

Dec. 3, 1968

L. WYZYKOWSKI
FILAMENT LAMP WITH BASE STEM ADAPTABLE FOR
CONNECTION TO DIFFERENT SOCKETS

3,414,762

Original Filed July 11, 1966

2 Sheets-Sheet 1

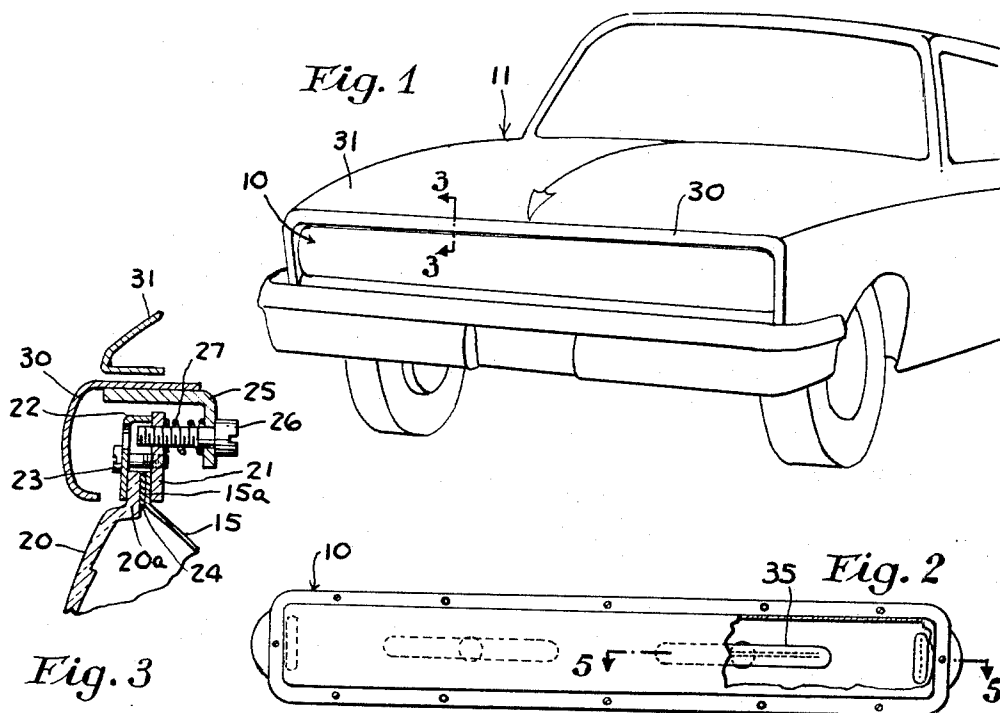


Fig. 3

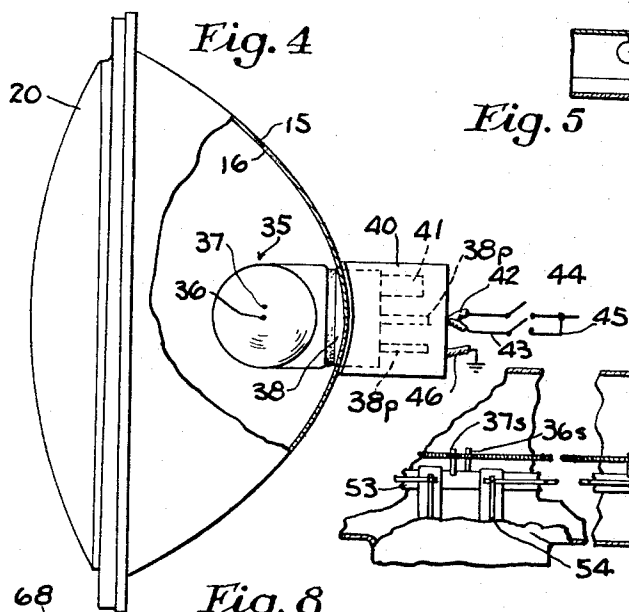


Fig. 5

Fig. 7

Fig. 6

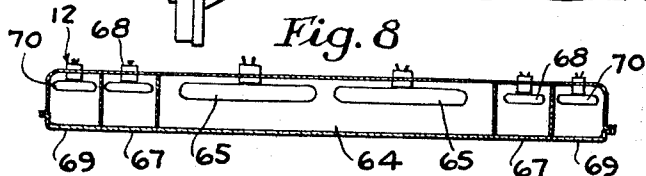


Fig. 8

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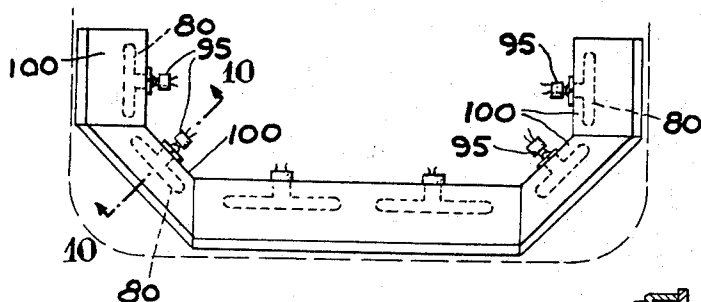


Fig. 9

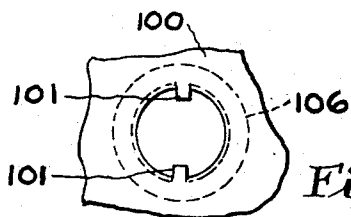


Fig. 11

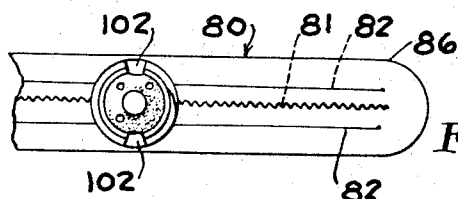


Fig. 12

