

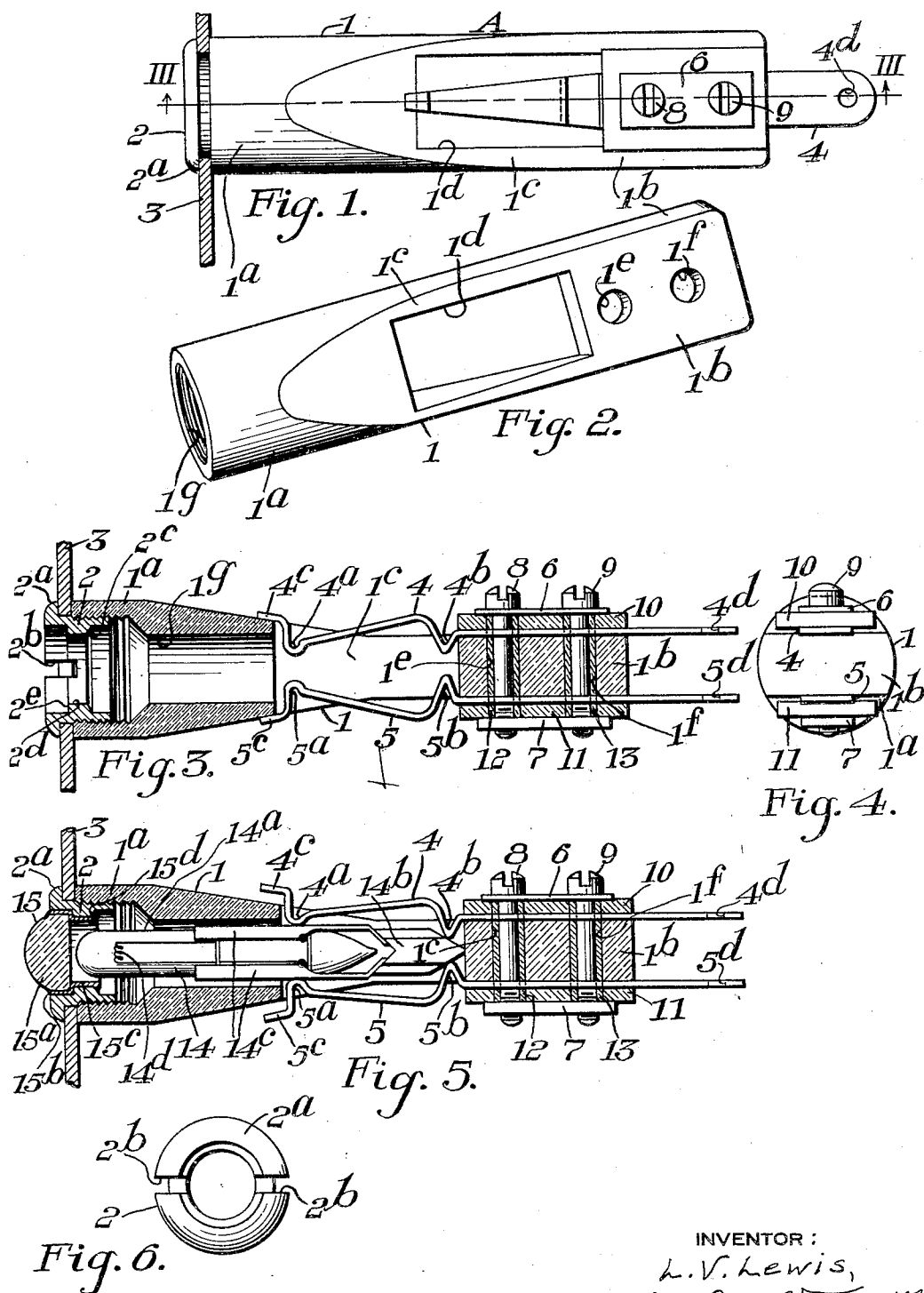
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LAMP RECEPTACLE

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## UNITED STATES PATENT OFFICE

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## LAMP RECEPTACLE

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My invention relates to lamp receptacles, and particularly to lamp receptacles for switchboard lamps of the type commonly used in telephone switchboards and the like.

