May 11, 1948. R. N. THAYER 2,441,456

LAMP HOLDER

Filed Jan. 22, 1945 2 Sheets-Sheet 1

Fig. 1.

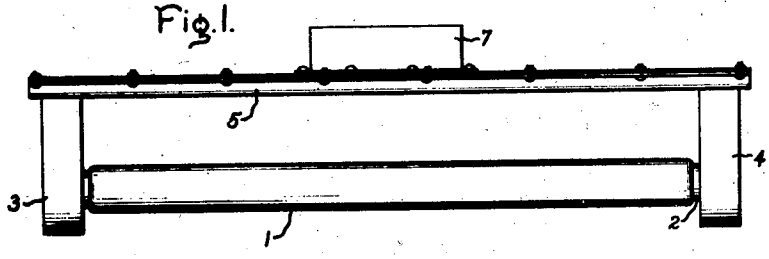


Fig. 3.

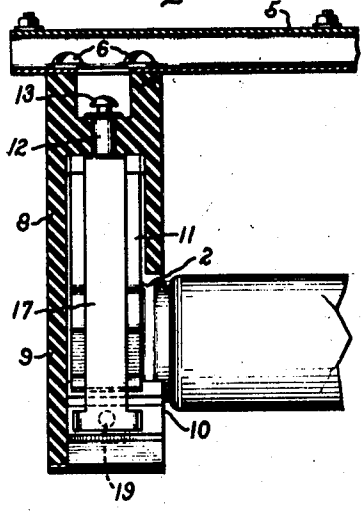


Fig. 2.

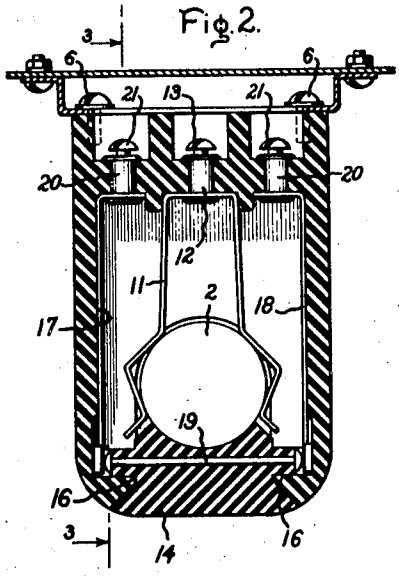
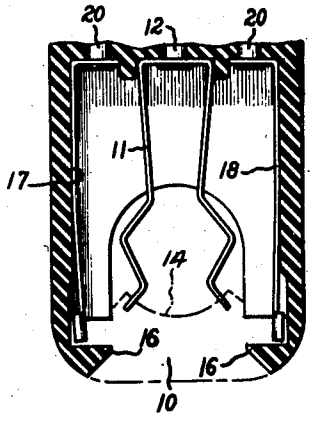


Fig. 4.



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Fig. 5.

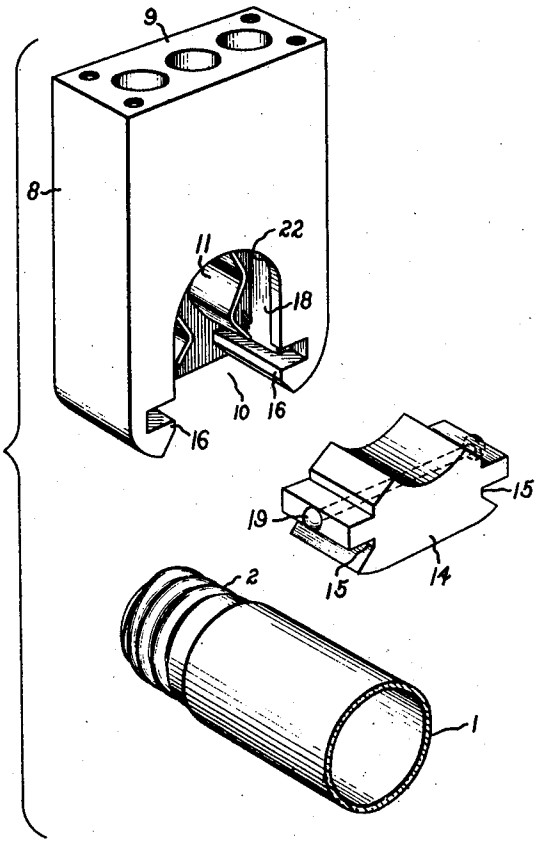
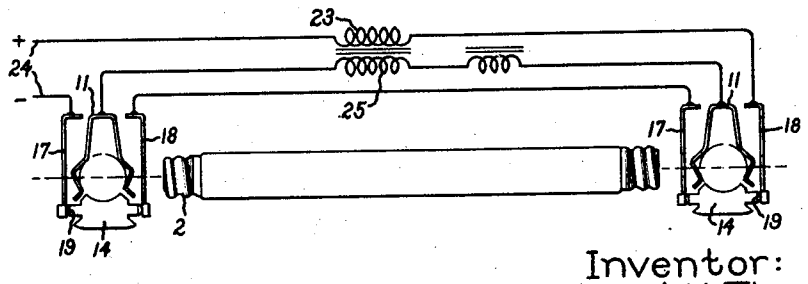


