March 27, 1951 J. M. PISTEY 2,546,778

SOCKET SWITCH FOR TUBULAR LAMPS

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Fig. 1.

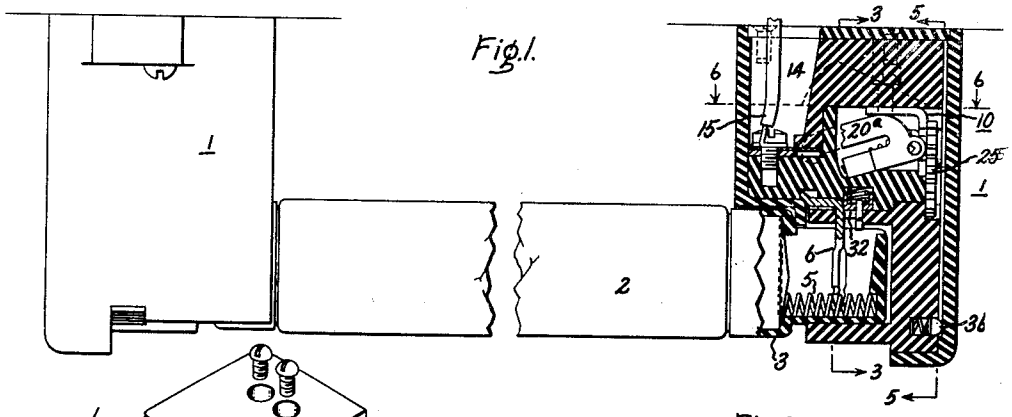


Fig. 2.

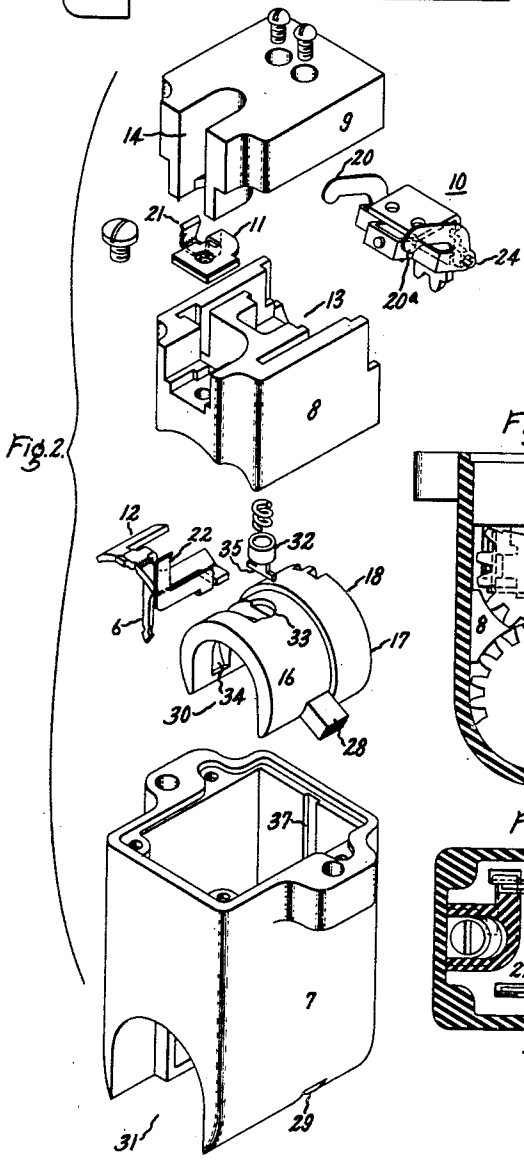


Fig. 3.

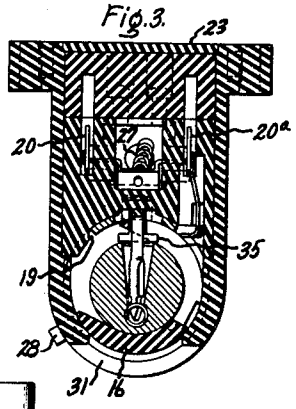


Fig. 5.

