Dec. 21, 1948. C. H. HODGKINS 2,456,940

LAMP HOLDER FOR FLUORESCENT LAMPS

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Fig. 1.

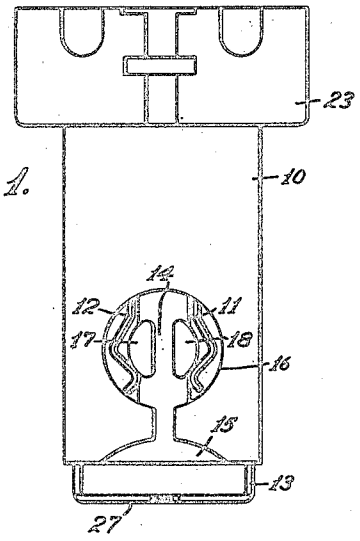


Fig. 2.

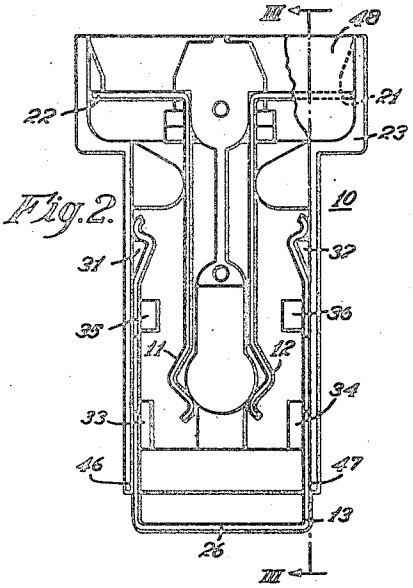


Fig. 3.

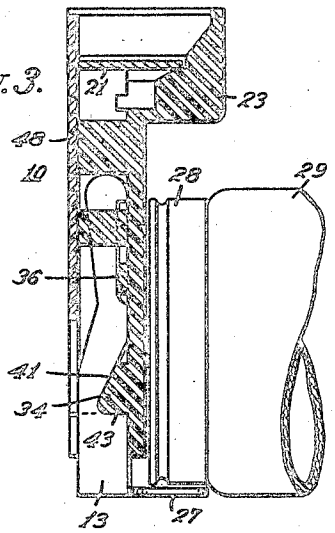


Fig. 4.

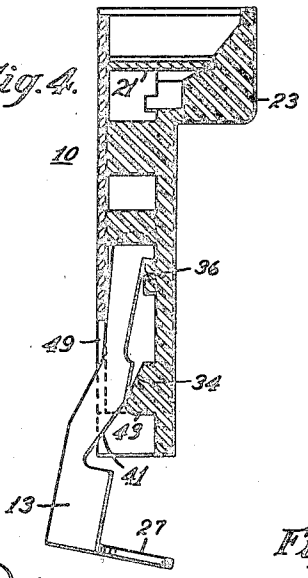


Fig. 5.

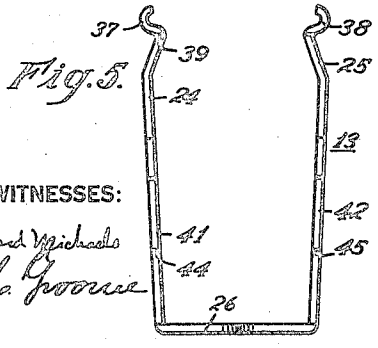


Fig. 6.

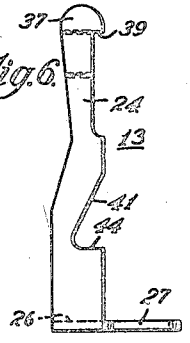
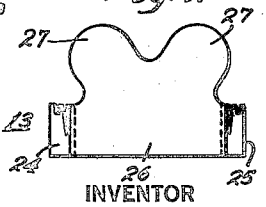


Fig. 7.



