Nov. 8, 1960 N. H. WEBER ET AL 2,959,761

BAYONET TYPE SOCKET FOR ELECTRIC LAMP

Filed Oct. 2, 1958 2 Sheets-Sheet 1

Fig 1

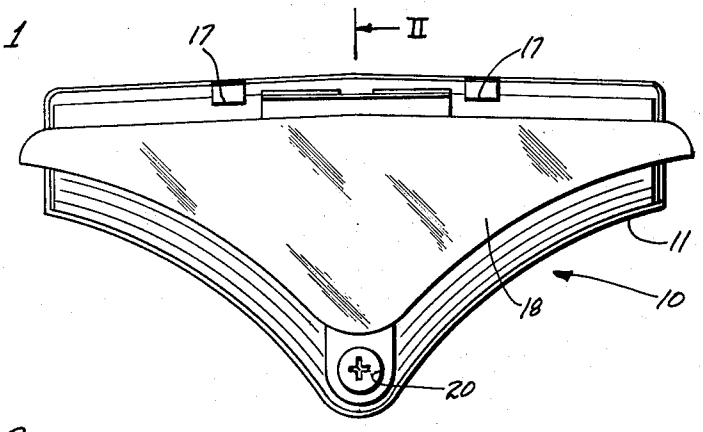


Fig 2

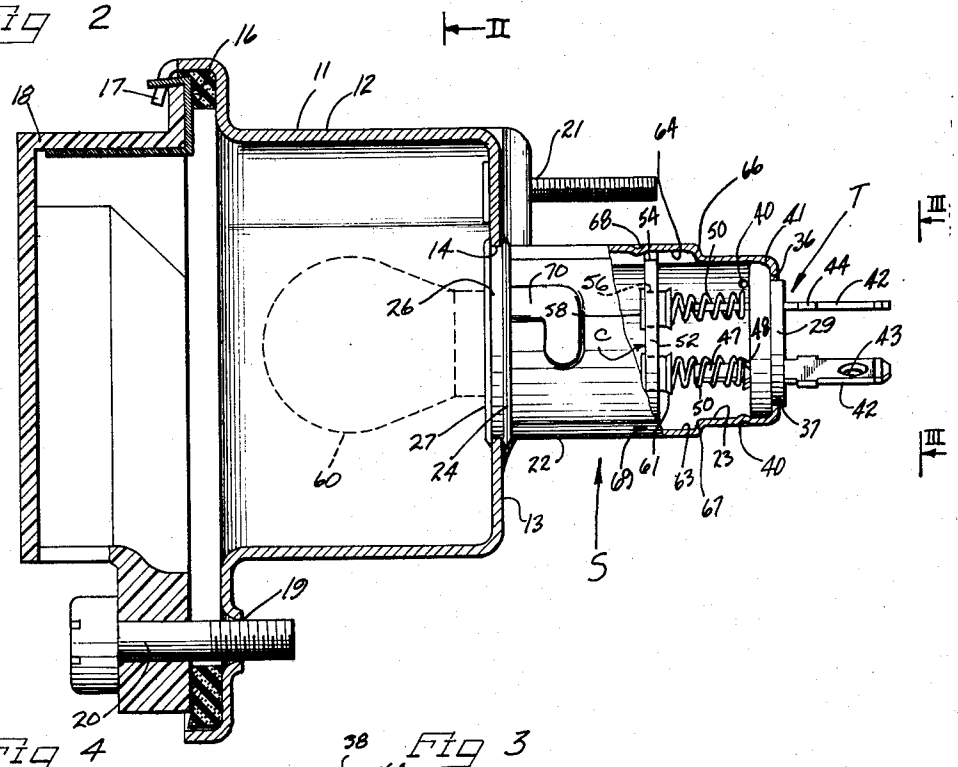


Fig 4

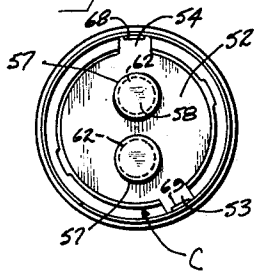
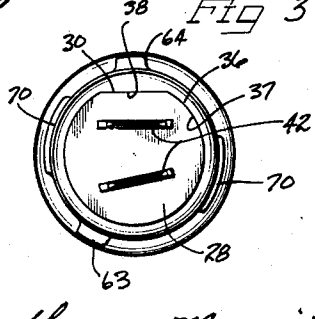


