Aug. 15, 1939. G. B. BENANDER 2,169,868

ELECTRIC SOCKET

Filed May 4, 1937

Fig. 1.

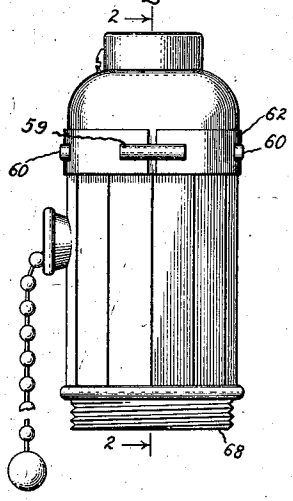


Fig. 2.

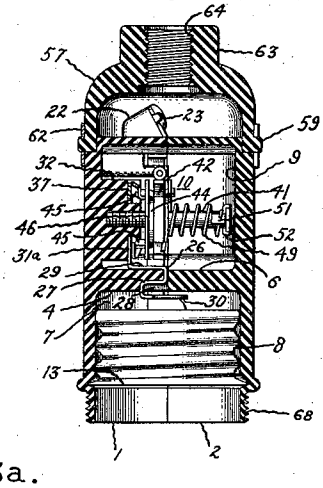


Fig. 3a.

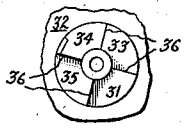


Fig. 3.

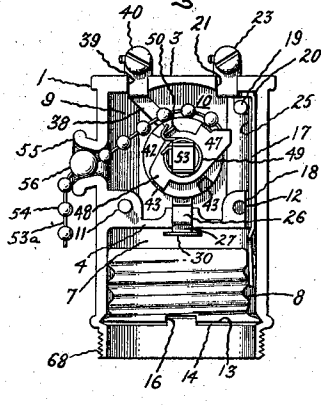


Fig. 4.

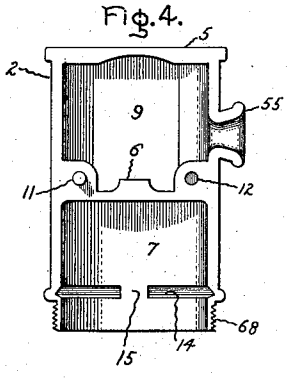


Fig. 5.

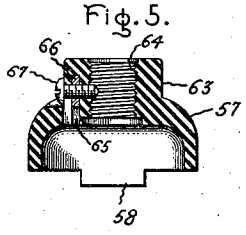


Fig. 6.

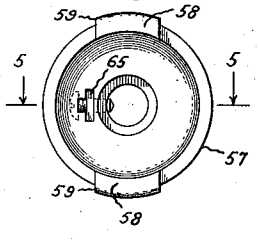


Fig. 7.

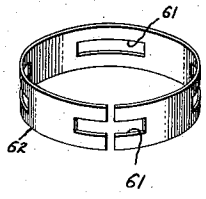
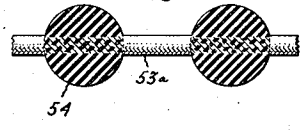


Fig. 8.



Inventor:
George B. Benander,
by Harry E. Dunham
His Attorney.

Patented Aug. 15, 1939

2,169,868

UNITED STATES PATENT OFFICE

2,169,868

ELECTRIC SOCKET

George B. Benander, Yalesville, Conn., assignor to Monowatt Electric Corporation, Bridgeport, Conn., a corporation of Connecticut

Application May 4, 1937, Serial No. 140,636

5 Claims. (Cl. 173—354)

The present invention relates to electric sockets.

The object of my invention is to provide an improved construction and arrangement in electric sockets and in particular to provide a socket construction in which all the exposed parts may be made of molded insulating material.

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

Referring to the drawing, Fig. 1 is an elevation of a pull chain socket embodying my invention; Fig. 2 is a sectional elevation of the socket; Fig. 3 is a plan view of one of the housing parts; Fig. 3a is a top plan view of the ratchet member for the pull switch; Fig. 4 is a plan view of the other housing part; Fig. 5 is a sectional elevation of the cap enclosing one end of the socket; Fig. 6 is a bottom plan view of the cap; Fig. 7 is a perspective view of the split ring which secures the cap to the socket housing; and Fig. 8 is a fragmentary sectional view of a portion of the flexible cord which operates the pull switch.

Referring to the drawing, the electric socket has a longitudinally split housing comprising semi-cylindrical mating housing parts 1 and 2 of suitably molded insulating material. The housing part 1 is provided with transverse walls 3 and 4 which abut transverse walls 5 and 6 on the housing part 2 and divide the housing into a chamber 7 for receiving a screw shell 8 and a chamber 9 for housing a pull switch 10. In the abutting surfaces of the walls 4 and 6 are fixed dowel pins 11 the projecting ends of which fit in holes 12 and secure the housing parts together. If the friction between the dowel pins and the holes is insufficient to hold the housing parts together, the outer surfaces of the dowel pins may be serrated or roughened to increase the friction.

