Feb. 25, 1958 R. C. WOOFTER 2,825,038

LAMP SOCKET WITH PRINTED CIRCUIT MOUNTING

Filed Nov. 7, 1956 2 Sheets-Sheet 1

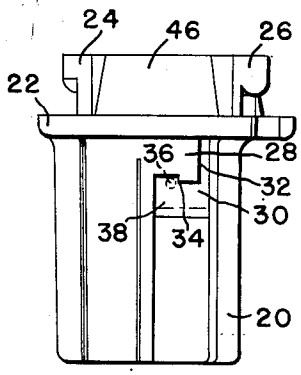


Fig. 1

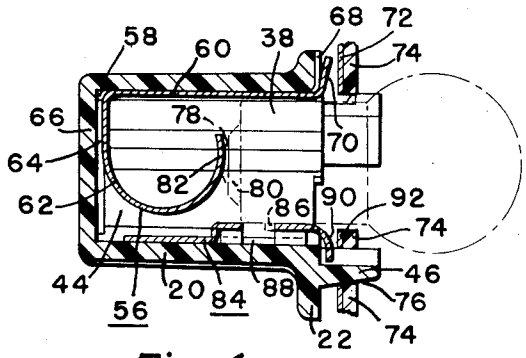


Fig. 4

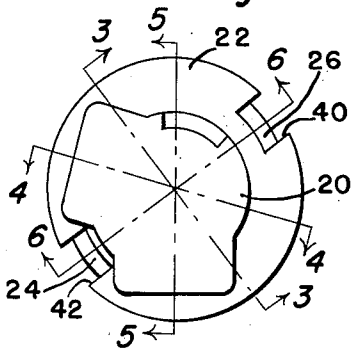


Fig. 2

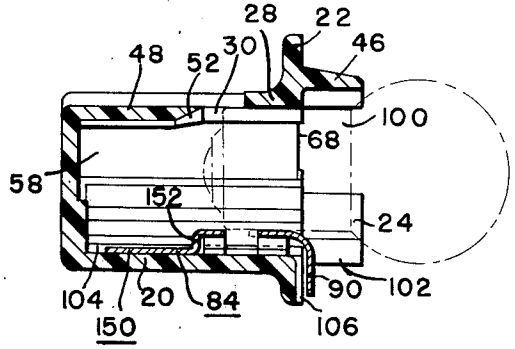


Fig. 5

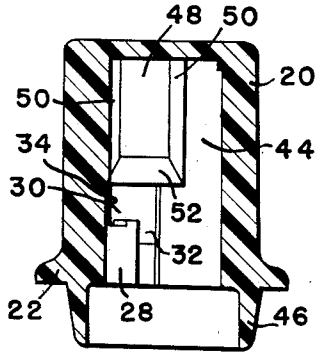


Fig. 3

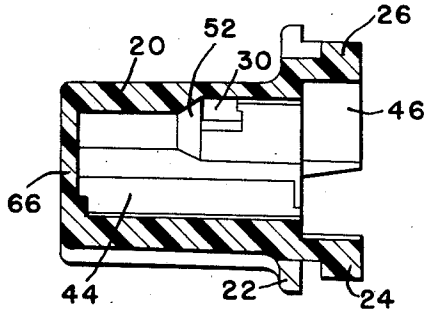


Fig. 6

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LAMP SOCKET WITH PRINTED CIRCUIT MOUNTING

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2 Sheets-Sheet 2

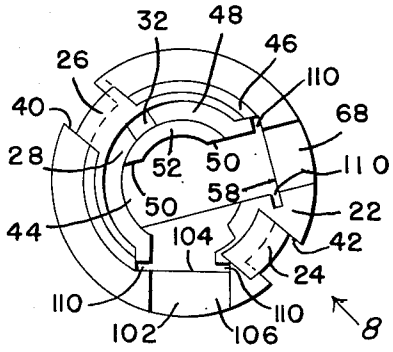


Fig. 7

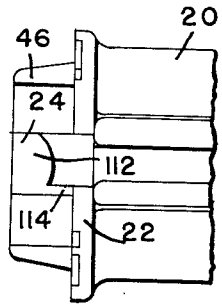


Fig. 8

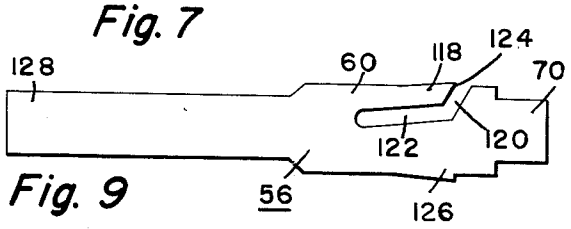


Fig. 9

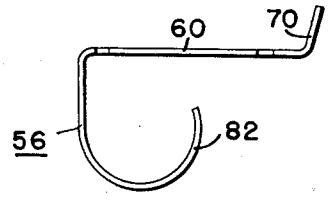


Fig. 10

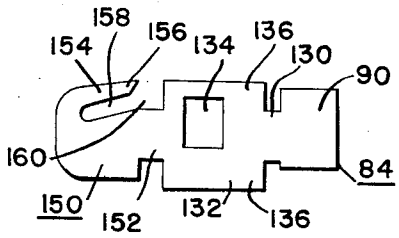


Fig. 12

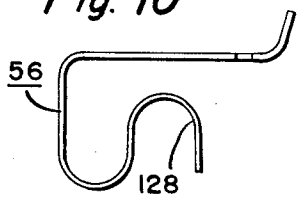


Fig. 11

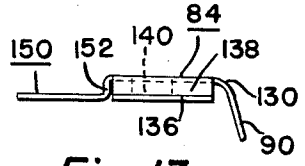


Fig. 13

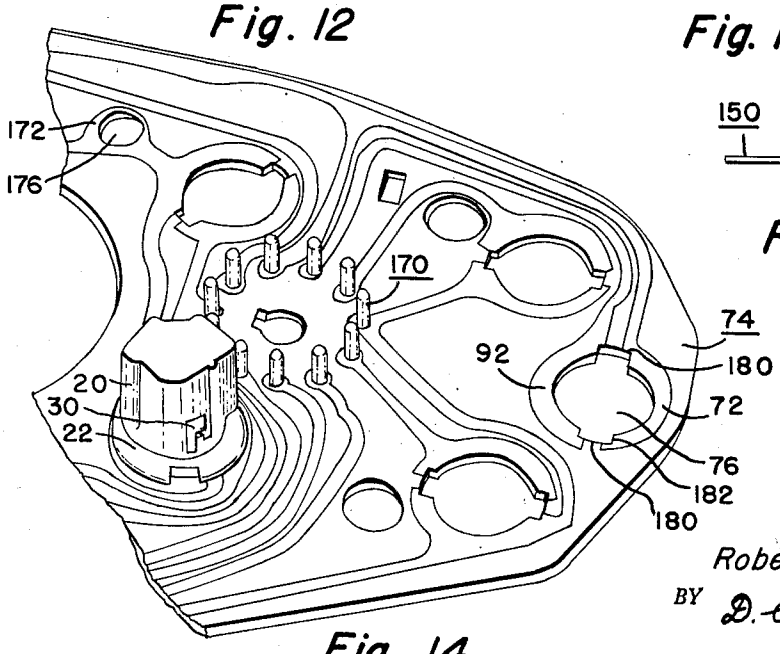


Fig. 14

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LAMP SOCKET WITH PRINTED CIRCUIT MOUNTING

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Application November 7, 1956, Serial No. 620,890

13 Claims. (Cl. 339—17)

This invention relates to a lamp socket adapted for use with printed circuits, and particularly to a lamp socket to be inserted in an opening in a panel containing a printed circuit, the panel being used for the instrument cluster on a motor vehicle, for example, serving to support light bulbs that illuminate various instruments, such as ammeters, pressure gauges of various sorts and other indicating devices.

A purpose of the present invention is to provide a new wireless lamp socket adapted for mounting with an apertured panel having a printed circuit on one side electrically engaged by terminal strips or resilient fingers secured in insulated positions with the socket to connect an electric light bulb.

Another object is to provide a wireless lamp socket housing of insulating material formed with one bayonet slot in a sidewall portion thereof and with a second bayonet slot formed by a terminal strip engageable in an insulated position with the housing so that a lamp bulb with bayonet projections is electrically connectable through a pair of terminal strips to an insulating board having a printed circuit thereon through rotative bayonet-type engagement of locking projection arms of the housing with slots of the insulating board.

