Sept. 1, 1970 W. R. MATTSON ET AL 3,526,868

INCANDESCENT LAMP SOCKET

Filed July 14, 1969

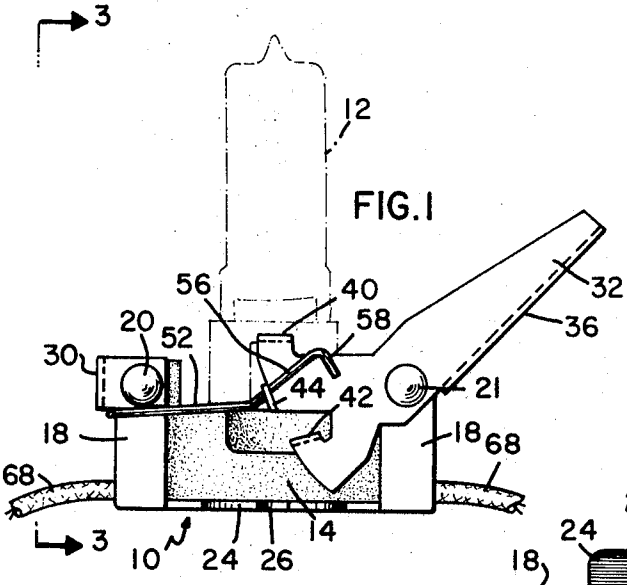

FIG. 1

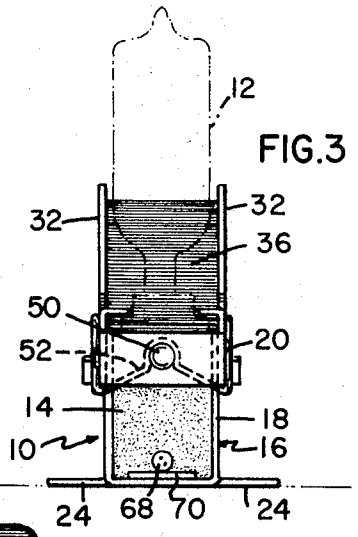

FIG. 3

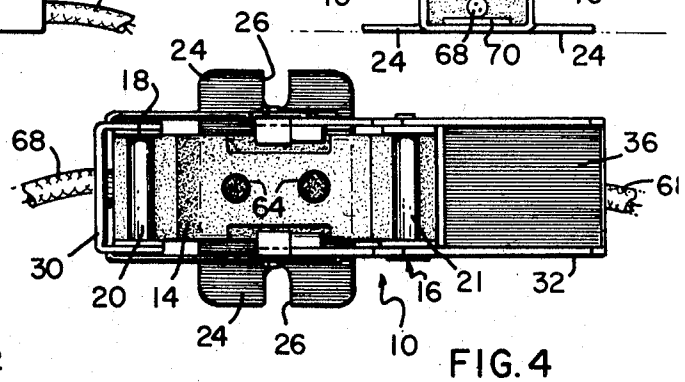

FIG. 4

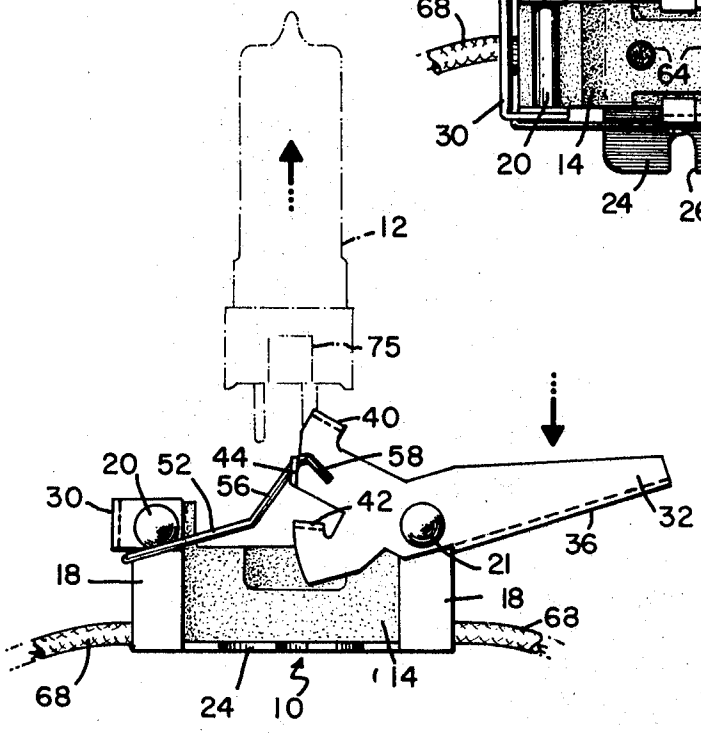

FIG. 2

WILLIAM R. MATTSON
RICHARD J. SHEA
INVENTORS
BY Laurence Brown
ATTORNEY

United States Patent Office 3,526,868 Patented Sept. 1, 1970

3,526,868

INCANDESCENT LAMP SOCKET

William R. Mattson, West Gloucester, and Richard J. Shea, Danvers, Mass., assignors to Sylvania Electric Products Inc., a corporation of Delaware

Filed July 14, 1969, Ser. No. 841,499
Int. Cl. H01r 13/62
U.S. Cl. 339—45 3 Claims

ABSTRACT OF THE DISCLOSURE

A socket adapted to retain a projection-type lamp in an optically fixed position within a visual projection system. The lamp is locked in place by a spring actuated lever that is thrown into this position by insertion of the lamp into the socket. This same spring actuated lever can be manipulated to eject the lamp.

FIELD OF THE INVENTION

In portable visual aid applications, such as overhead projectors, the lamp used for illumination must be securely fixed to the socket. This "locked-in" lamp arrangement has a two-fold purpose, mainly it is so that the apparatus can be transported from one site to another without removing the lamp. The other reason is that the lamp is usually operated other than in a base down position, therefore, it must be secured in place. The socket of this invention not only firmly holds the lamp in an optically aligned position, but can be used to eject the lamp by manipulation of a single, spring-actuated lever.

PRIOR ART

Various means for locking the lamp to the socket have previously been used in projection systems. Some were designed as bendable tabs or screw-type mounts that provided the necessary locking. However, they made lamp replacement time consuming and inconvenient. In these cases, a hot lamp had to be handled or time was spent waiting for the lamp to cool.

SUMMARY OF THE INVENTION

According to our invention, we have designed a unique lamp socket which overcomes the above mentioned disadvantages. In our lamp socket, an actuator lever controlled by a torsion spring is utilized to lock the lamp in the socket as well as to eject it when replacement is required. To insert a lamp the electrical contacts are initially fitted into the socket and the lower edge of the base is disposed between a set of lock tabs on the actuator lever. The actuator lever is then tripped. This action forces the lever into a locked position and the tabs on the lever engage a ledge on the lamp base. The torsion spring is designed so that a locking force occurs during insertion and an open position occurs when the actuator lever is tripped to eject the lamp.

