

No. 728,060.

PATENTED MAY 12, 1903.

A. D. WHIPPLE.
SWITCHBOARD INCANDESCENT LAMP.
APPLICATION FILED JAN. 27, 1902.

NO MODEL.

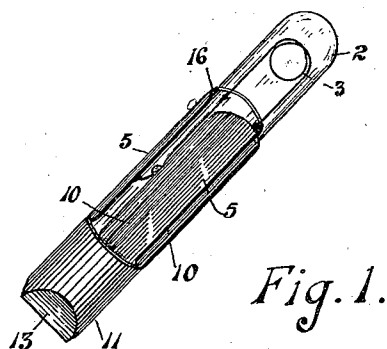


Fig. 1.

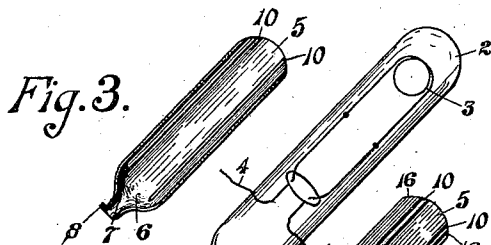


Fig. 2.

Fig. 3.



Fig. 4.

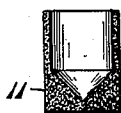
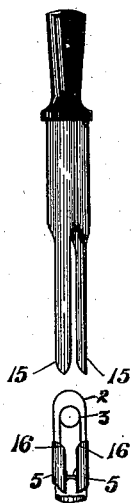


Fig. 6.

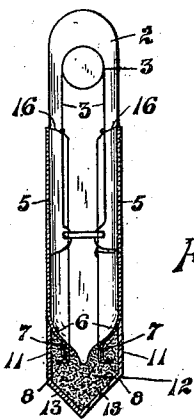


Fig. 7.

Fig. 8.

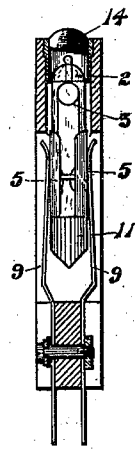


Fig. 9.

Witnesses.

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UNITED STATES PATENT OFFICE.

ALLEN D. WHIPPLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SWITCHBOARD INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 728,060, dated May 12, 1903.

Application filed January 27, 1902. Serial No. 91,355. (No model.)

To all whom it may concern:

Be it known that I, ALLEN D. WHIPPLE, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Switchboard Incandescent Lamps, (Case No. 52,) of which the following is a specification.

My invention relates to the new and useful improvements in switchboard incandescent lamps such as are used for signaling purposes in and about telephone-switchboards, although it will be apparent that they may be used in any desired relation.

The object of the invention is to provide a lamp of the character described which is more efficient and more durable than those heretofore known, which is more convenient to manipulate, cheaper to manufacture, and which is of improved appearance.

My invention is illustrated by the aid of the accompanying drawings, in which the same reference-numerals designate like parts throughout the several views, and in which—

Figure 1 is a perspective view of a lamp embodying my improvements. Fig. 2 is a similar view of the lamp-bulb. Fig. 3 is a like view of one of the lamp-terminals. Fig. 4 is a perspective view of the other terminal. Fig. 5 is a similar view of the lamp cap or base. Fig. 6 is a side view, partly in section, of the complete lamp. Fig. 7 is a view of the lamp in a jack as it is used in practice. Fig. 8 illustrates the manner of using the tool employed for inserting the lamps into and withdrawing them from the jacks. Fig. 9 is a section of the cap opposite of that shown in Fig. 6; and Fig. 10 represents the cross-section of the terminal on the line 10 10, Fig. 4.

In the figures, 2 designates the glass bulb of the lamp, which is preferably of the form shown and in which the end of the bulb is round or spherical to improve the illuminating qualities of the lamp. The usual filament 3 is provided and is carried out through the side walls of the bulb in a manner well understood, the ends 4 thereof being soldered to the contact-strips 5 5, carried upon the sides of the bulb 2, as illustrated in the drawings.