Another object is to provide a lamp socket housing with bayonet-type locking lugs formed integral therewith and rotatably engageable with slots formed peripherally about a hole in an insulating board having an electrically conductive printed circuit type material on one side so that a wireless connection is effected between the printed circuit material and a lamp bulb through a pair of terminal strips engageable through bayonet fastenings both to the bulb and printed circuit material.

A further object is to provide a wireless lamp socket having a pair of conductive terminal strips, each slidably engageable in longitudinally extending slots of the socket with locking engagement between the terminal strips and slots provided by resilient prongs or spear projections on the terminal strips as the strips are inserted from one end of the socket leaving bent-over terminal portions free at the insertion end of the socket and completely insulating these terminal portions between a printed circuit board and a radial shoulder of the socket near the insertion end.

Another object is to provide a wireless lamp socket for use with printed circuits to be inserted in an opening in a panel usable for an instrument cluster on a motor vehicle to eliminate excessive wiring connections behind a dashboard and to simplify lamp socket insertions in locations difficult to reach while providing bayonet-type locking lugs with the socket of the insulating material formed to provide a radial shoulder having cutout portions with a longitudinally extending wall portion or stop connected between the shoulder and a lug or abutment member with a curvilinear longitudinal cross section toward the cutout to provide resilient engagement with the printed circuit by pushing the lamp socket into place and turning it a few degrees rotatably until the stop engages a peripheral edge of the opening in the panel.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Figure 1 is a side or elevational view of a socket constructed in accordance with the present invention.

Figure 2 is a bottom view of the socket in Figure 1.

Figure 3 is a cross-sectional elevational view taken on the line 3—3 of Figure 2.

Figure 4 is a cross-sectional elevational view of the lamp socket on the line 4—4 of Figure 2, together with a phantom representation of an electric light bulb and base, together with a pair of terminal strips connectable to an insulating board with a printed circuit thereon as indicated.

Figure 5 is a cross-sectional elevational view taken on the line 5—5 of Figure 2.

Figure 6 is a cross-sectional elevational view of the socket taken on the line 6—6 of Figure 2.

Figure 7 is an end or top view of the lamp socket of Figure 1.

Figure 8 is a side projected view showing a locking lug or projection viewing the socket from one side of Figure 7.

Figure 9 is a developed or blank view showing detail of one terminal used in the lamp socket.

Figure 10 is a side elevational view of a terminal or contact shaped from the structure of Figure 9 for use in the lamp socket.

Figure 11 is a modified version of the terminal which can be shaped from the structure of Figure 9 differing from that in Figure 10 in an S-shaped contact portion.

Figure 12 is a developed or blank view of a second terminal structure used with the socket.

Figure 13 is a side elevational view of the terminal or grounding contact formed with the structure of Figure 12.

Figure 14 is a plan view of a lamp socket in assembled relationship with an insulating board having a printed circuit on one side showing the combination of elements in the present invention.

The objects are accomplished according to the present invention by the provision of a lamp socket formed of nylon, Teflon, Bakelite or some other suitable hard plastic, which is, itself, supported directly with an insulating board having a printed circuit material on one side thereof. The socket, as shown in Figure 1, includes a body portion 20 from which a flange or radial shoulder 22 integral therewith projects radially outwardly to be engageable with an insulating board or panel, as will be described later. Also integral with the body portion 20 and extending axially from the body portion on the opposite side of the flange 22 are a pair of locking projection arms or lugs 24 and 26. These lugs are formed to cooperate with slots in a bayonet type fastening with the printed circuit panel, as will be described. Figure 1 also shows in a wall 28 of the body portion 20 a bayonet slot 30 having an axial portion 32 and a transverse portion 34 which is adapted to be engaged by a pin 36 of a lamp bulb base 38 shown in phantom assembled with the socket. The cooperation of the pin 36 and bayonet slot 30 occur in a conventional manner.

Figure 2 shows a pair of diametrically opposite cutout portions 40 and 42 formed with the flange 22 to form bayonet slots in conjunction with the locking projecting arms 24 and 26 of Figure 1. These cutouts 40 and 42 permit resilient engagement of arms 24 and 26 relative to flange 22 when the arms cooperate with the printed circuit panel, as will be described. Figure 2 also shows

the axial portion 32 of the bayonet slot 30 formed with the socket to cooperate with the lamp bulb.