I will describe one form of lamp receptacle embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a view showing, in side elevation, one form of lamp receptacle embodying my invention attached to a control panel. Fig. 2 is an isometric view of the body 1 of the receptacle shown in Fig. 1. Fig. 3 is a sectional view on the line III—III of Fig. 1. Fig. 4 is an end view of the receptacle shown in Figs. 1 and 3 as it appears when viewed from the right in Fig. 3. Fig. 5 is a sectional view similar to Fig. 3 but showing a lamp and lamp cap in place in the receptacle. Fig. 6 is an end view of the bushing for attaching the receptacle to the panel.

Similar reference characters refer to similar parts in each of the several views.

Referring first to Figs. 1 and 2, the receptacle, designated, in general, by the reference character A, comprises a body 1 of suitable insulating material such, for example, as bakelite. This body 1, in the form here shown, is constructed with a circular end portion 1<sup>a</sup>, a flat end portion 1<sup>b</sup> which is substantially rectangular in cross-section, and an intermediate portion 1<sup>c</sup> which is tapered in such manner that the flat surfaces of the end portion 1<sup>b</sup> gradually merge into the rounded surface of the end portion 1<sup>a</sup>.

The end portion 1<sup>a</sup> is provided with an axial opening 1<sup>s</sup> which communicates with a rectangular slot 1<sup>d</sup> passing through the intermediate portion 1<sup>c</sup> from one side to the other. The outer end of the opening 1<sup>s</sup> has a larger diameter than the inner end of the opening, as best shown in Fig. 3, and is threaded to receive a bushing 2 having an annular flange 2<sup>a</sup> by means of which the receptacle A may be attached to a switchboard or control panel indicated at 3 in the drawing.

The end portion 1<sup>b</sup> of the body 1 is provided with two holes 1<sup>e</sup> and 1<sup>f</sup> (see Fig. 2) which receive two screws 8 and 9, respectively (Figs. 3 and 5). Mounted on the screws 8

and 9 on opposite sides of the end portion 1<sup>b</sup>, and clamped in place by a plate 7 into which the screws 8 and 9 are threaded, are two resilient contact fingers 4 and 5. The contact fingers 4 and 5 are insulated from the screws 8 and 9 by insulating sleeves 12, 13 which surround the screws, and by two insulating blocks 10 and 11 which are interposed respectively between the heads of the screws and the contact finger 4 and between the plate 7 and the contact finger 5. A plate 6, interposed between the heads of the screws and the insulating block 10, distributes over a large area the pressure which the heads of the screws exert on the block 10 when the screws are tightened, and prevents the heads of the screws from cutting into the block 10. The left-hand end of each contact finger is tapered as seen in Fig. 1, and the tapered end of the finger 4 is crimped at 4<sup>a</sup> and 4<sup>b</sup> to form projections which extend into the slot 1<sup>d</sup> near its opposite ends, while the tapered end of the finger 5 is similarly crimped at 5<sup>a</sup> and 5<sup>b</sup> to form projections which extend into the slot 1<sup>d</sup> opposite the corresponding projections in the finger 4. The tip of the tapered end of the finger 4 is provided with an offset extension 4<sup>c</sup> which extends past the left hand edge of the slot 1<sup>d</sup> and the tip of the tapered end of the finger 5 is provided with a similar offset extension 5<sup>c</sup>. When the receptacle A is empty, as shown in Fig. 3, the offset extensions 4<sup>c</sup> and 5<sup>c</sup> engage the body 1 adjacent the end of the slot 1<sup>d</sup> and prevent the fingers from being pressed together to cause a short circuit. The right-hand end of the contact finger 4 is provided with a hole 4<sup>d</sup> to facilitate making a soldered connection thereto, and the finger 5 is provided with a similar hole 5<sup>d</sup>.

