Jan. 28, 1958 W. J. GEIGER 2,821,649

ELECTRIC LAMP BASE

Filed Nov. 19, 1953

Fig. 1

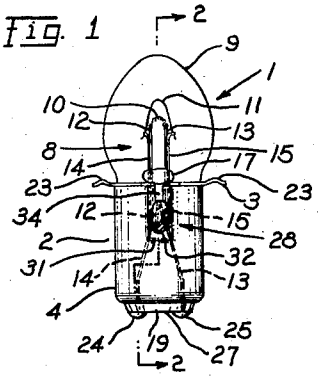


Fig. 2

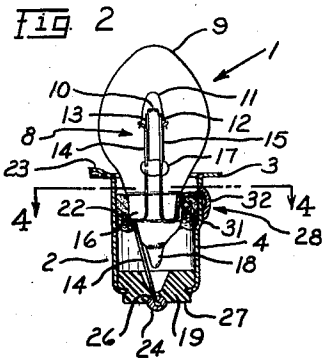


Fig. 3

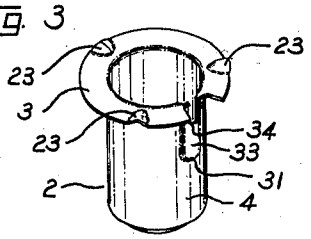


Fig. 4

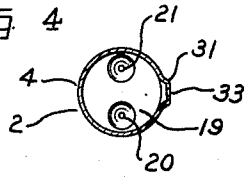


Fig. 5

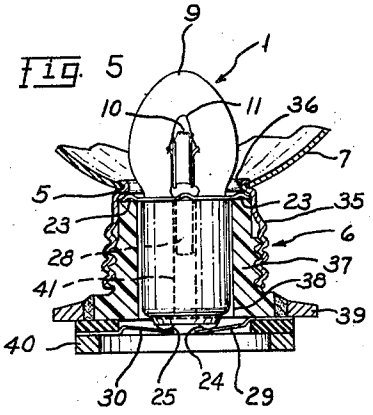
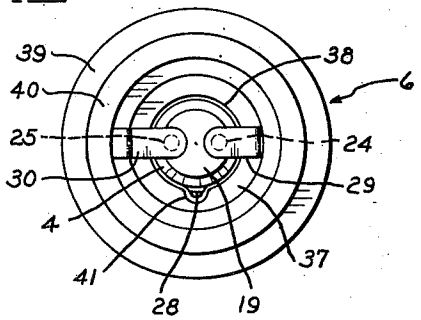


Fig. 6



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ELECTRIC LAMP BASE

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Application November 19, 1953, Serial No. 393,103

6 Claims. (Cl. 313—316)

My invention relates in general to electric incandescent lamps and similar devices, and more particularly to a base construction therefor.

Certain types of incandescent lamps, such as conventional prefocused flashlight lamps used in hand flashlights for instance, are provided with a base having a cylindrical metal shell portion provided with an outwardly turned prefocusing flange which is adapted to seat against an annular shoulder in the lamp socket to thereby accurately locate one or more filaments in the lamp in predetermined optical position relative to a reflector associated with the lamp socket. Where such a lamp is provided with two or more end or bottom contacts disposed alongside one another, it is necessary to provide some form of means on the lamp base for locating the lamp in a predetermined rotative position in the lamp socket in order to assure proper engagement of the end contacts with the corresponding contacts of the socket.

While the provision of bayonet pins on the lamp base for such lamp orienting purpose has been common practice heretofore, such bayonet pin type bases nevertheless are comparatively expensive to manufacture and they constitute an appreciable portion of the cost of a miniature type incandescent lamp. A satisfactory solution to this problem, from an economical standpoint, is to form a protruding guide key on the lamp base shell by outward deformation of the metal wall thereof, such key cooperating with a corresponding guide slot in the lamp socket.

Because of the fact that the normal manufacturing inaccuracies which attend the manufacture of lamp bases require the provision of a limited amount of clearance between the cylindrical walls of the base shell and the lamp socket in order to assure proper seating of the prefocusing flange of the base against the corresponding seating shoulder of the lamp socket, such a guide key on the base shell, to be truly effective, must be of sufficient keying height to properly engage with or lock between the walls of the guide slot in the lamp socket at all times, regardless of any lateral movement of the base shell in the socket. However, due to the extremely thin character of the material which is ordinarily employed for the metal shells of lamp bases (usually sheet brass of about 10 mils or so in thickness) and also due to the necessity, because of manufacturing economy considerations, of drawing such guide keys on the base shells after the shells have been drawn to their final cylindrical form rather than during the successive stages of their drawing operation, it is impossible to draw a guide key of the requisite height for effective keying coaction with the lamp socket. Because of the manufacturing limitations mentioned above, the drawing of a guide key of the required keying height on the finished cylindrical base shell would result in the rupturing of the metal of the shell at the region of the key in most instances.

