Nov. 30, 1926. 1,609,111

L. C. DOANE

BUS LIGHTING UNIT

Original Filed April 23, 1925 2 Sheets-Sheet 1

FIG. 1.

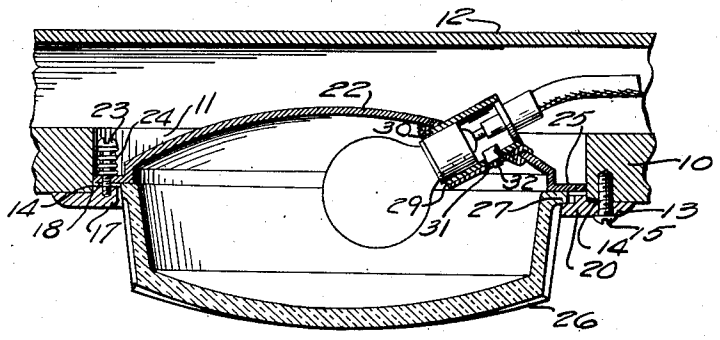


FIG. 2.

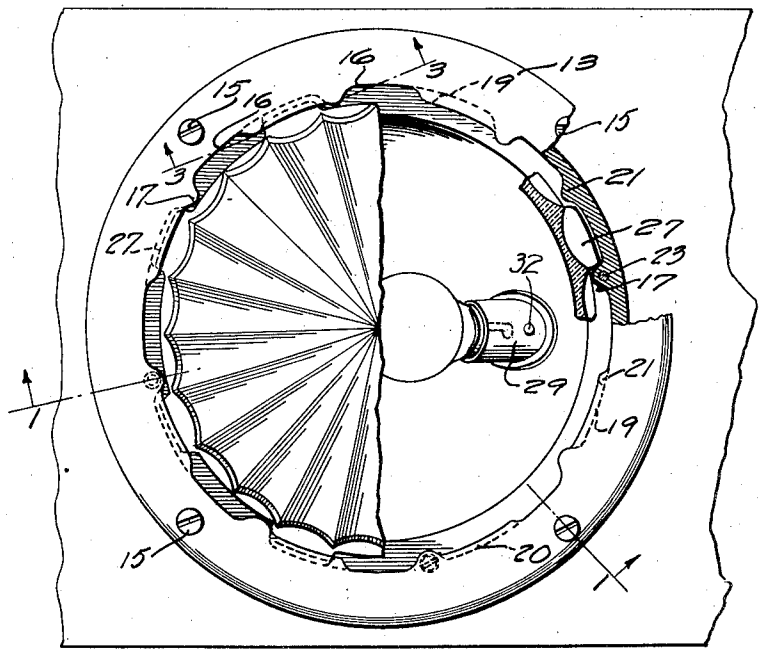
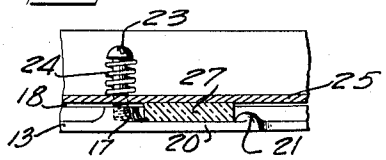


FIG. 3.



INVENTOR
LEROY C. DOANE
BY
Joseph B. Liberman
ATTORNEY

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L. C. DOANE

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Fig. 5.

