Sept. 27, 1949. G. B. BENANDER 2,483,120

ELECTRIC LAMP SOCKET

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Fig. 1.

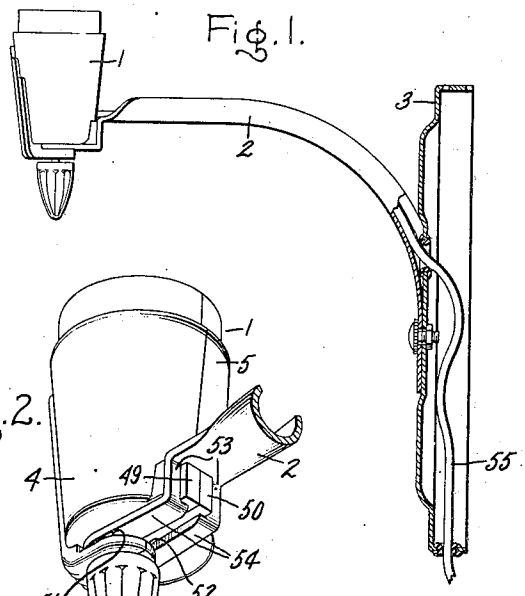


Fig. 2.

Fig. 4.

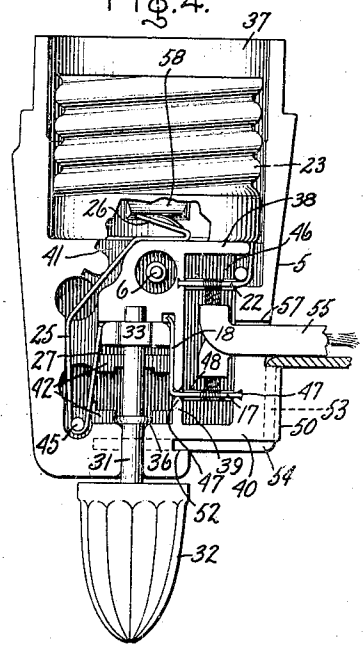
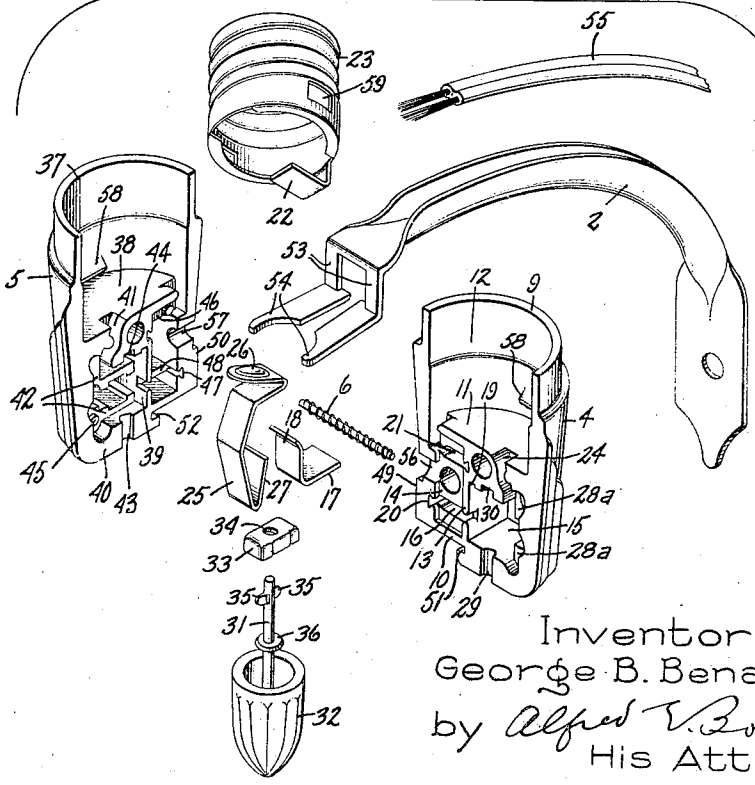


Fig. 3.



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Fig. 5.

