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E. B. TUPPEN

2,288,376

LAMPHOLDER

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Fig. 1.

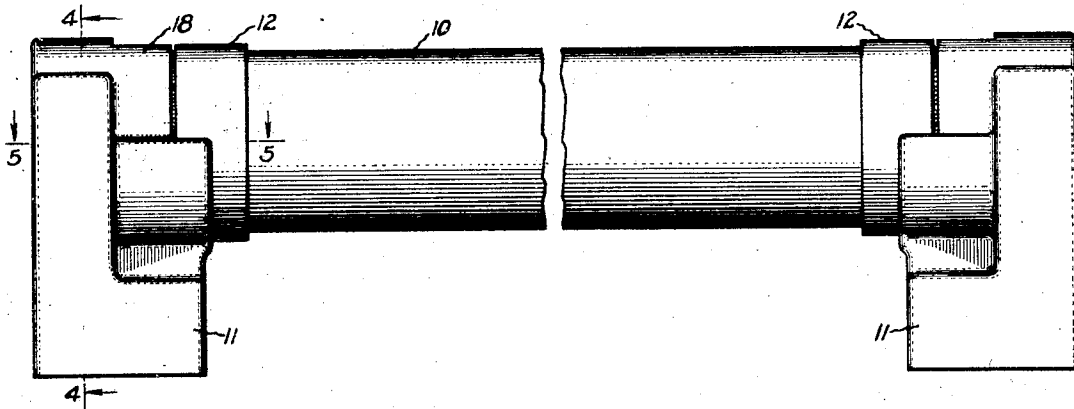


Fig. 2.

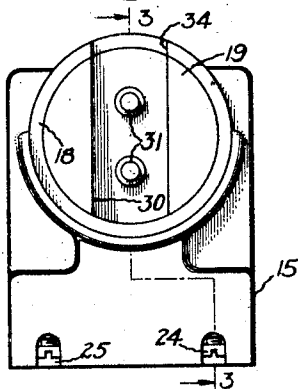


Fig. 3.

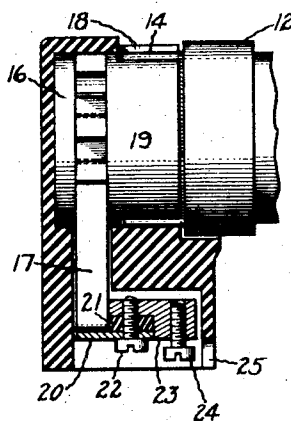


Fig. 4.

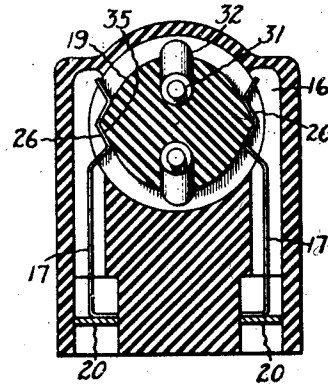


Fig. 5.

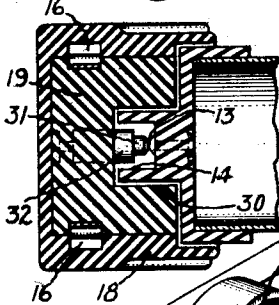


Fig. 7.

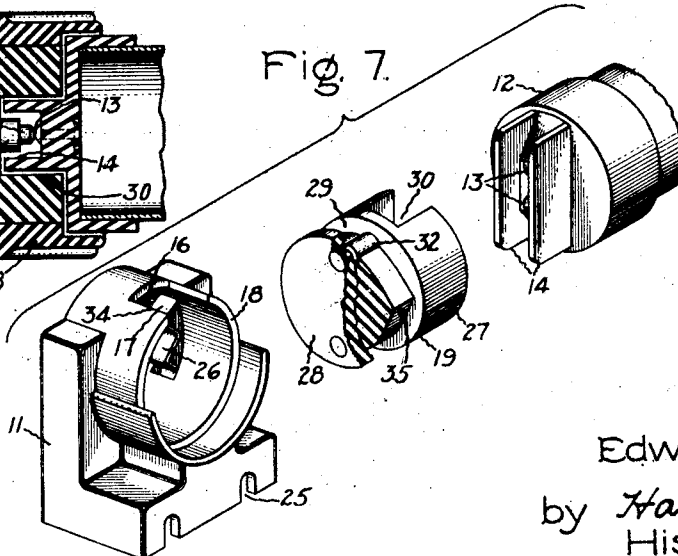
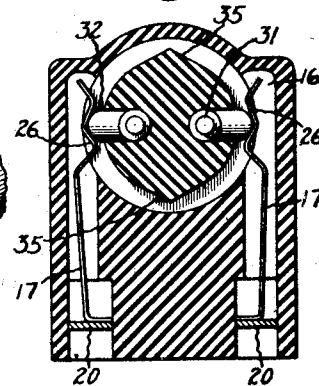


Fig. 6.