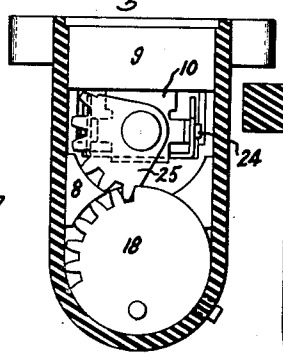


Fig. 4.

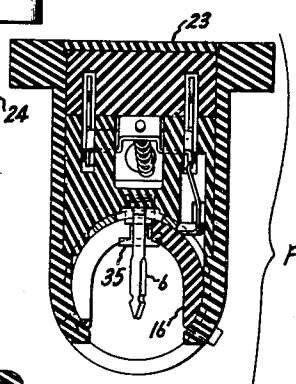
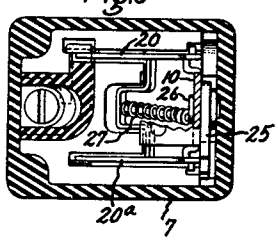
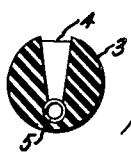


Fig. 6.





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SOCKET SWITCH FOR TUBULAR LAMPS

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2 Claims. (Cl. 200—51)

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My invention relates to a lamp holder for tubular lamps and the like, and has the broad objective of providing a lamp holder in which a combination switch actuator and guard device precludes access to live contacts or terminals within the holder.

More specifically, the objects of my invention include the provision of a lamp holder having a switch interposed between the contacts thereof and the line, said switch being operated by an insulating guard member which must be brought to a predetermined position before a lamp may be inserted or removed and which prior to the attainment of said position opens the switch; the provision of a lamp holder of the side insertion type having insulating guard means which when operated to permit removal of the lamp disconnects a terminal of the lamp holder from the line and which may not be inadvertently operated to reconnect said terminal before the lamp has been replaced; the provision of a lamp holder having switch means interposed between a terminal thereof and the line and means which prevent closing said switch so long as said terminal is externally accessible; and the provision of a lamp holder having improved safeguards against accidental short circuit or contact with the terminals.

These objectives may be accomplished by providing a side entry type of tubular lamp holder with a toggle switch interposed between the line connection and the exposed terminal of the holder and a suitable guard structure of insulating material having means for operating said switch. The guard structure, for example, may have a rotatable, arcuate, sleeve which controls the entry and removal of the lamp base. With the sleeve in lamp-receiving position, in which a terminal of the holder is exposed, the switch is open; when the sleeve is rotated to lamp-securement position, the switch is automatically closed. A latch device has been provided to secure the sleeve against rotation to its switch closing position until the latch has been released by the insertion of the lamp base into the holder. The toggle switch means are so arranged that the switch will throw to open circuit position before the guard means reaches a position which will permit the removal of the lamp base and will not throw to closed circuit position until the guard means substantially completes its movement to lamp-securement position.

Other features and advantages will be apparent from the following detailed description and the annexed drawing disclosing a presently preferred embodiment of the invention. In said drawing, Fig. 1 is a side elevation of a pair of lamp holders embodying the present invention, a tubular lamp being in position therein and one of the lamp holders being shown in vertical section; Fig. 2 is an exploded perspective showing the several elements of the lamp holder; Fig. 3 is a vertical section on lines 3—3 of Fig. 1; Fig. 4 is a section similar to Fig. 3 but showing the lamp based removed from the holder and the guard sleeve in open position; Fig. 5 is a vertical section looking in the direction of the arrows 5—5 of Fig. 1; and Fig. 6 is a plan section on lines 6—6 of Fig. 1.