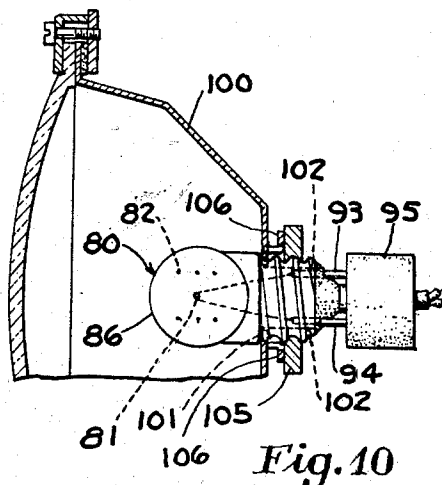


Fig. 10

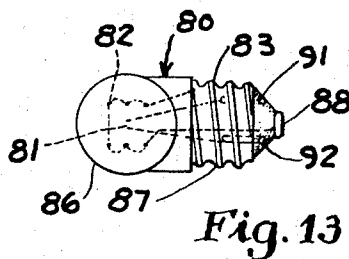


Fig. 13

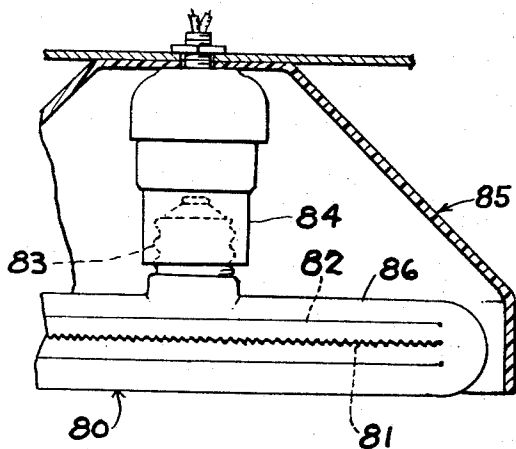


Fig. 14

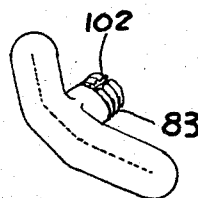


Fig. 15

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3,414,762

FILAMENT LAMP WITH BASE STEM ADAPTABLE FOR CONNECTION TO DIFFERENT SOCKETS

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Continuation of application Ser. No. 565,355, July 11, 1966. This application Jan. 18, 1968, Ser. No. 699,976
3 Claims. (Cl. 315—64)

