Feb. 2, 1954 C. H. J. ANDERSON ET AL 2,668,277

LAMP CAP FOR TUBULAR ELECTRIC LAMPS

Filed Aug. 2, 1950 2 Sheets-Sheet 1

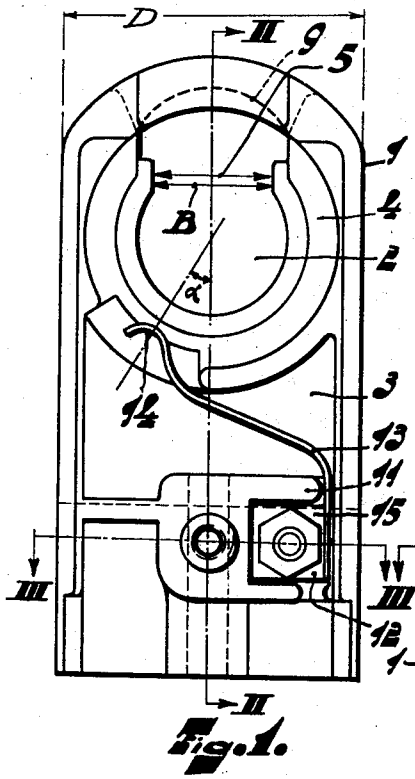


Fig. 1.

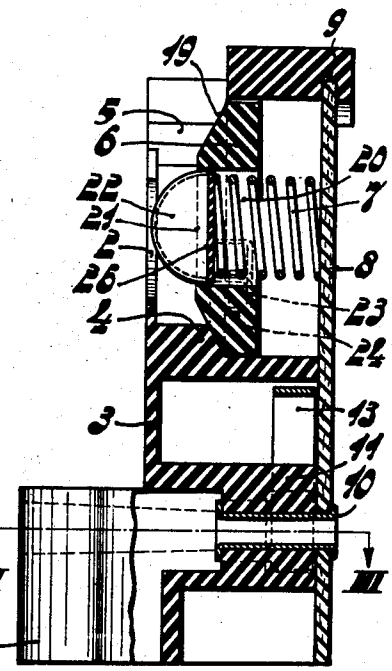


Fig. 2.

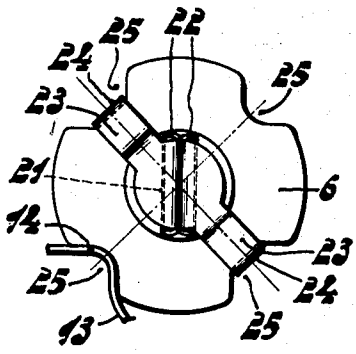


Fig. 4.

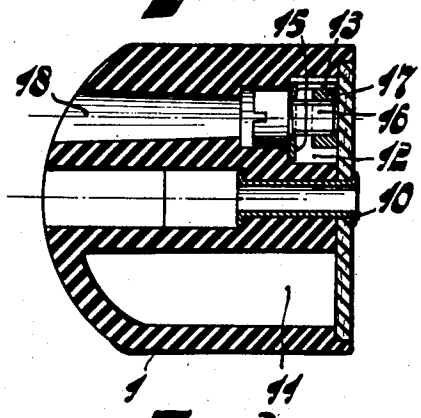


Fig. 3.

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LAMP CAP FOR TUBULAR ELECTRIC LAMPS

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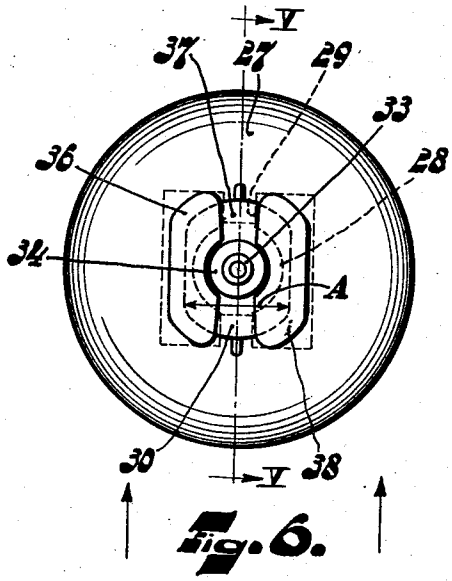


Fig. 6.

