July 14, 1931. G. H. CUSHING 1,814,669

PARKING LAMP

Filed Dec. 5, 1929

FIG. 1.

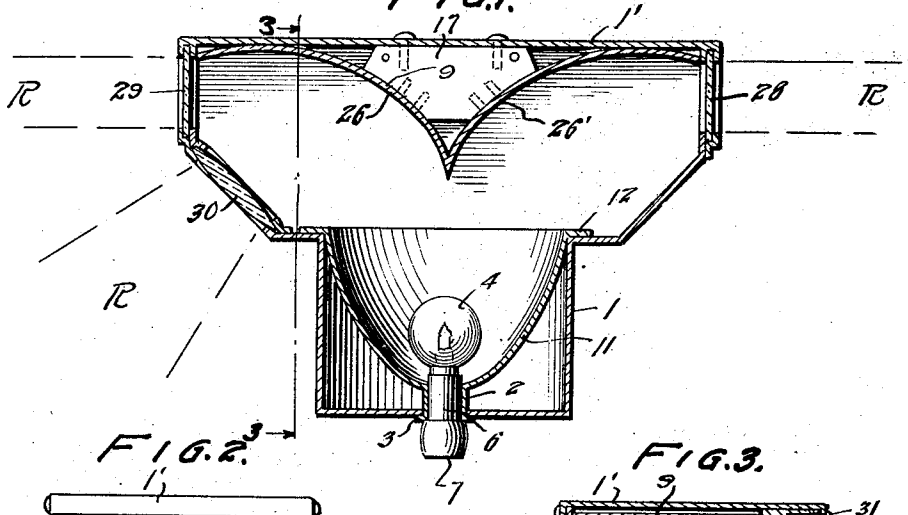


FIG. 2.

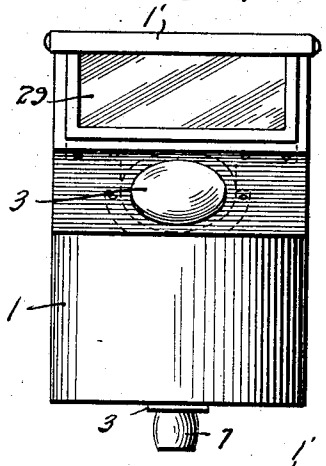


FIG. 3.

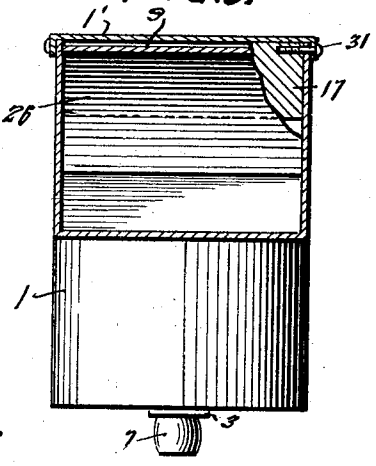
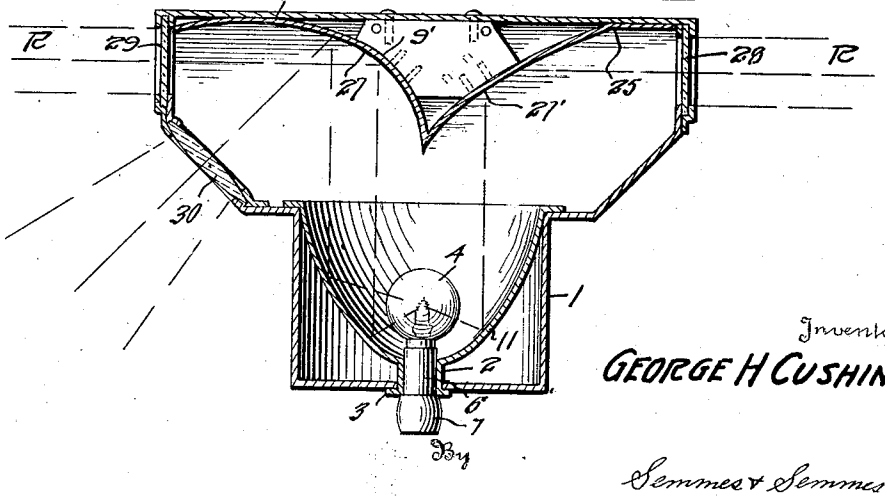


FIG. 4.