The screw shell 8 at its mouth has an outwardly extending peripheral flange 13 which fits in grooves 14 in the housing parts. The grooves are provided with filled-in portions 15 which cooperate with notches 16 in the flange 13 to nonrotatably hold the screw shell in the housing. A strip conductor 17 is fixed at one end to the outside screw shell and extends through a groove 18 between the wall 4 and the side wall of the housing, along the side wall of the housing, between a boss 19 and the corner 20, along the inner face of the end wall 3, and through a groove 21 in the upper edge of the wall 3. The other end of the contact strip extends over a boss 22 and has a terminal screw 23 threaded therein. The inner end of the terminal screw extends within a clearance hole in the boss (not shown). The upper edge of the strip 17 is substantially flush with the surface of the housing part 1. The strip 17 is preferably preformed and attached to the screw shell after which the screw shell and strip are inserted as a unit in the housing part 1. A strip 25 of insulating material is arranged between the contact strip 17 and the inner surface of the groove 18 and the boss 19. This strip insulates the contact strip from the interior of the chamber 9 in which the pull switch is mounted.

In the center of the wall 4 is a contact strip having a U-shaped portion 26 which fits over the upper edge of the wall. The arm 27 of the U-shaped portion fits in a groove 28 in the front side of the wall. The bottom of the U-shaped portion fits in a depression in the upper edge of the wall so that its outer surface is substantially flush with the edge of the wall. The arm 29 of the U-shaped portion is flush with the rear side of the wall. When the housing parts are secured together the edge of the wall 6 holds the contact strip 26 securely in place. Extending from the end of the arm 27 is an angular portion terminating in a circular portion 30 which serves as the center terminal socket. The center terminal is spaced from the front side of the walls 4 and 6 and due to its inherent resilience can yield to provide a resilient contact with the center contact of a plug threaded in the shell. Integral with the arm 29 is a contact 31a which rests on an inclined surface 31 of a cam or ratchet member 32 molded integral with the housing part 1. As shown in Fig. 3a the ratchet comprises four equally spaced inclined surfaces 31, 33, 34 and 35, each of the surfaces being inclined circumferentially upward in a counterclockwise direction as viewed in Fig. 3a. Between the end of each of the inclined portions and the beginning of the succeeding inclined portion is a vertical shoulder 36. On the inclined portion 34, diametrically opposite the inclined portion 31, is a contact 37 at one end of a contact strip 38. From the contact 37 the contact strip extends angularly to the inner face of the wall 3, vertically upward along the inner face of the wall, through a groove 39 in the upper edge of the wall, and over the upper surface of a boss identical with the boss 22. A terminal screw 40 is threaded into the outer end of the contact strip.

Threaded into the center of the ratchet member 32 is a spindle 41 on which is rotatably carried a disk 42 of insulating material having equally spaced notches 43 in its periphery. Fixed

to the under side of the disk 42 is a bridging member 44 having diametrically opposed contacts 45 having an inclination corresponding to the inclination of the inclined surfaces of the ratchet member. When the bridging member is in the position shown in Fig. 2 the contacts 45 rest on the contacts 31a and 37 and complete a circuit between the line terminal 40 and the center contact 30. When the bridging member is moved 90° from this position, the contacts 45 rest on the inclined surfaces 33 and 35 thereby interrupting the circuit to the center contact. A disk 46 of insulating material carried by the bridging member closely adjacent the contacts 45 tends to restrict the arc between the contacts upon breaking the circuit. On the upper side of the disk 42 is an operating arm 47 having diametrically opposed ears 48 the edges of which are downwardly inclined and are adapted to engage the edges of the slots 43 as the arm is turned in a counterclockwise direction as viewed in Fig. 3. When the arm is turned in a clockwise direction the ears slide over the slots 43 without turning the disk 42. The operating arm 47 is urged in a clockwise direction, as viewed in Fig. 3, and is pressed against the upper surface of the disk 42 by a coil spring 49 one end of which is hooked over a projection 50 on the operating arm and the other end of which is hooked over a projection 51 on a member 52 which is non-rotatably held against the head 53 of the spindle 41. The coil spring 49 exerts a force which presses the contacts 45 of the bridging member downward against the inclined surfaces of the ratchet member.

Connected to the operating member 47 is a flexible cord 53a having beads 54 of insulating material molded thereon. During the molding operation the material of the beads thoroughly impregnates the cord providing a cord which is well insulated under all conditions. For example, the insulating properties of the cord are not destroyed by such a severe test as soaking the cord in water. This is due to the fact that the material of the beads thoroughly impregnates the cord.

