

Oct. 19, 1943.

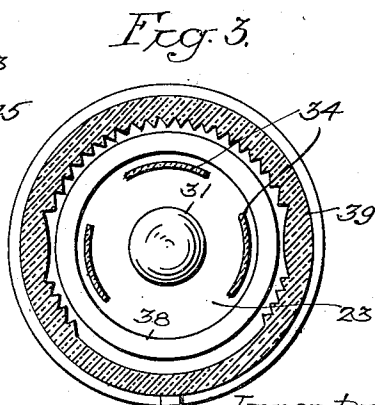
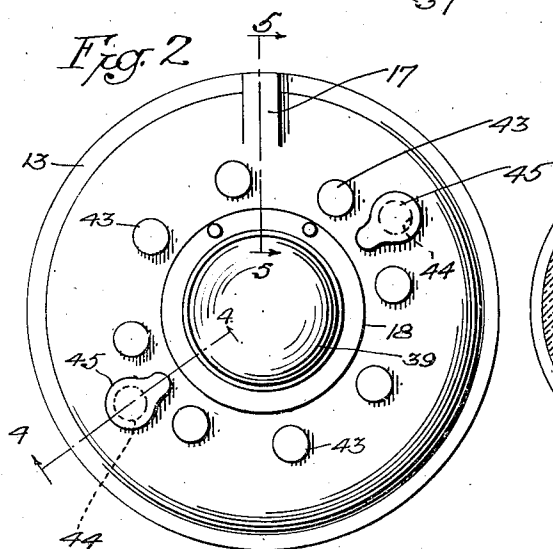
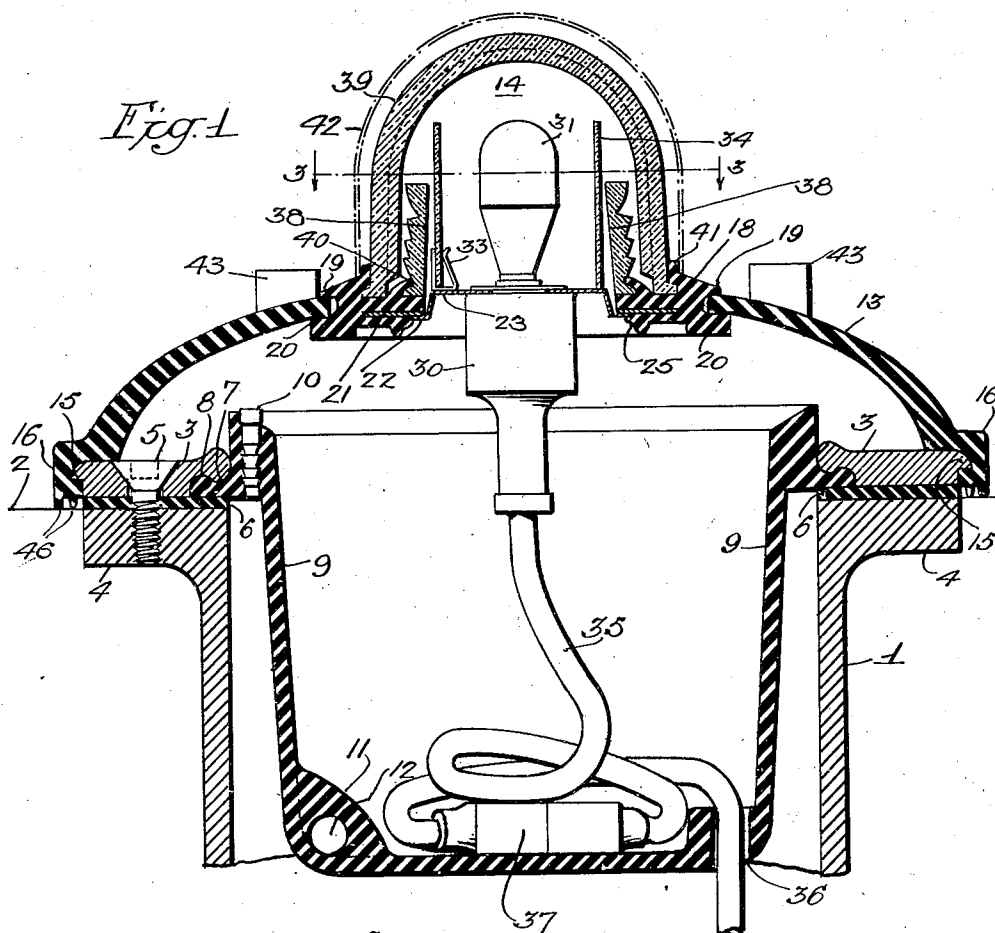
J. B. BARTOW

2,332,362

LAMP MOUNTING DEVICE

Filed June 17, 1941

3 Sheets-Sheet 1



Inventor,
John B. Bartow
by his Attorneys
Harrison & Harrison

Oct. 19, 1943.