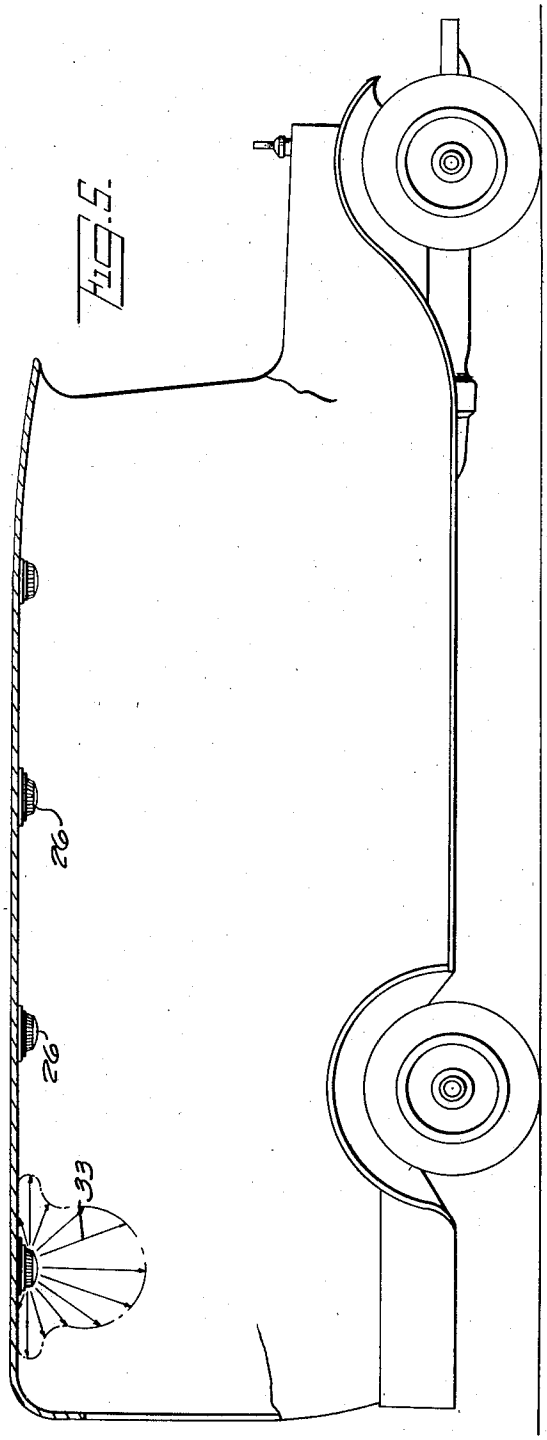
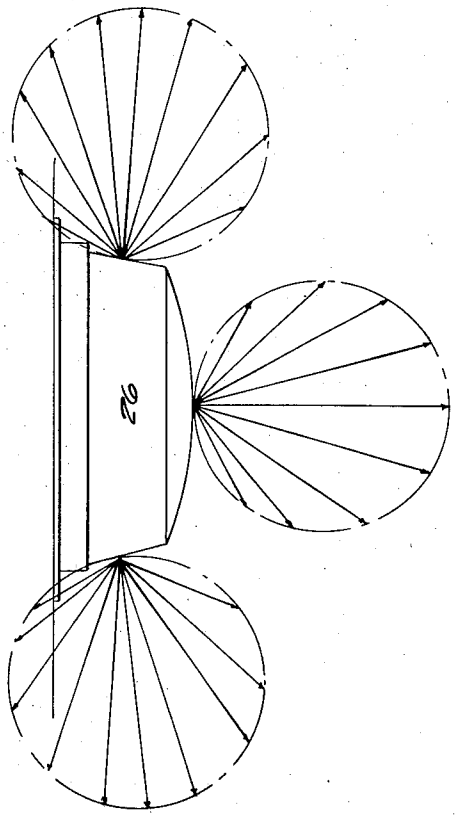


Fig. 4.



INVENTOR
LEROY C. DOANE
BY
Jules B. Liberman
ATTORNEY

Patented Nov. 30, 1926. 1,609,111

UNITED STATES PATENT OFFICE.

LEROY C. DOANE, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE MILLER COMPANY, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

BUS-LIGHTING UNIT.

Substitute for application Serial No. 25,193, filed April 23, 1925. This application filed July 24, 1926. Serial No. 124,637.

The present invention relates to bus lighting units, and is more particularly directed toward a lighting unit or lighting fixture suitable for use in automobile busses as a ceiling light, or the like.

For structural reasons, the ceilings in modern automobile busses are made comparatively low. Lamps may be carried in recesses in the ceilings and provided with reflectors, but this provides no illumination for the ceiling of the bus, making it dark and uninviting. Bare lamps projecting below the ceiling are unsuited for illuminating the interior of busses for they produce glare, eye strain, and undesirable reflections. A slight improvement over the bare lamp has been effected by the use of bowls of diffusing glass. These bowls, however, had to be very shallow on account of the limited head room in the low ceiling bus.