It is an object of the invention, therefore, to provide an electric lamp or similar device with a novel form of base of the rotative orienting type and of simple and inexpensive construction.

Another object of the invention is to provide an electric lamp or similar device having a base provided with a novel form of protruding key means on the shell thereof for rotatively positioning the lamp in a lamp socket.

Still another object of the invention is to provide an electric lamp or similar device having a base the metal shell portion of which is provided with a protruding guide key means which is of simple and inexpensive form and is of sufficient height to effectively key with a lamp socket having a limited amount of clearance with the base shell.

A further object of the invention is to provide an electric incandescent lamp or similar device with a base having a combination guide key and side lead-in wire connection.

In accordance with the invention, a guide key means on the base shell, having the requisite keying height for positive keying co-action with a lamp socket having a limited amount of clearance with the base shell, is constituted in part of an outwardly deformed rib on the metal shell which is supplemented by a bead of solder located on the top surface of the rib and electrically connecting one or more lead-in wires of the lamp to the base shell, the solder bead having a width approximating that of the keying rib so as to complement it and increase the effective keying height thereof.

Further objects and advantages of the invention will appear from the following detailed description of a species thereof and from the accompanying drawing.

In the drawing,

Fig. 1 is an elevation of an electric incandescent lamp provided with a base construction according to the invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 and showing the lamp bulb in elevation;

Fig. 3 is a perspective view of the lamp base according to the invention;

Fig. 4 is a section through the lamp base on the line 4—4 of Fig. 2;

Fig. 5 is an elevation of an incandescent lamp according to the invention mounted in place in a cooperating socket shown in section; and

Fig. 6 is a rear end view of the assembled lamp and socket of Fig. 5.

Referring to the drawing, the invention is there shown as applied to an electric incandescent lamp 1 of the miniature prefocused flashlight type such as is used in hand flashlights and which is provided with a lamp base 2 having an out-turned prefocusing flange or collar 3 on the metal shell 4 thereof for seating against a corresponding annular shoulder 5 (Fig. 5) in a lamp socket 6 to thereby locate one or more filaments in the lamp in accurate optical relation to a reflector 7 associated with the lamp socket. The particular lamp 1 illustrated is of the two-filament, butt-seal, type having a mount 8 sealed in a glass bulb or envelope 9 and comprising a pair of filaments 10 and 11 of the general form, and arranged in the bulb 9 in the same relative manner shown in Kurlander U. S. Patent 2,245,793, one of the filaments 10 comprising a short helical tungsten wire coil of substantially straight or slightly bowed form extending generally transverse to the axis of the lamp 1 and bulb 9 thereof, and the other filament 11 comprising an uncoiled or generally straight tungsten wire bent more or less like a hairpin into a U or V shape and mounted in a position straddling the coil filament 10, in a plane at right angles thereto and in generally coaxial relation to the lamp 1 and bulb 9 thereof, and with the bend of the U facing toward the top of the bulb. The form and ar-

rangement of the two filaments 10 and 11 within the bulb 9 is such that when the lamp 1 is mounted in a socket 6 and associated reflector 7 of approximately paraboloidal shape, with the concentrated filament 10 symmetrically disposed at the focus of the reflector, the concentrated filament 10 will produce a concentrated or "spot" beam of light upon energization thereof while the hairpin filament 11 will produce a dispersed or "spread" beam of light upon energization.

The filaments 10 and 11 are connected at their opposite ends to respective pairs of lead-in wires 12, 13 and 14, 15 which are sealed through the wall of the neck portion 16 of the bulb 9 by the conventional butt-seal method and are fixedly held in spaced relation within the bulb by a bead 17 of insulative material such as glass for instance. The bulb 9 is hermetically closed off at its neck end by the tipped-off residue 18 of a glass exhaust tube.

Mounted on the neck end of the bulb 9 is a base 2 according to the invention, the said base comprising the metal shell portion 4 which is closed at its outer end by a web or button 19 of insulative material such as glass or molded plastic, for instance. The web of insulating material 19 is provided with lead-in wire apertures 20, 21 disposed in side-by-side relation. The other or open inner end of the shell 4 is disposed over the neck 16 of the bulb and is suitably secured thereto, as by a ring 22 of conventional basing cement. The said inner end of the base shell 4 is provided with the out-turned prefocusing flange or collar 3 which is preferably provided, at three or more equally spaced points therearound, with small protrusions or seating bosses 23 adapted to abut against the internal shoulder 5 in the lamp socket to thereby properly locate the lamp filaments 10, 11 in predetermined optical relation to the focus of the associated reflector 7.