Fig 3



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Fig 6

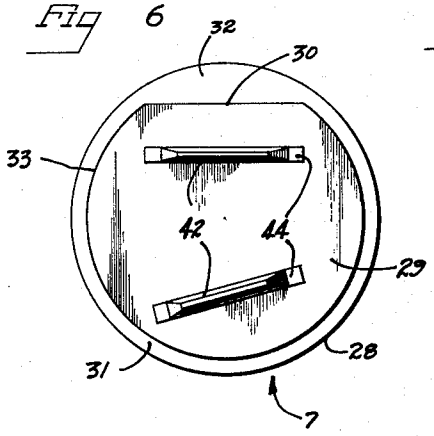


Fig 7

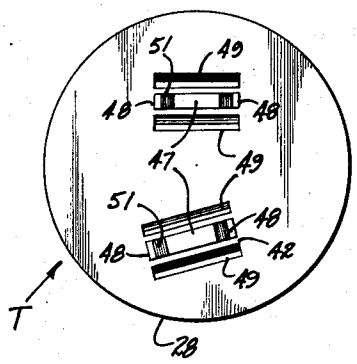


Fig 5

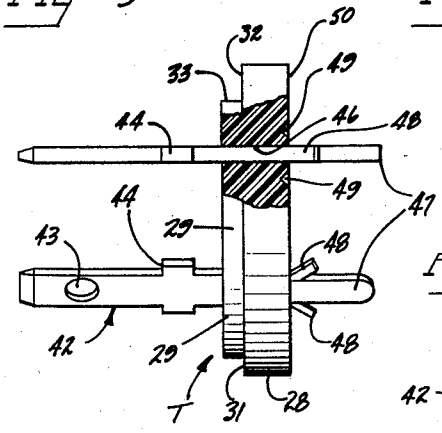


Fig 9

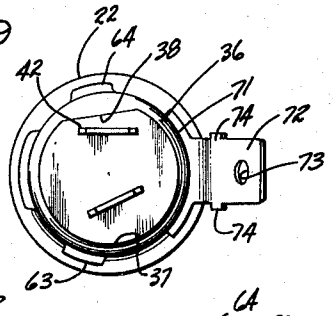


Fig 8

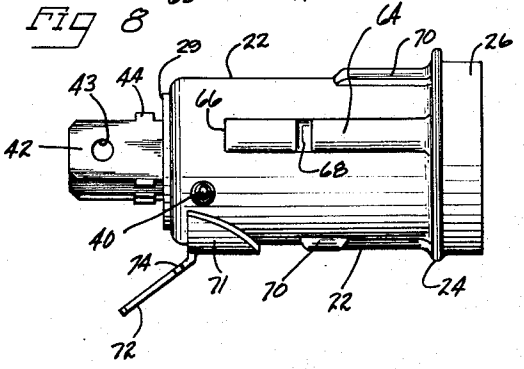
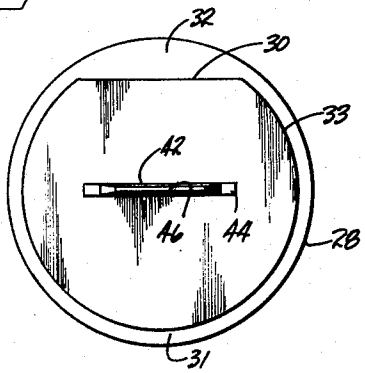


Fig 10



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2,959,761

BAYONET TYPE SOCKET FOR ELECTRIC LAMP

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Filed Oct. 2, 1958, Ser. No. 764,895

10 Claims. (Cl. 339—188)

This invention relates generally to improvements in a socket construction and more particularly relates to a park and turn signal lamp with the socket assembled in the housing as embodied in contemporary motor vehicles.

