April 25, 1950 G. B. BENANDER 2,505,518

KEY LAMP SOCKET

Filed June 24, 1948

Fig. 1.

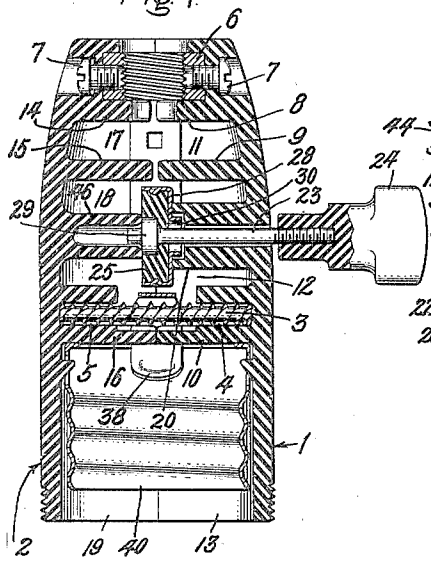


Fig. 2.

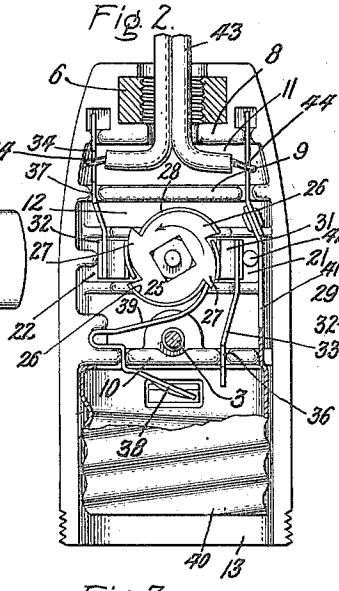


Fig. 5.

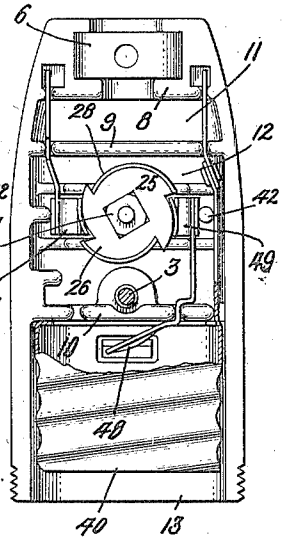


Fig. 3

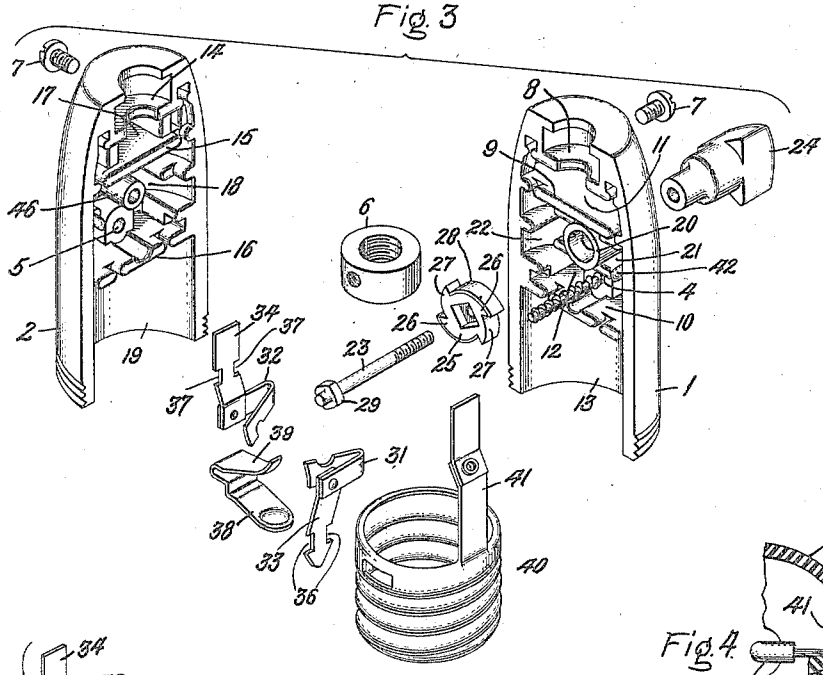


Fig. 4

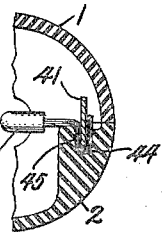
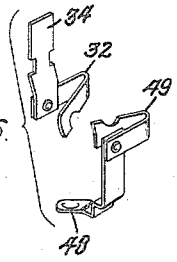


Fig. 6.