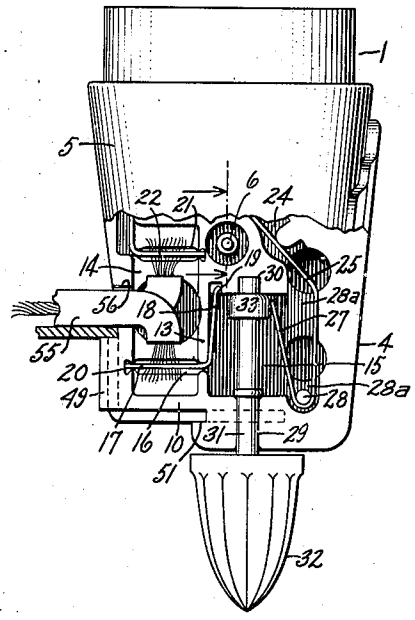


Fig. 7.

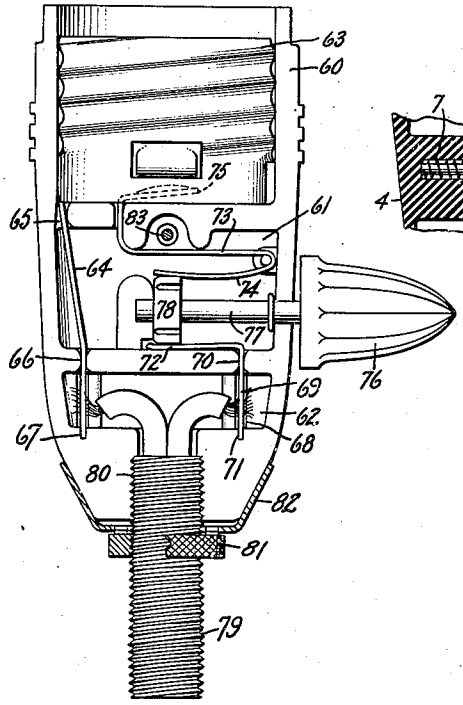
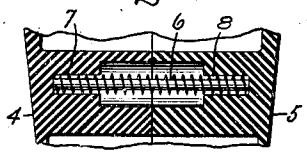


Fig. 6.



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UNITED STATES PATENT OFFICE

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ELECTRIC LAMP SOCKET

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Application December 24, 1946, Serial No. 718,166

1 Claim. (Cl. 200—51.17)

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The present invention relates to electric lamp sockets and particularly to such sockets which embody a switch and which are intended for use with lamp fixtures such as "pin up" lamps, floor lamps, table lamps and the like.

One object of my invention is to provide an improved apparatus which is simple in structure and capable of being manufactured at low cost.

Another object of my invention is to provide an improved key switch lamp socket which comprises a minimum number of parts and is capable of being assembled directly on a cord at low cost and with a minimum of labor.

Another object of my invention is to provide a key switch lamp socket which utilizes no binding screws, solder or welding for connecting the electric cord wires to the socket.

Another object of my invention is to provide an improved electric light fixture wherein the bracket serves to assist in holding the lamp socket assembled in an effective manner.

For a consideration of what I believe to be novel and my invention, attention is directed to the following specification and to the claim appended thereto.

In the drawing, Fig. 1 is a side elevation, partly in section, of a "pin up" lamp embodying by invention; Fig. 2 is a perspective view of a key lamp socket and an adjacent portion of the bracket illustrating the manner in which the bracket is attached to the socket and assists in holding the socket assembled; Fig. 3 is an exploded view showing in perspective the several parts which go to make up the fixture; Fig. 4 is a view of the cover half of the lamp socket with the lamp socket parts positioned therein; Fig. 5 is a side elevation of the lamp socket with the major portion of the cover broken away to illustrate the arrangement of the parts in the base of the socket; Fig. 6 is a detailed sectional view showing the manner in which the two halves of the socket are connected together, and Fig. 7 is a sectional view of a modified structure.

The fixture shown in Figs. 1 to 6 comprises a lamp socket 1, a bracket 2, and a wall plate 3. The lamp socket, bracket and wall plate are connected together to provide a unitary structure adapted to be hung on a wall.