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LAMP HOLDER FOR FLUORESCENT LAMPS

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9 Claims. (Cl. 173—328)

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My invention relates, generally, to lamp holders for use with tubular discharge devices in the form of fluorescent lamps and the like, and, more particularly, to a lamp holder of the locking type which functions to prevent the lamp from falling out of the holder due to improper lamping, vibration, shock, and other causes.

An object of my invention, generally stated, is to provide a lamp holder of the locking type which shall be of simple and economical construction and which shall function to effectively lock the lamp in the holder and still permit the ready removal thereof for relamping purposes.

A more specific object of my invention is to provide a lamp holder of the character described wherein the locking device is in the form of a U-shaped member mounted on the housing of the holder for limited longitudinal movement between predetermined limits corresponding to the locking and unlocking positions of the locking device.

A further object of my invention is to provide a lamp holder of the character described wherein the U-shaped locking member is provided with hook-shaped end portions which cooperate with spaced lugs on the inner side walls of the housing to determine the locking and unlocking positions of the member.

Another object of my invention is to provide a lamp holder of the character described wherein the U-shaped locking member is given a compound movement when it is partially withdrawn from the housing by means of cooperating cam elements on the member and side walls of the housing.

A still further object of my invention is to provide a lamp holder of the character described wherein the leg portions of the U-shaped locking member extend into the housing through transverse slots in one end thereof in sliding engagement with the inner side walls of the housing, and have hook-shaped end portions cooperating with a pair of spaced projections on each side wall to limit the longitudinal movement of the member, and also have cam surfaces cooperating with cam-shaped projections on the side walls to cause the locking member to tilt away from the face of the housing when it is moved to its unlocking position.

These and other objects of my invention will become more apparent upon the following detailed description when read in conjunction with the drawing, in which:

Figure 1 is a front elevational view of the lamp holder embodying the principal features of my invention;

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Fig. 2 is a rear elevational view of the lamp holder of Fig. 1 with the back cover removed;

Fig. 3 is an elevational view, partially in section, taken along line III—III of Fig. 2 showing the lamp in its normal position in the holder and the locking device in its closed or locking position;

Fig. 4 is a similar view without the lamp showing the locking device in its open or unlocking position;

Fig. 5 is a front elevational view of the locking device;

Fig. 6 is a side elevational view of the locking device; and

Fig. 7 is a top view of the locking device.

Referring to Fig. 1 of the drawing, there is shown a lamp holder comprising, generally, a shell-type housing **10**, a pair of contact fingers **11** and **12**, and a locking device **13**.

The housing may be formed of molded insulating material and is provided with a slot **14** in the front face thereof and the lower end thereof, as viewed in the drawing. This slot has an entrance portion **15** at the end of the housing which communicates with the circular portion **16** of the slot.

As shown, the free ends of the contact fingers **11** and **12** are disposed in cooperative relation with the circular portion **16** of the slot and a pair of spaced lugs **17** and **18** so that the contact pins of a lamp may be inserted into the slot and rotated into contact-making position with the contact fingers in a well known manner. As shown in Fig. 2, the contact fingers **11** and **12** have bent-over end portions **21** and **22** which are anchored in the base portion **23** of the housing.

The locking device **13** is in the form of a U-shaped member and is preferably made of a flat spring material, as shown best in Figs. 5 and 6. It comprises two leg portions **24** and **25** joined together by a connecting portion **26**. The connecting portion **26** is provided with a projecting portion **27**, as shown in Fig. 6, which in the locking position of the device extends outwardly beyond the face of the holder in overlapping relation with the base **28** of the lamp **29**, as shown in Fig. 3.

In this embodiment of the invention, the locking device **13** is so mounted within the housing that it has a limited longitudinal movement between predetermined limits and also in such manner that when the device is partially with-

drawn from the housing to its open position, it also has a tilting or sidewise movement.