Fig. 6.



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Patented May 11, 1948 2,441,456

UNITED STATES PATENT OFFICE

2,441,456

LAMP HOLDER

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Application January 22, 1945, Serial No. 573,836

7 Claims. (Cl. 173—328)

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The present invention relates to lamp holders and especially to lamp holders for tubular lamps, such as fluorescent lamps. It is especially useful in connection with tubular lamps requiring relatively high open circuit voltages, for example voltages of the order of 600 volts or higher, although it is not limited thereto.

One object of my invention is to provide an improved lamp holder which while affording a high degree of safety from an electrical standpoint is simple in structure, has a shallow socket depth, is neat in appearance, capable of being manufactured at low cost, and permits of the use of a simple lamp base structure.

A further object of my invention is to provide a construction wherein the lamp ends are locked in the lamp holder so the lamp cannot accidentally fall from the holders.

Further objects and advantages of my invention will appear more fully from the following specification.

For a consideration of what I believe to be novel and my invention, attention is directed to the following specification and to the claims appended thereto.

In the drawing, Fig. 1 is a side elevation of a tubular lamp mounted in holders embodying my invention; Fig. 2 is a transverse sectional view through one of the lamp holders shown in Fig. 1, a lamp end being in position in the holder; Fig. 3 is a sectional view taken on line 3—3, Fig. 2; Fig. 4 is a sectional view similar to Fig. 2 showing the position of parts before a lamp end is mounted therein; Fig. 5 is an exploded perspective view of parts of the lamp holder and an adjacent lamp end, and Fig. 6 is a diagrammatic wiring diagram.

According to my invention, I provide a lamp holder having contact means with which the lamp terminal contact means at a lamp end engages when the lamp end is positioned in the holder and in connection therewith, I provide a key or locking member which controls the lamp circuit and which must be removed or unlocked to permit removal or insertion of a lamp, and which when removed or unlocked opens the lamp circuit. Preferably also the arrangement is such that the key or locking member can be placed in position in the lamp holder to close the lamp circuit only when a lamp end is therein, thus insuring that the circuit to the lamp holder contact means will be energized only when a lamp is in position in the lamp holder. Lamps of the tubular type having operating voltages above 60 are commonly operated from transformers, the

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transformer having separate primary and secondary windings or being of the autotransformer type. Preferably, I arrange the circuits so that a key or locking member controls the primary transformer circuit and such circuit preferably includes the lamp holders at each end of the lamp. However, in the case of an autotransformer, the circuit need include only the lamp holder at one end of the lamp, in which case the key or locking member at the other lamp end serves only to lock the lamp into position and not to control the circuit.

Referring to the drawing, 1 indicates a tubular lamp which may be a lamp of the fluorescent type. In the present instance it is shown as being a type of tubular lamp adapted for cold starting. Accordingly, at each end it is provided with only a single terminal or contact means 2. In the present instance, the terminal or contact means is shown as being in the form of a screw shell of suitable metallic material. However, my invention is not limited necessarily to use with lamps of this type, it being well adapted for use with lamps having two terminals at each end which adapts them for hot cathode starting. Tubular lamp 1 is shown as being mounted in two lamp holders 3 and 4 mounted on a suitable support 5 by means of screws 6. The ballast for the lamp is indicated at 7.