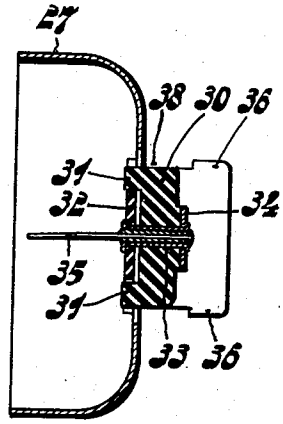


Fig. 5.

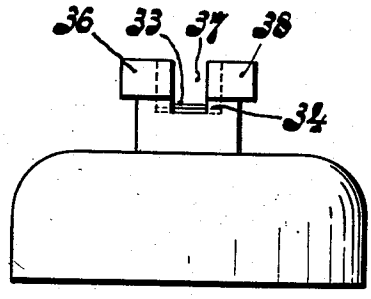


Fig. 7.

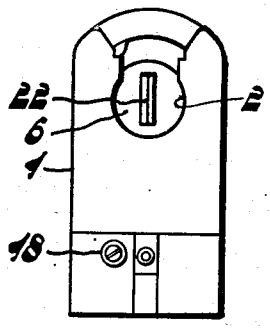


Fig. 8.

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LAMP CAP FOR TUBULAR ELECTRIC LAMPS

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Application August 2, 1950, Serial No. 177,263

Claims priority, application Netherlands August 11, 1949

2 Claims. (Cl. 339—52)

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The invention relates to lamp caps for tubular electric lamps, more particularly for low-pressure mercury-vapour discharge tubes, the lamp caps comprising one or more contacts housed in an insulating body.

It has been suggested to construct such a cap so as to enable it to be inserted in a holder in a particular position transverse to the axis of the lamp and to be locked therein by rotation, it being suggested in addition to provide on the outside of the insulating body an extension adapted to engage a groove in the holder when rotated. This construction readily gives rise to difficulty, if the lamp is placed in a slanting position in the holder, since in this position a comparatively large deviation of the extension occurs in an axial direction, so that it cannot be turned to engage the groove or becomes jammed therein.

This difficulty is particularly prevalent with those lamp caps in which the contact or contacts are fitted in an insulating body, since in the conventional constructions the diameter of this body is comparatively large. If the lamp has a contact in the form of a single axially protruding pin, this problem does not arise, but such contacts are objectionable in a number of cases, particularly because they are easily accessible when they are alive.

According to the invention the lamp cap has an axially directed extension, in which one or more contacts are housed in an insulated manner, the extension having a smaller diameter than the cap and having a slot in its periphery. This slot may be provided without interruption around the entire extension, but as an alternative it may be interrupted at one or more points.

With this construction the lamp holder may be designed so that the slot acts as a locking means. Since the extension has a comparatively small diameter, the lamp may be introduced into the holder in a comparatively slanting position, without jamming occurring.

Obviously, the extension should not be made so thin that its rigidity is affected. According to a preferred embodiment of the invention, the diameter of the extension ranges between ⅓ and ⅔ of the diameter of the cap. The diameter of the extension is to be understood to mean the mean value of the diameters in the slot and at the side thereof. The diameter of the cap is to be measured at the part of the cap adjoining the glass of the lamp.

The extension may be provided with lugs by which it is enabled to control a rotatable member provided in the holder. Rotation of the

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member permits the circuit of the lamp to be controlled so that the holder contact to be connected to the lamp cannot become alive, unless the lamp is inserted in the holder.