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Referring now to the drawing, the lamp holders 1 have been mounted in appropriate spaced relation to receive therebetween a tubular lamp 2. Said lamp is of the conventional side insertion type in which the base members 3 are each provided with a side insertion slot 4 at the base of which is a coil spring 5 which forms a terminal of the lamp. The base members are of insulating material. Each holder has a spear-like center terminal 6 which enters the slot 4 and penetrates between coils of the spring 5 to make contact therewith as the lamp is inserted into the holder. I have chosen to illustrate this contact arrangement because it is well known in the art; it will later be apparent, however, that my invention is not limited thereto or dependent thereon.

Each holder includes a body member 7 of insulation material which houses the insulating support blocks 8 and 9, said blocks securing the toggle switch frame 10, the line terminal 11 and the contact structure 12 of which the aforementioned center terminal 6 is a part. As is best shown in Fig. 1, the toggle frame 10 is attached to the underside of the support block 9 and occupies a recess 13 in support block 8. Line terminal 11 is carried by support block 8 at the base of the passage 14 through which the line lead 15 extends for screw-threaded attachment, as shown. The contact structure 12 is saddle-like, and is held between the arcuate base of block 8 and the sleeve portion 16 of the guard member 17, the enlarged diameter circular barrel 18 of said guard member cooperating with block 8 to provide the space 19 (Fig. 3) which accommodates the contact structure. Said guard member is of insulation material, such as a phenol condensation product. I prefer double pole switch construction, in which the contacts 20, 20a respectively operate with the contacts 21, 22 of the structures 11 and 12. Thus when the

switch is opened, the circuit is broken simultaneoulsy at two places. Since these breaks are in series, my switch holder is thereby adapted to operation on voltages higher than ordinary house lighting circuit voltages, and is especially useful with cold cathode tubular lamps which require such higher voltages for operation, although it is apparent the holder may be used with the conventional lower potential hot cathode lamps. An insulating cap plate 23 may be attached to the body 7 by screws as shown to integrate the assembly.

As appears in Figs. 2 and 5 the toggle switch contact structure is pivotally carried on pintles 24 of the frame 10 and is toggled to its respective open and closed circuit positions by an actuator 25 rotatably carried on frame 10. A shaft keyed to said actuator to be rotated thereby has a head 26 to which is eccentrically attached a conventional pin and spring toggling assembly 27 which, when said actuator is rotated, urges the switch contact member into sharp rotation after said assembly has passed through an overcenter position. The direction of operation of the toggle switch member depends, of course, upon the direction of rotation of the actuator 25 as is well known in the art.

I prefer to make the toggle switch actuator of an insulation material such as "Textolite" or a phenol condensation product. Rotation of the actuator to throw the switch to its operating positions is accomplished by rotation of the guard member 17. Although other mechanical devices may be employed for the necessary mechanical interconnection of the switch actuator and guard member, I prefer to utilize a gear drive, and accordingly form the actuator as a gear sector having the required number of teeth, and provide the circular barrel 18 of the guard member with meshing teeth, see Fig. 5. The rear of the housing 7 rotatably receives the barrel 18 and the forward housing walls extend about the sleeve 16 to hold the same within the housing, as clearly appears in Figs. 3, 4, and 5. A finger 28 projects from sleeve 16 through a slot 29 in housing 7, and provides convenient means for rotating the guard member within fixed limits.

The guard member has two operating positions, each of which establishes an operating condition of the toggle switch. Fig. 4 is the open, or lamp-receiving position, and as appears therein the wall opening 30 of the sleeve registers with wall opening 31 of the housing for the reception of the lamp base. The upper wall portion of the sleeve is substantially semicircular, with a radius only slightly larger than that of the lamp base, and after said base has been positioned with terminal 6 occupying the opening 4, the sleeve may be rotated to the Fig. 3 position in which the housing opening 31 is closed against removal of the lamp. The switch operation is such that with the guard member sleeve in lamp-receiving position the switch is open, and with the sleeve in locking position, the switch is closed.