Figure 3 is a cross-sectional elevational view taken on line 3—3 of Figure 2 to show a chamber 44 formed inside the body portion 20 of the socket adapted to receive the base 38 of the electric light bulb. Figure 3 shows the bayonet slot 30 formed with the body portion and also shows a cross-sectional view of an axially extending semi-circular wall 46 having a tapered outer periphery formed integral with the locking projection arm 26 to provide a spacing means for insulating and separating the base 38 of the lamp bulb from possible contact with conducting portions of the printed circuit panel into which the socket is fitted when assembled as explained below. The chamber 44 is of substantially the same diameter throughout except for an inwardly projecting annular portion 48 formed with tapered portions 50 and 52 extending radially inwardly for a short distance to provide a support against undesired movement of a terminal to be inserted in the socket and also to provide a stop or limit through the tapered portion 52 cooperable with the bayonet slot 30 to arrest excessive insertion of the lamp bulb base 38 into the chamber 44.

Figure 4 is another cross-sectional elevational view to show further structural details of the socket and bulb-receiving chamber. This view includes a phantom representation of a terminal or contact, generally indicated by the numeral 56, which is shown alone in Figure 10. The chamber 44 is provided with a longitudinally extending groove or recess 58 to receive an axially extending portion 60 of the terminal 56. A U-shaped or curved portion 62 of the terminal 56 extends into the chamber 44 and is resiliently supported in a bend portion 64 by the bottom 66 of the socket. Figure 4 also shows a radially extending recess 68 formed in alignment with the recess 58 to receive a bent-over contact portion 70 of the terminal 56. This bent-over portion 70 is engageable with a conducting material 72 of a printed circuit on an insulating board or panel 74 having an aperture 76 adapted to cooperate with the axial wall 46 formed with the socket. As mentioned above, the wall 46 helps to align the socket relative to the panel and also to separate conducting material, such as 72, from possible engagement with the cylindrical base 38 indicated in phantom for the lamp bulb. The base may be of the conventional type formed of brass to constitute one contact of the bulb while a second contact 78 is separated from the base by insulating material 80, as indicated in the phantom representation of the bulb. The second contact 78 is resiliently engageable with a free end 82 of the terminal 56 to provide electrical connection through the bent-over portion 70 to the printed circuit 72. Also indicated in phantom is a portion of a second or ground terminal, generally indicated by the numeral 84, shown alone in Figure 13 in further detail. A second pin 86 projecting radially outward from the lamp bulb base 38 is engageable with a bayonet 88 formed with the terminal 84. Engagement of the pin 86 with terminal 84 serves to ground connect the bulb electrically through a bent-over portion 90 of the terminal engageable with printed circuit material 92 on the insulating board 74 in a location separated from the printed circuit material 72 contacted by bent-over portion 70 of terminal 56.

Figure 5 is a cross-sectional elevational view of the socket taken through the bayonet slot 30 to show the wall structure 28 and body portion 20 of the socket more clearly in relation to the radial shoulder 22 and semi-cylindrical wall 46. Figure 5 more clearly shows the recess 58 for receiving terminal 56, as well as the radial recess 68 in the flange 22. It is clear that the locking projection arm or lug 24 is separate from the semi-cylindrical axial wall 46 because of radial openings 100 and 102 at opposite sides of the lug 24. These openings permit insertion of terminals 56 and 84 into recesses, such as recess 58, for terminal 56. The bent-over portions, such as 70 and 90, of these terminals can then extend radially outwardly over the recesses, such as 68, provided in the flange 22 for engagement with the printed circuit material, such as 72 and 92. The cross-section of Figure 5 runs directly through the center of a recess 104 for receiving the second terminal 84, and the radial recess 106 receives the bent-over portion 90 of this terminal.

Figure 6 is a cross-sectional elevational view through the body portion 20 and locking projecting arms 24 and 26. This view further shows how the axial wall 46 is formed integral with the arm 26 and shows the tapered portion 52 limiting insertion of the bulb base 38, as mentioned above. It can be seen that the lugs 24 and 26 are axially spaced from the flange or shoulder 22 a sufficient amount to accommodate the thickness of the insulating panel 74 when the socket is rotated to form a bayonet fastening with the panel.

