C. H. FISCHER.

ELECTRIC LAMP.

APPLICATION FILED JULY 17, 1914.

1,114,976.

Patented Oct. 27, 1914.

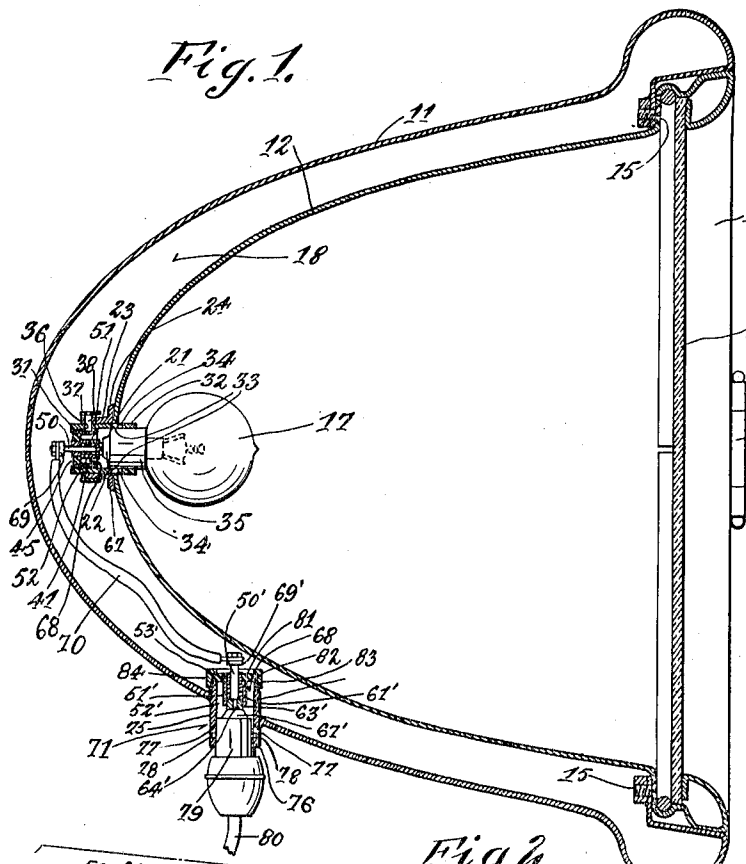


Fig. 1.

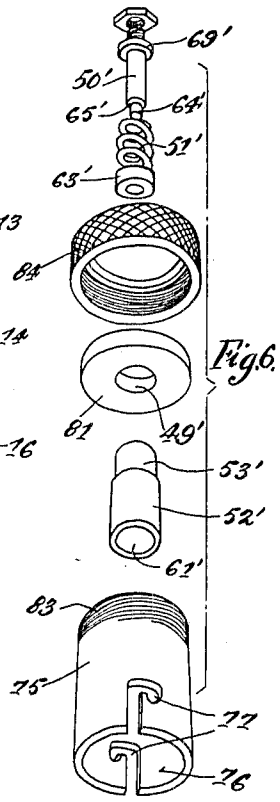


Fig. 6.

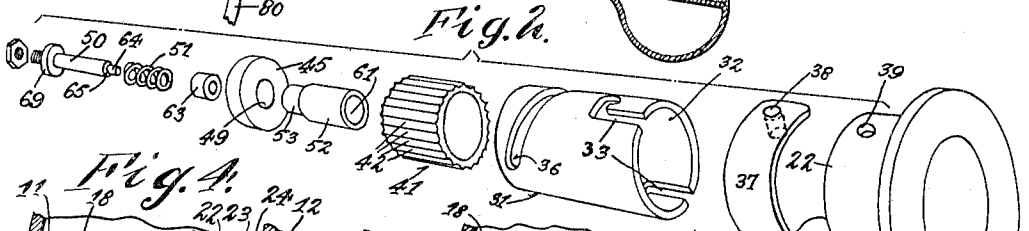


Fig. 2.