Each lamp holder comprises walls 8 which define a housing closed at one end by an end wall 9 and open at the other end as indicated at 10. Mounted on wall 9 is a U-shaped contact clip 11 adapted to receive between its arms the terminal 2 of a lamp end. Contact clip 11 is attached to wall 9 by a suitable rivet 12 into which is threaded a binding screw 13 for attaching a circuit wire to the contact clip. The open end of the clip faces toward the open end 10 of the housing so that a lamp end may be readily positioned in the housing between the two arms of the contact clip. This is shown clearly in Fig. 2.

For closing the open end 10 of the casing, I provide what I term a key or locking member 14 which in the present instance is in the form of a block of insulating material shaped to provide grooves 15 adapted to slide over projections 16 on walls 8 adjacent opening 10, although it may take other forms. The key or locking member carries a circuit closing member adapted to span a pair of contacts positioned in the lamp socket housing. The pair of contacts may be located in any suitable way in the housing, the essential thing being that when the key or locking member is positioned to close opening 10, the

contacts are connected together. For example, they may be located in spaced relation to each other along one side of the casing, the circuit closing members carried by the key or locking member being in the form of a plate along one side of the key or locking member; they may be in the form of contact sockets carried by the casing which are engaged by prongs carried by the key or locking member, or they may be in the form of a pair of contacts located on opposite sides of the casing, the key or locking member carrying a suitable connector for spanning the contacts. In the present instance, I have elected to illustrate the latter arrangement. To this end two contact arms 17 and 18 are shown positioned along opposite side walls of the casing with their ends terminating adjacent to projections 16 and the key or locking member 14 is provided with a transversely extending connecting member 19 which, when the key or locking member is positioned over the opening, connects together the contact arms 17 and 18. Contact arms 17 and 18 are attached to wall 9 by means of rivets 20 into which thread screws 21 for attaching circuit wires to the contacts.

In use of the invention, the two lamp holders 3 and 4 are mounted on the support 5 a distance apart to receive a tubular lamp between them. When a lamp is to be positioned in the holders, the keys or locking members 14 are removed and the lamp positioned in the lamp holders, terminals 2 being positioned between the arms of the U-shaped contact clips 11. After the lamp is positioned in the holders, the keys or locking members 14 are slid into place, projections 16 being positioned in the grooves 15. When a key or locking member is in place, its connecting member 19 connects together the contact arms 17 and 18 as is shown in Fig. 2.

As is best shown in Fig. 5, the one wall of the housing is cut away as is indicated at 22 to form a space to receive the lamp end. This may be considered the front wall of the casing. The back wall of the casing forms a stop for the key or locking member 14, the arrangement being such that when it is pushed into engagement with the back wall, connecting member 19 connects the two contact strips 17 and 18. Preferably, the arrangement is such that when a lamp end is not positioned in a holder, the contact means in the holder with which the lamp end engages stands in a position such that the key or locking member cannot be inserted into contact spanning position. As is shown clearly in Figs. 4 and 5, the arms of the U-shaped contact clip 11 stand in the way of the insertion of the key or locking member 14. This is indicated by the dot and dash lines in Fig. 4 which indicate the outline of the key or locking member 14. When a lamp is inserted in the lamp holder, the arms of contact clip 11 are moved to the positions shown in Fig. 2 wherein it will be seen their ends are out of the path of movement of the key or locking member 14 so that the key or locking member may be pushed into position.

One wiring arrangement for a pair of sockets is indicated in Fig. 6. The primary winding 23 of the transformer is connected to the source of power indicated at 24 through the contact arms 17 and 18 of the two lamp holders and the secondary 25 of the transformer is connected to the contact clips 11 of the lamp holders. In the case of an autotransformer, as pointed out above, the primary circuit need include the contact arms 17 and 18 of only one of the lamp holders in which

case the contact arms of the other lamp holder will perform no function.

It will be seen that the keys or locking members 14 serve to close the primary circuit for the lamp and also to lock the lamp in position in the holders so that it cannot fall out. To remove a lamp from the holders, it is first necessary to remove the keys or locking members 14 which means that the circuit is opened on the clips 11 before the lamp can be removed, and after the lamp is removed the clips remain disconnected from the circuit and can be again connected to the circuit only by first inserting a lamp end into the lamp holder and then positioning the key or locking member.

