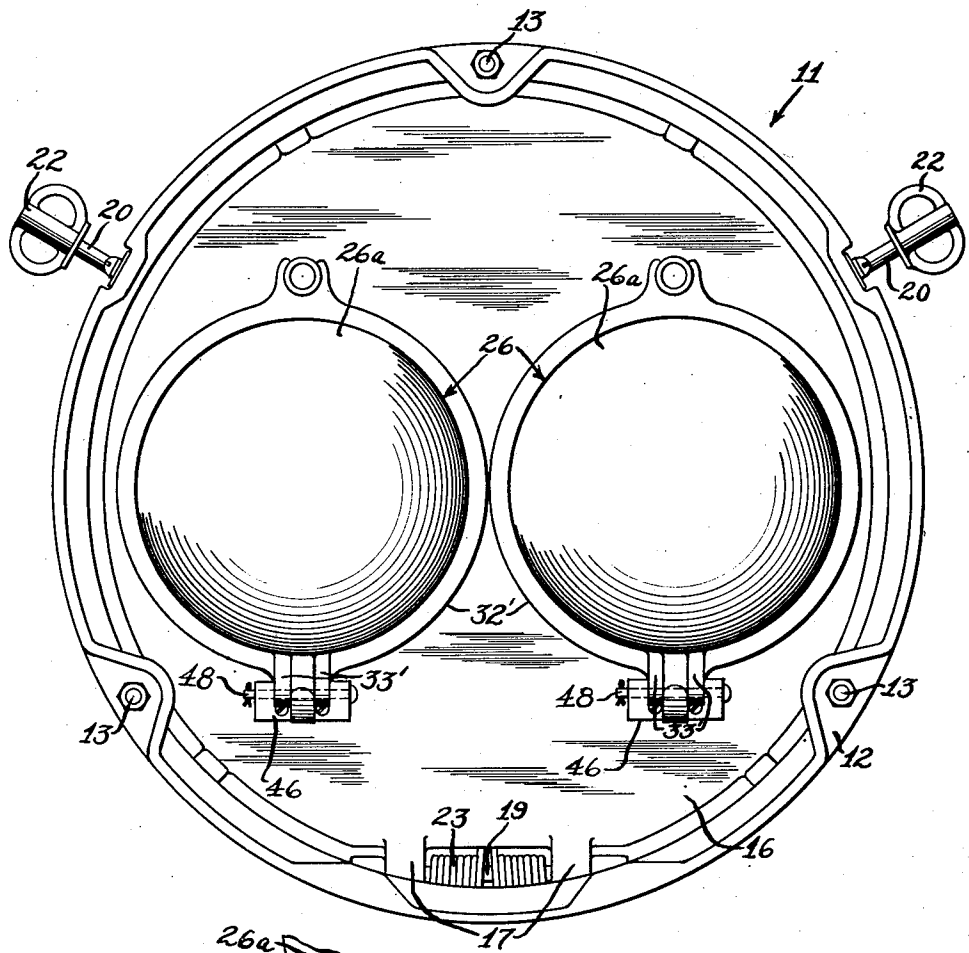
June 30, 1953 F. X. KEEGAN 2,644,076

RETAINING MECHANISM FOR SEALED BEAM LAMP TYPE LOCOMOTIVE HEADLIGHT ASSEMBLIES

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Fig. 1



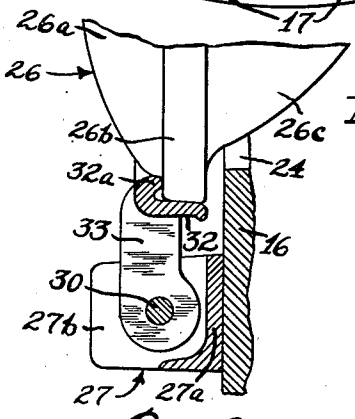


Fig. 3

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Fig. 4