Figure 7 is a forward or top end view of the socket in the present invention showing the semi-cylindrical shape of wall 46, the cutouts 40 and 42, as well as projecting arms 24 and 26. The axial recesses 58 and 104 are clearly visible and the radially inwardly projecting portion 48 having the tapered portion 52 can also be seen at one side of the chamber 44. The axial portion 32 of the bayonet slot extends radially through the wall portion 28 of the socket, as described with Figure 1. The recesses 68 and 106 aligned with recesses 58 and 104, respectively, are visible with the flange or shoulder 22. It is to be noted that the recesses 58 and 104 are undercut, as represented by the numerals 110, along longitudinally extending edges so as to provide a guide slot to receive longitudinal portions, such as 60 with terminal 56 into locking engagement with the body portion of the socket. The locking engagement of the terminals in cooperation with these guide slots of the socket body will be described in further detail below.

Figure 8 is a side projected view taken from Figure 7 to show further detail of the locking lug 24. As was mentioned before, the locking lug 24 is designed to engage the panel or insulating board 74 with a bayonet type fastening due to axial spacing relative to the flange 22. An arcuate portion 112 is shown in Figure 8 extending toward the flange 22 near cutout portions 40 and 42 so as to provide a resilient bayonet locking action relative to the board 74. Extending axially from the lug 24 from one end of the arcuate portion 112 integral with the flange 22 is a web stop or longitudinally extending limit 114 to assure that the socket cannot be rotated more than a few degrees. This limitation to the bayonet interlocking rotation of the socket with the panel is provided so that it will not be possible to rotate bent-over portions 70 and 90 of the terminals in excess so as to cause unwanted shorting due to the terminals across separate printed circuit portions 72 and 92, respectively.

Figure 9 is a developed or blank view of the terminal 56, shown in Figure 10, and assembled in phantom with the socket in Figure 4. As indicated with Figure 4, the terminal 56 has a bent-over portion 70, which is shown flat in Figure 9, to be connected with an axially or longitudinally extending portion 60. The portion 60 is of slightly greater width than the portion 70 so as to cooperate with the guide slots 110 of recesses 58 and 104 for receiving terminals 56 and 84, respectively. One side of the slightly wider portion 60 is provided with a resilient prong 118 formed by a slot having a substantially radial portion 120 and longitudinal portion 122 with the terminal 56. The resilient prong terminates at its free end in a barb or tang 124 designed to bite or grip into the body portion 20 of the socket upon insertion into the guide slot 110. Another wider portion 126 is formed extending from the portion 60 opposite to the barb 124 to further aid in the gripping action with the guide slots 110. Figure 10 shows how the terminal 56 is bent into

a U-shaped structure, as described with Figure 4, for the purpose of resiliently connecting a contact of light bulb to the printed circuit, as described above.

Figure 11 is a slightly modified version of the terminal in Figures 9 and 10 providing an S-shaped rather than a U-shaped structure with the tongue or contact portion **128** of the terminal **56**. It is to be understood that increased resilience and locking action of the terminal is provided by this S-shaped structure formed by using a longer tongue **128** with the terminal **56** so that there is lateral cooperation between the tongue **128** with the tapered portion **50** of the radially inwardly extending side portion **48** in chamber **44**. This lateral cooperation can be best visualized in the view of Figure 7. It is to be understood that the terminal **56** is inserted with the barbs **124** and **126** engaging guide slots **110** in recess **58** with the tongue **128** engageable with the tapered portions **50**, as shown. For purposes of clarity and to avoid confusion concerning the structures of the elements involved, the terminal **56** is not shown either in phantom or in actual structural relationship with these portions **50**.