I have found, that the use of these shallow glass bowls or shades of conventional outline (generally a small portion of the surface of a sphere) does not provide adequate illumination for the ceiling and upper side walls of the bus body. The surface of these bowls is almost horizontal and hence little or no light coming from the diffusing source is directed upwardly, resulting in making the interior of the bus appear to be dark and uninviting. I have found that this condition may be overcome by properly lighting the ceiling with units designed to properly redirect the light. These units employ diffusing bowls of special shape to redirect the light without interfering with the head room in the bus. The present invention contemplates a device suitable for the purpose which is capable of being mounted near the ceiling of a bus or automobile body and which is able to support the shade or globe in a compact and convenient manner so that it does not project into the interior.

One of the principal objects of the present invention is to provide a bus lighting unit which may be mounted in the ceiling of busses or the like, and which will adequately illuminate the ceiling and upper side walls of the bus, as well as provide downwardly directed light for the general illumination of the bus.

An object of the present invention is therefore to provide a holder for these purposes which permits the ready insertion and removal of the glass globe or bowl, and in which it is firmly held in position so that it will not vibrate or rattle while the vehicle is in motion.

Another object of the invention is to provide such a device in which the electric lamp is supported by a reflector, and wherein this reflector is utilized as the movable element for releasably clamping the glass bowl or shade in place.

Another object of the invention is to provide a lighting device for automotive equipment which can be easily mounted on the inside walls of the vehicle body, and which can be readily removed, if desired, for inspection and repairs.

A further object of the invention is to provide an improved lighting unit for automotive vehicles which may be used with the various sorts of lamps and sockets having either single or double contacts and screw or snap terminals.

In the accompanying drawings, there is shown for purposes of illustrating the invention, one of the many possible embodiments in which the present invention may take form, it being understood that they are merely illustrative of the inyention rather than limiting the same.

In these drawings:

Figure 1 is a sectional view taken on the broken line 1—1 of Figure 2;

Figure 2 is an inverted plan view of the structure shown in Figure 1;

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a side view of the glass bowl illustrating the distribution of light from the various parts of the bowl; and

Figure 5 is a side outline view of an automobile bus body illustrating the distribution of light from the preferred form of lighting unit.

The supporting frame work of the vehicle body is shown at 10 and is provided with a hole 11 of proper configuration in which to mount the unit. The roof or outside covering of the vehicle body is indicated at 12. These parts are spaced apart in the usual manner and permit wiring and mounting of the fixture.

A ring 13, preferably round, is shown as being provided with a circular shoulder 14 which fits insides the hole 11. This ring may be attached to the frame 10 by suitable screws such as illustrated at 15. The ring is provided with a number of regularly spaced notches 16, which extend from the front side of the ring through to the rear. It is also provided, adjacent one side of these notches 16, with lugs or abutment members 17 which extend to the rear 18 of the ring. The material of the ring is undercut as indicated by the dotted lines 19 so as to provide a substantially smooth surface near the rear side of the ring. This surface extends from one of the lugs 17 around to the adjacent lug 17. The front side of the ring, between the notch 16 and the said adjacent lug is provided with shelving portions 20 and these shelving portions are provided with small lugs or projections 21 extending rearwardly, as indicated.

The reflector is here shown in the form of a sheet metal stamping carried on the backside of the ring. The reflector is yieldingly fastened to the backside of the ring 13, preferably by means of screws 23 threaded into the ring 13, springs 24 being interposed between the screw heads and the reflector. These springs act to press the periphery 25 of the reflector toward the rear surface 18 of the ring.