The longitudinal movement together with the sidewise movement provides a compound movement or action which materially limits the degree of withdrawal necessary to open the locking device sufficiently to permit the insertion or removal of a lamp. This functioning of the locking device is effected by the way in which the legs thereof are shaped and the manner in which it is associated with the housing.

As shown in Fig. 2, the housing is provided with a plurality of pairs of lugs or projections on the inner side walls thereof. As viewed in Fig. 2, the upper pair of projections 31 and 32 may be termed the locking projections. The lower pair of projections 33 and 34, which are not clearly shown in Fig. 2 but are more clearly shown in Figs. 3 and 4, may be termed the camming members. The intermediate pair of projections 35 and 36, also best shown in Figs. 3 and 4, may be termed the stop members.

As shown in Figs. 5 and 6, the free ends of the leg members 24 and 25 of the locking device are provided with hook-shaped portions 37 and 38. In addition, as shown in Fig. 6, the hook-shaped portions extend over the front edges of the legs to provide a hook member 39. The leg portions of the locking device are also provided intermediate their ends with inclined camming surfaces 41 and 42.

Referring now to Figs. 3 and 4 and to Fig. 3, in particular, which shows the locking device in its closed or locking position, it will be observed that when it is in this position the camming portions 41 and 42 of the locking device are in engagement with the camming members 33 and 34 of the housing. The hook-shaped portions 37 and 38 of the locking device are in engagement with the locking projections 31 and 32, as best shown in Fig. 2.

When it is desired to release or open the locking device to the position as shown in Fig. 4, it is moved longitudinally of the housing by simply partially withdrawing it therefrom. This withdrawal movement causes the hook-shaped portions 37 and 38 to become released from the projections 31 and 32, and as the device moves outwardly, the cooperating camming portions on the legs of the device and the housing function to cause the locking device to tilt backwardly from the face of the holder to the position shown in Fig. 4.

The outward movement of the locking device is limited by the stop members 35 and 36 which engage the hook portions 39 and 40 at the ends of the U-shaped portions of the device.

As referred to hereinbefore, this provides for obtaining a compound movement of the locking device in order to limit the amount of longitudinal movement necessary to release the lamp. This is clearly apparent from the relative positions of the end of the housing and the locking device, as shown in Fig. 4. The outer tip of the projecting portion 27 moves backwardly to a position substantially in alignment with the front face of the housing. This permits the lamp to be moved downwardly out of the holder in the normal manner.

The inward movement of the locking device to the closed or locking position is limited by the lower edge 43 of the camming projections which engage the shoulders 44 and 45 on the leg portions of the locking device.

The legs of the locking device are preferably

spread apart, as shown in Fig. 5, in order that there will be sufficient frictional engagement between them and the side walls of the housing to control the movements of the locking device. It will be apparent that this also provides for causing the hook-shaped portions 37 and 38 to firmly engage the locking projections 31 and 32. The outward pressure, however, is only sufficient to maintain this locking relation when the locking device is subjected to the weight of the lamp in order that the device may be readily released by a manual operation.

The leg portions 24 and 25 extend into the housing through a pair of transverse slots 46 and 47 in the end thereof, as shown in Fig. 2. These slots open into the back of the housing, as shown in Fig. 4, and the back cover plate 48 is slotted at 49, as shown in Fig. 4, to permit the locking device to move to its tilted position.

It will be apparent that when the locking device is moved into its closed or locking position, it has a snap action which is provided by the shape of the locking projections 31 and 32.

In view of the foregoing detailed description of a preferred embodiment of my invention, it will be apparent that I have provided a lamp holder of the locking type which is of simple and economical construction and which will function to effectively lock the lamp into the holder. The locking device is so constructed and related to the housing of the holder that it may be readily actuated to its closed and open position without removing it as a separate element from the housing. In view of the nature of the locking device, it is always apparent to the one who is inserting or removing a lamp that the locking device is either in its locked or unlocked position. It is so constructed that it remains in either one of these positions and has no intermediate position in which it would be ineffective.