Figure 12 is a developed or blank view of the second terminal used with the socket of the present invention and indicated generally by the numeral **84** in the description of Figure 4. This terminal is shown in a side elevational view by Figure 13 and includes the bent-over portion **90** which is attached by a neck portion **130** to a central or axial portion **132** having an opening or rectangular slot **134** therein. The blank indicates a flat relationship of this central portion **132** relative to the bent-over portion **90** but it is to be understood that for purposes of engaging the guide slots **110** of the recess **104**, it is necessary to form the central portion into a bent-over longitudinal edge **136**, as shown in Figure 13. This bent-over edge may include a flat flange portion attached to a substantially U-shaped configuration of the central portion connected by a web **138**, as indicated in Figure 13. Bending over the edges so as to form this web will result in forming a slot **140** from the opening **134** so as to provide the bayonet slot indicated as the numeral **88** in the phantom view of Figure 4. Thus, by insertion of the terminal **84** into the recess **104** of the socket, the bayonet fastening to receive projection **86** of the bulb of Figure 4 is provided complementary to the bayonet slot **30** in the body portion **20** cooperable with the projection or pin **36** of the bulb. It is to be understood that formation of the web **138** with the terminal **84** transverse to the longitudinal portion **132** will result in a decrease in the width of the central portion **132** such that a locking portion, generally indicated by the numeral **150**, attached to the central portion through a neck **152** will be slightly wider than the width formed with the edges **136**. This locking portion **150** is provided with a resilient prong **154** similar to the resilient prong **118** of terminal **56**. A barb **156** is formed at the free end of the prong **154**, as determined by lateral slot portion **158** and longitudinal slot portion **160** forming the prong **154**. The barb **156** acts similar to the barb **124** by cooperating with the guide slots **110** in the undercut portion of recess **104** to retain the terminal **84** in locked engagement with the socket.

Figure 14 is a plan view of a fragment of an insulating board or panel, such as **74**, indicated with Figure 4 including printed circuit conducting portions **72** and **92** in spaced relationship to each other on one side of the board. A socket is shown connected to the panel **74** in one hole, such as **76**, and it is to be understood that a lacquer coating may be provided to cover both the panel and printed circuit material on the one side so as to prevent short-circuiting of portions **72** and **92** anywhere on the board. Only areas immediately adjacent the holes, such as **76**, are left uncoated for good electrical contact with bent-over portions, such as **70** and **90**, of the terminals used with the subject socket, for example.

Figure 14 also shows a plurality of upwardly extending prongs, generally indicated by the numeral **170**, for connection to lead-in wires from a battery or other electrical source connected with the printed circuit. These prongs may be grouped in a circular manner, as indicated, so that a suitable prong may be attached thereto in a conventional manner, such as is well known in radio tube connections, for example. It is possible that any one or more of these prongs **170** may be used as a ground connection rather than a battery connection in conjunction with either printed circuit material **72** or **92**. However, it is also possible for a portion of conducting material, such as **72**, to be so attached or formed with the panel **74** as to form an annular portion **172**, which is also free of lacquer or similar insulating coating. This annular portion **172** may be disposed about a hole **176** in the panel **74** for receiving a mounting bolt or securing means for rigidly attaching the panel **74** to a metal piece, such as a dashboard of an automobile in the passenger compartment. With proper mounting of the dashboard with the remainder of an automobile body, the portion **172** can serve as a ground connection to the source.

Figure 14 also shows a pair of radial slots, such as represented by the numeral **180**, in conjunction with the holes **76**. The slots are at opposite points in order to receive the locking lugs **24** and **26** of the lamp socket in a bayonet-type fastening. The stop portion **114** shown in Figure 8 integral between the locking projection **24** and flange or shoulder **22** of the socket can strike against a side edge **182** of any one of these slots **180**, for example, to limit rotative movement of the socket relative to the panel **74**. It is to be understood that the lamp socket fits into the circular hole **76** with the slots **180** cut out at diametrically opposite points in order to receive the locking lugs **24** and **26**. As the lamp socket is pushed into place and then turned clockwise or counterclockwise a few degrees, depending upon location of the stop **114**, a bayonet fastening occurs between the socket and panel as the locking arms engage the periphery of the hole through arcuate portion, such as **112** on lug **24**. The socket is purposely shown in Figure 14 locked in place relative to a portion of the printed circuit board to show how different parts cooperate and it is believed that Figure 4 with the phantom representation of the board, bulb and terminals together with the structure of the socket clearly shows how the socket and printed circuit mounting is achieved in accordance with the present invention. The panel of insulating material **74** may contain the necessary circuit wiring for an instrument cluster of a motor vehicle.