Park and turn signal lamps constitute widely used automobile accessories which must be efficient in operation, but which must be convenient to assemble, economic in cost and reliable in severe environmental operating conditions.

The present invention contemplates the provision of a metallic socket body in which guide grooves for a movable spring-biased contact and insulator assembly are formed as embossments, the bayonet slots for the light bulb used in assembly also being formed as embossments in the wall of the socket body.

The present invention also contemplates the provision of a rigid insulator or base member in which is carried one or more spade terminals and which is conveniently assembled with the socket body by staking so that sealed relationship is established between the base member and the socket body, thereby rendering the terminal end of the socket splash-proof and resistant to leakage.

The socket body construction of the present invention is further characterized by oblong staking which prevents the movable contact and insulator assembly from popping out when it is pivoted without a lamp bulb assembled in the unit.

Many other features, advantages and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description which follows and the accompanying sheets of drawings in which preferred structural embodiments incorporating the principles of the present invention are shown by way of illustrative example.

On the drawings:

Figure 1 is an end elevational view of a park and turn signal lamp construction embodying a lamp and socket of the present invention;

Figure 2 is a cross-sectional view taken generally on line II—II of Figure 1;

Figure 3 is an end elevational view of the socket embodied in the structure of Figures 1 and 2 taken in the direction of line III—III of Figure 2;

Figure 4 is a view looking into the opposite end of the socket unit;

Figure 5 is an elevational view of a terminal and base assembly as provided in accordance with the principles of the present invention with parts broken away and shown in cross-section to illustrate additional details of construction;

Figure 6 is a left-hand end view of the terminal and base assembly shown in Figure 5;

Figure 7 is a right-hand elevational view of the terminal and base assembly shown in Figure 5;

Figure 8 is a side elevational view of a socket unit before assembly with a park and turn lamp housing and illustrates a socket unit of the double pole grounded type;

Figure 9 is an end elevational view of the socket construction of Figure 8; and

Figure 10 is a view similar to Figure 6 but showing a base assembly with a single spade terminal.

As shown on the drawings:

A park and turn signal lamp is indicated generally by the reference numeral **10** and comprises a housing **11** shaped to provide side walls **12** and a rear wall **13** having a centrally disposed aperture **14**.

Opposite the rear wall **13** there is provided a flanged open side in which is received a circumferentially extending gasket **16**. Along one edge of the flanged opening there is provided a plurality of lugs **17** which are offset inwardly to overlie the edges of a plastic lens member **18**.

At the opposite edge of the flanged opening of the housing **11**, there is provided an embossed threaded aperture as at **19**. A fastening screw **20** passes through the lens member **18** and retains the lens member **18** in firm assembly with the housing **11**. The rear wall **13** of the housing **11** is provided with one or more threaded studs **21** to facilitate assembly of the apparatus to the body of a motor vehicle.

In accordance with the principles of the present invention, the park and turn signal lamp is particularly characterized by the provision of a socket construction shown generally at S and which is integrated with the housing **11** at the centrally disposed aperture **14** formed in the rear wall **13**.

As shown in the drawings particularly in Figure 2 and in Figure 8, the socket construction S includes a socket body **22** preferably made of metal and of a generally cylindrical configuration, thereby to provide an open-ended bore indicated at **23**.

At one end of the socket body, the bore **23** is closed by a terminal and base assembly indicated at T. At the other end of the socket body, the walls of the socket body **22** are axially crimped to form a radially outwardly extending flange **24**. The flange **24** is adjacent the other end of the socket body **22** but is spaced sufficiently inwardly of the end so that the edges of the aperture **14** in the rear wall **13** of the housing **11** are seated against one side of the flange **24** whereupon the extreme end portion of the socket body **22**, as shown at **26** (Figure 8), may be peened over or otherwise offset radially outwardly to form a flange **27** overlying the edges of the aperture **14** in the rear wall **13** to clamp the housing **11** between the flanges **24**, **27**, and thereby placing the socket body **22** in firm assembly with the housing **11**.