Inventor:
George B. Benander,
by Alfred V. Bobst.
His Attorney.

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KEY LAMP SOCKET

George B. Benander, Oaklawn, R. I., assignor to Monowatt Incorporated, a corporation of Connecticut

Application June 24, 1948, Serial No. 34,895

5 Claims. (Cl. 200—51.06)

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The present invention relates to key lamp sockets.

One object of the invention is to provide an improved switch contact arrangement for key lamp sockets which is unusually compact so as to permit the switch structure to be assembled in a lamp socket casing of small dimensions.

A further object is to provide a switch mechanism which is simple in structure, easily assembled, and readily adapted to be assembled for either a single filament lamp or for a two filament lamp, i. e. a "high-low" lamp.

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 sectional view of a lamp socket embodying my invention; Fig. 2 is a face view of one portion of the lamp socket casing showing the switch and contact members assembled therein for a two filament lamp; Fig. 3 is an exploded view of the lamp socket shown in Figs. 1 and 2; Fig. 4 is a detailed sectional view illustrating the manner in which the conductors of the cord are connected to the lamp socket; Fig. 5 is a view similar to Fig. 2 showing a lamp socket for a single filament lamp; and Fig. 6 is a perspective view of the contact members shown in Fig. 5.

Referring to the drawing, the socket casing is split longitudinally to provide two complementary portions or halves 1 and 2. For convenience, the portion 1 may be termed the base and the portion 2 the cover, since in assembling the socket, the several contact parts are assembled in portion 1, after which portion 2 is positioned over it. The casing parts are connected together by a blind screw 3, the ends of which have friction fits in sockets 4 and 5 in the respective parts, and by an internally threaded collar 6 having tapped openings to receive screws 7. As shown clearly in Figs. 1 and 2, base 1 is provided with transverse partition walls 8, 9, and 10 which serve to define a wiring cavity 11, a switch cavity 12, and a screw shell cavity 13; cover 2 is provided with similar walls 14, 15, and 16 providing corresponding complementary cavities 17, 18, and 19, so that when the casing parts are fastened together, there is provided a wiring chamber formed by cavities 11 and 17, a switch chamber formed by cavities 12 and 18, and a screw shell chamber formed by cavities 13 and 19.

This invention has to do particularly with the switch chamber and the construction and arrangements of the contacts therein whereby I

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am enabled to economize in the space required for the switch members, so as to keep the overall size of the lamp socket to a minimum; and at the same time provide a construction whereby in the same casing I am enabled in a simple manner and with few changes in contact parts to provide a lamp socket for either a two filament lamp or a single filament lamp.

At the central portion of switch cavity 12 in base 1 are walls which define a center post 20 on opposite sides of which are switch contact cavities 21 and 22. Post 20 has a passage through it for a switch stem 23, on the outer end of which is a switch operating button 24. On the inner end of stem 23 is a contact carrier comprising a disk 25 of insulating material having spaced ratched teeth which define two opposed longer ratchet surfaces 26 and two opposed shorter ratchet surfaces 27, the surfaces 26 covering arcs of the disk approximately twice as long as the surfaces 27. Carried by disk 25 is a bridging contact member 28 which extends across the underside of disk 25 and has its two ends bent at right angles to cover ratchet surfaces 26. Disk 25 has a round opening through which stem 23 extends and a rectangular recess in which a rectangular head 29 on the inner end of the stem 23 fits to provide a connection between the disk and the stem. The contact carrier is in contact with and turns on the end of post 20. It is positioned with respect to the post by a collar 30 on contact member 28 which extends into a recess in the inner end of the post (see Fig. 1).