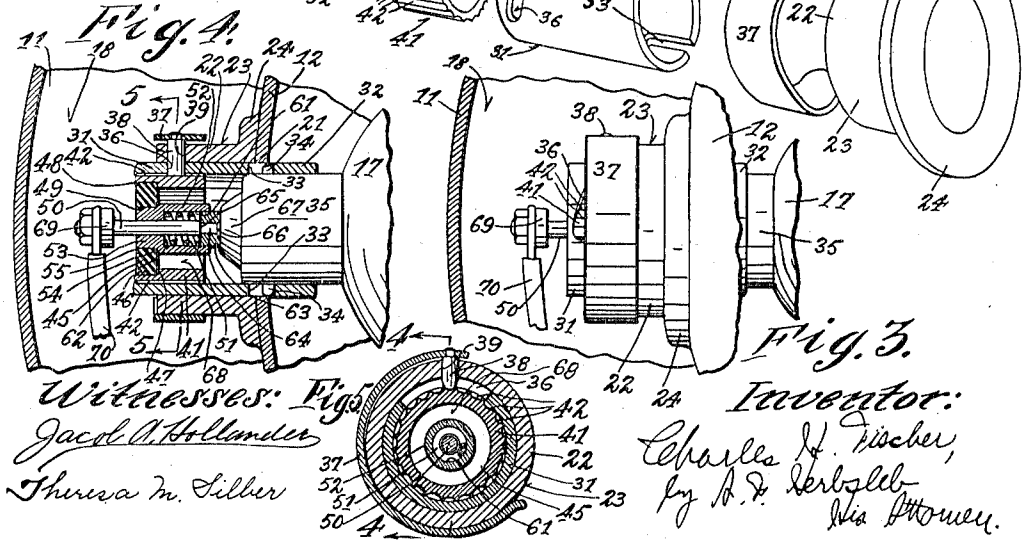


Fig. 4.

Fig. 3.

Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC LAMP.

1,114,976. Specification of Letters Patent. Patented Oct. 27, 1914.

Application filed July 17, 1914. Serial No. 851,582.

To all whom it may concern:

Be it known that I, CHARLES H. FISCHER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

My invention relates to electric lamps, for instance, such as those employed on vehicles, and has for its object the provision of novel means whereby to focus the electric light-bulb; further the provision of novel means for holding the electric light-bulb in adjusted position; and, further, the provision of novel means whereby to assemble the parts in the lamp without detrimental effect upon tie insulation or spring parts, it being understood that the attachment to the lamp-member is usually effected by heat, as by soldering, brazing, or heat-welding, my improved device permitting this to be done without effect upon the insulating means or other means to which heat is detrimental, accomplished in the present instance by the novel parts and novel construction and arrangement of the parts.

It is the object of my invention further, to provide a novel device of the character mentioned which occupies little space in length and provides a compact structure of few parts, readily made and assembled.

The invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 represents a longitudinal axial section of an electric lamp embodying my invention. Fig. 2 is a perspective view showing the means for attaching and focusing the electric light-bulb, the parts being shown in separated relation. Fig. 3 is a side elevation of the same in assembled relation, the reflector being shown partly broken away. Fig. 4 is an axial section of the same taken on a line corresponding to the line 4—4 of Fig. 5. Fig. 5 is a cross-section of the same, taken on a line corresponding to the line 5—5 of Fig. 4; and, Fig. 6 is a perspective view of the means for attaching the electric conductor to the lamp-casing, the parts being shown in separated relation, and the lamp-casing being shown partly broken away.

I do not herein broadly claim the means for supporting and insulating the central electric terminal post of the electric connector, having shown, described and claimed the same in an application for patent on improvements in electric connectors filed July 17, 1914, Serial No. 851,581.

The casing of the lamp is shown at 11. The reflector is shown at 12, this reflector or mirror being exemplified as a parabolic reflector, and the door of the lamp is shown at 13, this door being provided with a glass 14, or other suitable device through which the rays of light are projected from the reflector. The reflector is suitably attached to the casing, in the present exemplification, by screws 15, and the door is hinged to the casing by means of hinges 16, or the casing, reflector and door are suitably connected together in any suitable manner, preferably so that the front glass 14 is releasable in order to obtain access to the electric light-bulb, which is shown at 17, by means of which the manipulation is effected in the present exemplification, for focusing the light-bulb with relation to the reflector. The reflector is received within the casing, there being a space 18 between the reflector and casing. My improved device is compact in lengthwise relation so that this space may in practice be narrow.

The reflector is provided with a central rear aperture 21, from which an annular flange 22 projects, preferably rearwardly. In the present exemplification this flange is shown on a flange-piece 23 having a laterally annularly projecting wing 24, by means of which the flange-piece is secured to the reflector about the aperture, which may be accomplished by means of soldering, brazing, or heat-welding. A socket-member, shown as a socket-tube 31 is received in the flange. This socket-tube has plug-attaching means at its forward end, shown as a socket 32, the walls of which have bayonet slots 33 therein for receiving the pins 34 of the plug 35 of the electric light-bulb. A helical guide-connection is operatively disposed between the reflector and socket-member for guiding the light-bulb in a helical path for focusing the same in the reflector. This is shown accomplished by providing the periphery of the tube with a helical slot 36, the term helical slot including any slot of substantially helical form.