A glass lighting bowl 26 of suitable shape is provided with a number of outwardly extending lugs 27 which are adapted to pass through the notches 16 in the ring. This bowl may be inserted in place by passing these lugs through the notches to bring the upper side of the bowl against the lower side of the reflector, then apply sufficient pressure to the bowl to compress the springs 24 sufficiently to permit the lugs of the shade to pass by the lugs or projections 21. The glass bowl may then be turned a part of a revolution to bring the other side of the glass lugs against the lugs or abutments 17 of the ring. Upon removing the pressure from the bowl the springs 24 will press the reflector against the upper side of the glass bowl and will lock the lugs 27 firmly in place. It will, of course, be understood that various other constructions may be employed for supporting the reflector and glass bowl from the ring so that the reflector will be carried above the ceiling, and the glass bowl will be carried close up to the ceiling.

The reflector carries an obliquely disposed tube 29 placed to one side of the center of the reflector. A conventional lamp socket 30, here shown in the form of a snap terminal socket, is carried in this tube. The tube has a hole 31 to cooperate with the spring plunger 32 on the lamp socket so as to hold the socket in place. The socket may be connected to the wire leads either before the reflector is mounted in the bus ceiling, or the wires may be pulled through the tube and connected to the socket and then the socket pushed back into place. The same tube may be used to support screw threaded sockets or single and double contact snap terminal sockets. In any case, the lamp which may be a high candle power lamp, may be carried underneath the center of the reflector and may be easily removed and replaced when the glass bowl has been taken off.

The ring 13 and reflector may be assembled so as to be handled as a unit and it may be readily mounted on the frame 10. The form of glass globe to be used is preferably shallow as indicated so that it will not project into the interior of the vehicle body. The springs 24 will hold the parts tightly together so that vibration of the vehicle will not cause them to rattle. It will be noted that the entire assembly is exceedingly compact, without sacrifice of structural strength or ease of assembly. Also that no tools are necessary in removing a globe.

The preferred form of glass lighting bowl 26 is illustrated more in detail in Figure 4. It is preferably made of opal glass and is provided with side walls 26^a which are nearly vertical and of substantially uniform thickness. The maximum intensity of the diffused light is perpendicular to the side walls of the glass and the short conical side walls of the glass bowl direct a substantial amount of light horizontally onto the side walls of the bus. Light is also directed above the horizontal to illuminate the ceiling of the bus. Some of the light from the side walls will be directed downwardly to add to the light coming from the convex bottom of the bowl so that sufficient light will be diffused and spread below the bowl to evenly illuminate the bus body. The outside surface of the bowl may be fluted to improve its ornamental appearance as shown in Figure 2.

Figures 5 and 6 show the photometric distribution of these lighting units, the curve being as indicated at 33. From this, it will appear that considerable light is directed onto the ceiling of the bus and onto the upper side walls, thereby illuminating these parts of the bus to a considerable degree. By thus illuminating the ceiling and upper parts of the side walls of the bus, advertising matter is legible and the interior of the bus is made more cheerful and inviting. All this is accomplished by a lighting unit which gives a soft even light and which does not project into the body of the bus. These units may readily be arranged to use any standard form of lamp and may be so mounted in the ceiling of the bus that they may be taken apart for repairs, replacement or cleaning. They are theft

proof and dust proof and present a pleasing appearance during the day time, and may be easily kept clean.

The present application is a substitute for application Serial No. 25193, filed April 23, 1925.

It is obvious that the invention may be embodied in many forms and constructions, and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not limit myself in any way with respect thereto.

What is claimed is:

1. The combination with a bus having a ceiling and side walls, of a lighting unit mounted in the ceiling and including a shallow diffusing glass bowl having substantially vertical sides, the sides of the bowl being exposed for substantially the entire depth thereof, and a lamp carried inside the bowl, the bowl being so shaped that a substantial amount of light is directed onto the ceiling and upper side walls.

2. The combination with a bus having a ceiling and side walls, of a ceiling supported lighting unit including a shallow downwardly concave reflector permanently carried by the ceiling, an obliquely disposed lamp socket carried by the reflector, a lamp in the socket, and a removable diffusing glass bowl carried underneath the lamp and reflector, the sides of the bowl being exposed for substantially the entire depth thereof, the bowl being so shaped that a substantial amount of light is directed onto the ceiling and upper side walls.