Two of the lead-in wires (i. e., lead-in wires 13, 14) connected to different ones of the filaments 10, 11 extend through the apertures 20, 21, respectively, in the base insulation 19 and are embedded in small substantially spherically shaped beads of solder 24, 25 located in small approximately hemispherical wells or recesses 26, 26 which are formed in the outer face 27 of the insulating web or button 19 as outer end terminations of the apertures 20, 21. The beads of solder 24, 25 repose partly in the wells 26 and project partly above the outer face 27 of the insulating web 19 to serve as end terminal contacts for the lamp. The dimensions of the wells 26, and therefore the dimensions of the spherically shaped solder beads 24, 25, are within the range thereof wherein the surface tension of the soldier when molten relative to the weight thereof comprised in the bead is sufficient to draw the solder into and retain it in a substantially spherical form until the solidification of the solder.

The metal base shell 4 is provided with protruding guide key means 28 for locating the lamp 1 in predetermined rotative position in the lamp socket 6 so as to insure engagement of the lamp end contacts 24, 25 with the corresponding socket contacts 29 and 30, respectively. In accordance with the invention, the said guide key means 28 is constituted in part by a narrow raised guide rib on the base shell 4 and in part by a bead of solder 32 located on the top surface 33 of the guide rib 31 and having a width approximating that of the guide rib so as to complement it and increase the effective keying height thereof, the bead of solder 32 additionally serving to electrically connect the other two lead-in wires 12, 15 of the lamp to the base shell 4. The guide rib 31 is drawn out from the metal of the shell 4 to a height less than that which would normally cause rupturing of the metal of the base shell, e. g., around .027 to .030 inch, and it extends longitudinally inward of the base shell from its open inner end and preferably for a portion only of the length of the shell. The guide key 31 is formed with a more or less flattened top surface 33, as shown in Fig. 4, and it is provided with a narrow slot or slit 34 in its said top surface 33 extending longitudinally of the rib 31 from the open inner end of the shell 4 and preferably for a portion only of the length of the rib, as shown. The slot 34 is of a width to freely receive the lead-in wires 12, 15 which are drawn thereinto from the open inner end of the shell during the assembly of the base 2 onto the lamp bulb 9, the lead-in wires 12, 15 then being bent down over the outer side of the base shell onto the flat top surface 33 of the guide rib 31 where they are then secured in place and electrically connected to the base shell 4 by the bead of solder 32 located at the lower end of the slot 34. The bead of solder 32 is of sufficient height to provide, in conjunction with the rib 31, a guide key of the requisite keying height of at least .035 inch for positive interlocking engagement with the walls of a cooperating key slot in the wall of a lamp socket having the customary limited amount of clearance with the base shell 4, i. e., approximately .020" total difference between the inside diameter of the socket and the outside diameter of the base shell.

Figs. 5 and 6 illustrate the lamp of the invention mounted in a cooperating socket 6 such as employed in hand flashlights. The particular socket 6 illustrated comprises a threaded metal outer shell contact 35 having an inturned flange 36 at one end affording the seating shoulder 5 for the prefocusing flange 3 of the lamp base 2. The socket shell 35 is provided at its flanged end with the customary reflector 7 which may be of approximately paraboloidal shape and is suitably secured to the socket shell, as by rolling the inturned flange 36 of the socket shell over the peripheral edge of the lamp-receiving aperture in the reflector 7.

The lamp 1 is held in place in the socket 6, with the seating bosses 23 on the base prefocusing collar 3 abutting against the seating shoulder 5 of the socket shell 35, by a threaded hollow screw-in plug 37 of suitable insulating material having a central bore 38 for loosely receiving the lamp base 2 with a limited amount of clearance of, for example, around .020" total between the base shell and the cylindrical wall of the bore 38 in the plug. The screw-in plug 37 is provided with a pair of metal contacts 29, 30 which, as shown, may be in the form of spring metal fingers mounted in insulated relation to each other on the rear end of the screw-in plug and extending toward each other so as to extend at least part way across the outer or rear end of the bore 38 in the plug. The socket contacts 29, 30 are connected to respective annular contacts or metal rings 39, 40 suitably secured in insulated relation to each other on the plug 37, the annular contacts 39, 40 being adapted to be engaged by the contact-making element of a switch (not shown), such as is customarily provided on hand flashlights, to thereby complete the electrical power circuit to and energize one or the other, or both, of the lamp filaments 10, 11. The hollow plug 37 is further provided with a narrow groove or keyway 41 in the wall of the bore 38 extending longitudinally thereof and adapted to closely receive the guide key means 28 on the lamp base 2 to thereby locate the lamp 1 in the proper rotative position in the plug 37 for engagement of the lamp end contacts 24, 25 with the proper socket contacts 29, 30 on the plug.