Such caps are to be provided one at each end of the lamp. With such lamps having a cap at each end, it is desirable that a tolerance in the position of the axis of the holder relative to the axis of the lamp should be possible, because in this case the position of the lamp axis is determined by the line connecting the holders and deviations from this position should also be possible during insertion of the lamp, in contradistinction to the conditions obtaining with other caps, particularly with the bayonet cap, of which only one is provided on each lamp, the lamp being free to occupy the position determined by the holder.

In order that the invention may be readily carried into effect, an example will now be described in detail with reference to the accompanying drawings of the cap and associated lamp holder, in which:

Fig. 1 is a view of that side of the holder which is remote from the side on which the lamp is introduced and which will be termed the rear side, the rear wall of the holder and the rotatable member being removed;

Fig. 2 is a sectional view taken on the line II—II of Fig. 1;

Fig. 3 is a sectional view taken on the line III—III of Figs. 1 and 2;

Fig. 4 is a view of the rear side of the movable member and

Figs. 5 and 6 are respectively a sectional view and an end view of the lamp cap to be used with this holder.

Fig. 7 is a side view of the same lamp cap.

Fig. 8 is a side view of the holder as seen from a direction, opposite to that from which it is seen in Fig. 1.

The holder comprises a socket 1, which is made of insulating material, for example moulded material. The top of the socket is provided with an aperture 2, through which one end of the lamp cap can be introduced (from the top, as viewed in Figs. 1, 2 and 8), the lamp being moved transversely with respect to its longitudinal axis. Arranged around the aperture 2, on the bottom 3 of the socket, is an approximately horse-shoe-shaped edge 4, the opening 5 of which is turned upwards. This edge 4 (shown for the greater part in broken lines in Fig. 2) constitutes a seat for the movable member 6, which is urged against

this seat by a helical spring 7. On its rear side the spring 7 bears on a plate 8, which is preferably also made of insulating material and which constitutes the rear wall of the holder. At its upper side it is held under a hook-shaped part 9 of the socket 1 and at its lower side by a flanged rivet 10.

At the bottom end of the socket 1 an elevation 11 defines a recessed seat 12 for the bottom end of the stationary contact 13. This contact is a curved spring, the top end 14 of which engages the periphery of the movable member 6 and the bottom end of which has a bent hook-like part 15, which fits in the seat 12. This part is perforated to receive a screw 16 carrying a nut 17, the latter two being housed between the socket 1 the rear wall 8. The screw can be tightened through an aperture 18 in the socket so as to enable a conductor to be gripped between the nut 17 and the hook-like part 15.

The movable member 6 (Figs. 2 and 4) is constituted by a disc of insulating molded material, the front side of which is conically bevelled at the edge at 19, so that under the action of the spring 7 it is urged into the centre of the seat of the edge 4. However, there is no objection to its occupying tilted positions, if such is required by the position of the lamp relative to the holder. The rear side of the member 6 defines a cavity 20, adapted to receive the spring 7. The front wall of this cavity is provided with an elongated aperture 21, through which two crescent-shaped contact plates 22, which together constitute one contact, are introduced from the rear side. Each of these plates is integral with a strip 23, which extends across the rear side of the member 6 and forms a contact area 24 at the periphery thereof. The member 6 is provided at its periphery with four grooves 25, in two of which are located the strips 23. The plates 22 are retained in the member by the spring 7 with the intermediary of an insulating plate 26.

The lamp cap (see Figs. 5–7) for use with these lamp holders is constituted by a cap 27 to be applied to the tubular lamp, the bottom of which has a circular aperture 28 having two elongated extensions 29. In Fig. 6 this aperture is shown in broken lines.

A body 30 of insulating material is introduced by means of two lugs 31 through these extensions and, after another insulating plate 32 is provided on the inner surface of the cap, is secured in position with the use of a flanged rivet 33 and a washer 34. A supply wire 35 for an electrode of the lamp is secured by soldering in this flanged rivet, the width of the aperture 28 being such that adequate insulation of the flanged rivet 33 from the cap 27 is safeguarded.