The lamp socket casing or housing is formed in two parts or halves 4 and 5 which may be made from a suitable molding compound. They are held together by a transversely extending blind screw 6, the ends of which are driven into recesses 7 and 8 in the casing parts 4 and 5 (see Fig. 6) and also by means of the bracket end as

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hereinafter described. For purposes of description, the two casing parts 4 and 5 may be termed the base and the cover respectively since, in assembling the socket, the metal parts are positioned in part 4 after which part 5 is placed on part 4.

Referring particularly to Figs. 3 and 5, base 4 comprises a semi-cylindrical side wall 9 and an end wall 10. At 11 is a transverse partition wall spaced from end wall 10 to define a screw shell chamber 12. Between walls 10 and 11 is an axially extending wall 13 which divides the space between walls 10 and 11 into a wiring chamber 14 and a switch chamber 15. In the wiring chamber are walls which define a transverse slot 16 in which is positioned one arm 17 of a switch member, the other arm 18 of which is positioned in switch chamber 15. The end of arm 18 is located in a notch 19 and is biased toward the inner wall of the notch by its inherent resiliency as is shown in Fig. 5. The free end of the arm 17 is positioned in a notch 20 so that the switch member is firmly held in position. The inherent resiliency of the two arms with respect to each other is effected by reason of the elbow in the switch member being bent around the inner corner of slot 16. In transverse wall 14 is a right angular slot 21. Positioned edgewise in slot 21 is an arm 22 which is integral with the screw shell 23 of the lamp socket. Its outer end is bent at a right angle to shape the arm to fit slot 21. The free end of arm 22 is positioned in a notch in wall 11 and at its elbow is bent around the edge of slot 21 to place arm 22 under tension to hold it in position. In wall 11 is a transverse groove 24 in which is positioned edgewise a switch contact 25 formed integral with the center contact 26 of the lamp socket. The contact 25 is reversely bent on itself to provide a spring strip 27 located in switch housing 15 as shown clearly in Fig. 5 and which forms a spring contact of a switch. At its elbow, it is bent around a pin 28 formed integral with base 4. The edges of arm 17, arm 22 and contact 25 rest on the bottoms of the slot 16, slot 21 and groove 24, respectively. Contact 25 is supported also on a ledge 28a.

Positioned in a transverse notch 29 in end wall 10 and a recess 30 in wall 11 is a switch shaft 31 having a button 32 at its outer end and a switch head 33 at its inner end. The switch head 33 is rectangular and, as shown particularly in Fig. 3, comprises an inverted box like member having an opening 34 in its bottom wall in which the end of shaft 31 is positioned. Switch head 33 is held axially on the shaft between wings 35 formed in-

tegral with the shaft and the adjacent surface of transverse wall 11. On shaft 31 is a collar 36 which fits against the inner surface of end wall 10 to hold the shaft in an axial direction. Wings 35 extend the long way of head 33 and are of less width than the head. When shaft 31 is turned, they engage the side walls of the head to turn it with the shaft. This forms a lost motion connection between the shaft and the head to effect a snap action when the switch is opened as explained hereinafter.

Cover 5 is generally similar to base 4. It has a wall 37 which defines a screw shell chamber, a transverse partition 38 corresponding to partition 11 of the base and a longitudinally extending partition 39 corresponding to partition 13 of the base and serving to define a wiring chamber and a switch chamber complementary to the chambers 14 and 15. Its end wall is indicated at 40. In transverse partition 38 are walls which define a groove 41 corresponding to groove 24 of the base and adapted to receive the edge of switch contact 25. In the switch chamber is a ledge 42 adapted to engage the edge of switch contact 25, the switch contact 25 being thus clamped between the bottoms of grooves 24 and 41 and the ledges 28a and 42. End wall 40 is provided with a notch 43 complementary to notch 29 of the base member and a recess 44 complementary to recess 30 of the base member. At 45 is a pin on ledge 42 complementary to pin 28 around which the elbow of contact 25 is bent. In wall 38 is a right angle slot 46 complementary to slot 21 to receive the edge of arm 22. Adjacent end wall 40 are walls which define notches 47 and a ledge 48 which receive and engage the edges of the switch member comprising arms 17 and 18 to clamp it between the two halves of the casing.