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UNITED STATES PATENT OFFICE

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LAMP HOLDER

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In Great Britain November 22, 1939

6 Claims. (Cl. 176—33)

This invention relates to lampholders for double-ended tubular lamps, for example, fluorescent lamps of the well-known commercial type now in use.

It is desirable to provide lampholders for lamps of the type described into which the lamp can readily be inserted and which obviate the possibility of the user inserting one end of the lamp in a corresponding holder and completing a circuit to earth by accidental contact with a contact element associated with the base at the other end of the lamp.

It is an object of the invention to provide a lampholder so constructed and arranged that it is impossible to make an accidental contact with the lampholder contact blades before the lamp is fully inserted in the holder, thereby protecting the user from injury by contact with a live line.

It is a further object of the invention to provide a lampholder which holds the lamp securely in position and in which the lamp is rotated to lock it in position to prevent accidental detachment of the lamp from the lampholder.

In the accompanying drawing, Fig. 1 is a view of a tubular lamp supported at each end by a lampholder constructed in accordance with my invention; Fig. 2 is a front view of the lampholder; Fig. 3 is a sectional view through a portion of the lampholder taken along the line 3—3 of Fig. 2; Fig. 4 is a sectional view through the lampholder taken along the line 4—4 of Fig. 1; Fig. 5 is another sectional view taken along the line 5—5 of Fig. 1; Fig. 6 is a cross-sectional view through the lampholder similar to the showing of Fig. 4 showing the device after the lamp has been rotated into locked position, and Fig. 7 is an exploded view of the elements of the lampholder.

Referring to the drawing, I have shown a tubular lamp 10 which may be of the well-known fluorescent type now in use and which is supported at each end by lampholders 11 constructed in accordance with my invention. Each end of the lamp is provided with a ferrule 12 which may be formed of insulating material and which is provided with spaced contact prongs 13 for cooperating with the lampholder. The contact prongs 13 are shielded by baffle plates 14 extending in parallel relationship on each side of the contact prongs. In addition, the plates form guiding means for inserting the lamp in the lampholder.

The lampholder comprises a base 15 formed of insulating material, such as a molded phenolic condensation product and filler, which is provided with a recess 16 for receiving spaced contact members 17. As shown most clearly by Figs. 3 and 7, the recess 16 is protected by means of a forwardly extending shroud 18 which forms in

effect a bearing surface for a rotatable member 19. Each contact member 17 is formed of flexible strip material, for example spring bronze. One end of the contact member extends into the recess 16 in the manner hereinbefore mentioned; the other end is secured in any suitable manner to a plate 20 supported on a bar 21 of insulating material by means of a screw 22. Attached to the bar 21 and electrically connected to a respective contact member is a terminal plate 23 provided with a screw 24 for making electrical connections to the contact members. The circuit connections are made through openings 25 formed in the base of the housing 15. Each of the contact members 17 is provided with an indented contact-making surface 26 for a purpose to be described later.

The member 19, which is rotatably mounted on the base member 15, is constructed of insulating material and is made of generally cylindrical formation so that it may be rotatably mounted on the body member within the recess 16 and the shroud 18. The cylindrical member 19 is provided with a front portion 27 and a rear portion 28 separated by a groove 29 which receives the contact blades 16. The front portion of the member is provided with a diametrical slot 30 of a size to receive the guiding plates 14 on the lamp ferrule. Midway of the slot are a plurality of contact pins 31 for making electrical contact with the contact prongs 13 of the lamp 10. The pins 31 are slidably mounted in contact cylinders 32 and are biased to outward position by springs (not shown). Portions of the contact cylinders 32 extend into the groove 29 for cooperation with the contact members 16 in a manner to be described later. In mounted position that portion of the rotatable member comprising the back plate 28 and the groove 29 are hidden within the recess 16 while the front portion 27 rests on the bearing surface formed by the shroud 18. Since the contact members 17 extend into the groove 29 when the rotatable member is assembled on the base 15 lateral movement of the member is prevented.

A portion of the shroud 18 is cut away to provide a slot 34 for cooperation with the diametrical slot in the rotatable member so that the lamp prongs may be moved through the slots when they are in alignment. In addition to the cam surfaces formed by portions of the contact cylinders 32 within the groove 29, the inner face of the groove is itself provided with a plurality of insulating cam surfaces 35 which are diametrically opposed and which form an indexing or positioning means for the rotatable member 19. The normal position of the rotatable member is shown by Figs. 2, 4 and 5 in which the slot 30 in the rotatable member is disposed in alignment with the slot 34 and is in substantially ver-

tical position to receive the guiding plates 14 of the lamp ferrule. In this position, the insulating cam surfaces 35 formed in the groove 29 engage the contact surfaces 26 on the contact member 17; since the contact members are spring biased into engagement with the rotatable member the latter is held releasably in position.