A spring-member 37 is arranged to be received about the flange and is provided with a part, shown as a pin 38, which is received through a hole 39 in the flange, this pin,

when the parts are assembled, extending into the helical slot, the front and rear walls of this helical slot being guided against the inner end of this pin. This spring-member is shown as a flat spring bent to such form as to extend about the flange for a distance of at least half its circumference so that the spring is held about the flange by its own resilient contact with the flange, the pin being simultaneously pressed inwardly.

A lining 41, shown in the form of a ring, is received in the tube, the outer periphery of this lining being preferably provided with locating parts 42 at the slot, shown as radial projections and depressions with which the inner end of the pin is arranged to coact, the pin being preferably of sufficient length for causing coaction between the inner end of the pin and the depressions, the inner end of the pin being preferably formed to be received in the depressions and forming a continuously acting holding means between the spring-member and the socket-member for holding the socket-member at various points of its helical adjustment.

A hard fiber insulating washer 45 is located at the rear end of the socket-member and is shown received in an annular recess 46 in the rear end of the ring, being received against a shoulder 47 in said ring, the rear end of the ring being spun about the rear edge of the washer for forming a shoulder 48 securing the hard fiber washer in the outer end of the socket-member. These insulating hard fiber washers are formed preferably by punching the same out of hard fiber sheets, and form an insulating support for the terminal post which is strong and durable, and is thin, and therefore occupies little space lengthwise of the electric connector. The hard fiber washer is provided with a preferably axial hole 49, in which a yieldable electric terminal post 50 has longitudinal movement, preferably yieldingly pressed toward the socket end of the socket-member by means of a spring 51. In the present exemplification an inner tube 52 is secured in the hole of the washer, as by providing the rear end of the tube with a reduced end 53, which is received in the hole of the washer, the tube being secured to the washer by having the washer secured between the shoulder 54 formed by said reduced end and having the rear end of this reduced end spun about the rear end of the wall of the hole in the washer for forming a shoulder 55.

The forward end of the tube is provided with an enlarged bore 61 forming a shoulder 62 at the bottom of the bore, and the forward end of the post is provided with a head 63, the spring being received in the inner tube between said head and last-named shoulder for normally pressing the post forwardly. The head is shown formed by a ring received about the reduced end 64 of the post and held in place between the shoulder 65 and the outer spread end 66 of said reduced end. The construction permits ready assembling of the parts. When the plug of the electric lamp is secured to the socket-member, the end terminal 67 of the electric light-bulb contacts the forward end of the post and forces the same rearwardly against the resistance of the spring for forming good electric contact.

The inner tube is preferably spaced from the lining or ring member and from the tube of the socket-member, the space 68 thus formed in connection with the hard fiber washer insulating the post from the tube of the socket-member and providing a very simple and compact structure for the purpose which is of substantially less length than in the character of connectors employing a body of rubber as an insulating material, and providing a novel, more simple and durable structure not liable to fracture.

The rear end of the terminal post is provided with an enlargement 69 to which the flexible electric conductor 70 is secured. This conductor extends laterally from the terminal post and makes connection with an outer electric connector 71 which is secured to the casing of the lamp, the proximate ends of the light-bulb connector and outer connector and said flexible conductor being located in the space 18 between the reflector and casing. The socket-member is rotatable about the terminal post so that the flexible conductor 70 may maintain its laterally extending relation to the reflector.

A plug-tube 75 is suitably secured to the casing of the lamp, which is usually accomplished by means of soldering, brazing, or heat welding. The outer end of this tube is provided with connecting means for the plug, exemplified as a socket 76, the wall of which is provided with bayonet-slots 77, with which coacting pins 78 of a usual plug 79 may be connected, the plug having the usual electric conductor 80 from a suitable source of electricity connected therewith.

An insulating hard fiber washer 81 is releasably secured to the tube, as by means of having the hard fiber washer received about the inner end of the tube, as shown at 82, the inner end of the tube being screw-threaded, as shown at 83, for having a gland 84 screwed thereabout, the hard fiber washer being clamped between the gland and the inner end of the tube.

An electric terminal post is connected with this hard fiber washer, preferably in manner similar to the connection of the electric terminal post of the electric light-bulb with the hard fiber washer 45, the parts being designated by similar but primed reference numerals.