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UNITED STATES PATENT OFFICE

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PARKING LAMP

Original application filed November 25, 1924, Serial No. 752,214, and November 20, 1929, Serial No. 408,643. Divided and this application filed December 5, 1929. Serial No. 411,919.

The invention relates in general to lamps and more particularly has reference to lamps used as headlights or other lamps equipped with reflectors.

This application is a division of application Serial No. 752,214 filed November 25, 1924, and application Serial No. 408,643 filed November 20, 1929.

The major object of this invention is the provision of a novel indicating and running lamp for vehicles.

An equally important object of the invention is the provision of an indicating and running lamp for vehicles and besides serving to indicate the vehicle when it is in motion or at a standstill will also serve in aiding persons approaching the vehicle to definitely locate its position.

Another object of the invention is to provide an indicating and running light of simple and compact design possessing great strength and rigidity.

Another object of my invention is to provide a lamp in which the direct rays from the light source are shielded.

A further object of my invention is to provide a lamp which utilizes all of the light emanating from the light source and one that is adapted to focus the light upon the surface to be illuminated.

A still further object of my invention is to provide a lamp which not only focuses the light upon a given surface, but also shields the light rays in such manner as to prevent any glare to inconvenience or endanger a person in the path of its light.

With these and other objects in view, which may be incident to my improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements comprising my invention may be varied in construction, proportions and arrangement without departing from the spirit and scope of the appended claims.

The invention comprehends the provision of a novel indicating and running lamp for use with a vehicle in order that its exact position may be determined at all times and at any angle from which it is viewed. One method of practically effecting the concept of this invention is to provide a lamp housing having a primary reflector surrounding a light source, mounted therein and a multi-directional secondary reflector positioned above the primary reflector, the secondary reflector being adapted to direct light from the lamp housing in a plurality of directions.

In order to make my invention more clearly understood, I have shown in the accompanying drawings, means for carrying the same into practical effect without limiting the improvements in their useful applications to the particular constructions which, for the purpose of explanation, have been made the subject of illustration.

In the drawings:

Figure 1 is a vertical sectional view of the lamp.

Figure 2 is an end view of the lamp.

Figure 3 is a vertical sectional view along the line 3—3 of Figure 1.

Figure 4 is a modification of the lamp embodied in Figure 1 and having a modified form of secondary reflecting surfaces.

Throughout the different views similar reference numerals refer to like parts. Referring to Figure 1, I have shown an illustration of my invention in the form of an automobile parking lamp. The lamp is formed with a housing 1, and contained within the housing is a source of light 4 which is surrounded by a primary reflector 11.

The housing 1 may be formed in any desired manner and is preferably provided with a lower well-like portion in which is mounted the light source 4 and the parabolic reflector 11. Reflector 11 is provided with a flange 12 about the outer edge thereof which is adapted to engage with a shoulder formed in the housing to properly position the reflector in the housing. A tubular projection 2 is formed on the reflector 11 which extends through a flanged opening 3 in the lower wall of the housing 1. This tubular projection may be spun outwardly to secure the reflector in the housing. A lamp and plug receptacle 6 of any available type may be positioned in the tubular projection 2, and may be provided with the usual plug 7.

Opposite the primary reflector, in addition to the cover 1′ of the housing, is a multi-directional secondary reflector 9 formed of two parabolic reflecting surfaces 26 and 26′. The secondary reflector 9 is mounted upon the cover by suitable screw means 17. It should be observed that the substantially parabolic reflecting surfaces 26 and 26′ are positioned back to back with respect to each other so that the cross section of the secondary reflectors, as shown in Figure 1 presents symmetrical halves. Moreover the adjacent arms of the parabolas forming these surfaces are joined together at their ends along a line substantially perpendicular to the major axis of the primary reflector as shown by the dotted line in Figure 3.

While surfaces 26 and 26′ have been shown symmetrically positioned this construction need not be followed if desired. For example, the size of either the parabolic sections 26 and 26′ may differ from each other without departing from the spirit of the invention.