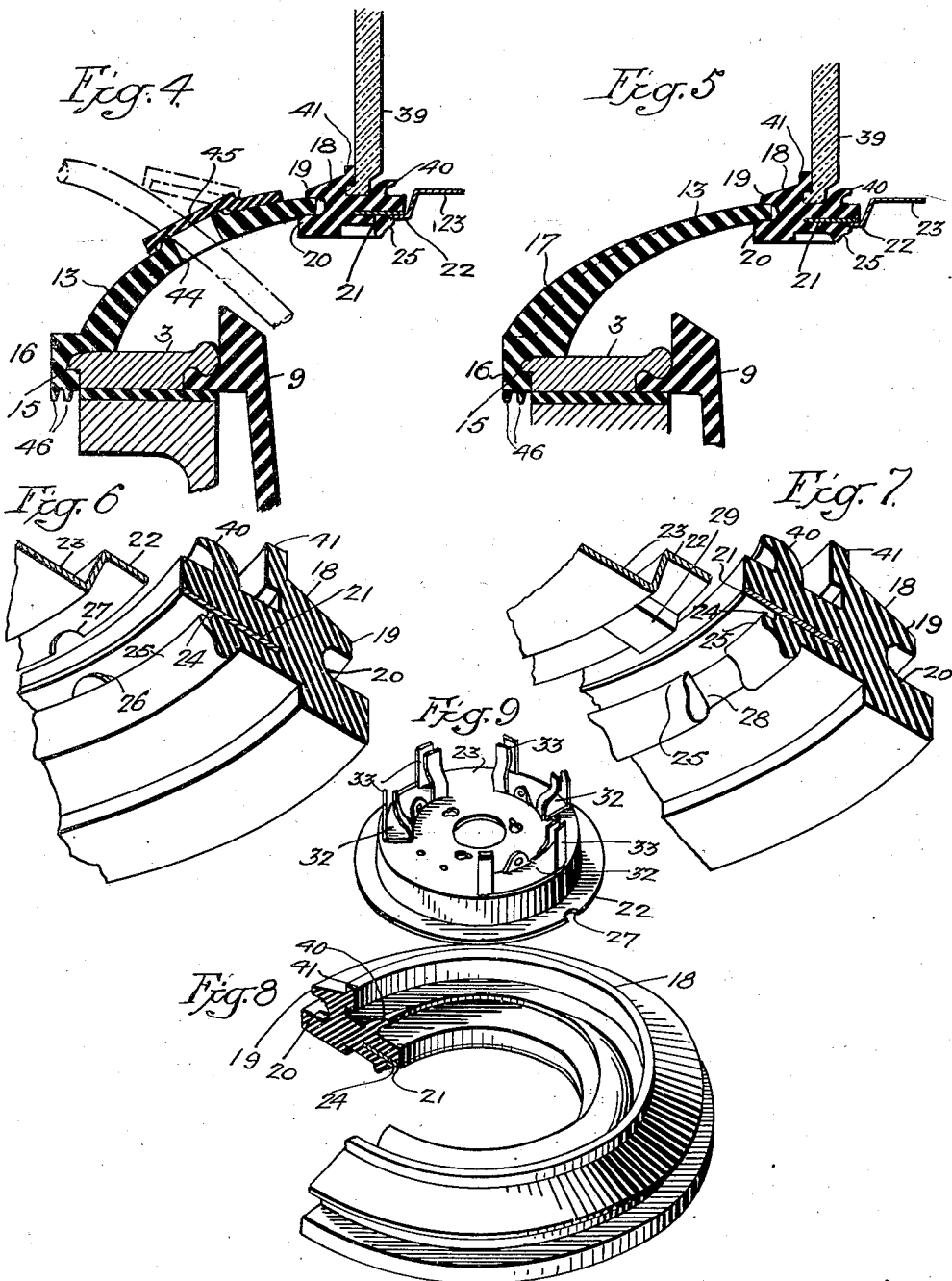
J. B. BARTOW

2,332,362

LAMP MOUNTING DEVICE

Filed June 17, 1941

3 Sheets-Sheet 2



Inventor
John B. Bartow
by his Attorneys
Houson & Houson

Oct. 19, 1943.