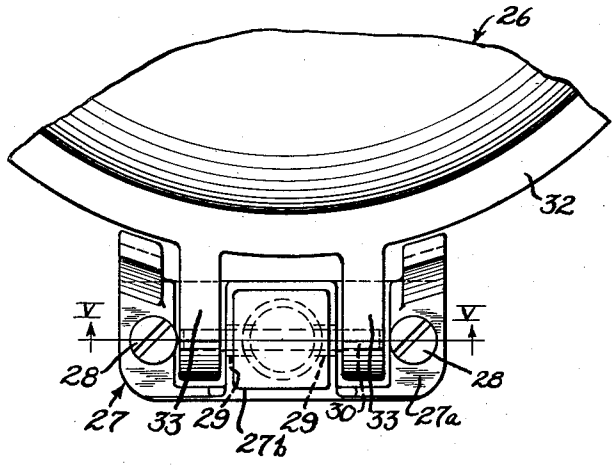


Fig. 2

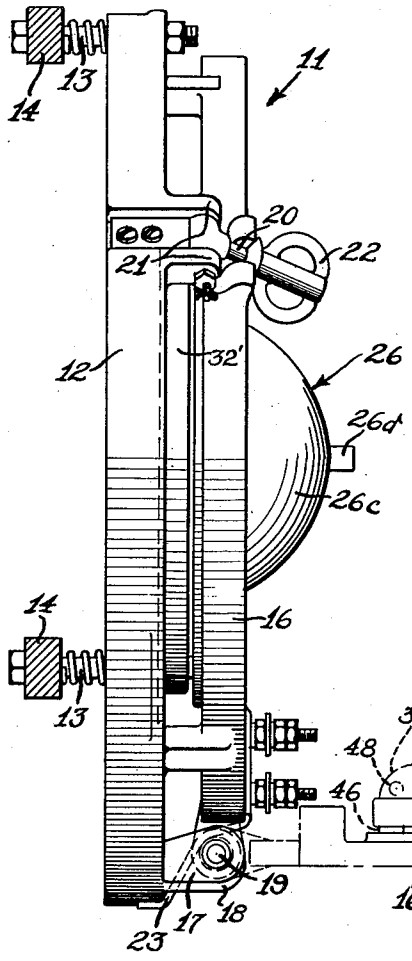
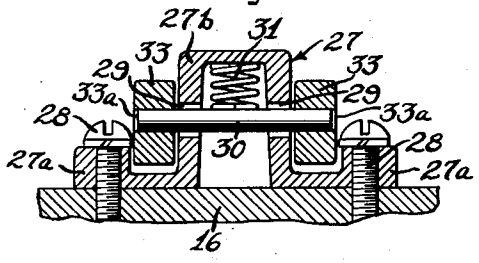
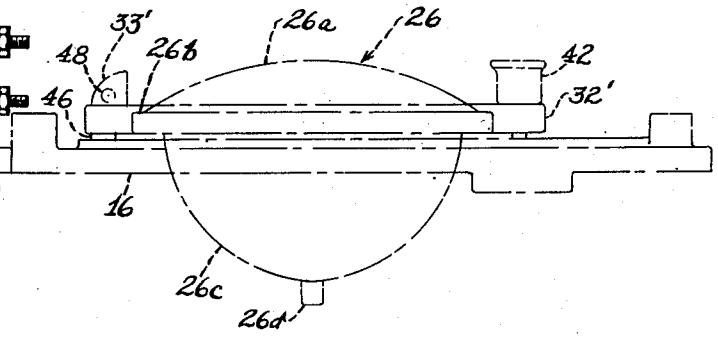


Fig. 5





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RETAINING MECHANISM FOR SEALED BEAM LAMP TYPE LOCOMOTIVE HEADLIGHT ASSEMBLIES