To mount the lamp, a lampholder is provided for each end. The guiding plates 14 in the end ferrule of the lamp are inserted through the slot 34 in the shroud into the diametrical slot 30 in the rotatable member so that the contact pins 31 on the lampholder engage the contact prongs 13 of the lamp. After the ferrule is seated in position the lamp is rotated through an angle of substantially 90 degrees. This moves the insulating cam surfaces 35 of the rotatable member out of engagement with the contact surfaces 26 and permits portions of the contact cylinders 32 to engage the contact members 17 in the manner shown by Fig. 6. In this position, electrical connection is made between the contact members 17 and the contact pins 31 so that the lamp filament is electrically connected to the lampholder. In addition to making electrical contact between the lampholder and lamp the contact members 17 releasably grip the contact cylinder 32, so that the rotatable member is maintained in position by the action of the contact blades. This prevents the lamp from becoming inadvertently rotated within the lampholder.

As the lamp is rotated in the lampholder, the slot 30 of the rotatable member 19 is moved out of coincidence with the opening 34 in the shroud 18 so that the guiding plates 14 of the lamp ferrules are prevented from moving within the slot 30 and are completely shielded by the shroud 18. This means that the lamp cannot be removed from the lampholder without first rotating the member 19 to a position to bring the guiding plates 14 of the ferrule into alignment with the opening 34 in the shroud 18 thereby disconnecting the contact pins 31 from engagement with the contact members 17. In this manner, the lamp is electrically disconnected from the operating circuit before it can be removed from the lampholder. Conversely, the lamp cannot be connected into the circuit until it is first seated within the lampholder and then rotated to locked position. It is impossible to make an accidental contact with the contact members 17 inasmuch as these elements are hidden at all times within the body of the lampholder. The contact pins 31 are well protected by the walls of the rotatable member defining the slot 30 and, in addition, are disposed within the shroud 18 so that it is likewise very difficult to make accidental contact therewith. In the position shown by Fig. 2, which is the normal position of the lampholder with the lamp removed therefrom, the contact pins 31 are dead so there is no danger of a user receiving a shock from contact therewith.

While I have shown the lamp ferrule 12 as provided with guiding plates 14, it should be manifest that in some cases these plates may be omitted as well. In such cases, the contact prongs of the lamp still make contact with the pins 31 on the lampholder but since a portion of the shroud 18 surrounds the end ferrule of the lamp, as shown by Fig. 5, the end ferrule would still be maintained in position on the lampholder.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A lampholder for use with a lamp having spaced aligned contact prongs comprising, in 75

combination, a base member of insulating material having spaced contact members, a rotatable member on said base operative upon turning of the lamp, said rotatable member being provided with a slot for receiving the lamp prongs by straight line movement therethrough, and means operative upon rotation of said rotatable member by turning the lamp to effect an electrical connection between the lamp contact prongs and the said contact members.

2. A lampholder for use with a lamp having spaced contact prongs comprising, in combination, a base of insulating material, strip contact members mounted on said base, a rotatable member mounted on said base adjacent said contact members and being provided with a diametrical slot for receiving the lamp prongs by straight line movement therethrough, and means effective upon rotation of the lamp and said rotatable member to place the lamp contact prongs in electrical connection with the said contact members.

3. A lampholder for use with a lamp having spaced contact prongs comprising, in combination, a base of insulating material, spaced contact members mounted on said base, and a member rotatably mounted on said base between said contact members, said member being provided with spaced contact pins for cooperation with the lamp prongs and being rotated by turning of the lamp, rotation of said movable member placing the contact pins in electrical connection with the spaced contact members.

4. A lampholder for use with a lamp having spaced contact prongs comprising, in combination, a base of insulating material, spaced flexible contact members mounted on said base, a member rotatably mounted on said base and being provided with a peripheral groove for receiving said spaced contact members, contact prong engaging pins carried by said rotatable member and having portions extending into said groove for cooperation with the contact members, and means on said rotatable member for receiving the base of the lamp with the lamp contact prongs in electrical engagement with the contact pins, said lamp and rotatable member being movable to engage portions of the contact pins with the flexible contact members to form an electric circuit with the lamp prongs.

5. In a lamp holder for use with a lamp having spaced contact prongs, a base of insulating material having a slot therein, a rotatable member carried by said base and being provided with a diametrical slot normally in alignment with said first-mentioned slot for receiving the lamp contact prongs by straight line movement therethrough, said rotatable member being movable upon turning of the lamp to move the diametrical slot out of alignment with said first-mentioned slot to hold the lamp in position on said holder.

6. In combination, a tubular lamp having a contact prong and a guiding means projecting from an end ferrule thereof, a base of insulating material, contact members mounted on said base, a member rotatably mounted on said base, said member being provided with a slot for receiving said lamp contact prong and guiding means, and means effective upon rotation of the lamp and said rotatable member to place the lamp contact prong in electrical connection with one of the said contact members.

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