In park and turn signal lamps, the terminal end of the sockets must be splash-proof since they are exposed to water thrown off of the car wheels. In accordance with the principles of the present invention, therefore, the terminal and base assembly T is characterized by the ease and facility with which it is sealingly assembled into the socket body **22**. Referring first of all to Figure 5 in conjunction with Figures 6 and 7, the details of construction of the terminal and base assembly T will be observed.

First of all, there is provided a base member **28** which is made of a rigid, electrically non-conductive, synthetic material such as nylon. The base member **28** preferably comprises a generally circular disk having an outer diameter corresponding to the inner diameter of the bore **23** so that the base member **28** may be conformably received in the bore **23**.

The base member **28** is particularly characterized by the provision of an axially projecting portion of reduced size shown at **29**. The axially projecting portion **29** is also generally circular in configuration, but at one side thereof a flat wall **30** is provided which bears a chordal

relation to the remaining outer peripheral portion thereof. Between the reduced portion 29 and the main body of the base member 28, there is thus provided an annular radially extending shoulder 31 having an enlarged portion 32 and there is also an axially extending shoulder 33.

Referring specifically to Figure 3 and Figure 9, it will be noted that the terminal end of the socket body 22 is provided with a radially inwardly extending flange 36 offset from the main body portion of the socket body 22 at the end of the bore 23. The edges of the flange 36 prescribe the confines of an opening 37 which is complementary in shape to the configuration of the axially projecting portion 29. Thus, it will be noted that the inner edges of the flange 36 form a generally circular opening 37 having a flat wall 38.

As is clearly shown in Figure 2, the axially projecting portion 29 of the base member 28 acts as a pilot portion in passing through the opening 37, whereupon the flange 36 is seated against the shoulder 32 and around the shoulder 33, the flat wall 38 of the flange 36 engaging against the adjoining flat wall 30 of the axially projecting portion 29 on the base member 28.

In assembling the two components together, the socket body 22 is staked as at a plurality of circumferentially spaced embossed stake portions 40, which stake portions 40 are spaced axially inwardly of the flange 36 and arranged so that the material of the base member 28 is actually forced into the corners as at 41, thereby effecting a tight sealed relation which prevents leakage of liquid fluid between the socket body 22 and the terminal and base assembly T.

The terminal and base assembly T carries one or more so-called spade terminals. In the embodiment of Figures 1–9, two such spade terminals are shown, but in the embodiment of Figure 10, a single spade terminal is provided. The characteristics of each specific spade terminal are identical and, accordingly, like reference numerals are employed in describing the details of construction.

Each spade terminal is indicated generally at 42 and comprises a blade member of elongate configuration apertured at one end as at 43 to facilitate attachment thereto of a conductor wire. Intermediate its ends, the blade member 42 is provided with winged extensions 44 which provide abutments operable as a stop.

Each spade terminal 42 extends through an aperture 46 formed in the body portion of the base member 28. Thus, the aperture 43 is provided in a portion which is external of the socket body 22 and the external portion is thus adapted to be connected to a conductor wire, while the opposite end of the spade terminal 42 extends through the base member 28 into the bore 23. As shown particularly in Figures 5 and 7, the inner portion of the spade terminal is particularly characterized by a reduced tongue portion 47 and spaced on opposite sides of the tongue portion 47 are a pair of fingers indicated at 48, 48.

In assembling each spade terminal 42 into the base member 28, an upsetting cut 49 is made in the flat surface 50 of the base member 28 adjacent and parallel to the spade terminal 42 at the same time as the fingers 48 are slightly staked as shown in Fig. 5, thereby forcing the nylon material of the base member 28 against the flat side of the spade terminals 42 and effectively establishing a sealed relation between the rigid disk 28 and the spade terminals 42.

Referring now to Figure 2, it will be noted that the tongue 47 of each spade terminal 42 is received inside of the coils of a coil spring 50, the ends of the coil spring 50 bottoming in a recess 51 provided between each tongue 47 and the adjoining fingers 48. The coil springs 50 are made of electrically conductive material and having one end retained and bottomed on the internal portion of the spade terminal 42, the opposite end of each spring 50 extends into the bore 23.