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Fig. 7

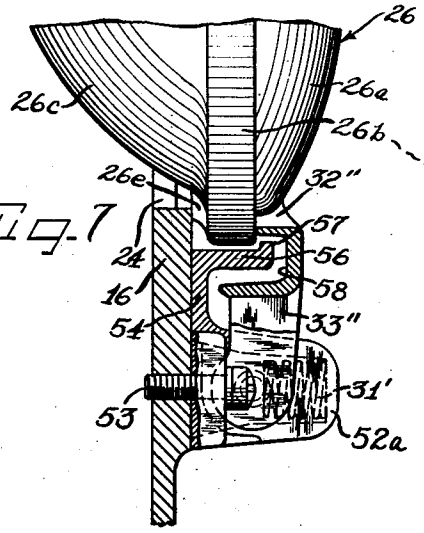


Fig. 6

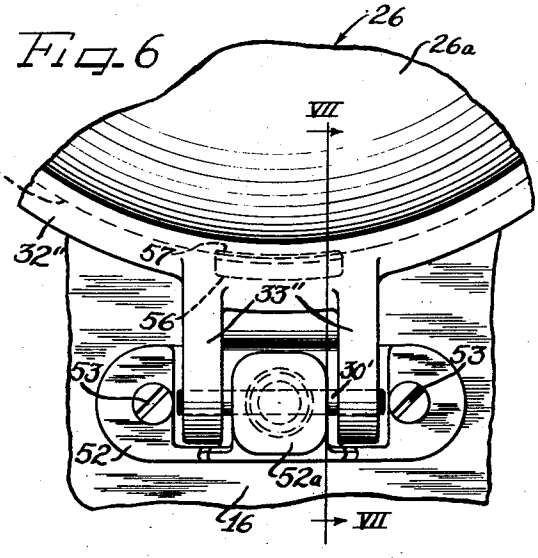


Fig. 9

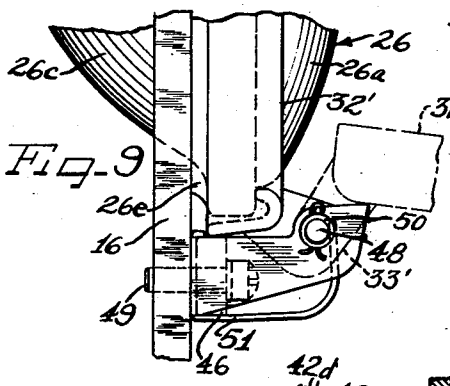


Fig. 8

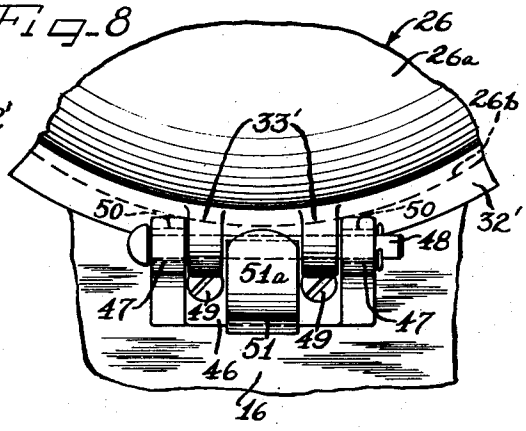
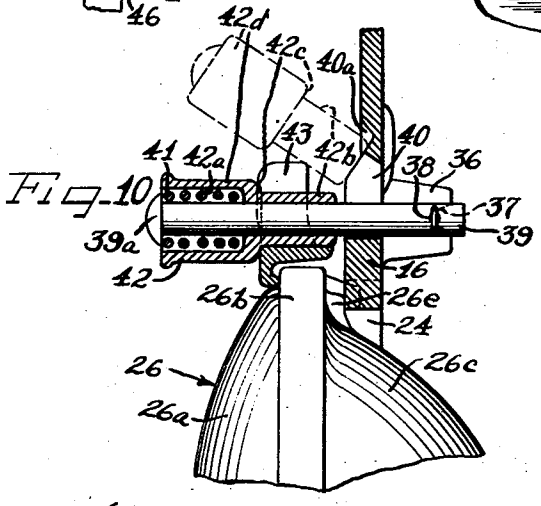


Fig. 10



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2,644,076

RETAINING MECHANISM FOR SEALED BEAM LAMP TYPE LOCOMOTIVE HEADLIGHT ASSEMBLIES

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Application May 19, 1950, Serial No. 163,050

9 Claims. (Cl. 240—41)

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This invention relates generally to locomotive headlight assemblies and more particularly to a novel closure and lamp door to removably receive and retain one or more sealed beam lamp units in firm mounted assembly in direct metal-to-glass contact not necessitating the use of soft gaskets or other readily destructible insulating or cushioning media.

The sealed beam lamp type locomotive headlight assembly is, of course, well known in the art, however, the features of this particular invention are specifically related to the solution of servicing problem which has troubled the manufacturers and users of these types of lights for many years.