The locking device itself may be formed by simple stamping and bending operations. Likewise, the housing of the holder may be readily molded to provide the necessary internal projections and slots to cooperate with the locking device. In other words, a holder may be constructed in accordance with the teachings of my invention with very little, if any, machine operation. The housing is simply formed by molding and the locking device inserted therein through the transverse slots 46 and 47 and the cover 48 placed in position.

While I have shown a specific embodiment of my invention, it is to be understood that changes and modifications may be made therein without departing from the principles of the invention.

I claim as my invention:

1. A lamp holder for use with tubular discharge lamps comprising, a shell-type housing having a slot in the face and one end thereof to receive the contact members of a lamp, a pair of resilient contact fingers mounted within the housing in cooperative relation with the slot, said housing having oppositely disposed projections on its inner side walls, and a lamp lock mounted on the housing for limited longitudinal movement with respect thereto, said lock being in the form of a U-shaped member with the legs of the U positioned within the housing in sliding relation to the inner side walls thereof and the leg connecting portion of the U positioned over the entrance portion of the slot and having hook-shaped end portions disposed to engage said projections when the lock is moved to its locking position with the leg connecting in obstructing relation to the entrance portion of the slot.

2. A lamp holder for use with tubular discharge lamps comprising, a shell-type housing having a slot in the face and one end thereof to receive the contact members of a lamp, a pair of resilient contact fingers mounted within the housing in cooperative relation with the slot, said housing having a plurality of spaced oppositely disposed projections on its inner side walls intermediate its ends and transverse spaced slots in its end portion on opposite sides of the slot therein, and a U-shaped locking member mounted on the housing with the legs of the member extending into the housing through said transverse slots into sliding engagement with the inner side walls, the ends of said legs being hook shaped to releasably engage one pair of said projections to retain said locking member in a locking position with its leg connecting portion in obstructing relation to the slot entrance and to engage said other pair of projections to limit the movement of the locking member when it is actuated to its unlocking position with its leg connecting portion out of obstructing relation to the slot entrance.

3. A lamp holder for use with tubular discharge lamps comprising, a housing having a slot in one end and a face thereof to receive the contact prongs of the lamp, said housing having at least one projection on an inner wall thereof, contact fingers mounted in the housing in cooperative relation with said slot, and a locking member mounted on the housing for limited longitudinal movement relative thereto to prevent the lamp from becoming accidentally disengaged therefrom, said member being U-shaped with the legs of the U disposed within the housing on opposite sides of the slot with the leg connecting portion of the U extending over the entrance to the slot in the end of the housing and having the free end of at least one of the said legs shaped to engage said projection in the housing when the locking member is moved a predetermined distance out of the housing.

4. A lamp holder for use with tubular discharge lamps comprising, a housing having a slot in one end and a face thereof to receive the contact prongs of the lamp, contact fingers mounted within the housing in cooperative relation with said slot, a locking member secured to the housing and having a portion thereof movable in and out of obstructing relation with respect to the entrance portion of the slot, said locking member being U-shaped with the leg portions of the U being disposed within the housing for sliding movement endwise in and out thereof and the connecting portion disposed outside the housing over the entrance slot, and stop means within the housing cooperative with the leg portions of the locking member for limiting the endwise movement of the locking member out of the housing to a predetermined degree.

5. A lamp holder for use with tubular discharge lamps having a pair of contact prongs at either end thereof comprising, a shell-type housing having parallel inner side walls and a slot in one end and the face thereof to receive the contact prongs of the lamp and a pair of transverse slots in said end spaced on opposite sides of said slot adjacent the inner side walls, a plurality of contact fingers mounted within the housing in cooperative relation with the slot, and a locking member mounted on the housing for longitudinal movement with respect thereto into and out of obstructing relation with respect to the entrance portion of the slot, said locking member being U-shaped and formed of flat spring material with the free ends of the legs of the U normally spread apart a greater distance than the connected portions and extending into the housing through the transverse end slots and disposed in sliding relation with the inner side walls of the housing on opposite sides of the slot and with the leg connecting position of the U positioned over the entrance portion of the slot.