On the lower ends of the casing parts 1 and 2 are walls which provide projections 49 and 50 and grooves 51 and 52. The end of bracket 2 is provided with right angle furcations shaped to define arms 53 which fit on opposite sides of projections 49 and 50 and projections 54 which are positioned in grooves 51 and 52. This assists screw 6 in holding the casing parts assembled. At its other end, bracket 2 is attached to a wall plate 3 which may be hung on a wall. At 55 is an electric cord, one end of which is attached to the lamp socket and the other end of which may have a plug cap for connecting with a wall receptacle. In the two casing parts just above projections 49 and 50 are complementary semicircular grooves 56 and 57 which define an opening in the side wall of the wiring chamber through which cord 55 passes. The screw shell 23 is positioned in the casing and held from turning by projection 58 on the casing parts located in openings 59 in the screw shell.

In assembling the structure, the base part 4 may be placed in a suitable holding fixture, the end of the cord 55 positioned in groove 56 and the bared conductor ends fanned out across slots 16 and 21, as indicated by Fig. 5. Following this, the switch member comprising contact arms 17 and 18 may be positioned as shown in Fig. 5, the arm 17 being forced down into the slot 16 with the wire end beneath it. Next, the screw shell may be positioned in the screw shell chamber, arm 22 being positioned in right angle slot 21 with its end in the notch at the inner end of slot 21, the end of the fanned-out wire being pushed down into the slot beneath arm 22. The arrangement is such that the arms 17 and 22 fit tightly in the slots so that the wire is wedged

firmly beneath and in contact with them. Also, the arrangement is such that the arms are placed under tension to assist in holding them in place. Next, contact 25 is positioned in base part 4, as shown in Fig. 5, after which shaft 31 with switch head 33 thereon is positioned in notch 29 and recess 30. The arrangement is such that spring strip 27 is biased outwardly firmly into engagement with the side of switch head 33, as shown in Fig. 5. With the metal parts of the socket thus assembled in the base half of the casing, the top half 5 is positioned thereon, the two halves being fastened together by the blind screw 6 the ends of which are forced into the openings 7 and 8, as shown in Fig. 6. Next, the socket may be connected with bracket arm 2, it being forced between the furcations at the end of the bracket arm to bring projections 54 into grooves 51 and 52 and arms 53 to positions on opposite sides of projections 49 and 50. This is shown clearly in Fig. 2. The blind screw 6 along with the furcations at the end of the bracket 2 serve to hold the lamp socket securely assembled.

With the switch head 33 in the position shown in Fig. 5, the switch is open, the head being out of engagement with the contact arm 18. By turning shaft 31 through an angle of 90°, the switch head is brought to the position shown in Fig. 4 wherein it bridges spring strip 27 and switch arm 18. The spring strip 27 serves both as a switch contact and as a spring for effecting a snap action when the switch is opened. When shaft 31 is turned to close the switch, the initial movement of the shaft brings wings 35 into engagement with the sides of head 33, taking up the lost motion in the connection. Following this, head 33 begins to turn with the shaft. The initial movement of head 33 compresses spring 27 and, after a short movement, diametrically opposite corners of head 33 are in engagement with both spring strip 27 and switch contact arm 18, thus closing the circuit. Continued movement of shaft 31 brings head 33 to the position shown in Fig. 4 wherein the head is held clamped between spring strip 27 and contact arm 18. By reason of the lost motion connection between shaft 31 and head 33, at the completion of the turning movement the head is moved by the compression of spring strip 27 to center the head so that the flat outer surfaces of its end walls rest evenly between spring strip 27 and contact arm 18.

When shaft 31 is turned to open the switch, the wings 35 are brought into engagement with the side walls of head 33 taking up the lost motion connection after which the head begins to turn with the shaft. As soon as diammetrically opposite corners of the head pass dead center, the pressure of spring strip 27 against the head serves quickly to turn it independently of the shaft and snap it back to the Fig. 5 position where it is out of engagement with contact 18. This snap action can take place because of the lost motion connection between the shaft and the head. The snap action is pronounced when the switch is opened because of the tension stored in the spring strip which tension is increased during the initial movement of the head and because the longer diameter of the head on which spring strip 27 is now acting gives a substantial leverage through which the spring acts on the head. The lost motion connection permits the head to turn independently of the shaft. At all times, spring strip 27 is under compression and is in engagement with the head. As will be clear, the switch may

be opened or closed by turning shaft 31 in either direction.