With the advent of dieselization in the railroad industry, it became desirable to provide a headlight assembly which could be serviced from the inside of the locomotive cab since the streamlined contours of modern diesel locomotives were not characterized by the provision of the catwalk and ladders so familiar to the traditional steam locomotive and which operating personnel had to use in order to approach the headlight assembly for a servicing operation.

Thus, in a twin sealed beam locomotive headlight assembly as has been commonly employed heretofore by the railroads, a master mounting ring attached to the locomotive is provided having a hinged lamp door latchable to the master mounting ring in generally vertical disposition so that the lamp door may be swung rearwardly into the cab of the locomotive for servicing operations. Such a fixture was not only deficient with respect to its adaptability on the front end of a steam locomotive but required the use of gaskets and other types of readily destructible insulating and cushioning media which made lamp servicing an expensive and troublesome operation.

According to the general features of the present invention, a conventional twin sealed beam type locomotive headlight assembly is provided with novel and improved closure means whereby the assembly may be serviced from either front or rear and by means of which a sealed beam unit may be pre-positioned and firmly supported during the servicing operation as well as firmly locked in place without requiring the use of a soft gasket.

The closure means includes a hinge support firmly mounted on the lamp door adjacent the sealed beam lamp receiving opening formed therein and provided with appropriate boss means having oversized apertures formed therein to loosely receive a pivot pin upon which a

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lamp retainer ring may be hinged. A latch stud carried by the lamp door in general alignment with the hinge support cooperates with the lamp retainer ring to lock the sealed beam lamp unit on the door.

The latch stud is provided with a spring loaded latch nut and the hinged support is equipped with a loading spring which operates against the pivot pin so that both the hinged connection of the retainer as well as the latch connection are resiliently loaded thereby biasing the sealed beam lamp unit into direct contact between the lamp door and the retainer ring.

It will be apparent that an arrangement of this nature completely eliminates the necessity of providing the usual soft rubber gasket or other type of readily destructible insulating or cushioning medium which has usually been provided in conventional apparatus to support the sealed beam lamp unit.

It is an object of this invention, therefore, to provide a closure means for a sealed beam lamp type locomotive headlight assembly having a lamp retaining ring mounted on a spring loaded hinge and locked by a spring loaded latch.

Another object of the present invention is to provide a locomotive headlight assembly which may be readily serviced from either the front or rear and in which pre-positioning lamp supporting means are provided.

A further object of the present invention is to eliminate the necessity of providing readily destructible insulating and cushioning elements in the locomotive headlight assembly whereby the entire assembly may be fabricated from durable metal components which are easy to manufacture and which are efficient in operation.

Many other features, advantages, and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description which follows and the annexed sheets of drawings in which a preferred embodiment of a sealed beam lamp type locomotive headlight assembly embodying the principles of my invention is shown.

On the drawings:

Fig. 1 is a front elevational view of a sealed beam lamp type locomotive headlight assembly according to the present invention with the latch studs swung outwardly to illustrate the constructional details thereof.

Fig. 2 is a side elevational view of the locomotive headlight assembly shown in Fig. 1 with the latch studs moved into locking position and

showing in dashed outline the conventional manner of swinging the lamp door rearwardly for a servicing operation.

Fig. 3 is an enlarged fragmentary cross-sectional view with parts shown in elevation illustrating how the retainer ring of the present invention receives the flange of a typical sealed beam lamp unit.

Fig. 4 is an enlarged fragmentary plan view of a spring loaded hinge as employed in a closure mechanism according to the present invention.

Fig. 5 is a fragmentary cross-sectional view taken on line V—V of Fig. 4.

Fig. 6 is an enlarged fragmentary plan view of an alternative embodiment of the spring loaded hinge employed in my closure mechanism and incorporating a special lamp shelf.

Fig. 7 is a cross-sectional view taken on line VII—VII of Fig. 6.

Fig. 8 is an enlarged fragmentary plan view of an alternative embodiment of a hinge support for the closure means of my invention.

Fig. 9 is a fragmentary side elevational view of the hinge structure shown in Fig. 8 illustrating in phantom the hinging operation of the lamp retainer; and,

Fig. 10 is a fragmentary cross-sectional view with parts shown in elevation of a resiliently loaded latch provided in accordance with the present invention.