Mounted within the housing are three lenses. One lens 28 is to be used to give light in the forward direction, and another lens 29, which may be of colored glass, is used as the signal for the parking light. Mounted within the housing with its axis at an angle thereto, is a dispersing lens 30 which is to be used to direct the light rays upon the side or the running board of the vehicle. From an inspection of Figure 1 it will be noted that the lenses 28 and 29 are in parallel planes while the lens 30 is in a plane which is angularly disposed with respect to that of the previously mentioned lenses.

The theory of my improved parking and running lamp is that the lenses are so arranged as to give light in the proper direction both when the vehicle is in operation and when parked. It is well known that night driving is particularly hazardous when the vehicles are not properly lighted. By this, I mean that at night it is difficult to gauge the distance between passing machines unless there is some light thrown on the body of the machine. It is with this idea in mind that I have provided the dispersing lenses shown in my parking lamp. As is well understood light rays from the light source will be deflected from the primary reflector in a direction which is parallel to the major axis thereof and these rays will impinge upon the reflecting surfaces 26 and 26′ of the secondary reflector after which they will be again reflected through the various lenses associated with the lamp.

The light rays R reflected from the secondary reflector 9 pass through the lens 30 and are dispersed along the side of the car and light up the space beneath and along the running board. This gives the approaching motorist an opportunity to distinguish the elements of the car and also will serve to illuminate the space of the road between the passing cars. This is particularly desirable when the high-powered headlights are dimmed both for the reason that the sudden dimming is very apt to cause confusion to the driver of the approaching vehicle unless there is an auxiliary light which will serve to give a lighted surface on the side of the car. The colored lens 29, of course, is used when the car is parked and the lens 28 gives a light in the direction in which the vehicle is moving, which would be sufficient to light the road if the headlights were turned off. It also serves the purpose as a pilot light when the vehicle is parked.

Usually parking lamps are of small candle power for reasons of economy desired in the use of such lamps. With my improved reflecting surface, I am enabled to utilize all of the light emanating from the small candle power bulb and it is so reflected from the secondary reflector to give maximum light intensity.

While in the construction shown the indicating and running lamp is positioned upon a front fender or mudguard of an automobile, it should be observed that by merely placing the lenses 29 and 30 on the right hand side of the lamp as shown in Figure 1 and the lens 28 on the left hand side of the lamp, the structure may be positioned upon a rear mudguard of an automobile with equally advantageous results.

Referring to Figure 2, the dispersing lens 30 is shown in its relative position with the colored diffusing lens 29 mounted in the housing 1 of the lamp and at the rear of the lamp.

In Figure 3, I have shown the cover 1′ of the housing fitting down over the sides and upon which is mounted the secondary reflector 9. The cover is fastened to the housing 1 by suitable screw means 31.

There is shown in Figure 4 a somewhat modified form of the indicating and running light. The embodiment here shown differs from that disclosed in Figure 1 only in the shape of the reflecting surfaces of the secondary multi-directions reflector 9′. In Figure 4 one of the reflecting surfaces 27 is substantially parabolic in shape, while the other reflecting surface is broken by being formed of a curvilinear portion 27′ provided with an extension portion 25 which is joined thereto along a line lying to the right or outside of a vertical projection of the greatest diameter of the primary parabolic reflector. It should be noted that the curvilinear portion is in effect an arc of comparatively great curvature so as to form a substantially straight surface and moreover it is positioned at such an angle with respect to the major axis of the primary reflector that the light rays R de-

flected therefrom will be substantially horizontal as shown. It should be observed that the curvilinear portion 27′ is joined to the arm of the parabolic surface 27 along a line substantially at right angles to the major axis of the primary reflector.

The purpose of this construction is apparent from a consideration of the features involved. As is well understood light rays from the light source will be reflected from the primary reflector parallel to the major axis thereof and will thence strike the secondary reflector 9′. The portion of the light impinging upon the surface 27 will be directed through the lens 29 and the lens 30 as previously described. Light striking the surface 27′ will be reflected as rays or pencils which are substantially horizontal.

