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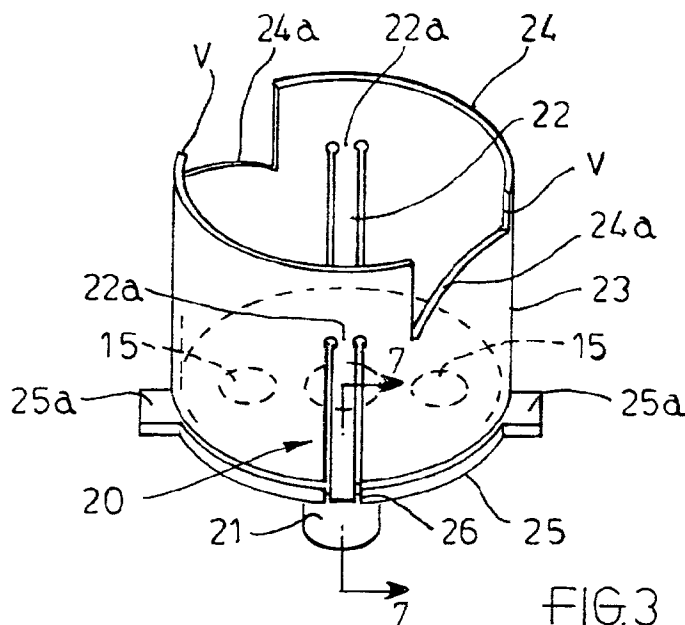
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(54) **Safety bulb holder**

(57) There is disclosed a bayonet-fitting bulb holder having a socket and a cover plate therein for the contact pins which has apertures for the pins and which is moved by the action of inserting a bulb so as to align the

apertures with the pins and by the action of removing a bulb so as to cover the pins and comprising a locking arrangement preventing movement of the cover plate from the pin-covering position except by inserting a bulb or like member filling the socket.



EP 0 933 839 A2

Description

[0001] This invention relates to safety bayonet-fitting light bulb holders.

[0002] Bayonet-fitting bulb holders are about as old as electric lighting itself and have not fundamentally changed since their introduction. They consist of a socket with bayonet pin receiving slots and a body holding sprung contact pins. These pins, with no bulb present, although within the socket, are nevertheless exposed and can be live without any means of telling, even with switched bulb holders.

[0003] Numerous designs have been proposed to render such bulb holders safe, including, with switched bulb holders, a mechanism that precludes removing the bulb while the pins are live and precludes switching the pins to live unless there is a bulb present. It has also been proposed to disconnect the pins from contact with live terminals when no bulb is present. These arrangements do not appear to have been put on the market to any great extent, quite possibly because the safety measures necessarily render them more expensive than conventional bulb holders without any outward sign that they are any safer - the contact pins are still visible and accessible, and, where safe holders are mixed with conventional in a household or office, a false sense of security may be engendered.

[0004] Designs have also been proposed in which a cover plate, is movable axially and in rotation which has apertures for the contact pins, the pins projecting through the apertures so as to be accessible to the bulb contacts when the bulb is inserted, but rotating so that the cover plate conceals the pins when the bulb is removed. Even so, this design is not totally safe, since it is possible to displace the cover plate in the absence of a bulb to expose live contact pins.

[0005] The present invention provides an improved bayonet-fitting bulb holder which does not have the problems of the aforementioned prior art.

[0006] The invention comprises a bayonet-fitting bulb holder having a socket and a cover plate therein for the contact pins which has apertures for the pins and which is moved by the action of inserting a bulb so as to align the apertures with the pins and by the action of removing a bulb so as to cover the pins and comprising a locking arrangement preventing movement of the cover plate from the pin-covering position except by inserting a bulb or like member filling the socket.

[0007] The cover plate may move axially and rotate in the socket between the pin aligning and covering positions. Rotational movement may be permitted by the locking arrangement by a member urged radially outwardly on insertion of a bulb. The cover plate may be the base of a cup member having a cylindrical wall and being journaled on a sub-plate which sub-plate is free to move axially but not to rotate in the socket and which has a notch into which fits an inwardly-biassed tongue of the cup member which is urged out of the notch on

insertion of a bulb. The tongue may be continuation of the cylindrical wall of the cup member, rooted therein and projecting below the base to the depth of the sub-plate.

[0008] The cup member and the sub-plate may form a unit having a depending spigot axially slidable in a bore of a contact pin sub-assembly.

[0009] The cylindrical wall of the cup member may be relieved to accept the bayonet pins of a bulb to effect rotation of the cover plate as the bulb is rotated in the socket on insertion and removal.

[0010] The bulb holder may have bayonet pin engagement slots extending through a quarter turn, and, indeed, this feature may be used independently of the safety feature, the subject of the above-disclosed invention. An advantage of the quarter turn-extending bayonet slot is that it affords a shallow ramp which requires less insertion force and less liability to damage of the bayonet slots which can give rise to difficulties inserting and removing bulbs.

[0011] It is recognised that bulb holders are sometimes used as sockets for plugs which mimic the contact base of a bayonet fitting bulb - the holders of the present invention work with such plugs exactly, of course, as with bulbs themselves.

[0012] Embodiments of bayonet-fitting lamp bulb holders according to the invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is an axial section through a bulb holder with the bayonet track developed, with a bulb mounted;

Figure 2 is a section like Figure 1, with no bulb mounted;

Figure 3 is a perspective view of a cover plate assembly of the bulb holder of Figures 1 and 2, from above;

Figure 4 is a perspective view of the assembly of Figure 3, from below;

Figure 5 is a view on arrow 5 of Figure 1;

Figure 6 is a view on arrow 6 of Figure 2; and

Figure 7 is a section through 7-7 of Figure 3.