In Fig. 7 is shown a modified construction wherein the arrangement is such that the electric cord enters from the bottom of the lamp socket and the switch button is on the side of the lamp socket. In Fig. 7, 60 is the base half of the socket casing, 61 indicates the switch chamber and 62 the wiring chamber. The metal screw shell 63 is provided with a relatively straight arm 64 which extends through slots 65 and 66 and has its outer end positioned in a notch 67. One end of the bared conduction of a cord is positioned in slot 67 beneath the end of arm 64. The bared end of the other conductor of the cord is positioned in a slot 68 beneath arm 69 of a right angle contact member which is positioned in a groove 70 and notch 71 and has its other arm 72 located in switch chamber 61. At 73 is the other switch contact, it having a spring contact strip 74 corresponding to strip 27 of Figs. 1 to 6, and a center contact 75 for the lamp socket. The switch button 76 is attached to the outer end of shaft 77 on the inner end of which is the switch head 78 adapted to be moved into and out of engagement with contact arm 72. The switch structure of Fig. 7 is similar to that of Figs. 1 to 6 and operates in the same way. The manner of assembling the construction shown in Fig. 7 and its operation will be understood from the description already given of Figs. 1 to 6. In this construction, the lamp socket is shown as being carried by a threaded thimble 79 which threads into an opening 80 formed in the complementary halves of the casing. On thimble 79 is a nut 81 which serves to hold in position a collar 82 which surrounds the lower end of the lamp socket to hold the two halves of the lamp socket together at their lower end. Between nut 81 and the flat end of collar 82 is a suitable lock washer 83. 84 indicates a blind screw corresponding to screw 6 of Fig. 1 to 6 which serves also in holding the two halves of the casing together. The upper half of the casing for the modification shown in Fig. 7 is not illustrated. It may be similar to the lower half, being complementary thereto and fitting on the lower half to form a complete casing after the manner of the construction shown in Figs. 1 to 6.

The manner of assembling the modification shown in Fig. 7 is similar to that already described in connection with Figs. 1 to 6 and will be apparent without further description. It will be noted that collar 82 flares outwardly engaging the tapered end of the socket housing. When nut 81 is screwed up against the bottom wall of the collar it forces the collar over the tapered end of the housing drawing the two halves of the housing tightly together. Thus the collar 82 in the Fig. 7 construction performs the same function as do the functions 54 in the Figs. 1 to 6 construction.

The construction shown in Fig. 7 is well

adapted for use in table and floor lamps wherein the thimble 79 serves to support the socket in the lamp base. In such constructions, the cord usually extends down through the base and out at its lower end. With the construction shown in Fig. 7, the socket may be assembled on the cord at the factory, it thus forming an assembled construction to be sold as a unit. The plug cap may be attached to the cord after the cord has been threaded down through the lamp base and the nipple 79 attached thereto.

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

A lamp socket comprising a combination, a casing split longitudinally to provide complementary casing parts, walls in the casing parts defining within the casing a lamp contact chamber, a wiring chamber and a switch chamber, a first contact element comprising an integral spring contact strip having one of its ends positioned in the center of the lamp contact chamber and adapted to contact the center contact of a lamp and its other end positioned in the switch chamber and forming a switch contact, a second contact element comprising an integral member having a screw shell portion positioned along the side of the lamp contact chamber and adapted to contact the screw contact of a lamp, said second contact element having another portion extending into said wiring chamber and forming a wiring end, a third contact element comprising an integral contact strip having one end positioned in the wiring chamber and forming a wiring end and having its other end forming a second switch contact and being positioned in said switch chamber spaced from said first named switch contact, said casing walls having a plurality of notches spaced and positioned to receive portions of said contact elements, the latter being positioned edgewise in said notches for holding said elements in position, a switch member in the switch chamber for connecting together said switch contacts, means for moving said switch member, and means for holding said casing parts together.

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