While theory explains a parabolic reflector, such as that employed for the primary reflecting surface, as reflecting all of the light from the light source in rays parallel to the principal axis of the reflector, it is well understood and recognized that a certain amount of light from the light source is not reflected in this manner but escapes as "free light". To provide for this condition the right reflector is formed of two separate surfaces, the curvilinear portion 27′ and the extension 25. Thus it may be seen that substantially all of the free light striking upon the surface 27′ and 25 will be reflected through the lens 28. The length of the extension 25 is such that a ray of free light striking upon its left end or its end opposite to the lens 28 will be deflected through this lens. It is evident that the lengths of the curvilinear portion 27′ and the extension 25 are dependent upon such factors as the size of the primary reflector, the strength of the light source, the dimensions of the lens 28, the angular position of the surface 27′ with respect to the major axis of the primary reflector and the degree of curvature of the curvilinear portion 27′, and also upon the distance between the light source and the secondary reflector.

It will be appreciated that the advantages of the second embodiment of the invention shown in Figure 4 for the purpose of controlling free light may be incorporated in the device shown in Figures 1 through 3. For example, the parabolic surfaces 26 and 26′ may be constructed of different sizes by forming the parabolas with their focus points positioned at unequal distances from their vertexes. Moreover it will be appreciated that by positioning the unequal parabolic surfaces so that their major axes form unequal angles with a vertical plane passing through the light source, it will be appreciated that the free light may be further controlled.

In both embodiments of the invention, if it is desired an auxiliary reflector in the form of a miniature paraboloid may be positioned around the light source. By such an expedient the amount of uncontrolled free light is materially reduced.

While the foregoing construction has been described as of particular use for automobiles it is to be understood that it may be employed for other vehicles and in fact may be used wherever a strong light is desired without departing from the spirit and scope of the invention. Likewise it should be understood that while I have disclosed an electric bulb as providing the light source for the lamp, other means of illumination, such as illuminating gases may be employed if desired without departing from the scope of the appended claims.

It will be appreciated from the foregoing description that I have provided an auxiliary lamp which will illuminate a vehicle so as to indicate its position at all times and when viewed in any manner. It may also be appreciated that I have provided an indicating and running lamp which besides being of sturdy construction, possessing great strength and rigidity, is of simple design.

While I have shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustration, as it is apparent that many changes and variations may be made therein by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.

I claim:

1. A lamp structure comprising a housing, a source of light, a primary reflector, a secondary reflector, and a plurality of light dispersing lenses, one of said lenses lying in a plane angularly positioned with respect to the planes of the other lenses.

2. A lamp comprising a housing, a source of light, a primary reflector, a secondary reflector and a plurality of light dispersing lenses, one of said lenses lying in a plane different from the plane of the remaining lenses, said remaining lenses lying in parallel planes.

3. A lamp comprising a housing, a light source positioned in the lower portion of the housing, a reflector positioned around the light source and adapted to project light from the source upwardly, a reflector positioned above the light source adapted to project light falling thereon through an opening in one side of the housing and through an opening in the opposite side of the housing.

4. A lamp structure comprising a housing, a light source positioned in the lower portion of the housing, a reflector positioned around the light source and adapted to project light from the source upwardly, a re-

flector positioned above the light source adapted to project light falling thereon through an opening in one side of the housing and through an opening in the opposite side of the housing, and means in said openings for dispersing light passing therethrough.

5. A lamp structure for vehicles comprising a housing, a light source in the lower portion thereof, a parabolic reflector surrounding said light source and adapted to project light from said source upwardly, a multi-directional reflector positioned above said light source so as to receive rays reflected from said parabolic reflector, said multi-directional reflector being adapted to project light falling thereon through a plurality of oppositely disposed openings in said housing.

6. A lamp structure for vehicles comprising a housing, a light source in the lower portion thereof, a parabolic reflector surrounding said light source and adapted to project light from said source upwardly, a multi-directional reflector positioned above said light source so as to receive rays reflected from said parabolic reflector, said multi-directional reflector being adapted to project light falling thereon, through a plurality of oppositely disposed openings in said housing, one of said openings being in a plane angularly positioned with respect to the plane of the other openings.