In contact cavities 21 and 22 are V-shaped spring switch contacts 31 and 32, the closed ends of the V's being at the bottoms of the cavities and the open ends being adjacent the contact carrier. The outer arm of contact 31 is attached to a lamp contact strip 33; its inner arm engages the edge of the contact carrier. The outer arm of contact 32 is attached to a contact strip 34; its inner arm engages the edge of the contact carrier. The arms of contacts 31 and 32 which engage the contact carrier are spring pressed against it due to the inherent resiliency of the material from which the contacts are made. The ends of the arms which are in engagement with the edge of the contact carrier are curved somewhat as shown clearly in Fig. 2, so as to conform to the contour of the outer surfaces of the ratchet teeth to effect good engagement with the contact 28. It will be noted that contacts 31 and 32 are positioned at right angles to contact strips 33 and 34 and that the free arms of contacts 31 and 32 stand at right angles to the plane of the contact carrier so that the periphery of disk 25

engages the sides of the arms adjacent to their outer ends. This arrangement is one important feature of my invention since by such arrangement I am enabled to provide a more compact structure than heretofore while at the same time providing a contact arm long enough to give the desired resiliency for the contact arm. The arrangement is of advantage also in assembling the switch parts since the V-shaped contacts fit readily in the contact cavities 21 and 22 and tend to remain there.

Contact strip 33 is positioned edgewise in a notch in wall 10 with its free end projecting into screw shell cavity 13 where it forms a contact for a two-filament lamp. It is provided with notches 36 in its edges for locking over wall 10 and over the corresponding wall 16 of cover 1. Contact strip 34 extends across wiring cavity 11 and is positioned edgewise in notches in walls 9 and 8. It is provided with notches 37 in its edges for locking over wall 9 and over the corresponding wall 15 of cover 1. In the screw shell cavity is a center lamp contact 38 integral with which is a spring switch contact 39, the face end of which engages the edge of the switch contact carrier. It is positioned edgewise in a notch in wall 10 and a corresponding notch in wall 16 of cover 1. Also in the screw shell cavity is a screw shell 40 to which is attached a contact strip 41 which extends edgewise along the side of the casing as shown in Fig. 2, its end extending across wiring cavity 11. It is positioned edgewise in notches in walls 10, 9, and 8 and in corresponding notches in walls 16, 15, and 14 of cover 2. Separating contact strip 41 and contact 31 is a post 42 integral with base 1.

The ends of conductor wires are attached to contact strips 34 and 41 in wiring cavity 11. Insofar as the present invention is concerned, they may be attached in any suitable manner. In the present instance, a cord 43 is shown as having its bared conductor ends 44 attached to the contacts by being wedged in slots 45 defined by walls in cover 1 as shown in Fig. 4.

Cover 2 is provided with a center post 46 which is in alignment with post 20 and serves, when the structure is assembled, to hold the contact carrier in position. Post 46 has a bore in which the inner end of switch stem 23 is positioned to assist in keeping the contact carrier centered.

In assembling, base 1 with collar 6 fastened therein by the one screw 7, may be placed in a suitable fixture and the several switch and contact elements positioned therein, stem 23 with disk 25 thereon being dropped through post 20, one end of screw 3 being forced into socket 4, and the bared ends of the conductors being placed across the edges of contact strips 34 and 41, all as shown in Fig. 2. After the parts are assembled in base 1, cover 2 is positioned over the base, the other end of screw 3 being forced into socket 5 and the other screw 7 threaded into collar 6. Preferably, the arrangement is such that this screw 7 passes entirely through collar 6 to serve as a setscrew for a pipe threaded into collar 6. When the cover 1 is positioned on the base, slots 45 are forced down over contact strips 34 and 41, clamping the conductor ends as shown in Fig. 4.

In Fig. 2, the switch is shown in open position, since switch contacts 31 and 32 are in engagement with insulating surface 27. When the contact carrier is turned counterclockwise one step, contacts 31 and 32 will be brought into engagement with bridging contact member 28 and

since contact 39 remains in engagement with contact member 28, a circuit will be closed through both filaments of a two filament lamp in the lamp socket. When the contact carrier is turned another step, contact 39 will be out of engagement with bridging contact member 28, leaving only contacts 31 and 32 in engagement therewith so that only one lamp filament will be connected in circuit. When turned another step, the switch will be again in its open position.

For a single filament lamp socket, the same casing parts may be used, it being necessary merely to substitute for switch contact structures 31, 33 and 38, 39, a switch contact structure comprising center contact 48 and V-shaped switch contact 49 as shown in Figs. 5 and 6. Otherwise, the structure may be the same as that already described. Accordingly, in Figs. 5 and 6, reference characters the same as those of Figs. 1 to 4 have been applied to corresponding parts. From the description already given the structure and operation of the lamp socket for a single filament lamp will be clear.

