.

6. A socket for a double or single filament lamp having a central contact piece and two side contact pieces insulated from each other and occupying the same concentric circle around the central contact piece, one of the line wires being connected with said central

contact piece, and two circuit closers located between the other line wire and the two side contact pieces, and means for operating either of said circuit closers, combined with a double filament lamp having a central contact piece to which one of the limbs of each filament is connected and engaging the central contact piece on the socket, and two side contact pieces to which the other limbs of said filaments are connected, said side contact pieces being insulated from each other, and occupying the same concentric circle around the central contact piece, and engaging the two side contact pieces in the socket, substantially as described.

7. A base for a double filament lamp capable of cooperation with either the special socket herein described or with one of the ordinary sockets designed for use with single filament lamps, having a central contact piece to which one of the limbs of each filament in the lamp may be connected, and two side contact pieces, insulated from each other to which the other limbs of said filaments may be connected, said side contact pieces occupying the same concentric circle around the central contact piece, substantially as described.

8. A base for a double filament lamp capable of cooperation with either the special socket herein described or with one of the ordinary sockets designed for use with single filament lamps, having a central screw threaded socket a^{10} to which one of the limbs of each filament may be connected, and two side plates a^8 , a^9 , insulated from each other, to which the other limbs of said filaments may be connected, said side plates occupying the same concentric circle around the central socket, substantially as described.

9. A socket for a double or single filament lamp, having a central contact piece, and two side contact pieces, insulated from each other and occupying the same concentric circle around the central contact piece, substantially as described.

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

CHAS. A. BEAL.

Witnesses:

B. J. NOYES,
FLORENCE H. DAVIS.