The bushing 2, in addition to providing means for attaching the receptacle to a switchboard, or control panel, also serves as a holder for a lamp cap 15 as best seen in Fig. 5. The lamp cap 15 is a standard cap of the well known type commonly employed in telephone switchboards and comprises a metal tube 15<sup>e</sup> having a bezel ring 15<sup>b</sup> formed on one end and having the other end slotted to form resilient segments which are crimped

to form an annular bead 15<sup>a</sup>. The bezel ring 15<sup>b</sup> carries the usual bulls eye 15<sup>a</sup> which may have any appropriate color as desired. For co-operation with the lamp cap 15, the inside of the bushing 2 is provided with an annular projection 2<sup>a</sup>, the outer edge 2<sup>e</sup> of which is normal to the axis of the bushing, and the inner edge 2<sup>c</sup> of which is beveled, as best seen in Fig. 3. When the lamp cap 15 is inserted in the bushing 2, the edge 2<sup>e</sup> of the projection 2<sup>a</sup> engages the cap at the right-hand end of the bezel ring 15<sup>b</sup> as viewed in Fig. 5 and acts as a stop, while the beveled edge 2<sup>c</sup> of the projection 2<sup>a</sup> engages the cap 15 at the annular bead 15<sup>a</sup> and holds the cap in place. To facilitate removing the lamp cap, and to permit the use of a screw driver for attaching the receptacle to the panel, the bushing 2 is also provided with a saw kerf 2<sup>b</sup> as best seen in Figs. 3 and 6.

The receptacle A is particularly adapted to receive a standard telephone switchboard lamp such as the lamp 14 illustrated in Fig. 5. This lamp, in the form here shown, comprises a wedge-shaped base 14<sup>b</sup> of insulating material carrying two diametrically opposite spaced terminals 14<sup>c</sup> between which is secured a small tubular bulb 14<sup>a</sup> containing a filament 14<sup>d</sup>. The lamp 14 may be inserted in the receptacle A through the bushing 2 by removing the lamp cap 15. When the lamp is being inserted in the receptacle, the projections 4<sup>a</sup> and 5<sup>a</sup> engage the wedge-shaped base 14<sup>b</sup> of the lamp 14 as the base moves past these projections and automatically turn the lamp to the position in which the terminals 14<sup>c</sup> are in alignment with the projections 4<sup>a</sup> and 5<sup>a</sup>. In case the lamp is turned from the position in which the terminals 14<sup>c</sup> are in alignment with the projections 4<sup>a</sup> and 5<sup>a</sup> after the base of the lamp has moved past the projections 4<sup>a</sup> and 5<sup>a</sup>, however, the projections 4<sup>b</sup> and 5<sup>b</sup> are so arranged that these projections will then engage the base and either restore the lamp to the proper position as the lamp is moved the rest of the way into the receptacle, or else prevent the lamp from being inserted into the receptacle far enough to permit the lamp cap to be replaced, thus insuring that the lamp will be inserted in the receptacle in the proper position. When the lamp is inserted in the receptacle in the proper position, the projections 4<sup>a</sup> and 5<sup>a</sup> engage the terminals 14<sup>c</sup> of the lamp and make electrical contact therewith. The width of the tapered end of each finger is made narrower than the distance between the terminals 14<sup>c</sup> of the lamp 14 so that it is impossible for the contact fingers to bridge the terminals of the lamp under any condition and cause a short circuit. Furthermore, the distance between the projections 4<sup>a</sup> and 5<sup>a</sup> and the inner end of the bushing 2 is sufficiently large so that when a lamp is being inserted in the receptacle A, the terminals 14<sup>c</sup> will

have passed the bushing 2 before the terminals engage the contact fingers at the projections 4<sup>a</sup> and 5<sup>a</sup>. It is therefore impossible for a finger 4 or 5 to be connected with the bushing 2 by a terminal 14<sup>c</sup> during insertion of the lamp.

One advantage of a receptacle embodying my invention is that due to the construction and arrangement of the parts the risk of short circuits in replacing lamps is completely eliminated.

Another advantage of a receptacle embodying my invention is that the receptacle may be attached directly to a metal control panel or switchboard without insulating the receptacle from the panel or switchboard by drilling a single hole in the panel.

Another advantage is that due to the absence of attachment lugs or projecting parts several lamp receptacles may be located very close together, because the diameter of the parts at the rear of the panel is substantially the same as the outside diameter of the bushing at the front of the panel.

Another advantage is that by use of suitable lamp replacing tools, the lamp may be removed and replaced from the front of the panel, so that it is unnecessary to give the operator access to the rear of the panel, and risk of disturbing wiring or connections is avoided.

Still another advantage of my invention is that the factor of safety against insulation breakdown is extremely high.