Certain features disclosed in this application are not claimed herein as they form subject matter claimed in my earlier filed applications Serial No. 638,776, filed January 3, 1946, now Patent No. 2,457,521, December 28, 1948; Serial No. 718,166, filed December 24, 1946, now Patent No. 2,483,120, September 27, 1949; and Serial No. 8,470, filed February 14, 1948.

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

1. In a lamp socket, a casing split longitudinally to provide complementary base and cover portions, walls in said portions which define complementary switch cavities, walls in the switch cavity of the base portion which define a center post and a contact cavity on each side of the post, a ratchet type contact carrier positioned to turn on the inner end of said post, strip contacts extending longitudinally of the casing having ends which terminate in the switch cavity, and V-shaped switch contacts positioned in said contact cavities with their closed ends at the bottoms of the cavities, the outer arm of each V-shaped contact being connected to one of said strip contacts, the inner arm of each V-shaped contact being positioned at right angles to the plane of the contact carrier with the side of its free end in engagement therewith and said carrier having a bridging contact adapted, when said carrier is operated, to control the interconnection of said strip contacts.

2. In a lamp socket, a casing split longitudinally to provide complementary base and cover portions, walls in said portions which define complementary switch cavities, walls in the switch cavity of the base portion which define a contact cavity on each side of the base, a ratchet type contact carrier in the switch cavity, strip contacts extending longitudinally of the casing having ends which terminate in the switch cavity, and switch contacts connected to said ends and extending at right angles to the plane of the contact carrier positioned in said contact cavities with the sides of their free ends in engagement with the edge of the contact carrier said carrier having a bridging contact adapted, when said carrier is operated, to control the interconnection of said strip contacts.

3. In a lamp socket for a two filament lamp, a casing split longitudinally to provide complementary base and cover portions, walls in said portions which define complementary switch

cavities, walls in the switch cavity of the base portion which define a contact cavity on each side of the base, a ratchet type contact carrier in the switch cavity having opposed wide and narrow ratchet teeth on its edge and a bridging contact on the faces of the wide teeth, three switch contacts having contact ends in the switch cavity in engagement with the edge of said contact carrier, two of said contacts being positioned in said contact cavities at right angles to the plane of the contact carrier, and means connecting two of said switch contacts to contact ends to be engaged by the contact terminals of a two filament lamp said bridging contact being adapted, when said carrier is operated, to control selectively the interconnection of said switch contacts and thereby to control selectively the energization of said lamp filaments.

4. A rotary switch comprising a casing split to provide base and cover portions, a recess in said casing portions forming a switch cavity, a ratchet type contact carrier in the switch cavity having opposed ratchet teeth in its edge and a bridging contact on the edge faces of alternate teeth, two switch contacts formed of strip spring metal reversely bent into a V-shape and being positioned in said cavity on opposite sides of said carrier with their closed ends at the bottom of the cavity, the outer arm of each V-shaped contact having circuit connecting means secured thereto and the inner arm of each V-shaped contact being positioned at right angles to the plane of said contact carrier with the side of its free end in engagement with a ratchet tooth face thereof, said bridging contact being adapted, upon rotation of the carrier, to control the interconnection of said contacts.

5. A three position rotary switch comprising a casing split to provide base and cover portions,

a recess in said casing portions forming a switch cavity, a ratchet type contact carrier in the switch cavity having opposed wide and narrow ratchet teeth in its edge and a bridging contact on the edge faces of the wire teeth, two switch contacts formed of strip spring metal reversely bent into a V-shape and being positioned in said cavity on opposite sides of said carrier with their closed ends at the bottom of the cavity, the outer arm of each V-shaped contact having circuit connecting means secured thereto and the inner arm of each V-shaped contact being positioned at right angles to the plane of said contact carrier with the side of its free end in engagement with a ratchet tooth face thereof, and a third switch contact having a contact end in said cavity and positioned in engagement with a ratchet tooth face thereof and spaced less than the width of said wide ratchet teeth from one of said V-shaped contacts, said bridging contact being adapted upon rotation of the carrier, to control selectively the interconnection of said switch contacts.

GEORGE B. BENANDER.

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