As shown in the drawings:

Referring first to Figs. 1 and 2, a sealed beam lamp type locomotive headlight assembly is indicated generally by the reference numeral 11 and includes a master mounting ring 12 having a plurality of resiliently loaded mounting studs 13 spaced, in this embodiment, at 120 degree intervals to afford an adjustable three point suspension by means of which the master mounting ring 12 may be carried on a locomotive, a part of which for purposes of illustration being identified by the reference numeral 14, the master mounting ring 12 being in generally vertical disposition relative to the locomotive upon which it is carried.

A lamp door 16 is provided having apertured boss means 17 registrable with complementary apertured boss means 18 formed on the master mounting ring through which a pivot pin 19 may be passed to permit hinging of the lamp door 16 for pivotal movement about the axis of the pin 19. The lamp door 16 is normally positioned in coaxial registry with the master mounting ring 12 and may be locked in such position by means of a plurality of latch studs 20 pivotally carried by appropriate hinge means 21 formed on the master mounting ring 12, the latch studs 20 having lock nuts 22 thereon cooperable with the door 16.

A torsion spring 23 is carried by the pin 19 and operates between the lamp door 16 and the master mounting ring 12 to limit the rearward swing of the lamp door 16. The spring 23 may be chosen to maintain the lamp door 16 in substantially horizontal alignment so that servicing personnel may have both hands free when replacing or handling the sealed beam lamp units employed in the assembly 11.

The lamp door 16 is provided with a plurality of openings 24 (Fig. 3) which in this embodiment are disposed on a horizontal axis bisecting the plane of the lamp door 16. A conventional sealed beam lamp is received by each of the openings 24. Although the details of the sealed beam lamp unit structure are not a part of this invention, it is important to note the general configuration defined by such units since the features of the present invention favorably exploit all of the structural characteristics exemplified thereby. Because each of such sealed beam lamp units and their respective closure means are of identical construction, like reference numerals are employed to designate similar parts.

The sealed beam lamp unit per se is indicated generally by the reference numeral 26 and includes a clear lens portion 26*a* terminating in a radially extending annular flange 26*b* with a bowl shaped back portion 26*c* extending away therefrom. Conductor terminals 26*d* are situated on the bowl shaped back portion 26*c* and are electrically connected to the enclosed filament means not shown.

It should be also noted that the sealed beam lamp unit 26 is provided with a plurality of spaced lugs 26*e* which are best shown in Figs. 7, 9 and 10 and which are located directly adjacent the back side of the annular flange 26*b*.

As may be seen on the drawings, the bowl shaped portion 26*c* is inserted through the opening 24 and the lugs 26*e* come into abutting engagement with the door 16.

Referring now to Figs. 3, 4, 5 and 10, one embodiment of the closure means provided in accordance with the principles of the present invention to retain the sealed beam lamp unit 26 in firm assembly upon the lamp door 16 is shown.

The closure means includes a hinge support member 27 which preferably takes the form of a small casting having a flanged base portion 27*a* through which a suitable fastening means 28 may be passed to secure same to the lamp door 16.

A hollow boss portion 27*b* extends upwardly from the base portion 27*a* and suitable enlarged apertures 29 which may take the form of vertically disposed slots if desired, are provided in the side walls of the boss portion 27*b* receive and journal a pivot pin 30, the pivot pin 30 being of a small enough outer diameter to permit loose play in the apertures 29.

A resilient element, which in this specific embodiment takes the form of a small coil spring 31, is disposed between the pivot pin 30 and the top of the boss portion 27*b* so as to normally bias the pivot pin downwardly in the enlarged apertures 29.

A lamp retainer ring 32 is provided which is of general circular configuration complementally conforming to the shape of the flange 26*b* of the sealed beam lamp unit 26. As shown on the drawings, the lamp retainer ring 32 is provided with radially inwardly extending overlying lip 32*a* which together with the main body portion of the lamp retainer ring 32 provides a seating shoulder against which the flange 26*b* may abut.