ABSTRACT OF THE DISCLOSURE

The present application discloses an improved electric bulb intended, in addition to its other purposes, to eliminate in motor vehicles the use of electric bulbs of projector type, such as head lights, parking lights, and signal lights providing sharp localized illumination and to substitute therefor bulbs with elongated bodies housing similarly elongated filaments which may be as long as 6" whereby a substantially continuous chain of bulbs is produced in a luminous panel, giving more uniformly distributed illumination. The bulb, a plurality of which is used in an elongated reflecting panel, is of a combined nature and in addition to its use in motor vehicles as a signal light can also serve in a house lighting circuit for purposes such as a night bulb. In order to perform such combined function, the bulb includes a base stem whereby the bulb can be installed in an automotive reflector without rotation, since even limited rotation would not be practicable there because of elongated shape of the bulb. In accordance with the invention, the bulb is installed by a straight line push into its socket which includes a guiding lug received in a slot formed by the ends of the thread coils of the bulb's base stem. The separate coils form a helical thread intended for inserting the bulb into a conventional house lighting internal socket. The bulb includes two elongated filaments adapted to have impressed thereon a house lighting current or a battery current, selectively. The disclosed construction of the base stem of the bulb provides for electrical connection with each respective circuit in either operative position of the bulb which position is determined by the locating means, to provide for horizontal positioning of the bulb to form a substantially continuous illuminating band in an automotive reflector.

The present application is a continuation of Ser. No. 565,355 filed on July 11, 1966, now abandoned, which is a continuation-in-part of Ser. No. 357,130 filed on Apr. 3, 1964, now abandoned for lighting system for motor vehicles.

This invention relates to an improved lighting system for motor vehicles, such as passenger automobiles, buses, trucks, and the like. In one of its aspects, the invention relates to an improved electric bulb.

Conventional lighting systems for motor vehicles particularly for passenger automobiles, usually comprises a plurality of electric bulb fixtures with reflectors operatively mounted at various places in the vehicle structure. The exterior lighting of a present-day passenger automobile comprises headlights used for illuminating the road in front of the moving automobile, and a plurality of smaller lights intended to operate primarily as signals. Two or four headlights are usually provided on the front of an automobile, with two so-called "parking lights" provided adjacent such headlights, usually above or below the same. "Parking lights" are intended for use under weather conditions when illuminating the road is not necessary but when it is desired to make an approaching vehicle more visible for safety purposes. Such conditions are usually met in driving in twilight or in drizzling rain, light fog, or murky weather in general.

At the rear of the vehicle there are usually provided three pairs of lights, two pairs with red lenses, and one pair with colorless lenses, all arranged in a single horizontal row. One pair of the red lens lights are the lights which go on automatically with application of vehicle brakes, and are usually referred to as "brake lights." The second pair of red lens lights are the lights which go on when the headlights or parking lights are switched on, and are usually referred to as "tail lights." The third pair of rear lights, namely those with colorless lenses, go on automatically when the transmission is shifted in reverse and they illuminate the space rearwardly of the vehicle and give a signal that the vehicle is about to back up. Thus, this pair of lights may be considered to be both illuminating and signal lights. These lights are usually referred to as "back-up lights."

Thus, the total number of lights on the exterior of a motor vehicle may be twelve and even more, with all of such lights being, in effect, spotlights, i.e. lights having intensely illuminated spot appearance. The headlights are, in effect, small search lights projecting relatively strong beams of lights in a single horizontal row, with such beams overlapping or merging together to illuminate the road in front of the vehicle. The beam of lights projected by the headlights are very strong, and if directed to the eyes of the operators of the oncoming cars, as are the "high beam" lights, they not only interfere with the vision during the night but are harmful to the eyesight. However, the "low beam" lights also present considerable interference to the vision of the operators of the oncoming vehicles, particularly on narrow two-way roads. This is due to the strength of the projected beam, increasing the contrast between the light and dark.

In addition to the disadvantages created by such lights being spotlights, their multiplicity creates various manufacturing and maintenance problems, increasing the cost of manufacturing, complicating wiring, and making repairs more difficult and costly. Eliminating such lights has been, therefore, an object of many prior inventions seeking to reduce the number of such lights and to substitute them by non-glaring panels. However, while a considerable number of such constructions have been proposed, none of them has received an appreciable application due to various new problems created thereby, and greatly increasing the cost of manufacturing and maintenance.

One of the objects of the present invention is to provide an improved lighting system for a motor vehicle whereby the above difficulties and disadvantages are overcome and largely eliminated without creating new problems or appreciably increasing the costs involved.