The features of construction thus far described may be carried out in any other manner desired, although I prefer the arrangement shown and described.

The metallic contact-strips 5 5, forming the terminals of the lamp, are preferably of the form shown—that is, they extend along the sides of the bulb for some distance and are curved or arc-shaped in cross-section to cause them to closely fit the bulb. At their inner ends they are curved inwardly, as shown at 6, to conform to the shape of the end of the bulb 2. The ends 7 of the terminals are made narrower than the main portion thereof and are preferably arc-shaped in cross-section, as shown in enlarged scale in Fig. 10, to strengthen them. They preferably extend beyond the bulb, as shown. Their extreme ends 8 are bent outward to better hold the cement used to secure the cap in place, although, of course, other equivalent designs could be employed to accomplish the same purpose. These terminals, which are conveniently cut and stamped from sheet-brass, are designed to be securely cemented to the glass bulb in the position shown in Figs. 1 and 6, a terminal 4 of the filament being soldered to each. The curved or hollowed portion of the terminals into which the end of the bulb fits increases the cementing-surface of the two and provides in addition a mechanical supporting connection between them. The body portions of these terminals are adapted to be engaged by the contact-terminals of the lamp-sockets, the latter being usually in the form of lamp-jacks, as seen in Fig. 7, in which contact-springs 9 9 are suitably supported and are adapted to engage the terminals 5 when the lamps are inserted therein. These springs 9 9 are connected in the circuit in which it is desired to include the lamp. They are of flat spring metal, and accordingly the terminals 5 are preferably provided with longitudinal raised ribs 10, equidistant from the center line and of a sufficient height to cause them to bear equally with the central portion of the terminals upon the jack-spring 9. These ribs thus serve the double function of providing additional electrical contact-surface and preventing the lamps from being

turned out of the proper position either during their insertion or thereafter.

In other lamps of this general type trouble is experienced in the leakage of current between the terminals caused by the absorption of moisture by the wood placed between them. Again, the wood is liable to char, and thus reduce the efficiency of the device, besides being liable to cause destructive fires. Trouble is also caused in prior devices by the terminals of the lamps catching upon the jack-springs when it is attempted to insert the lamps in the jacks, the terminals being thus torn off the bulbs. My invention seeks to avoid these difficulties by providing a cap 11, preferably of the form shown in the drawings, adapted to slip over the extended ends of the terminals and to be cemented in place thereon by a suitable cement 12. This cap is of non-combustible material to prevent charring and burning and non-absorbent in character to prevent absorbing moisture. Lava is found to be suitable for the purpose and is preferred; but so far as some features of this portion of my invention are concerned other material may be substituted. A further advantage of lava resides in the fact that acids or soldering salts and similar compounds do not affect it. The cement used may be of any suitable kind to electrically insulate the terminals and at the same time mechanically connect the parts together. It will be obvious that in the form shown the cement adheres to both terminals and bulb, whereby all assist in holding the cap 11 in place, and the cement secures all together. The ends 8 of the terminals and the end of the lamp may obviously be constructed of the form desired to increase or decrease this holding action. So, too, the terminals or bulb alone may be entirely depended upon to sustain the cap by suitably forming them, so far as certain features and claims are concerned. The body of the cap is cylindrical in form, and its closed end is wedge-shaped, the beveled or wedge faces 13 being placed in line with the terminals 5, whereby the springs 9 of the jacks are spread apart and guided upon the terminals 5 as the lamps are inserted in the jacks. The flat sides of the wedge prevent the lamp from being inserted in the jack in any but the proper position. The cylindrical portion of the cap is of such a size that its sides are in substantial alinement with the outer faces of the terminals, whereby the jack-springs more easily slide upon and off the lamp. Curving the terminals inwardly permits the use of a cap of this small character and at the same time provides ample room for the cement to fill in about the ends of the terminals. The cap thus entirely covering and inclosing the ends of the terminals prevents them from catching upon the jack-springs and being torn off the bulb. These lamps are placed in jacks, as stated, and are located beneath the surface of the board upon which the jacks are placed, a

covering of translucent glass 14 of the desired color being inserted in the jack-opening to protect the lamp and provide a more efficient signal.