The formation of the side lead-in wire connection or solder bead 32 as a part of the guide key means 28 for the lamp, in the manner according to the invention, enables the use of an outwardly deformed guide rib 31 on the base shell 4 of a limited height such that it can be easily drawn out of the metal of the base shell, after the latter has been drawn into its final cylindrical shape, without any danger whatever of the metal of the shell rupturing in the region of the guide rib. The end result, therefore, is a guide key means 28 which is easy and inexpensive to form and which will effectively operate to interlock at all times with the cooperating keyway 41 of a lamp socket 6 having a limited amount of clearance with the lamp base 2, regardless of the lateral position of the base therein.

Although a preferred embodiment of my invention has

been disclosed, it will be understood that the invention is not to be limited to the specific construction and arrangement of parts shown, but that they may be widely modified within the spirit and scope of my invention as defined by the appended claims.

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

1. An electrical device comprising an envelope, an electrical energy translation element mounted within said envelope, lead-in wires sealed through said envelope and connected to said energy translation element, and a base secured to said envelope and comprising a generally smooth walled cylindrical metal shell having an open inner envelope-receiving end and having an outwardly deformed portion extending longitudinally of the shell from its inner end to provide a keying rib thereon, said rib having a slot therein extending longitudinally of the rib from the open inner end of the shell, and one of said lead-in wires extending through said slot to the outer side of the shell and being electrically connected thereto.

2. An electrical device comprising an envelope, an electrical energy translation element mounted within said envelope, lead-in wires sealed through said envelope and connected to said energy translation element, a base secured to said envelope and comprising a generally smooth walled cylindrical metal shell having an open inner envelope-receiving end and having an outwardly deformed portion extending longitudinally of the shell from its inner end to provide a keying rib thereon, said rib having a slot therein extending longitudinally of the rib from the open inner end of the shell, one of said lead-in wires extending through said slot to the outer side of the shell, and a bead of solder on the top surface of said rib connecting said one lead-in wire to the shell and having a width approximating that of the keying rib to thereby complement it and increase the effective keying height thereof.

3. An electrical device comprising an envelope, an electrical energy translation element mounted within said envelope, lead-in wires sealed through said envelope and connected to said energy translation element, a base secured to said envelope and comprising a generally smooth walled cylindrical metal shell having an open inner envelope-receiving end and having an outwardly deformed portion extending longitudinally of the shell from its inner end and for a part of its length to provide a keying rib, said rib being provided with a flattened top surface having a slot therein extending longitudinally of and for a part of the length of the rib from the open inner end of the shell, one of said lead-in wires extending through said slot to the outer side of the shell, and a bead of solder on the top surface of said rib connecting said one lead-in wire to the shell and having a width approximating that of the keying rib to thereby complement it and increase the effective keying height thereof.

4. An electric lamp comprising an envelope, a pair of filaments mounted within said envelope, a plurality of lead-in wires sealed through said envelope and respectively connected to the end of said filaments, a base secured to said envelope and comprising a generally smooth walled cylindrical metal shell having an open inner envelope-receiving end and having an outwardly deformed portion extending longitudinally of the shell from its inner end to provide a keying rib thereon, said rib having a slot therein extending longitudinally of the rib from the open inner end of the shell, two of said lead-in wires connected to different ones of said filaments extending through said slot to the outer side of the shell, and a bead of solder on the top surface of said rib connecting said two lead-in wires to the shell and having a width approximating that of the keying rib to thereby complement it and increase the effective keying height thereof.

5. A lamp base comprising a generally smooth walled cylindrical metal shell having an open end for receiving the bulb of a lamp, said shell having an outwardly deformed portion extending longitudinally of the shell from its said open end to provide a keying rib thereon, said rib having a slot therein extending longitudinally of the rib from the said open end of the shell.

6. A lamp base comprising a generally smooth walled cylindrical metal shell having an open end for receiving the bulb of a lamp, said shell having an outwardly deformed portion extending longitudinally of the shell from its said open end and for a part of its length to provide a keying rib, said rib being provided with a flattened top surface having a slot therein extending longitudinally of and for a part of the length of the rib from the said open end of the shell.

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