A pair of spaced legs 33 extend outwardly from the ring 32 and are arranged to receive the boss portion 27*b* therebetween. The legs 33 are each provided with a suitable aperture 33*a* to snugly receive a pivot pin 30. By such arrangement, the lamp retainer ring 32 may be pivotally hinged for rotative movement about the axis of the pin 30.

A latch mechanism is located in diametrically opposed relationship to the hinge mechanism described above to lock the lamp retainer ring 32 in clamping relationship with the lamp.

As shown in Figure 10 the latch structure includes a boss portion which protrudes from the lamp door 16 and takes the form of a pair of

spaced legs 36 slotted as at 37 to seat a cotter pin 38 extending through an apertured latch stud 39 which, in turn, extends upwardly through a complexly shaped aperture 40 formed in the lamp door 16 in registry with the legs 36 of the boss.

The end of the latch stud 39 is provided with a rivet head as at 39*a* against which may be seated a resilient element such as a coil spring 41 the other end of which being seated on the bottom of a counterbore 42*a* formed in a reciprocable latch sleeve or collar 42.

The lamp retaining ring 32 is provided with a slotted lug 43 which receives a reduced diameter portion 42*b* of the latch sleeve or collar 42, a shoulder 42*c* between an enlarged diameter portion 42*d* and the reduced diameter portion 42*b* operating to seat on the lug 43 of the retainer ring 32 so as to permit the spring 41 to bias the lamp retainer ring 32 into loaded clamping engagement with the flange 26*b* of the sealed beam lamp unit 26.

As shown in the drawings, the pivotal connection of the latch stud 39 effected by the cotter pin 38 in the slotted portion 37 of the boss legs 36 permits the latch stud 39 to be displaced angularly to provide clearance for the lamp retainer door 32 when it is pivoted about the axis of the hinge pin 30.

To further facilitate the efficient hinging action of the latch stud 39, the aperture 40 formed in the lamp door 16 is oversized and is provided with an angularly displaced counterbore portion 40*a* which seats the reduced diameter portion 42*b* of the latch sleeve 42 when the latch stud 39 is moved to a clearance position.

It will be evident that the spring 31 in the hinge structure together with the spring 41 in the latch structure will effectively load the lamp retainer ring 32 resiliently into clamping engagement with the flange 26*b* of the sealed beam lamp unit 26. Thus, if an unusual force is applied to the assembled sealed beam lamp unit 26 it will be absorbed by the springs 31 and 41. In this manner, the hinge and latch closure structure provided by the applicant serves the dual purpose of continuously retaining the sealed beam lamp unit 26 in vibration-free assembly with the lamp door 16 and providing a cushioned mounting for the sealed beam lamp unit 26 without necessitating the use of readily destructible insulating or cushioning gaskets as has been necessary in the prior art lamp structures.

It will be further apparent that the applicant's arrangement includes a combination of elements which are all permanently affixed to the lamp door 16 and which do not require the use of tools or other special instruments in the manipulation thereof during a servicing operation.

It is contemplated that other types of spring loaded hinge members may be provided by way of structural embodiment of the inventive principles of the present disclosure. One example of a spring loaded hinge member is shown in Figures 1, 8 and 9 in which a hinge casting 46 is provided having a pair of spaced bosses 47 apertured to receive a hinge pin 48 and fastened to the lamp door 16 by a pair of fasteners 49.

A lamp retainer ring 32′ having a pair of spaced legs 33′ suitably apertured to receive the pin 48 is hinged for pivotal rotation about the axis of the pin 48. The apertures in the spaced bosses 47 are indicated generally by the reference numeral 50 and are oversized or may comprise slots so as to promote free play between the lugs 47 and the pin 48. In this embodiment, a leaf spring 51 formed

by a strip of metal suitably bent in a generally U-shape configuration has one leg portion 51*a* in proximate overlying relationship to the center portion of the pin 48 so as to resiliently engage the same when the pin 48 is moved upwardly in the apertures 50.

By virtue of such arrangement, the leaf spring 51 together with the spring 41 in the latch structure will resiliently load two diametrically opposed points of the lamp retainer ring 32′ to permit direct clamping of the sealed beam lamp unit 26.

In Figures 6 and 7 a modification of the hinged structure previously described in connection with Figures 3, 4 and 5 is shown whereby a positioning shelf may be made integral with the hinge casting to assist in locating the sealed beam lamp unit 26 for reception by one of the openings 24 in the lamp door 16.