The insulating body 30 comprises in addition two projecting portions 36, which extend beyond the cap 27 and which are spaced by the transverse slot 37 (a side wall of which is shown in Fig. 5). A peripheral groove 38 surrounds the projecting parts 36 adjoining the cap. These projecting portions 36 constitute the lugs which are adapted to cause rotation of the member 6 provided in the holder. The bottom of this groove has a circular periphery with two flattened parts as shown by the broken lines in Fig. 6. The distance A between these flattened parts is slightly smaller than the width B of the aperture 5 of the holder as shown by Fig. 6 and Fig. 1 respectively.

The operation of this holder will be described for one end of the lamp. A similar holder is provided at the other end. Different features of the holder are further described and claimed in one of the following copending applications: Serial Nos. 177,261; 177,262; 177,264; all filed on August 2, 1950.

The holder is mounted while the member 6 occupies the position shown in Fig. 2. The contacts 22 cannot yet be alive, since the end 14 of the stationary contact 13 does not engage one of the strips 23 (Fig. 4).

One lamp end is introduced into the holder from above and turned in a manner such that the body 30 passes through the aperture 5, the slit 37 located between the lugs or eyelets being directed so that the contact plates 22 move inside and establish a contact with the conductor 35 by way of the flanged rivet 33. If the lamp is then turned through 90° about the lamp axis, the lugs 36 engage the contact plates 22, cause the member 6 to rotate and one of the strips 23 is thus brought into engagement with the end 14 of the stationary contact 13. This contact can now be alive. At the same time removal of the lamp is prevented while it is in the rotated position. In this position, the contact plates 22 are engaged between the projecting lamp cap parts, and the enlarged portion of the floor of groove 38 can not pass through the aperture 5. A shift of the lamp in the axial direction is impossible, since the projecting portions 36 are enlarged beyond groove 38 and engage the wall of the socket 1 behind the face of the aperture 2.

Safety from electric shock is ensured with this holder, since it is not possible to remove the lamp from the holder without the contacts 22 being first switched off. It is possible to introduce only one of the lamp ends into a holder and then to turn the lamp. The contact on the cap at the other end of the lamp may now be alive by way of the impedance of the lamp, but the slit 37 is narrow and deep enough to prevent this contact being touched accidentally.

It may be seen most clearly from Fig. 5 that, if a lamp provided with a cap having locking extensions is introduced into the holder crookedly, difficulties may arise if the extensions have the same diameter as the lamp. This slanting position would cause the extensions to be subjected to an axial displacing force, with the result that either they could no longer be caused to occupy their position in the holder or they might lead to breakage of the holder.

The cap described above in which this difficulty is avoided, is intended for use particularly with low-pressure mercury-vapour discharge tubes, so-called fluorescent lamps, but it may also be used with tubular incandescent lamps which are provided with a contact at each end.

What we claim is:

1. A lamp cap for a tubular electric lamp having an elongated bulb portion, comprising an axially-extending locking hub having a smaller diameter than the diameter of said cap, said locking hub having a transversely extending flange portion at the outer end thereof adapted to engage locking portions of a lampholder to prevent direct withdrawal of the bulb when its attached cap is inserted in the lampholder and the lamp then rotated, said hub having a slot extending transversely across the entire hub at its outer end for receiving a contact plate of the lampholder, and an electrical contact member extending through the hub and terminating within the bottom of the slot for making electrical

contact with the contact plate when the cap is inserted in the lampholder and thereby protecting the contact member from external engagement by objects too large to fit within the slot.

2. A lamp cap for a tubular electric lamp having an elongated bulb portion as claimed in claim 1 in which the locking hub has a diameter from about ⅓ to ⅔ the diameter of the cap.

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JOHANNES HENDRICUS FRANCISCUS VAN WERD.

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