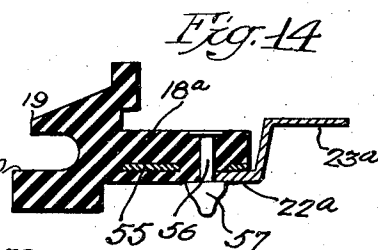
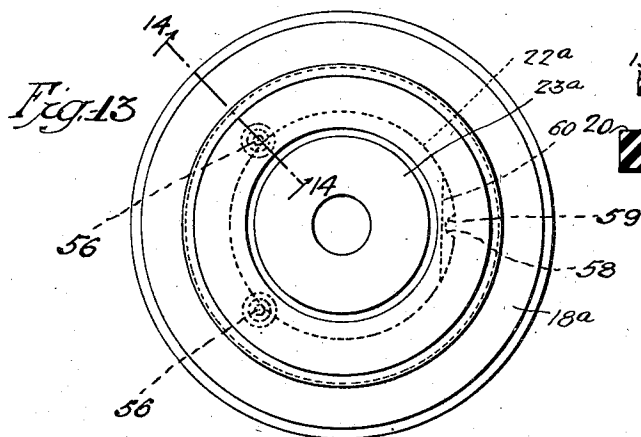
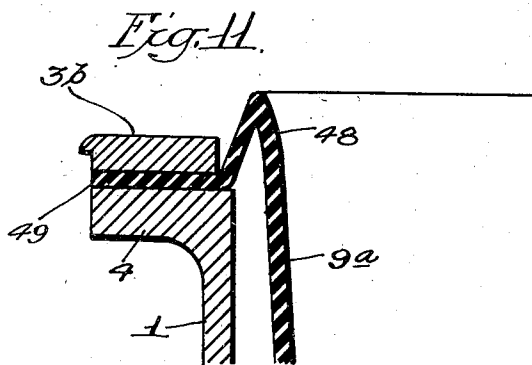
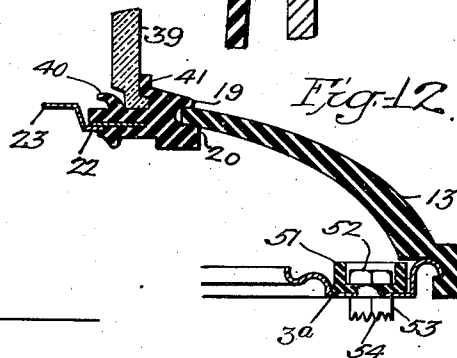
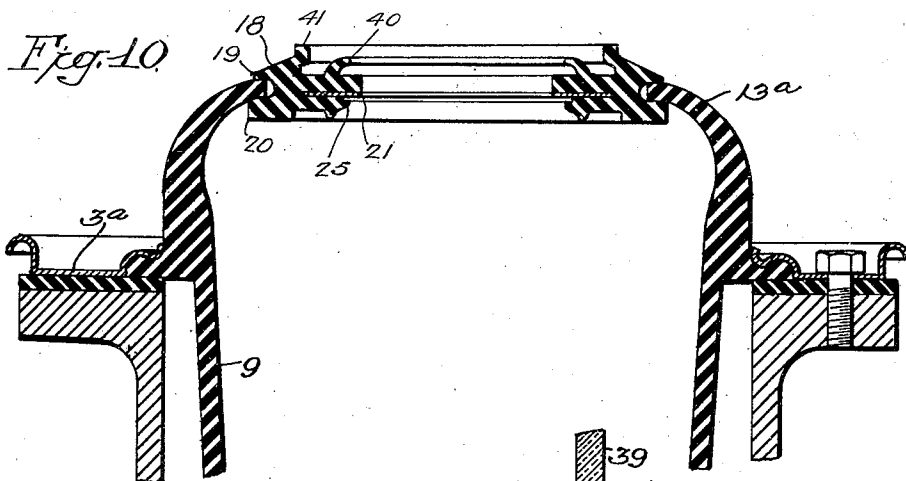
J. B. BARTOW

2,332,362

LAMP MOUNTING DEVICE

Filed June 17, 1941

3 Sheets-Sheet 3



Inventor
John B. Bartow
by his Attorneys
Hoyson & Hoyson

UNITED STATES PATENT OFFICE

2,332,362

LAMP MOUNTING DEVICE

John B. Bartow, Blue Bell, Pa., assignor to Bartow Beacons Inc., Philadelphia, Pa., a corporation of Pennsylvania

Application June 17, 1941, Serial No. 398,505

9 Claims. (Cl. 240—1.2)

This invention relates to a lamp mounting device, and more particularly to a device for mounting a lamp on the ground in close proximity thereto. The device is particularly intended for use as a runway or other marker on an airfield or airport, but it is capable of other uses, for example, it may be used as a marker on streets or highways.

The principal object of the invention is to provide a lamp mounting device which is of simple construction and may be manufactured at low cost and which is highly efficient in operation and provides maximum safety.