From the operating member 47 the cord extends through a flared mouth 55 formed by mating parts molded integral with the housing parts 1 and 2. A large bead 56 limits the inward motion of the cord. Upon pulling the cord the operating arm 47 is moved through an angle slightly greater than 90°. During this movement the ears 48 on the operating arm engage the edges of notches 43 and turn the disk 42 and the bridging member fixed thereto. Upon release of the cord the operating member 47 is returned by the spring 49 to the position shown in Fig. 3, the ears 48 riding over the notches 43 without turning the disk 42. It is, therefore, apparent that by pulling and releasing the cord, the bridging member is turned in 90° steps successively making and breaking the circuit to the center contact.

In the assembly of the socket the screw shell, the switch, and the contacts are assembled in the housing part 1. The housing part 2 is then aligned with the housing part 1, the dowel pins 11 fitting in the openings 12, and the housing parts are pressed together. When the housing parts are assembled the screw shell is securely held therebetween, the center contact is clamped between the walls 4 and 6, and the contacts 17 and 38 are clamped between the walls 3 and 5. The outer ends of the contacts 17 and 38 are rigidly held against the bosses 22. The socket is very easy to wire since the line terminal screws 23 and 40 are accessible from the outside of the housing. The line terminals are the only exposed conducting parts of the socket.

For enclosing the line terminals a cap 57 of molded insulating material is provided . The surface of the cap which abuts the lower end of the housing is provided with diametrically opposed projections 58 which fit into complementary recesses (Fig. 2) in the housing and locate the angular position of the cap with reference to the housing. On the outer surface of the projections 58 are projections 59 which project beyond the outer surfaces of the housing. Integral with the housing parts 1 and 2 and intermediate the projections 59 are similar projections 60. The projections 59 and 60 cooperate with openings 61 in a split ring 62. When the ring is snapped in place the projections 59 and 60 fit in the opening 61, thereby securing the cap to the housing. Since the openings and projections are circumferentially spaced, the cap is nonrotatably held on the housing.

At the center of the cap is a boss 63 having internally threaded opening 64 molded therein by means of which the cap may be threaded on a suitable support, such as a conduit through which the line conductors extend. In the inner face of the cap is molded an open ended slot or recess 65 of the same width as a nut 66. When the nut 66 is dropped in the slot it is non-rotatably held therein. A screw 67 threaded from the outside of the boss 63 through the nut provides a set screw for fixing the cap to the support on which it is threaded. This provides a convenient arrangement for mounting a set screw in a cap of molded insulating material without resorting to the use of molded inserts.

On the upper end of the housing parts 1 and 2 adjacent the mouth of the screw shell are molded cooperating threads 68 on which a fixture may be threaded.

In the use of the socket, the cap 57 is disconnected from the socket housing and is threaded on the end of a conduit and locked in place by means of the set screw 67. The line conductors which project through the end of the conduit are then connected to the terminals 23 and 40. It will be noted that these terminals are easily accessible and that they constitute the only exposed conducting parts of the socket housing. The socket housing is now fitted on the cap and secured thereto by means of the split ring 62.

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

1. In an electric socket, a housing, a cap at one end of the housing, circumferentially spaced projections on said cap and said housing respectively, and a split ring having circumferentially spaced openings into which said projections fit for securing the cap to the housing.

2. In an electric socket, a housing, a cap at one end of the housing, a split ring encircling said cap and said housing, and circumferentially spaced interfitting portions respectively in said ring and said cap and in said ring and said housing whereby the ring holds the cap on the housing.

3. In an electric socket, a longitudinally split housing having mating parts of insulating material, socket terminals in the housing comprising a screw shell and a center contact, abutting walls integral with said housing parts providing a chamber for the socket terminals, abutting end

walls on said housing parts closing the end of the housing, bosses on the outside of said end walls, line terminals for connection with line conductors on said bosses and contact strips for connecting the line and socket terminals extending from the line terminals between the abutting walls of said housing parts, a cap of insulating material on the end of said housing enclosing the line terminals, and means including a split ring embracing said housing parts for non-rotatably and removably securing said cap to said housing.

4. In an electric socket, a longitudinally split housing having mating parts of insulating material, socket terminals comprising screw shell and a center contact in said housing, abutting walls integral with said housing parts providing a chamber for the socket terminals and a chamber for the switch and a closure for the end of the housing, line terminals for connection with line conductors on the outside of said housing at the closed end, a switch in said chamber, connections between the line terminals and the socket terminals one of which is connected through said switch, a cap of insulating material on the end of said housing enclosing the line terminals, and means including a split ring embracing said housing parts for non-rotatably and removably securing said cap to said housing.

5. In an electric socket, a housing, a cap at one end of the housing, a projection on the cap, a projection on the housing, and a ring encircling the cap and housing and having openings into which the projections respectively fit for securing the cap to the housing, said openings and projections being circumferentially spaced whereby the cap is nonrotatably held on the housing.

GEORGE B. BENANDER.