When ejecting the lamp from the socket, the actuator lever is moved counter to insertion. A set of ejecting tabs on the actuator lever are disposed beneath the lamp base and movement of the actuator lever will lift the lamp out of the socket. When this movement is completed, it places the actuator lever in an open position. The lever can stay in this position until a new lamp is inserted into the socket between the locking tabs.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of the socket and a lamp locked in position.

FIG. 2 is a view similar to FIG. 1 but with the lamp in an ejected position.

FIG. 3 is a side elevational view of the socket and lamp.

FIG. 4 is a top view of the socket only.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1 of the drawings, the socket **10** of our invention is shown having a lamp **12** illustrated in phantom line, locked in its operative position. In FIG. 2, the same lamp **12** is shown being ejected from the socket **10**.

The basic socket **10** has a generally rectangular main body **14** made from a refractory insulating material. A metal bracket or yoke **16** having four upstanding arms **18** encompasses the body **14** and retains it through pivot studs **20**, **21** positioned at either end. These studs extend through holes provided in the upstanding legs **18** and rest in concave grooves (not shown in the drawing) which prevent lateral movement. The lower end of bracket **16** is provided with mounting tabs **24**, each of which has an elongated slot **26** for the adaption of screws or bolts, when the socket is secured to an apparatus.

In addition to preventing lateral movement of the body **14**, studs **20** and **21** form supports for the ejection mechanism. Stud **20** supports spring-retaining bail **30** and stud **21** supports an actuator lever bail **32**. As viewed in FIGS. 1 and 2 the actuator lever bail **32** pivots on approximately one third its length on stud **21**. The longer portion of the lever is provided with a lateral web area **36** which connects an identically shaped lever on the opposite side of the body **14** and is pivotally supported on the other end by stud **21**. Each short portion of the lever **32** is provided with two inwardly directed tabs **40** and **42** and a spring retaining ear **44**. The function of tabs **40** and **42** will be described hereinafter in the description of the operational sequence.