As shown in the drawings, the modified structure includes a casting 52 mounted on the lamp door 16 by a plurality of fasteners 53, the casting 52 including a hollow dome portion 52*a*, one edge thereof merging with a flattened portion 54 lying adjacent the lamp door 16 and terminating in a table 56 extending in a plane normal to the plane of the door 16 and lying proximate the edge of the opening 24. The table 56 may be provided with a lip 57 at the terminal edge thereof.

In order to accommodate the provision of the table 56, a modified lamp retainer ring 32″ is provided having a relieved portion defining a recess 58 to receive the table 56 when the lamp retaining ring 32″ is moved into a lamp holding position.

It will be understood that the rest of the structure shown in Figures 6 and 7 is similar to that previously described in connection with Figures 3, 4 and 5 in that a spring 31′ will be located in the hollow dome 52*a* to spring bias a hinge pin 30″ pivotally connecting the legs 33″ of the lamp retaining ring 32″ to the hinge casting 52.

The table 56 operates as a guide means so that the sealed beam lamp unit 26 may be easily set in place within the opening 24 during a servicing operation.

Moreover, the table 56 provides a positive support against which the flange 26*b* of the sealed beam lamp unit 26 engages so as to hold the sealed beam lamp unit 26 in place previous to swinging the lamp retaining ring 32″ into a lamp holding position. This feature is particularly useful if the lamp door is positioned generally vertically.

Although various minor modifications in structure may be suggested by those versed in the art, it should be understood that I do not wish to be limited to the precise details herein described for the sake of clarity only but wish to embody within the scope of this patent all such modifications as reasonably and properly come within the scope of my invention.

I claim as my invention:

1. In a sealed beam lamp unit of the type adapted for use on the locomotive of a railroad train, a lamp door having an opening therein to receive a sealed beam lamp unit of the type having support means overlying the edge portions of the opening, and closure means to retain said sealed beam lamp unit in firm assembly with said lamp door, said closure means comprising a hinge support mounted adjacent said opening on said lamp door, said hinge support defining oversized aperture means to journal a pivot pin, a pivot pin loosely fitted in said aperture means, a lamp retainer ring pivotally carried by said pivot pin

for angular displacement about the axis thereof, a latch stud pivotally carried by said lamp door in spaced relationship to said hinge support and being cooperable with said lamp retainer ring and spring means between said pivot pin and said hinge support and between said latch stud and said lamp retainer ring to resiliently clamp said sealed beam lamp unit between said lamp retainer ring and said lamp door.

2. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of the annular flange of the lamp, a clamping ring abutting the other side of the annular flange portion and a plurality of spaced spring loaded connections between said ring and said support member to resiliently load said ring to clamp said lamp between said support member and said ring, one of said connections comprising a hinge support on said support member defining an oversized journal, a hinge pin carried by said ring and loosely journaled in said hinge support, and a spring between said hinge support and said hinge pin to resiliently load said ring, whereby said ring may be permanently hinged to said support member.

3. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion comprising, a support member to carry the lamp including a flange abutting portion to abut one side of said annular flange portion of the lamp, a clamping ring abutting the other side of said annular flange portion, and a plurality of circumferentially spaced spring loaded connections between said ring and said support member to resiliently load said ring to clamp said lamp between said support member and said ring, one of said connections comprising a hinge support on said support member defining an oversized journal, a hinge pin carried by said ring and loosely journaled in said hinge support, and a spring between said hinge support and said hinge pin to resiliently load said ring, whereby said ring may be permanently hinged to said support member, said hinge support including a hollow dome-shaped member having said journal formed through the side walls thereof, said spring comprising a coil spring located in said hollow dome-shaped portion with one end thereof engaging the top wall of the hollow dome-shaped portion and the other end engaging the hinge pin.

4. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of the annular flange of the lamp, a clamping ring abutting the other side of the annular flange portion, and a plurality of circumferentially spaced spring loaded connections between said ring and said support member to resiliently load said ring to clamp said lamp between said support member and said ring, one of said connections comprising a hinge support on said support member defining an oversized journal, a hinge pin carried by said ring and loosely journaled in said hinge support, and a spring between said hinge support and said hinge pin to resiliently load said ring, whereby said ring may be permanently hinged to said support member, said hinge support including a pair of spaced boss portions having said journal formed therethrough, said spring

comprising a leaf spring extending away from said support member and having a bent over lip extending between said spaced boss portions to resiliently engage the hinge pin.

5. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of the annular flange of the lamp, a clamping ring abutting the other side of the annular flange portion, and a pair of spring loaded connections to resiliently clamp the sealed beam lamp unit between said support member and said ring, one of said connections comprising a spring loaded hinge and the other comprising a latch structure, said latch structure including a latch stud pivotally carried by said support member, a boss on said ring having a slot in registry with and adapted to receive said latch stud, and a reciprocable spring biased collar overlying said boss and carried by said latch stud to resiliently load said ring toward said lamp, said latch stud being selectively movable into and out of registry with said slot to lock said ring to said support member.

6. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of said annular flange of the lamp, a clamping ring abutting the other side of said annular flange portion, and a pair of spring loaded connections to resiliently clamp said sealed beam lamp unit between said support member and said ring, one of said connections comprising a hinge support on said support member defining an oversized journal, a hinge pin carried by said ring and loosely journaled in said hinge support, and a spring between said hinge support and said hinge pin to resiliently load said ring, whereby said ring may be permanently hinged to said support member, and the other of said connections comprising a latch structure, said latch structure including a latch stud pivotally carried by said support member, a boss on said ring having a slot in registry with and adapted to receive said latch stud, and a reciprocable spring biased collar overlying said boss and carried by said latch stud to resiliently load said ring toward said lamp, said latch stud being selectively movable into and out of registry with said slot to lock said ring to said support member.

7. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of the annular flange of the lamp, a clamping ring abutting the other side of said annular flange portion, and a pair of spring loaded connections to resiliently clamp said sealed beam lamp unit between said support member and said ring, one of said connections comprising a hollow dome-shaped hinge support member on said support member having an oversized journal opening formed through the side walls thereof, a hinge pin carried by said ring and loosely journaled in said opening, and a coil spring located in said hollow dome-shaped hinge support member with one end thereof engaging the top wall and the other end engaging the hinge pin to load said ring, and the other of said connections comprising a latch structure, said latch structure including a latch stud pivotally carried by said support member, a boss

on said ring circumferentially spaced from said hinge pin and having a slot in registry with and adapted to receive said latch stud, and a reciprocable spring biased collar overlying said boss and carried by said latch stud to resiliently load said ring toward said lamp, said latch stud being selectively movable into and out of registry with said slot to lock said ring to said support member.

8. A sealed beam lamp retaining mechanism for use with a sealed beam lamp having an annular flange portion, comprising, a support member to carry the lamp including a flange abutting portion to abut one side of the annular flange of the lamp, a clamping ring abutting the other side of the annular flange portion, and a pair of spring loaded connections to resiliently clamp the sealed beam lamp unit between said support member and said ring, one of said connections comprising a hinge support including a pair of spaced boss portions on said support member each having a journal opening formed therethrough, a leaf spring extending away from said support member and having a bent over lip extending between said spaced boss portions, and a hinge pin on said clamping ring journaled in said openings and resiliently engaged by said lip, and the other of said connections comprising a latch stud pivotally carried by said support member, a boss on said clamping ring having a slot in registry with and adapted to receive said latch stud, and a reciprocable spring biased collar overlying said boss and carried by said latch stud to resiliently load said ring toward said lamp, said latch stud being selectively movable into and out of registry with said slot to lock said ring to said support member.

9. In a headlight apparatus, a sealed beam lamp having a bowl-shaped back portion and an annular flange, a support member having an opening therein to receive said bowl-shaped back portion, one face of said flange overlyingly abutting the edges of said opening, a clamping ring to overlie the other face of said flange, a spring loaded hinge pivotally connecting said ring to said support member, and a spring loaded latch circumferentially spaced from said hinge and carried by said support member to lock said ring in clamping relationship to said lamp, said hinge having a shelf element projecting toward said opening terminating adjacent said opening to guide and support said flange during assembly of said lamp to said support member.

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