Another object of the present invention is to provide a lighting system for a motor vehicle, in which the beam producing spot type lights, both of the illuminating type, such as headlights, as well as the signal type, such as parking lights, brake lights, and back-up lights, have been completely eliminated together with their sockets and wiring, thus greatly simplifying construction of the vehicle and its electrical system.

A further object of the present invention is to provide a lighting panel which includes both illuminating lights and signal lights in the form of glowing panels rather than in the form of bright spot lights, which panels provide sufficient illumination of the road, give proper signals, are not harmful to the eyesight of the operators of the oncoming vehicles, and create less contrast between the light and dark.

A still further object of the present invention is to provide an improved lighting system for motor vehicles such as passenger automobiles, buses, trucks, and the like, in which rows of bright spot lights presently used in con-

ventional motor vehicle lighting systems are eliminated together with disadvantages thereof.

A still further object of the present invention is to provide an improved lighting system of the foregoing character in which glowing panels include battery operated filament type electric bulbs, rather than fluorescent tubes requiring special voltage for their operation and therefore considerable other changes in the construction of the electrical system of the vehicle.

A still further object of the present invention is to provide an improved electric bulb which is particularly advantageous in application to the lighting system for motor vehicles, disclosed herein.

It is another object of the present invention to provide an improved lighting system for motor vehicles which is of a greatly simplified construction, is dependable in operation, is less expensive to manufacture, and is easy to maintain and repair.

Still another object of the present invention is to provide an improved electric bulb which can be used selectively either in the house electric lighting system or in motor vehicle lighting system and, in effect has a double life as compared with the electric bulbs intended for only one of such applications.

Further objects and advantages of this invention will be apparent from the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification, wherein like reference characters designate corresponding parts in the several views.

FIG. 1 is a perspective view of the front part of the motor vehicle embodying the present invention.

FIG. 2 is an elevational view of the front or headlight panel, with the portion of the lens thereof being broken away to expose the interior construction of the panel.

FIG. 3 is a fragmentary sectional view taken in the direction of the arrows on the section plane passed through the section line 3—3 of FIG. 1.

FIG. 4 is an end view of the panel of FIG. 2, the observer being presumed to look at the righthand end thereof, with the parts of the reflector being broken away.

FIG. 5 is a fragmentary sectional view of the panel, said view being taken in the direction of the arrow on the section plane passed through the section line 5—5 of FIG. 2.

FIG. 6 is a fragmentary sectional view of a T-shaped electric bulb used in accordance with the present invention in the electric lighting system for motor vehicles, disclosed herein.

FIG. 7 is a fragmentary sectional view taken in the direction of the arrows on the section plane passed through the line 7—7 of FIG. 6.

FIG. 8 is a view similar in part to FIG. 5, and showing in horizontal section the rear lighting panel.

FIGURE 9 is a plan view similar in part to FIGURE 8 but showing modified construction of the rear light panel to provide substantially rounded ends.

FIGURE 10 is a sectional view taken in the direction of the arrows on the section plane passed through the section line 10—10 of FIGURE 9.

FIGURE 11 is a fragmentary elevational view showing the central portion of the reflector adapted to receive the improved signal bulb such as shown in FIGS. 10 and 13 and including bulb-locating projections.

FIGURE 12 is an end view of the bulb.

FIGURE 13 is a side view of the bulb.

FIGURE 14 is a view partly in section illustrating the improved bulb installed in a lamp socket of a house lighting system.

FIGURE 15 is a perspective view illustrating the improved bulb such as shown in FIGURES 12 and 13 but with the elongated body thereof being made curved.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying draw-

ings, since the invention is capable of other embodiments and of being practiced or carried out in various ways within the scope of the claims. Also, it is to be understood that the phraseology and terminology employed herein is for the purpose of description and not of limitation.

In the drawing there is shown by way of example, an electric lighting system for motor vehicles, embodying the present invention. The electric lighting system illustrated and described herein comprises generally a front lighting panel 10 operatively mounted in a manner described in detail below at the front of the vehicle 11, as shown in FIG. 1, and a rear panel 12, see FIG. 8, mounted in a substantially similar manner at the rear end of the vehicle. Both panels 10 and 12 are of the elongated shape and their length is approximating the width of the vehicle. The height at which the panel 10 and 12 are mounted on the vehicle corresponds substantially to that at which conventional lights of the spot character are mounted. Both panels are removable and in their mounted positions are accessible from behind for service.