It is the practice to insert and withdraw lamps of this character by means of an implement of the kind shown in Fig. 8, having two spring tongues or jaws, such as 15, which are adapted to be slipped over the lamp-bulb, the tongues 15 passing over the bulb between the edges of the terminals 5. As now constructed the terminals of the lamps have square upper ends, and the tongue 15 catches such ends and tends to tear the terminals from the bulbs. To prevent this in my lamp, the terminals have rounded ends and corners 16, whereby when the tool is slipped over the bulb, even though the lamp is in the jack and the position of the terminals cannot be seen, the tongues are guided into the spaces between the terminals, and their connection with the bulb is not severed.

From the foregoing it will be apparent that I have provided a lamp which is at once simple, complete, and efficient, which is not subject to the usual objections and disadvantages, which embodies in addition many novel and advantageous features, and which is capable of being manufactured at comparatively small cost.

The invention has been described with reference to the particular construction shown; but it will be evident that the same is capable of many mechanical variations and modifications, and I therefore do not wish it to be limited in all its phases and aspects to those so shown and described.

What I claim as my invention, and wish to secure by Letters Patent, is—

1. In a lamp of the kind described, the combination with a bulb, of contact-strips secured thereto and forming the terminals of the lamp, an insulating-cap fitting over said terminals, and cement within the cap to secure it in place, substantially as described.

2. In a lamp of the kind described, the combination with a cylindrical lamp-bulb, of contact-strips secured to the said bulb and forming the terminals for the lamp, said strips being bent inwardly to follow the curve of the end of the bulb, an insulating-cap having its outer surface substantially flush with the straight portions of said strips, and cement within the cap and surrounding the bent ends of said strips, substantially as described.

3. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured thereto and forming the terminals of the lamp, said strips extending beyond the end of the bulb and having transversely-projecting portions, a cap inclosing said portions, and cement within said cap and surrounding the ends of the terminals and portions, substantially as described.

4. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured thereto and forming the ter-

minals of the lamp, said strips extending beyond the end of the bulb and having their ends bent at an angle, a cap surrounding said ends, and cement filling said cap and filling in around said ends, substantially as described.

5 5. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured thereto, a cap fitting over the ends of said strips, and cement filling said cap and engaging the end of the bulb to thereby secure all parts together, substantially as described.

15 6. In a lamp of the kind described, the combination with a bulb, of contact-strips secured thereto and forming the terminals of the lamp, and a hollow insulating-cap fitting over the ends of said terminals and secured thereon, substantially as described.

20 7. In a lamp of the kind described, the combination with a bulb, of contact-strips secured thereto forming the terminals of the lamp, and a non-combustible hollow insulating-cap for the lamp slipped over the ends of the terminals and secured thereon, substantially as described.

25 8. In a lamp of the kind described, the combination with a bulb, of contact-strips secured thereto forming the terminals of the lamp, and a hollow non-absorbent and non-combustible insulating-cap for the lamp placed over the ends of said terminals and secured in place thereon, substantially as described.

35 9. In a lamp of the kind described, the combination with a bulb, of contact-strips cemented thereto and forming the terminals of the lamp, a non-absorbent and non-combustible insulating-cap for the lamp, and a cement filling for the cap to secure it in place, substantially as described.

40 10. In a lamp of the kind described, the combination with a bulb, of contact-strips secured to said bulb and forming the terminals of the lamp, said strips being curved inwardly at the end of the bulb, and a base for the lamp comprising a cap having its outer surface substantially flush with the contact portions of said strips, fitting over the ends of said terminals and filled with a suitable cement to secure the same in place, substantially as described.