6. A lamp holder for use with tubular discharge lamps having a pair of contact prongs at either end thereof comprising, a shell-type housing having parallel inner walls with camming members thereon and a slot in one end and the face thereof to receive the contact prongs of the lamp, a plurality of contact fingers mounted within the housing in cooperative relation with the slot, and a U-shaped locking member having elongated leg portions and a leg connecting portion mounted on the housing with the leg portions of the U positioned within the housing in sliding relation with the inner walls of the housing for longitudinal movement in and out of the housing to position the leg connecting portion into and out of obstructing relation to the entrance portion of the slot, said locking member having camming surfaces on its leg portions intermediate their ends disposed to engage the camming members on the inner walls to effect a tilting movement of said member away from the face of the holder as it is moved out of the housing.

7. A lamp holder for use with tubular discharge lamps comprising, a shell-type housing having a slot in the face and one end thereof to receive the contact members of a lamp, said housing having a pair of transverse slots in one end thereof on opposite sides of the slot entrance, a pair of contact springs mounted within the housing in cooperative relation with the slot, a U-shaped locking member having leg portions with hook members at their free ends and a leg connecting portion mounted on the housing with its leg portions extending into the housing through said transverse slots and its leg connecting portion disposed across the entrance portion of the slot, said locking member being movable in and out of the housing to position its connecting portion into and out of covering and uncovering relation with respect to the entrance portion of the slot, and locking projections on the inner side walls of the housing disposed to be releasably engaged by the hook shaped members on the leg portions to retain the locking member in the housing.

8. A lamp holder for use with tubular discharge lamps comprising, a shell-type housing having a slot in the face and one end thereof to receive the contact members of a lamp, said housing having a pair of transverse slots in one end thereof on opposite sides of the slot entrance and internal camming members on the side walls thereof, said housing also having an internal stop member on a side wall spaced a predetermined distance longitudinally from the slotted end of the housing, a pair of contact springs mounted within the housing in cooperative relation with the slot, a U-shaped locking member mounted on the housing with its leg portions at least one of which is hook shaped at its free end extending into the housing through said transverse slots and its leg connecting portion disposed across the entrance portion of the slot for longitudinal movement within the housing between predetermined limits as determined by said stop member and the hook shaped end of a leg portion, said leg portions having cam portions intermediate their ends cooperating with the internal camming members of the housing to

effect a tilting movement of the locking member away from the slotted face of the housing as it is moved out of the housing.

9. A lamp holder for use with tubular discharge lamps comprising, a shell-type housing having a slot in the face and one end thereof to receive the contact members of a lamp, said housing having a pair of transverse slots in one end thereof on opposite sides of the slot entrance, said housing also having a pair of oppositely disposed internal projections on the opposite side walls thereof intermediate the ends thereof, a pair of contact springs mounted within the housing in cooperative relation with the slot, a U-shaped locking member mounted on the housing for movement in and out of the housing with its leg portions extending into the housing through said transverse slots in sliding engagement with the internal side walls of the housing and its connecting portion disposed across the entrance portion of the slot, said leg portions of the locking member and the internal side walls of the housing being so shaped as to cause said

locking member to swing back away from the slotted face of the housing when partially withdrawn from the housing into an unlocking position, thereby to reduce the amount of longitudinal movement of said member to a minimum to give sufficient clearance of the entrance portion of the slot for insertion of a lamp, said leg portions having hook shaped ends extending beyond the internal projections and disposed to engage said projections to limit the outward longitudinal movement of the locking member.

CHARLES H. HODGKINS.

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