The front panel 10 comprises generally a reflector 15, which may be made of sheet metal, with its concaved surface 16 being made a reflecting surface in a manner well known in the art. The ends of the reflector 15 are turned forwardly to provide enclosed ends as is best shown at 17 in FIG. 5 to provide reflecting end surfaces. To the reflector 15 there is connected an elongated lens 20 substantially co-extensive with the reflector 15 and sealingly connected thereto with the aid of a metal strip 21 co-operating with an angle bar 22 connected to the strip 21 with the aid of a screw 23 and gripping the flanges 20a and 15a of the lens 20 and the reflector 15, respectively, with a gasket 24 being provided between said flanges. If desired, an additional gasket disposed between the flanges 20a and the gripping surfaces of the angular bar 22 may also be provided.

The panel 10 is mounted on an angular body member 25 which may be a part of the automobile body or may be secured directly to the frame of the vehicle. This connection is effected with the aid of an adjustment screw 26 engaging the member 21 at an integrally threaded hole. A spring 27 is provided on said screw 26 between said members 21 and 25 to insure tight and rattle-free connection.

An ornamental molding 30 connected to the angular member 25 is provided around the entire periphery of the panel to conceal the mechanical connection described above. It will be understood that said mechanical connection is substantially of the same nature along the bottom edge of the panel.

It will now be seen that when the hood 31 of the vehicle is raised, adjustment of the inclination of the panel 10 may be made with the aid of the adjusting screws 26, which screws are easily accessible because of their position, when the hood 31 is open. The ornamental molding 30 may be continuous and form, in effect, an integral frame as shown in FIG. 1, or may consist of two or more sections.

Within the enclosure formed as described above by the reflector 15 and the lens 20, there is operatively mounted a plurality, in the present instance two, of T-shaped electric bulbs 35. The bulbs 35 are of the tube filament type and therefore may be operated from a vehicle battery. Said bulbs 35 are so disposed with respect to the reflector 15 that one of the filaments 36 or 37 has the light rays produced thereby reflected for a long distance or "bright lights" illumination of the road and the other filament has its rays reflected downwardly to have the beam of light reflected downwardly and thus to protect the vision and the eyesight of the operator of the oncoming vehicle.

In accordance with the present invention, connection of the bulbs 35 to the reflector 15 is produced by non-rotating movements of the bulb, and therefore the screw-type bulb sockets used in conventional lighting systems are eliminated in the lighting system disclosed herein.

In accordance with the invention, the stems 38 of the bulbs, which stems extend substantially perpendicular to the tubular bodies or upper T-bars 39 of said bulbs, include connecting prongs such as prongs 38p adapted to be received by a socket 40 secured to the reflector 15 as illustrated. A locating lug 41 insures that the bulb 35 will be connected to the sockets in only one position. To the sockets 40 and their metal or conducting tubes receiving the prongs 38 are secured the ends of the wires 42 and 43 in a manner well known in the art. Within the wires 42 and 43 there are interposed switches 44 and 45 with the aid of which the lights are switched on either for the "low beam" or the "high beam" illumination of the road. The connection 46 provides the ground. The arrangement of switches of the nature described above is well known in the art and no detailed description thereof or further diagrams showing connection of the bulbs to the car battery are believed necessary herein.

It is of importance that the T-shaped bulbs used in the lighting system embodying the present invention are of the filament type, and therefore can be operated from the conventional battery without requiring additional components such as those necessary for operating luminous or fluorescent tubes. I prefer to use for the purposes of headlight or road illumination, the bulbs in which the tubular bodies thereof are approximately 12 inches long, with two or three of such bulbs being provided in the front panel. In the operative position of the bulbs 35, such tubular bodies become disposed in a single horizontal row with the ends of said tubular bodies being closely adjacent to each other such as when three bulbs are provided, or disposed at a distance, such as 6 inches or 8 inches from each other, as illustrated in the present embodiment.

Because of the substantial length of the filaments which extend through substantially the entire length of the tubes, glass supports, such as 37s and 36s are provided for them along their length. FIG. 6 illustrates the details of construction of the bulbs 35. The numeral 53 illustrates an electric lead from the prong in electric contact with the wire 43, and leading to the filament 36, while the numeral 54 illustrates the lead which is in electric contact with the wire 42, and leads to the upper filament 37, as illustrated in FIG. 6.