55 11. In a lamp of the kind described, the combination with a cylindrical lamp-bulb having a bulging lower end, of contact-strips extending longitudinally thereof and projecting beyond the end of the same, said strips being transversely curved throughout their length to fit the bulb and curved inwardly at the ends to form a pocket in which the end of the bulb fits, and a suitable base for the lamp secured to said projecting ends of the terminals, substantially as described.

65 12. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured thereto and forming the terminals of the lamps, of a hollow insulating-cap of lava adapted to be slipped over and en-

tirely inclosing the ends of said strips, and means to secure the same in place thereon, substantially as described.

75 13. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured thereto, and a hollow cap of insulation fitted to the end of the bulb and over the ends of the terminals, a filling for said cap to secure the same in place, said cap having a wedge-shaped end, the wedging-faces thereof being in alinement with the said strips, substantially as described.

80 14. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips secured to and along the sides of the bulb and forming the lamp-terminals, said strips having rounded upper ends to permit the ready insertion of the lamp into the jaws or tongues of the removing implement, whereby the said terminals are prevented from being torn off, substantially as described.

90 15. In a lamp of the kind described, the combination with a cylindrical bulb, of a pair of contact-strips connected to the sides thereof and forming the terminals of the lamps, said terminals extending beyond the end of the bulb, and a suitable base for the lamp secured to said extended ends of the terminals, said terminals having their upper ends rounded to permit the ready application of the removing implement without tearing the same off, substantially as described.

100 16. In a lamp of the kind described, the combination with a cylindrical bulb having a smooth cylindrical surface, of a pair of contact-strips cemented to the sides thereof and forming the terminals of the lamps, said terminals extending beyond the end of the bulb, and a suitable base for the lamp secured to said extended ends of the terminals, said terminals having their upper ends rounded to permit the ready application of the removing implement without tearing the same off the bulb, substantially as described.

110 17. In a lamp of the kind described, the combination with a cylindrical bulb, of contact-strips cemented to the sides thereof and extending beyond the end of the same, said terminals being curved transversely so as to fit the bulb, the said extended ends being also transversely curved to laterally strengthen the same, and an insulating-base for the lamp, substantially as described.

120 18. In a lamp of the kind described, the combination with a cylindrical bulb, contacts secured along the sides thereof and forming the terminals of the lamp, and a lava cap fitting over the ends of said contacts and secured thereon, substantially as described.

130 19. The combination with a cylindrical glass bulb, of thin sheet-metal terminals cemented to the sides of the bulb, said terminals being curved transversely to conform to the curvature of the bulb and following the curve of the bulb at its lower end, said terminals also having narrow lower ends extending beyond the end of the bulb and also transversely

curved and having their extreme ends bent outwardly, a hollow insulating-cap of substantially the same diameter as the bulb placed over said extended ends of the terminals, and an insulating-cement inside of said cap and filling in around the extended ends of said terminals to secure said cap in place and all parts together and to provide a solid insulating-base for the lamp, substantially as described.

20. The combination with a cylindrical glass bulb, of thin sheet-metal terminals extending longitudinally of and cemented to the sides of said bulb, a filament for the lamp having its connections soldered to said terminals, longitudinal ridges upon each side of and equidistant from the centerline of said terminals, said terminals being curved transversely so as to fit the said bulb and being curved inwardly at the lower ends to conform to the curvature of the lower end of the bulb, said

terminals having also narrowed ends extending beyond the ends of the bulb, said extended ends being also transversely curved to increase their strength and having their extreme ends bent outwardly, a hollow cap of lava having substantially the same diameter as the bulb, said cap being placed over the said extended ends of the terminals and fitting at its upper edge against the said terminals and an insulating-cement filling for said cap, said cement filling the space within said cap and around the extended ends of said terminals and the lower end of the bulb and serving to bind said parts together, substantially as described.

In witness whereof I hereunto subscribe my name in the presence of two witnesses.

ALLEN D. WHIPPLE.

Witnesses:

F. W. DUNBAR,

ROBERT LEWIS AMES.