In my improved device the flange 22 is arranged to be secured to the reflector, this flange being of metal and not affected by heat employed in the attaching operation. Furthermore, the tube 75 is secured to the casing, this tube being of metal and not detrimentally affected by the heat employed in attaching the same. When these parts have been connected, the other parts of my improved device are readily assembled in connection therewith, which it will be observed may be accomplished in the present exemplification without the employment of tools.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a lamp, the combination with a reflector, of a lamp-member and a socket-member having helical guide-connection therebetween about the line of the principal axis of said reflector, and spring-pressed positioning means acting operatively between said members removably received about said members.

2. In a lamp, the combination with a reflector, of a lamp-member and a socket-member having helical guide-connection therebetween about the line of the principal axis of said reflector, and a spring-pressed positioning means at said guide-connection.

3. In a lamp, the combination of a casing, a reflector in said casing having a rear central aperture, said reflector provided with a flange about said aperture, a socket-tube in said flange, a light-bulb secured to the forward end of said socket-tube, said flange and socket-tube having a helical guide-connection therebetween for guiding said socket-tube in a helical path for focusing said light-bulb in said reflector, and a spring-pressed holding means removably received about said flange and acting operatively between said flange and socket-tube for automatically holding said socket-tube in adjusted position.

4. In a lamp, the combination of a reflector having a central rear aperture and a longitudinally extending flange about said aperture, a socket-member removably received in said flange, a light-bulb secured to the forward end of said socket-member, said flange and socket-member provided with a helical guide connection for helically guiding said socket-member in said flange for focusing said light-bulb in said reflector, and automatically acting spring positioning means acting on said socket-member removably received about said flange.

5. In a lamp, the combination of a reflector having a rear central aperture, a socket-member received in said aperture arranged to receive a light-bulb at its forward end, a hard fiber washer in said socket-member, a longitudinally movable spring-pressed terminal post in said hard fiber washer, and a laterally extending electric conductor at the rear end of said post, said reflector and socket-member having a helical guide-connection for helically guiding said socket-member for focusing said light-bulb in said reflector, and said socket-member rotatable about said terminal post for permitting said electric conductor to maintain its lateral position during said helical guiding of said socket-member.

6. In a lamp, the combination of a reflector having a central rear aperture and a longitudinally extending flange about said aperture, a socket-member received in said aperture, a light-bulb secured to the forward end of said socket-member, said socket-member provided with a helical slot and said flange provided with a positioning aperture, and a spring-pressed part received through said aperture into said helical slot whereby said socket-member is helically guided for focusing said light-bulb in said reflector.

7. In a lamp, the combination of a reflector having a central rear aperture and a longitudinally extending flange about said aperture, a socket-member received in said aperture, a light-bulb secured to the forward end of said socket-member, said socket-member provided with a helical slot having a bottom provided with positioning projections, and a spring received about said flange, said spring provided with a part received through said flange and guideway against said bottom.

8. In a lamp, the combination of a reflector having a central rear aperture, a socket-member received in said aperture, a light-bulb secured to the forward end of said socket-member, said socket-member provided with a helical guideway having retaining means, and a spring-pressed part on said reflector coacting with said guideway and said retaining means thereof for helically guiding said socket-member for focusing said light-bulb in said reflector and automatically retaining said light-bulb in its adjusted position.

9. In a lamp, the combination of a reflector having a central rear aperture and a longitudinally extending flange about said aperture, a socket-member received in said aperture, a light-bulb secured to the forward end of said socket-member, said socket-member provided with a helical slot, said flange provided with a positioning aperture, and a spring removably received about said flange and having a part thereon received through said positioning aperture and into said helical slot, whereby said socket-member is helically guided for focusing said light-bulb in said reflector.

10. In a lamp, the combination of a reflector having a central rear aperture and a longitudinally extending flange about said

aperture, a socket-member received in said aperture, a light-bulb secured to the forward end of said socket-member, a hard fiber washer in said socket-member, a spring-pressed terminal post movable longitudinally through said hard fiber washer, and an electric conductor extending laterally from said terminal post, said flange and socket-member provided with helical guide-connection whereby said socket-member is helically guided for focusing said light-bulb in said reflector, and said socket-member rotatable about said terminal post during said helically guided movement thereof for maintaining said electric conductor in laterally extending position.

11. In a lamp, the combination of a lamp-member, a socket-tube supported by said lamp-member, said socket-tube provided with a helical slot, a second tube having a periphery provided with positioning projections, said second tube secured in said socket-tube with said positioning projections on said periphery exposed through said helical slot, a reflector provided with a central rear aperture and a longitudinally extending flange at said aperture, said flange provided with a hole, and a removable spring received about said flange and having a part thereon received through said hole and helical slot yieldingly against said positioning projections on said periphery.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

CHARLES H. FISCHER.

Witnesses:
CHARLES E. WEBER,
THERESA M. SILBER.