In order to provide parking lights, bulbs 60 are provided within the front panel, as is best shown in FIG. 5, said bulb being disposed in the reflecting proximity to the surfaces 17. The bulbs 60 may also be of the T-shape, although they are considerably smaller than the bulbs 35 since their function is not to illuminate the road but merely to provide a signal, as explained above. However, because of their elongated shape, vertical arrangement, and their position with respect to the reflecting surfaces 17, the lights of said bulb 60 are reflected in a substantial part along the main reflecting surface 16, and thus produces appearance of a lightly glowing panel rather than of bright spot lights.

The construction of the rear panel 12 is substantially similar, in its major part to that of the front panel 10, except that the enclosure thereof is divided into five sections, and the lens is of two colors; colorless, and red. The lens of the rear panel may be articulated, i.e. composed of a plurality of pieces, or it may be an integral construction. However, with the use of either of these constructions, the lens comprises a middle portion 64 including two or more of light bulbs 65 of T-shape, thus providing "back-up" signal lights which have the double function of providing the signal and illuminating the space behind the vehicle when the vehicle transmission is shifted into reverse for the purposes of backing up the vehicle. Since such illumination need not be as strong as illumination of the road in front of the fast moving vehicle, the bulbs 65 may be considerably smaller than the bulbs 35, although their inner construction and con-

nection to the electric wiring may be the same as that described with reference to bulbs 35.

The panel sections 67, 67 have light bulbs 68, 68 provided therein in front of the reflecting surfaces, which bulbs may be also of T-shape. These bulbs serve the purposes of "brake lights," and go on automatically when the brakes are applied. Sections 69, 69 are provided at the ends of the panel 12, and they are similar in their construction to the section 67 and their lenses are also of the red color. The bulbs 70, 70 thereof may be substantially similar to the bulbs 68, 68 of the section 67. However, these bulbs go on automatically when the bulbs 35 or the parking lights 60 are switched on, and therefore serve the purposes of "tail lights."

The electric system described above is particularly advantageous in passenger automobiles but may also be used in buses, trucks and other transportation instrumentalities when bright single-beam headlights are found to be interfering with the vision and eyesight of the operators of oncoming instrumentalities or of the service personnel confronting such instrumentalities during the dark, or other persons who may observe the same.

FIGURES 9-15 illustrate an improved electric bulb constructed in a manner adapting it for selective use in the automobile lighting system or in a house lighting system. Conventional double-filament bulbs used in motor vehicles become inoperative for their intended purposes when one of their filaments burns out or otherwise becomes inoperative. In such a case, a bulb, the second filament of which could still serve for considerable time, has to be discarded. This fact results in a large yearly loss because of discarding large quantities of electric bulbs which became only partially inoperative.

In accordance with the present invention, I provide an improved two-filament bulb which can be used until both of its filaments receive their full intended use. Since the electric bulb embodying the present invention is so constructed that only one of its filaments is used in either of its two possible applications, the improved bulb disclosed herein has its life period doubled, thus making it possible to effect considerable economies.

Referring specifically to FIGURES 9-15, the electric bulb illustrated therein is of the signal type such as is used in motor vehicles for the tail lights or backup lights and which do not require changing the position of the focus location in order to provide the low beam and the high beam as is required in the case of illuminating bulbs such as those indicated by the numeral 35 in the construction of FIGS. 1-8.

The two filaments provided in the electric bulb of FIGS. 9-15 are of two different kinds. The center filament 81 of the bulb 80 is a filament of a battery type, i.e. of the type adapted to operate when electrically connected to source of electric current such as is used in motor vehicles, i.e. a battery current of 6 or 12-volt intensity. On the other hand, the outer filament 82 is of the type adapted to receive the conventional house lighting current such as of 110-volt intensity.

The construction of the bulb itself is such that it can be used either in the house lighting system or in the motor vehicle lighting system. Accordingly, the bulb itself comprises an externally threaded plug 83 adapted to be received by an internally threaded socket such as 84 provided in the lamp 85. The glass body 86 is of an elongated shape and it houses the above-mentioned filaments which are also of the elongated form similar to that of the filaments of the construction of FIGS. 1-8. It should be understood, however, that since connecting the bulb 80 to the conventional house lighting system socket, such as 84, must be by rotating the bulb, the shade or reflector of such a lamp must be such as to allow such rotation of the bulb. Electrical connection of the outer filament 82 with the terminals of the socket 84 is similar to that of a conventional electric bulb and is through the outer shell 87 of the plug providing one terminal and the central terminal 88

providing the second terminal. On the other hand, electrical connection of the central or battery filament 81 with the vehicle battery is through two metal sockets 91 and 92 adapted to receive the prongs 93 and 94 of the plug 95 connected to the battery of the motor vehicle.