A movable contact and insulater assembly is confined for sliding movement within the bore 23 and is indicated generally by the reference character C.

As shown in Figures 2 and 4, the contact and insulator assembly C includes an insulator member 52 which is generally circular in configuration, being sized to afford ready clearance with the internal walls of the bore 23 and particularly characterized by a pair of circumferentially spaced radially outwardly extending lugs 53 and 54, respectively. The lugs 53 and 54 are generally rectangular in shape. The insulator disk 52 is particularly characterized by one or more apertures 56, Fig. 2, corresponding in number to the spade terminals 42, each aperture 56 being located to be in general alignment with a corresponding spade terminal 42.

A generally cup-shaped contact member is located in each aperture 56 and since the structural characteristics of each is identical, like reference numerals will be used to identify the structural features. The cup-shaped contact members are indicated at 57 and are preferably made out of electrically conductive material such as brass. After location in a corresponding aperture 56, the contact members 57 are offset to provide a flat contact surface 58 on one side of the insulator disk 52 adapted to engage an adjoining terminal of a light bulb 60. On the opposite side of the insulator disk 52, each cup-shaped contact member 57 is particularly characterized by a flange portion 61 forming the edges of a socket opening 62 receiving and seating the opposite end of a corresponding coil spring 50 so that the end of the coil spring engages against the wall of the contact member 57 forming the flat contact surface 58.

The socket body 22 is particularly characterized by having formed in the walls thereof, a pair of embossed axially extending guide grooves 63 and 64 receiving and confining the lugs 53 and 54 on the insulating disk 52 for axial movement.

Each of the grooves 63 and 64 extends inwardly from the bulb end of the socket body 22 but terminate short of the terminal end to each form a first shoulder indicated at 66 and 67, respectively. The shoulders 66 and 67 lie in axial register with the lugs 53 and 54, thereby limiting inward movement of the insulator disk 52 in one direction.

The socket body 22 is also particularly characterized by the formation in the walls thereof at each of the grooves 63 and 64 of a transversely extending generally rectangular embossment 68 and 69, respectively. Each of the embossments 68 and 69 forms a second shoulder spaced axially or longitudinally of the first shoulder 66 or 67, and such shoulders also lying in register with the lugs 53 and 54 to limit outward movement of the insulator disk 52.

The embossments 68 and 69 are formed by oblong staking and the rectangular configuration is particularly effective in preventing the insulator disk 52 from popping out when it is pivoted without a lamp bulb such as the lamp bulb 60 assembled in the socket body 22. Accordingly, the stability of the unit is improved without increasing the depth of the indentations or embossments. At the same time, the contact and insulator assembly C is movable within the limits prescribed by the spaced apart shoulders 68, 66 and 67, 69 so that different lamp bulbs can quickly and conveniently be assembled into the socket body 22 of the present invention.

The socket body 22 has also formed in the walls thereof bayonet slots indicated generally at 70 formed as embossments and so configured as to provide an effective bayonet connection for a conventional bayonet-type light bulb such as is indicated in dotted lines at 60.

Although firmly integrated with the park and turn signal lamp 10, the electrical components of the socket construction S are readily connected in circuit with the usual electrical circuitry of an automotive vehicle.

If desired to incorporate the socket of the present invention into a grounded circuit, the arrangement of Fig-

ures 8 and 9 is provided wherein a grounding terminal having a body portion **71** is firmly connected to the outer periphery of the socket body **22**, the body **71** having an outwardly extending terminal blade **72** formed with a wire aperture **73** adjacent one end thereof. The terminal blade **72** is also characterized by the provision of outwardly extending shoulders **74** along an intermediate portion thereof.

Although various minor modifications might be suggested by those versed in the art, it should be understood that we wish to embody within the scope of the patent warranted hereon all such modifications as reasonably and properly come within the scope of our contribution to the art.