While the embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In combination, comprising, an insulating panel having a printed circuit conducting material on one side thereof and at least one hole therethrough with slots cut out at peripherally spaced portions of the hole, a wireless electric lamp socket formed of suitable insulating material having a chamber formed therein adapted to receive a base of an electric light bulb, a radially outwardly extending shoulder formed with said socket, said shoulder and chamber having recesses therewith, a pair of terminal strips insertable from one end of said socket into the recesses, a bent-over portion on each of said strips extending between said shoulder and said panel in electrical conducting contact with said printed circuit conducting material to complete an electrical circuit through the electric lamp bulb insertable in said socket, and bayonet fastening lugs extending axially of said socket cooperable with the slots cut out at peripherally spaced portions of the hole in said panel, said lugs locking said socket to said panel as the socket is pushed into place and turned axially.

2. In combination, including, an insulating board hav-

ing a printed circuit conducting material on one side thereof in separate portions terminating peripherally at opposite sides of edges of a hole extending through said board, an electric lamp socket free of electrical wires, said socket formed of suitable insulating material having a chamber formed therein to receive a base of an electric light bulb insertable from one end of said socket, a pair of terminal strips insertable from the same end of said socket, a resilient prong laterally extending from each strip cooperable with a cut-out guide slot portion of an axial recess formed for each strip in a chamber within said socket, said prong gripping said socket to position said strips with a bent-over portion of each of said strips between said socket and said printed circuit conducting material at opposite sides of the edges of the hole in said board, and projecting arms extending from said socket through slots at diametrically opposite portions of the hole of said board to lock said socket and board in cooperating relationship.

3. A lamp socket and printed circuit mounting for use in an instrument cluster on a motor vehicle to support light bulbs free of lead-in electric wires, comprising, in combination, a lamp socket free of electric wires and formed of suitable insulating material with a chamber therein adapted to receive a base of an electric light bulb, said socket having one closed-off end and an open end through which the bulb is inserted, the open end being surrounded by a shoulder extending radially of said socket and having radial recesses therein, the chamber in said socket having a pair of longitudinally extending recesses aligned with the radial recesses with the longitudinal recesses undercut laterally to form guide slots therewith, a pair of terminal strips insertable in the longitudinal recess and guide slots, each of said strips including a bent-over end portion inserted in the radial recess of said shoulder, and an insulating board having a printed circuit conducting material on one side thereof immediately adjacent each of said bent-over end strip portions, said board having a hole therethrough to admit passage of said socket with an inserted light bulb into mounting engagement, said shoulder and said board serving to sandwich separated portions of the printed circuit conducting material into electrical conducting engagement against said bent-over end strip portions so that electrical wiring with said socket is eliminated.

4. A lamp socket, comprising, a body of electrical insulating material having a substantially cylindrical chamber portion therein to receive the base of a lamp bulb, the chamber being closed off at one end and open at its opposite end, a radially extending shoulder formed with said body adjacent the open end with radially extending recesses in said shoulder, a tapered-edge and radially-inwardly-extending portion of said body located in said chamber for limiting inserting movement of the bulb into the chamber, a pair of laterally undercut longitudinal and radially outwardly extending recesses located aside from said tapered-edge portion, a first terminal strip insertable in one of said undercut recesses including a curved tongue portion of said first strip positioned laterally of said tapered-edge portion, said strip also including a bent-over end portion fitting into one of the radially extending recesses in said shoulder, a second terminal strip in the second of said pair of undercut recesses and also including a bent-over end portion fitting into another of the radially extending recesses in said shoulder, and bayonet fastening means formed with one of said strips complementary to a bayonet slot formed with said socket for mounting the lamp bulb, said strips eliminating all electrical wiring from said socket to permit electrical connection to the bulb through said bent-over end portions with said shoulder.

5. A lamp socket, comprising, a body of electrical insulating material having a chamber portion therein to receive the base of a lamp bulb, the chamber being closed off at one end by said insulating body and open at its opposite end, a shoulder formed with said body adjacent the open end, a pair of locking projection arms protruding axially of said body on a side of said shoulder opposite the closed chamber end, and a pair of terminal strips extending from bent-over end portions on said shoulder to the inside of the chamber secured by insertion axially into undercut longitudinal recesses in the body chamber, said strips inside the chamber electrically connecting with insulation-separated contact portions of the bulb, said protruding arms having a cross-section providing a surface axially spaced from said shoulder for mounting said body and said strips against a printed circuit material thus keeping the lamp socket free of electrical wiring.