Since the sockets 91 and 92 are depressed and are insulated within the body of the plug of the bulb when the bulb is installed in a house lighting system, the sockets 93 and 94 are not in contact with any current-carrying element of a house-lamp socket. On the other hand, when the bulb is installed in the reflector 100 of the motor vehicle, the sockets 91 and 92, and therefore the filament 81, are electrically connected to the motor vehicle battery while the externally threaded plug of the electric bulb is not in electrical contact with any current-carrying element thereof.

Means are provided whereby the electric bulb 80 is installed in place in the reflector 100 by a straight line or inward movement without rotation, with locating means being provided whereby the bulb can be received in the socket in two positions. The locating means are exemplified by the projections 101 provided in the reflector 100 at the hole adapted to receive the bulb, which projections cooperate with the grooves 102 provided in the externally threaded plug 83 thereof. Such grooves are indicated in dotted lines in FIG. 10 and in full lines in FIG. 15. A threaded nut 105 cooperates with the externally threaded plug 83. When screwed all the way down on the plug placed in place through the hole, the nut 105 bears on the flanges 106 and keeps the bulb firmly in place. The plug 85 is brought to the plug 83 and its prongs 93 and 94 are inserted into the sockets 91 and 92.

In accordance with the invention, the electric bulb may be first used either in a motor vehicle or in a house lighting system. When its respective filament burns out after the usual time period of service, the electric bulb is removed and placed into other lighting system for its other application wherein it may continue for the full length of service of an electric bulb made for such an application. Thus, the useful life of my improved bulb is, in effect, doubled. Thus, my improved electric bulb which I shall call "Leon Bulb" provides a novel and useful article having a number of important advantages.

By virtue of the above disclosed constructions, the objects of the present invention listed above and numerous additional advantages are attained.

I claim:

1. An electric bulb adapted to be interposed operatively and selectively into two different electric circuits, one circuit carrying battery current and the second circuit carrying house lighting current, with said circuits including bulb-receiving internal sockets of different mechanical construction, one of said sockets having two terminals and requiring non-rotative receipt of the bulb and the second internal socket requiring rotation of the bulb for its inser-

tion into the circuits, said bulb comprising a base stem having a helical thread on its outside surfaces adapted to engage the internal helical thread of a conventional socket, said external thread being made up of separate coils with spaced ends forming the walls of at least one longitudinal guide slot adapting said thread to clear a prong in the second internal socket for non-rotative insertion of the bulb thereinto, a glass body in the form of a tube secured to said base stem and extending perpendicularly to said stem at each of the two sides thereof for a distance at least twice as long as the diameter of the bulb base stem, two filaments operatively arranged within said tube and extending substantially throughout the entire length of said tube, one filament adapted to have impressed on it, selectively, said battery current and the second filament to have impressed thereon said house lighting current, said base stem further having three terminals therein with said terminals being insulated from one another, two of said three terminals being connected to said one filament and the remaining terminal being connected to said second filament, said at least one longitudinal guide slot operative to connectively locate said two of said three terminals relative to respective ones of said two terminals in said one socket for battery operation.

2. The construction defined in claim 1, the end portions of the glass tube body on both sides of the bulb socket being bent in the direction of the bulb socket.

3. In a motor vehicle, a lighting system including an elongated reflector provided at the rear end of the vehicle, said reflector extending substantially through the entire width of the vehicle to form the entire rear light and signal system of the vehicle, a plurality of internal sockets provided in said reflector adapted to receive electric light bulbs by pressing the same in without rotation and a corresponding plurality of electric light bulbs defined in claim 1 operatively inserted in said internal sockets, said internal sockets including guiding slot means positioning said bulbs in said reflector to have their elongated bodies extend horizontally to form an elongated chain of lights extending substantially through the entire length of said reflector.

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P. C. DEMEO, *Assistant Examiner*.