Although I have herein shown and described only one form of lamp receptacle embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. A receptacle for cooperation with a telephone switchboard lamp of the type comprising a tubular bulb secured between diametrically opposite spaced terminals carried by a wedge-shaped base of insulating material, said receptacle comprising a body of insulating material having a circular portion at one end provided with an opening for receiving said lamp and having a rectangular portion at the other end provided with two spaced holes extending therethrough from one side to the other and having an intermediate tapered portion provided with a rectangular slot extending therethrough from one side to the other and communicating at one end with said opening, two screws one extending through each spaced hole, two sleeves of insulating material one on each screw, two contact fingers one mounted on each screw on opposite sides of said rectangular portion and each having one end tapered to a width which is less than the distance

between the spaced terminals of said lamp and said fingers having their tapered ends crimped to form two pairs of spaced projections which extend into said slot and each  
 5 finger having the tip of the tapered portion provided with an offset extension which projects past the end of said slot, one pair of projections being disposed opposite each other near one end of said slot in a position to en-  
 10 gage the terminals of said lamp and make electrical connection therewith and said second projections being disposed opposite each other near the other end of said slot in such manner that said lamp is prevented from  
 15 being inserted completely into said receptacle unless said terminals are in alignment with said first projections, a first metal plate threaded to receive said screws for clamping  
 20 said fingers in place, two blocks of insulating material one interposed between one contact finger and the heads of said screws and the other interposed between the other finger and  
 25 said plate, and a plate interposed between the heads of said screws and the adjacent block of insulating material.

2. A receptacle for a standard telephone switchboard lamp of the type comprising a tubular bulb secured between diametrically  
 30 opposite spaced terminals carried by a wedge-shaped base of insulating material, said receptacle comprising a body of insulating material provided with an opening for receiving said lamp, and two contact fingers  
 35 attached to said body, each said finger having one end tapered to a width which is less than the distance between the spaced terminals of said lamp and said fingers having  
 40 their tapered ends crimped to form two pairs of projections, one pair of projections being disposed in a position to engage the terminals of said lamp when said lamp is inserted  
 45 into said receptacle and make electrical connection with said terminals, and the other pair of projections being disposed in such manner that said lamp is prevented from being  
 50 fully inserted into said receptacle unless said terminals are in alignment with said one pair of projections.

3. A receptacle for a standard telephone switchboard lamp of the type comprising a tubular bulb secured between diametrically  
 50 opposite spaced terminals carried by a wedge-shaped base of insulating material, said receptacle comprising a body of insulating material provided with an opening for receiving  
 55 said lamp, and two contact fingers attached to said body and each having a portion which is narrower than the distance between the terminals of said lamp and another  
 60 portion which is substantially as wide as the base of said lamp, the narrow portions of said fingers being crimped to form one pair of projections and the wide portions being  
 65 crimped to form another pair of projections, said one pair of projections being

disposed opposite each other in a position to engage the terminals of said lamp and make electrical contact therewith, and said other pair of projections being disposed opposite  
 70 each other in such manner that when said lamp is inserted in said receptacle in approximately the correct position for said one pair of projections to engage the terminals of said lamp said other pair of projections  
 75 will engage said wedge shaped base and will turn said lamp to the exact position for said projections to engage said terminals.

4. A receptacle for a standard telephone switchboard lamp of the type comprising a tubular bulb secured between diametrically  
 80 opposite spaced terminals carried by a wedge shaped base of insulating material, said receptacle comprising a body of insulating material provided with an opening for receiving  
 85 said lamp, and two contact fingers attached to said body and each having a portion which is narrower than the distance between the terminals of said lamp and another  
 90 portion which is substantially as wide as the base of said lamp, the narrow portions of said fingers being crimped to form one pair of projections and the wide portions being  
 95 crimped to form another pair of projections, said one pair of projections being disposed opposite each other in a position to engage the terminals of said lamp and make electrical  
 100 contact therewith, and said other pair of projections being disposed opposite each other in such manner that when said lamp is inserted in said receptacle in approximately  
 105 the correct position for said one pair of projections to engage the terminals of said lamp said other pair of projections will engage said wedge shaped base and will turn said  
 110 lamp to the exact position for said projections to engage said terminals, said fingers further being provided with offset portions which cooperate with said body to prevent  
 115 said fingers from being pressed together when said receptacle is empty.

In testimony whereof I affix my signature.  
 LLOYD V. LEWIS.

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