We claim as our invention:

1. In a socket assembly, a socket body comprising a generally cylindrical member having an open-ended bore and characterized by having formed at one end thereof a radially inwardly extending flange forming the edges of a generally circular opening for said bore but having one flat chordal side, a base member made of a rigid electrically non-conductive material comprising a generally circular disk conformably received in said bore and having an axially projecting portion of reduced size conforming in shape to and received in said opening in said socket body, said socket body having a plurality of circumferentially spaced embossed stakes formed therein spaced from said flange and tightly clamping said base member in sealed assembly with said socket body, a spade terminal extending axially through said base member and having an external portion adapted to be connected to a conductor wire, and an internal portion extending inwardly into said bore, an electrically conductive coil spring having one end retained by and bottomed on said internal portion of said spade terminal and having its opposite end extending freely into said bore, a contact and insulator assembly bottomed against said opposite free end of said coil spring and comprising an insulator disk having an aperture extending therethrough and further including a pair of circumferentially spaced peripheral lugs, a cup-shaped contact member in said aperture and being offset to provide a flat contact surface on one side of said insulator disk adapted to engage an adjoining terminal, and a socket opening out of the other side of said disk receiving and seating said opposite end of said coil spring, said socket body having formed in the walls thereof a pair of embossed axially extending guide grooves receiving and confining said lugs on said insulator disk for axial movement thereof, said grooves extending inwardly from the other end of said socket body but terminating short of said one end of said socket body to each form a first shoulder engaging said lugs and limiting inward movement of said insulator disk in one direction, said socket body having formed in the walls thereof at each of said grooves a transversely extending generally rectangular embossment forming a second shoulder extending across said groove and spaced from said first shoulders and engaging said lugs to limit outward movement of said insulator disk, said socket member having an integral circumferentially continuous crimped radially outwardly extending flange adjacent said other end of said socket body, and an offset flange at said other end of said socket body for clamping the edges of an apertured fixture against said crimped flange.

2. In a socket assembly as defined in claim 1, a grounding terminal mounted in firm assembly to said socket body and having a terminal blade adapted to be connected to ground.

3. In a socket assembly as defined in claim 1, said socket body having embossed bayonet slots formed in the walls thereof opening out of said other end of said socket body for receiving and retaining a light bulb therein in electrically conductive engagement with said contact and insulator assembly.

4. In a socket assembly, a socket body comprising a generally cylindrical member having an open-ended bore and characterized by having formed at one end thereof a radially inwardly extending flange forming the edges of a generally circular opening but having one flat chordal side, a base member made of a rigid electrically non-conductive material comprising a generally circular disk conformably received in said bore and having an axially projecting portion of reduced size conforming in shape and received in said opening, said socket body having a plurality of circumferentially spaced embossed stakes formed therein spaced from said flange and tightly clamping said base member in sealed assembly with said socket body, a spade terminal extending axially through said base member having an external portion adapted to be connected to a conductor wire and an internal portion extending inwardly into said bore, an electrically conductive coil spring having one end retained by and bottomed on said internal portion and having its opposite end extending into said bore, a contact and insulator assembly bottomed against said opposite end of said spring and comprising an insulator disk having an aperture extending therethrough and having a pair of circumferentially spaced peripheral lugs formed thereon, a cup-shaped contact member in said aperture and being offset to provide a flat contact surface on one side of said insulator disk adapted to engage an adjoining terminal, and a socket opening out of the other side of said disk receiving and seating said opposite end of said spring, said socket body having formed in the walls thereof a pair of embossed axially extending guide grooves receiving and confining said lugs and said insulator disk for axial movement, said grooves extending inwardly from the other end of said socket body but terminating short of said one end to each form a first shoulder engaging said lugs and limiting inward movement of said insulator disk in one direction, said socket body having formed in the walls thereof at each of said grooves a transversely extending generally rectangular embossment forming a second shoulder extending across said groove and spaced from said first shoulders to engage said lugs and limit outward movement of said insulator disk.