[0013] The drawings illustrate a bayonet-fitting bulb holder 11 having a socket 13 and a cover plate 12 therein for the contact pins 16 which have apertures 15 for the pins 16 and which is moved by the action of inserting a bulb 14 so as to align the apertures 15 with the pins 16 and by the action of removing the bulb 14 so as to cover the pins 16, and comprising a locking arrangement 20 preventing movement of the cover plate 12 from the pin-covering position (Figures 2, 6) except by insert-

ing a bulb 14 or like member such as a bulb-mimicking plug filling the socket.

[0014] The cover plate 12 moves axially and rotates in the socket between the pin-aligning (Figures 1, 5) and pin-covering (Figures, 2 6) positions.

[0015] Rotational movement is permitted by the locking arrangement 20 by a member 22 urged radially outwardly (arrow A, Figure 7) on insertion of a bulb 14. The cover plate 12 is the base of a cup member 23 - see particularly Figures 3 and 4 having a cylindrical wall 24 and being journaled on a sub-plate 25, which sub-plate 25 is free to move axially but not to rotate (by virtue of lugs 25a) in the socket 11 and which has a notch 26 - in fact, two diametrically opposite notches 26 - into which fits an inwardly-biased tongue - the member 22 is the cup member 23 which urged out of the notch 26 on insertion of a bulb 14. There can be more than two such tongues 22 and notches 26 - the more there are, the more effective the locking arrangement 20.

[0016] The tongue 22 is a continuation of the cylindrical wall 24 of the cup member 23, rooted therein at 22a as a sprung hinge and projecting below the base - the cover plate 12 - to the depth of the sub-plate 25. The cup member 23 and the sub-plate 25 for a unit - see particularly Figures 3 and 4 - having a depending spigot 21 axially slidable in a bore 28 of a contact pin sub-assembly 11a of the bulb holder 11. In manufacture, the cover plate 12, sub-plate 25 unit is assembled, then dropped into the sub-assembly 11a where it is retained against removal (which would defeat the object) by a radially-inwardly directed step 19 on the socket 13.

[0017] In the pin-covering position, Figures 2, 6, the pins 16, which are, of course, spring-biased, urge the unit 23, 25 towards the step 19. In the pin-aligned position, Figures 1, 5 the pins 16 project just through (by about 1 mm) the apertures 15 in contact with the terminals 17 of the bulb 14.

[0018] The cylindrical wall 24 of the cup member 23 is relieved at 24a to accept the bayonet pins 14a of a bulb 14 to effect rotation of the cover plate as the bulb 14 is rotated in the socket 14 on insertion and removal. The relieving at 24a is designed to operate with an improved bayonet action in which the bayonet pin engaging tracks 18 of the socket 13 are ramped and extend through a quarter turn, as is seen in the developed profile in Figures 1 and 2. This ramped track facilitates easier insertion and removal of the bulb with reduced risk of damage to an consequent malfunction of the track as compared with a conventional "J" shaped track extending over a fraction of that and requiring a substantially axial insertion with a short twist before the sprung contact pins push the bulb back.

[0019] The ramped track can be used even without the cover plate arrangement. However, when used with it, the angular extent of the relieving at 24a is equal to that of the track 18 less required rotation of the cover plate 12 to give access to the pins 16.

[0020] Removing the bulb 14, because of the profiling

of the relieving at 24a, holds the cover plate 15 down at the level seen in Figure 1 allowing the sprung pins 16 to assist in the ejection of the bulb 14 exactly as in a conventional arrangement. Only when the bayonet pins pick up the vertical section V of the relieving 24a - position 1 on the developed track 18, Figure 2 - does the cover plate 12 begin to close. The plate 12 has reliefs 15a on the bulb side of the apertures 15 to ease its passage between the pins 16 and the bulb 14.

Claims

1. A bayonet-fitting bulb holder having a socket and a cover plate therein for the contact pins which has apertures for the pins and which is moved by the action of inserting a bulb so as to align the apertures with the pins and by the action of removing a bulb so as to cover the pins and comprising a locking arrangement preventing movement of the cover plate from the pin-covering position except by inserting a bulb or like member filling the socket.
2. A bulb holder according to claim 1, in which the cover plate moves axially and rotates in the socket between its pin aligning and covering positions.
3. A bulb holder according to claim 2, in which rotational movement is permitted by the locking arrangement by a member urged radially outwardly on insertion of a bulb.
4. A bulb holder according to claim 3, in which the cover plate is the base of a cup member having a cylindrical wall and being journaled on a sub-plate which sub-plate is free to move axially but not to rotate in the socket and which has a notch into which fits an inwardly-biased tongue of the cup member which is urged out of the notch on insertion of a bulb.
5. A bulb holder according to claim 4, in which the tongue is a continuation of the cylindrical wall of the cup member, rooted therein and projecting below the base to the depth of the sub-plate.
6. A bulb holder according to claim 4 or claim 5, in which the cup member and the sub-plate form a unit having a depending spigot axially slidable in a bore of a contact pin sub-assembly.
7. A bulb holder according to any one of claims 4 to 6, in which the cylindrical wall of the cup member is relieved to accept the bayonet pins of a bulb to effect rotation of the cover plate as the bulb is rotated in the socket on insertion and removal.
8. A bayonet-fitting bulb holder having ramped bayo-

net pin engagement tracks.

9. A bulb holder according to claim 8, in which the tracks extend through a quarter turn.

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10. A bulb holder according to any one of claims 1 to 7, having bayonet pin engagement tracks according to claim 8 or claim 9.

11. A bayonet-fitting arrangement comprising a socket having bayonet pin engagement slots extending through a quarter turn.

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