6. The lamp socket of claim 5 in which each of said terminal strips has a resilient barbed prong extending laterally therefrom to be in biting engagement with guide slots formed with the undercut longitudinal recesses.

7. The lamp socket of claim 5 in which at least one of the protruding locking arms has a curvilinear portion in the cross section of the arm on a surface axially spaced from said shoulder to resiliently mount said socket against the printed circuit material.

8. The lamp socket of claim 7 wherein a limiting stop web is formed extending integrally from one end of said curvilinear portion in a longitudinal direction to said shoulder so as to permit rotation of only a few degrees in securing said terminal strip bent-over portions in electrical engagement with printed circuit material.

9. A lamp socket, comprising, in combination, a body of electrical insulating material having a chamber portion therein to receive the base of a lamp bulb, the chamber being closed off at one end by said insulating body in a floor portion and open at its opposite end, a shoulder formed with said body about the open end, a pair of locking lugs protruding axially from said body on a side of said shoulder opposite the closed chamber end, and a pair of terminal strips extending from bent-over end portions formed therewith fitted against said shoulder to the inside of the chamber, said strips having a mid section slightly wider laterally than said bent-over end portions to secure said strips to said body by gripping of the mid section into undercut longitudinal recesses in the body chamber, said strips inside the chamber electrically connecting with insulation-separated contact portions of the bulb respectively, said lugs having a cross-section providing a surface axially spaced from said shoulder for mounting said body and said strips against an apertured panel having a printed circuit conducting material thereon immediately adjacent said bent-over end portions thus keeping the lamp socket free of electrical wiring.

10. The combination of claim 9 wherein one of said terminal strips at an end opposite the bent-over end portion has a tongue curved to a U-shaped contact end resiliently engageable between a floor portion of said socket and one contact of the lamp bulb, said other of the pair of strips having bent-over webs terminating in longitudinal edges fitting into gripping engagement into undercut longitudinal recesses in the body chamber, said mid section having a slot serving as one part of a bayonet fastening complemented by a bayonet slot in a sidewall of the socket for engaging the light bulb.

11. The combination of claim 9 wherein one of said terminal strips at an end opposite the bent-over end portion has a tongue curved to an S-shaped contact resiliently engageable between a floor portion of said socket and a first contact of the lamp bulb, said other of the pair of strips engaging another conducting portion of the bulb insulated from the first contact thereof.

12. A lamp socket and printed circuit mounting for use in an instrument cluster on a motor vehicle to support light bulbs free of lead-in electric wires, comprising, in combination a lamp socket formed of suitable insulating material with a chamber therein adapted to receive a base of an electric light bulb, said socket hav-

ing one closed-off end and an open end through which the bulb is inserted, the open end being surrounded by a shoulder extending laterally at an angle to the axis of said socket, a pair of terminal strips attached to said socket within the chamber, each of said strips including an end portion bent over onto said shoulder, and an insulating board having a conducting material on one side thereof immediately adjacent each of said bent-over end strip portions, said board having a hole therethrough to admit passage of said socket with an inserted light bulb into mounting engagement, said shoulder and said board serving to sandwich separated portions of the conducting material on said board into electrical conducting engagement against said bent-over end strip portions.

13. A lamp socket, comprising, a body of electrical insulating material having a chamber portion therein to receive the base of a lamp bulb having insulation-separated contact portions, the chamber being closed off at

one end by said insulating body and open at its opposite end, a shoulder formed with said body adjacent the open end, a pair of locking projection arms protruding from said body on a side of said shoulder opposite the closed chamber end, and a pair of terminal strips extending from bent-over end portions on said shoulder to the inside of the shoulder, said strips being attached to said socket insulating body and located within the chamber and electrically connectible with insulation-separated contact portions of a bulb, said protruding arms having a cross section providing a surface axially spaced from said shoulder and cooperating therewith to provide for mounting of said body and said strips against a printed circuit material on a mounting panel to keep the lamp socket free of electrical wiring.

No references cited.