5. In a socket assembly, a socket body comprising a generally cylindrical member, a radially inwardly extending flange at one end of said cylindrical member shaped to form a generally circular opening having one flat chordal side at one end of said bore, a base member made of electrically non-conductive material conformably shaped to and received in said opening in sealed assembly with said socket body, a spade terminal extending through said base member having an external portion adapted to be connected to a conductor wire and an internal portion extending inwardly ito said bore, a coil spring having its coils at one end retained by and engaged against said internal portion, and a contact and insulator assembly bottomed against the opposite end of said spring and comprising an insulator disk having an aperture extending therethrough, a cup-shaped contact member in said aperture and being offset to provide a flat contact surface on one side of said insulator disk adapted to engage an adjoining terminal and a socket opening out of the other side of said disk receiving and seating the coils at the other end of said coil spring, said socket body having formed in the walls thereof a pair of embossed axially extending guide grooves and means on said disk received and confined in said guide grooves to guide and support said disk for limite reciprocable movement.

6. In a socket assembly, a socket body comprising a generally cylindrical member having an open ended bore, a radially inwardly extending flange at one end of said bore shaped to form the edges of a generally circular opening having one flat chordal side, a base member made of a rigid electrically non-conductive synthetic material comprising a generally circular disk conformably received in said bore and having an axially projecting portion of reduced size conforming in shape to and received

in said opening, said socket body having a plurality of circumferentially spaced embossed stakes formed therein spaced from said flange and tightly clamping said base member in sealed assembly with said socket body, a terminal comprising a strip form member extending axially through said base member and having an external portion adapted to be connected to a conductor wire and an internal portion extending inwardly into said bore, an electrically conductive coil spring having its coils at one end engaged against and retained by said internal portion, and a contact and insulator assembly bottomed against said opposite end of said spring.

7. In a socket assembly as defined in claim 6, said internal portion of said terminal including an axially projecting tongue of reduced size and having spaced on opposite transverse sides thereof staking fingers spread to tightly stake said terminal in said base member.

8. In a socket assembly as defined in claim 6, said base member having a sealing portion immediately adjacent the strip form terminal member and closely engaged therewith to assist in preventing leakage through the base member.

9. In a socket assembly, a socket body comprising a cylindrical member having an open-ended bore, a terminal base closing one end of said socket body and carrying electrical terminal means, an electrically conductive coil spring having one end bottomed against said terminal base at said terminal means and extending into said bore, and a contact and insulator assembly bottomed against the opposite end of said spring and comprising an insulator disk having an aperture extending therethrough, a cup-shaped contact member in said disc and extending through said aperture and being offset to provide a flat contact surface on one side of said insulator disk adapted to engage an adjoining terminal, and a socket opening out of the other side of said disk receiving and seating said opposite end of said spring, said socket body having formed in the walls thereof a pair of embossed axially extending guide grooves, said grooves extending inwardly from the other end of said socket body but terminating short of said one end to each form a first shoulder, said insulator disk having peripheral lug means received in said guide grooves and engageable with said shoulders to limit inward movement of said insulator disk in one direction, said socket body having formed in the walls thereof at each of said grooves a transversely extending generally rectangular embossment forming a second shoulder extending across said grooves and spaced from said first shoulders to engage said lug means and limit outward movement of said insulator from said socket body.

10. In a socket assembly, a socket body comprising a cylindrical member having an open-ended bore, a radially inwardly extending flange at one end of said socket body shaped to form a generally circular opening with one flat chordal side, a base member made of nylon comprising a generally circular disk conformably shaped to and received in said bore and having an axially projecting portion of reduced size conforming in shape to and received in said opening, said socket body having a plurality of circumferentially spaced embossed stakes formed therein spaced from said flange and tightly clamping said base member in sealed assembly with said socket body, a strip form terminal extending axially through said base member and having an external portion adapted to be connected to a conductor wire and an internal portion extending inwardly into said bore, an electrically conductive coil spring having one end retained by and bottomed on said internal portion and having its opposite end extending into said bore, and a contact and insulator assembly bottomed against said opposite end of said spring, and comprising, an insulator disk having an aperture extending therethrough, a cup-shaped contact member in said aperture and being offset to provide a flat contact surface on one side of said insulator disk adapted to engage an adjoining terminal, and a socket opening out of the other side of said disk receiving and seating the coils at said opposite end of said spring.

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