I provide means for latching the sleeve in its lamp receiving position until a lamp has been inserted in the holder. Thus, so long as the terminal 6 is exposed or externally accessible, said terminal is not connected to the line. A typical latching device may comprise a cylindrical body portion 32 slidably housed within cavity of the body member 8, see Fig. 1, and spring biased downwardly into engagement with the interrupted circular end 33 of the slot 34 provided for the accommodation of terminal 6. The keying

relationship of the latch body 32 with the sleeve walls prevents rotation of the guard member in either direction. The latch may be released only by driving the body 32 upwardly out of engagement with the end portion 33 of said slot 34. For such release, I provide the latch body 32 with a head 35 which is engaged and forced upwardly by the lamp base to raise the body 32 above the sleeve 16, see Fig. 3.

Summarizing the operation of my device, in the Fig. 4 position in which the guard sleeve 16 is positioned for the reception of a lamp base the switch actuator 25 has been rotated by the barrel 18 to throw the switch 10 into open circuit position. The center terminal 6 is therefore in an open circuit. Upon the insertion of a lamp base into the holder, the guard 17 may be rotated clockwise of Fig. 4. The overcenter action of the toggling assembly 27 does not occur until the sleeve 16 approaches the Fig. 3 position, in which position it is physically impossible to gain access to the contact 6. On completion of the rotation of the guard a spring pressed detent 36 in the barrel 18 engages with a recess 37 in the housing member 7 to yieldably retain the guard in its closed position. Upon counterclockwise rotation of the guard 17 the toggle switch is thrown to open circuit position before the sleeve 16 has cleared the mouth of the body 7 for the removal of the lamp base.

It should be understood that conventional external switch means will be used for the normal operational control of the lamps. The guard actuated toggle switches within the holders insure against shock or short circuit whenever a lamp base is empty.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made; and I therefore contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

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

1. A holder for tubular lamps and the like comprising a body structure having a side opening to receive a base of a lamp, a line terminal, a terminal exposed within said side opening for engagement with contact means on said lamp base, a toggle switch in circuit between said terminals, means for actuating said toggle switch, a guard member, and means releasable by a lamp base for effecting the locking of said switch actuating means, said guard member including an arcuate sleeve of insulating material registrable with said body side opening to receive said lamp base and rotatable relative thereto to secure said lamp base against removal from said holder, said switch actuating means comprising a gear sector mounted for rotation in said housing to effect tripping of said toggle switch, said guard member further having a plurality of gear teeth on the periphery thereof engageable with said gear sector to effect the operation of said toggle switch to the open position when said guard is in the lamp-receiving position and to the closed position when said guard is in the lamp-securing position.

2. A holder for tubular lamps and the like comprising a body structure having a side opening to receive a base of a lamp, a line terminal, a terminal exposed within said side opening for engagement with contact means on said lamp base, a toggle switch in circuit between said termi-

nals, means for actuating said switch, and means for preventing the operation of said switch actuating means until a lamp is in said holder, said switch actuating means comprising an insulating guard member, a gear sector, and means connecting said gear sector to said toggle switch, said guard member having means for effecting rotatable support thereof within said housing to provide a position in which said side opening is cleared to receive a lamp base and a position closing said opening to secure a lamp within said holder, said guard member further having a plurality of gear teeth formed on the periphery thereof engageable with said gear sector, said gear sector including means for rotatably supporting the same within said housing in engagement with said guard member teeth, and said connecting means being adapted to engage the toggle mechanism of said toggle switch to effect the operation thereof to the open position when said guard member is in the lamp-receiving position and to the closed position when said guard

member is in the lamp-securing position, said switch actuation preventing means comprising a latch contained within said housing, means biasing said latch into engagement with said guard member to hold the same against rotation from its lamp-receiving position, and means including a finger extending from said latch means through said side opening and adapted to be displaced upon engagement therewith by a lamp base to release said latch means and to permit the rotation of said guard member.

JOHN M. PISTEY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,840,583	Hubbell	Jan. 12, 1932
2,430,602	De Bell	Nov. 11, 1947
2,438,012	Laidig	Mar. 16, 1948