3. In a lighting unit for busses, a reflector, supporting means for the reflector including a ring adapted to be mounted substantially flush with the ceiling of the bus, a lamp socket carried by the reflector, a lamp carried in the socket underneath the reflector, and a shallow diffusing glass bowl, removably carried by the ring and projecting therethrough, the bowl having substantially vertical sides which are exposed for substantially the entire depth thereof, whereby a substantial portion of the light from the lamp is diffused and directed onto the ceiling of the bus to illuminate the same.

4. In a lighting unit for busses, a shallow, downwardly concave reflector, supporting means for the reflector including a ring adapted to be mounted substantially flush with the ceiling of the bus, an obliquely disposed lamp socket removably carried by the reflector, a lamp carried in the socket underneath the reflector, and a shallow diffusing glass bowl, removably carried by the ring and projecting therethrough, the bowl having substantially vertical sides which are exposed for substantially the entire depth thereof, whereby a substantial portion of the light from the lamp is diffused and directed onto the ceiling of the bus to illuminate the same.

5. In a lighting unit for busses, a reflector, a ring adapted to be mounted substantially flush with the ceiling of the bus, springs for pressing the reflector toward the ring, a lamp socket carried by the reflector, a lamp carried in the socket underneath the reflector, and a shallow diffusing glass bowl having substantially vertical sides, said bowl having a flange removably carried between the reflector and ring, the bowl surrounding the lamp whereby a substantial portion of the light from the lamp is diffused and directed onto the ceiling of the bus to illuminate the same.

6. In combination, a bus or the like having a hole in the ceiling thereof, a downwardly concave reflector extending into said oepning, an obliquely disposed tube carried by the reflector, a lamp socket removably carried in the tube, means for locking the socket in position, a ring mounted substantially flush with the ceiling of the bus and supporting the reflector, and a shallow diffusing glass bowl removably carried adjacent the ceiling, the sides of the bowl being exposed for substantially the entire depth thereof, the bowl having substantially vertical sides surrounding the lamp to diffuse the light onto the ceiling.

7. In a lighting unit, a permanently mounted ring, a movably mounted member supported from the back side of the ring, spring means for yieldably pressing said member against the ring, a lamp socket carried by the member and bodily movable therewith, a glass shade extending forwardly of the ring, the shade having outwardly extending lugs, the ring having notches through which the shade lugs may pass, the back side of the ring between the notches being provided with recesses to receive the shade lugs when turned angularly, the spring pressed member acting against the shade to hold the lugs in the recesses.

8. In a lighting unit for motor vehicles, a ring, a reflector yieldably pressed toward the backside of the ring, a glass shade carried at the front of the ring, the ring having notches and the shade having cooperative lugs whereby the shade may be pressed against the reflector to displace it backwardly, and means for locking the shade in the ring upon a partial revolution of the shade.

9. A holder for globes or the like comprising a ring, a reflector, carried at the backside of the ring, spring means for pressing the reflector toward the ring, the ring having interiorly disposed notches extending across the inner edge of the ring, and undercut portions near the back side of the ring and communicating with the notches.

10. In a lighting unit for motor vehicles, a

ring adapted to be permanently mounted, a reflector, and means for yieldably mounting the reflector on the back side of the ring comprising a plurality of rearwardly extending screws threaded into the ring and passing through the reflector, and springs between the heads of the screws and the reflector.

11. In a lighting fixture in combination, a ring, a reflector on the backside of the ring, a lamp carried by the reflector, members anchored to the ring and guiding the reflector for bodily movement away from the ring, springs for pressing the reflector toward the ring, a shade, outwardly directed lugs carried by the shade and cooperative notches in the ring to permit the lugs to be passed through the ring and brought against the reflector whereby the reflector may be pressed away from the ring, and recessed portions adjacent the notches into which the lugs may be turned upon partial rotation of the globe, the recesses having a configuration adapted to receive the lugs and prevent removal of the shade.

Signed at Meriden, in the county of New Haven and State of Connecticut, this 19th day of July, 1926.

LEROY C. DOANE.