7. A lamp for vehicles comprising a housing provided with a depending well-like portion and a detachable cover, a parabolic reflector having a peripheral flange positioned in said well-like portion of the housing, said flange cooperating with the housing to position the reflector therein, a secondary reflector secured to the detachable cover for said housing and adapted to project light directed by the parabolic reflector through a plurality of openings formed in said housing.

8. A lamp structure for vehicles comprising a housing, a well-like portion formed in said housing, a parabolic reflector positioned in said well-like portion and having a peripheral flange adapted to coact with a shoulder formed about the well-like portion of said housing to position the reflector, a tubular projection extending from the vertex portion of said parabolic reflector and extending through an opening in the lower portion of said well, said flange and tubular projection serving to position said reflector within said housing, said housing having an opening in one end thereof and an opening in the opposite end thereof and a third opening in one end beneath the aforesaid opening, a reflector positioned in the upper portion of said housing adapted to project light from the light source through each of said openings, and means in said openings to disperse light passing therethrough.

9. A lamp structure for vehicles comprising a housing, a well-like portion formed in said housing, a parabolic reflector positioned in said well-like portion and having a peripheral flange adapted to coact with a shoulder formed about the well-like portion of said housing to position the reflector, a tubular projection extending from the vertex portion of said parabolic reflector and extending through an opening in the lower portion of said well, said flange and tubular projection serving to position said reflector within said housing, said housing having an opening in one end thereof and an opening in the opposite end thereof and a third opening in one end beneath one of the aforesaid openings, a reflector positioned in the upper portion of said housing adapted to project light from the light source through each of said openings.

10. A lamp structure comprising a housing, a light source positioned therein, a primary reflector surrounding said light source, and a multi-directional reflector having two separate reflecting sections positioned above said primary reflector, one of said reflecting sections being formed of a parabolic surface and the other of said sections being formed of a curvilinear surface having an extension portion formed thereon, the multi-directional reflector being adapted to project light from the lamp housing in a plurality of directions.

11. A lamp comprising a housing, a light source positioned therein, a primary reflector surrounding said light source, and a multi-directional reflector having two separate reflecting sections positioned above said primary reflector, one of said reflecting sections being formed of a parabolic surface and the other of said sections being formed of a curvilinear surface with an extension portion formed thereon, the parabolic surface and the curvilinear surface being positioned back to back with respect to each other so that an end of the curvilinear surface coincides with an arm of the parabola forming the parabolic surface along a line perpendicular to the major axis of said primary reflector.

12. A lamp structure for vehicles comprising a housing, said housing being provided with a plurality of openings at one end and a single opening at the other end, a light source in the lower portion of said housing, a parabolic reflector surrounding said light source and adapted to project light from said source upwardly upon a multi-directional reflector formed of a separate reflecting section having a parabolic shaped surface and a separate reflecting section having a curvilinear shaped surface provided with a substantially straight extension portion, said parabolic reflecting section of the multi-

directional reflector being positioned adjacent the end of the housing having the plurality of openings, and the curvilinear reflecting section being positioned adjacent the end of the housing having the single opening.

13. A lamp structure for vehicles comprising a housing, the upper portion of said housing being provided with an opening at an end thereof, a second opening lying in a parallel plane thereto at the opposite end of said housing, and a third opening below the first mentioned opening angularly disposed with respect thereto, a light source in the lower portion of said housing, a parabolic reflector surrounding said light source and adapted to project light from said source upwardly, a multi-directional reflector formed of a separate reflecting section having a parabolic shaped surface and a separate reflecting section having a curvilinear shaped surface provided with a substantially straight extension portion, said parabolic reflecting section of the multi-directional reflector being positioned adjacent the end of the housing having the plurality of openings, and the curvilinear reflecting section being positioned adjacent the end of the housing having the single opening.

14. An auxiliary lamp for vehicles comprising a housing, a well-like portion formed in said housing, a parabolic reflector positioned in said well-like portion and having a peripheral flange adapted to coact with a shoulder formed about the well-like portion of said housing to position the reflector, a light source arranged at the focus of said reflector, a multi-directional reflector positioned above said light source and adapted to project light from said lamp housing in a plurality of directions.

In testimony whereof I affix my signature.

GEORGE H. CUSHING.