The key or locking member 14 is shaped to provide a curved surface as shown best in Figs. 2 and 5 which fits against the lamp to hold it firmly and positively in position in the lamp holders so it cannot vibrate and cannot work loose and fall. If desired, the key or locking member 14 may be attached to the holder by means of a suitable chain or it may be hinged to the holder to prevent loss or misplacement of the key or locking member.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention may be carried out by other means.

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

1. A lamp holder for a tubular lamp having contact means at its ends comprising walls which define a casing having an open end, contact means in the casing adapted to be engaged by lamp end contact means when positioned in the casing through said end, a lamp circuit closing contact means in said casing, a member for closing said open end, said member being keyed to interlock with the end of the casing and thereby lock the lamp end in the holder, and said member having means adapted to co-act with said lamp circuit closing contact means for closing the lamp circuit when said member is positioned to close said opened end, said first contact means being spring tensioned and adapted, when a lamp end is not positioned in the casing, to occupy a space therein normally occupied by said member and thereby to prevent positioning of said end closing member.

2. A lamp holder for a tubular lamp having contact means at its ends comprising walls which define a casing having an open end, contact means in the casing adapted to be engaged by lamp end contact means when positioned in the casing through said open end, a lamp circuit closing contact means in said casing, a member for closing said open end, said member being keyed to interlock with the end of the casing and thereby lock the lamp end in the holder, and said member having means adapted to co-act with said lamp circuit, closing contact means for closing the lamp circuit when said member is positioned to close said opened end, and means including said first contact means for preventing positioning said end closing member in the casing except when a lamp end is positioned in the casing.

3. A lamp holder for the end of a tubular lamp comprising a casing having an opening through which a lamp end may be positioned in the hold-

er, a cover for the opening for locking the lamp end in the holder; contact means controlled by the positioning of the cover in closed position for closing a circuit to a lamp end contact, and means preventing positioning of the cover on the casing except when a lamp end is positioned in the casing.

4. A lamp holder for a tubular lamp having contact means at its ends comprising a casing having an open end, a U-shaped contact clip in the casing, the open end of which faces the open end of the casing, a side wall of the casing adjacent to its open end being shaped to define a recess whereby a lamp end may be positioned in the casing, normally open contact means in the casing, and a member mounted on and closing the open end of the casing, said member being keyed to interlock with the casing and thereby being adapted to lock a lamp end therein and said member having means adapted to co-act with said normally open contact means for closing the same, said U-shaped contact clips being spring tensioned and adapted, when a lamp is not in the casing, to occupy a space therein normally occupied by said member and thereby to prevent mounting of the open end closing member.

5. A lamp holder for a tubular lamp having contacts at its ends comprising, in combination, a casing having an open end for receiving the lamp contact, a contact means in the casing for engaging and making electrical connection with the lamp contact, normally open contact elements in the casing and a member mounted on said casing and being provided with conducting means for engaging the normally open contact elements to close a circuit therethrough, said member closing the open end of the casing and being keyed to interlock therewith and thereby to lock a lamp therein when the member is mounted on the casing, said first-mentioned contact means being spring tensioned and adapted, when a lamp end is not positioned in the casing, to occupy a space therein normally occupied by said member and thereby to prevent mounting of the member on the casing unless a lamp is first positioned in the holder.

6. A lamp holder for a tubular lamp comprising, in combination, a casing having a recess extending to an end wall of the casing to form an open end, contact means in said recess for receiving a lamp contact, spaced contact members carried by the housing in said recess and being normally in open circuit position, and a member of insulating material having a conducting member for engaging said contact members to close a circuit therethrough, said member being slidably mounted on said casing to close the open end thereof after mounting of the lamp to hold the lamp and being keyed to interlock with the casing in position.

7. A lamp holder for the end of a tubular lamp comprising a casing having an opening through which a lamp end may be positioned in the holder, a cover for the opening for locking the lamp end in the holder, contact means controlled by the positioning of the cover in closed position for closing a circuit to a lamp end contact and means adapted, when a lamp end is not positioned in the casing, to occupy a space occupied by the cover in closed position and said means being adapted to be actuated by a lamp end to move out of said space whereby said means prevents positioning of the cover on the casing except when a lamp end is positioned in the casing.

RICHARD M. THAYER.

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