As mentioned previously, the spring retaining bail **30** is pivoted at both ends on pivot **20**. The inside surface of the web portion of the bail is provided with a stud **50** (as seen in FIG. 3) and a torsion spring **52** is anchored thereabout. The torsion spring **52** is directed beneath the legs of bail **30**, each end of which extend toward the lever **32**. The end portions of the spring **52** are shaped as angled cam surfaces **56** with terminating hook ends **58**. The cam surfaces **56** of spring **52** lie in grooves disposed on the retaining ears **44** of lever **32** and the hook ends **58** provide a limiting means for the lever **32**.

As viewed in FIG. 2 when the cam lever **32** is in its opened operative position, the spring is in a dormant spring position, that is, it is retained in the crook of the terminating end. In comparison to FIG. 1, the lever **32** is in its locked position when the spring **32** having its inclined cam surface **56** bearing against the ears **44** which provides spring tension to lever **32**.

As viewed in FIGS. 1 and 4 electrical connectors for the lamp are located in the main insulated body **14** and provide the necessary electrical connection to operate a lamp. In FIG. 4, two receiving holes **64** are shown in the main body one slightly larger than the other which insures proper alignment of the lamp **12**. The electrical connectors are not shown but are standard cup connectors fixed to the end of lead-in wires **68**. The connectors are aliged with the holes **64** and provide proper electrical connection to the prongs of the lamp **12**. As viewed in FIG. 3, an insulator pad **70** is positioned between the bracket **16** and the connectors providing a complete insulated receiver.

Insertion and ejection of the lamp from the socket can be described with reference to FIGS. 1 and 2. In FIG. 2, a view of the socket is shown where a lamp **12** is in position to be placed into the socket **10**. As mentioned above,

the lever 32 in this position does not have the tension that normally is provided by the spring 52. As the prongs of the lamp are slipped into the mating holes 64 of the socket, the lower end of a ledge 75 on the lamp base contacts the inwardly directed ejecting tabs 42 of lever 32. Forcing the prongs, and hence the base into socket will rotate the lever 32 to a point where locking the tabs 44 will ride down the cam portion of the spring 52. At a point approximately midway of the length of the angle portion the spring will overcome the resistance of the lever thereby snapping it into a locked position shown in FIG. 1. Locking tabs 40 then come to rest over the ledge 75. The lever is tensioned in this position by the spring 52 laying against locking tabs 44.

Ejection of the lamp is accomplished by reversing the procedure. Pressure applied to the end of the lever 32 which brings the ejecting tabs 42, now lying at the bottom of clearance space in the body, to a point underneath the base of the ledge 75. Further movement of the lever will fully eject the lamp.

As our invention we claim:

1. A lamp holder comprising: socket means adapted to hold a prong type lamp, lever means pivotally associated with said socket means, locking tabs and ejecting tabs separated from each other disposed on said lever means and adapted to be disposed above and below a ledge on the lamp; spring means bearing against said lever means and adapted to hold the locking tabs against the top of the ledge in a locked position and to abut the bottom of the ledge during ejection, said socket means including a flat metal bracket having a first set and a second set of oppositely disposed upstanding legs at each end thereof and an insulated lamp receiving body portion fitted and held within the confines of the legs; a pair of pivot studs fitted to each top end of the legs to retain said lamp receiver with the bracket.

2. The holder according to claim 1 wherein said lever means includes indentical side members joined and spaced from one another by a flat web portion, said side members connected to said pivot studs on the first set of upstanding legs of said metal bracket and said side members each having an outwardly directed spring retaining tab.

3. The holder according to claim 2 wherein said spring means is anchored to a retaining bail positioned on the second set of upstanding legs, said spring having cam surfaces disposed along the length and terminating with a hook end, said hook end being guided in said spring retaining tabs.

References Cited

UNITED STATES PATENTS

2,615,071 10/1952 Schwartz et al.

MARVIN A. CHAMPION, Primary Examiner

T. P. LEWIS, Assistant Examiner

U.S. Cl. X.R.

339—75