Another object of the invention is to provide a novel lamp mounting comprising a dome-shaped flexible lamp-carrying member which may be readily attached to a stationary support member, or detached therefrom, in order that the lamp may be raised above its normal position whenever desired, for example, whenever snow covers the ground to such a depth as to interfere with the normal operation of the device.

A further object of the invention is to provide a novel device of this character wherein the lamp-carrying assembly is adapted for portability in order that the lamp may be used as a portable device.

Still another object of the invention is to provide a lamp mounting device wherein the lamp unit is detachable, and means are provided to cause the lamp unit to detach itself and drop into a receptacle below the ground level, in the event that the device is struck by the wheel of a vehicle such as an airplane.

A further object of the invention is to provide novel means for mounting the lamp unit in a device of this character.

A further object of the invention is to provide novel means for mounting light-controlling elements, such as lenses and color screens, on the lamp unit.

Other objects and features of the invention will be apparent hereinafter.

In the accompanying drawings:

Fig. 1 is a cross sectional view of the lamp mounting device;

Fig. 2 is a plan view of the device on a smaller scale;

Fig. 3 is a detail sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a detail sectional view taken along line 4—4 of Fig. 2;

Fig. 5 is a similar view taken along line 5—5 of Fig. 2;

Fig. 6 is a fragmentary perspective view of

certain portions of the lamp-carrying elements; Fig. 7 is a similar view of different portions of said elements;

Fig. 8 is a fragmentary perspective view of the lamp-carrying ring;

Fig. 9 is a perspective view of the lamp mounting plate;

Fig. 10 is a cross-sectional view of a modified form of the lamp-mounting device;

Fig. 11 is a fragmentary sectional view of a further modification;

Fig. 12 is a fragmentary sectional view of still another modification;

Fig. 13 is a plan view illustrating an alternative suspension for the lamp-supporting plate; and

Fig. 14 is a fragmentary sectional view taken along the line 14—14 of Fig. 13.

Referring particularly to Fig. 1, there is provided a metal tank or sump 1 which is adapted to be disposed below the ground level indicated at 2, and which serves to house any current supply equipment, such as a transformer, which may be employed. A metallic ring 3 is secured to the upper flange 4 of the sump 1 by means of screws 5 or the like. A rubber gasket 6 forms a watertight seal between ring 3 and flange 4. The inner edge 7 of ring 3 is formed as illustrated to retain a flange 8 on an inner receptacle or sump 9, which is formed of highly resilient and flexible material, such as soft rubber. It will be noted that the portions 7 and 8 are complementary in shape in order that the flange 8 shall be securely held. Thus, the inner sump or receptacle 9 is suspended within the outer metallic sump 1. The purpose of the inner sump 9 will be described hereinafter.

In order that the inner sump may be turned inside-out to empty any contents thereof, a finger web 11 is provided in the lower portion of the sump, as illustrated. By inserting a finger in the aperture 12, the flexible sump may be easily turned inside-out. There is also provided an air valve 10 by means of which air may be admitted to the space below sump 9 so as to destroy any partial vacuum tending to oppose the turning of the sump inside-out.

A dome-shaped lamp-supporting member 13 serves to support the lamp assembly or unit designated generally by reference character 14. Member 13 is formed of resilient and flexible material, such as soft rubber. Preferably, the thickness of this member is greater at the lower part thereof than at its upper part, as illustrated, for a purpose which will be described later. The

outer and lower edge of member 13 is formed for interlocking engagement with ring 3 in order that member 13 may be readily attached to or detached from the stationary and rigid ring. To this end, a projection 15 is formed on the outer edge of ring 3, and the edge portion of member 13 is formed to provide the interlocking portion 16 which is complementary to the projection 15 and is adapted to interlock therewith. To facilitate detachment of member 13 from ring 3 whenever desired, there is provided on member 13 a rib 17 (see Figs. 2 and 5) at the outer portion of the said member. By exerting pressure on this rib, for example by pressing on the same with the foot, the member 13 may be caused to relax its grip on ring 3 at that point, and it may be readily stripped from the ring in the same manner that a tire casing is removed from its mounting rim.

The member 13 is in the form of a ring, and has a central opening within which the lamp assembly is supported by means of a resilient ring 18 which may be formed of rubber. This ring is detachably supported by member 13 by means of circular lips 19 and 20 between which the inner edge of member 13 is removably retained. These interfitting portions of elements 13 and 18 are so formed that the ring 18 may be inserted from the bottom, and it is readily detachable in this direction. To this end the lip 19 is relatively thin as illustrated. The purpose of this is to enable the entire lamp assembly, including ring 18, to detach itself and fall into the receptacle 9 in the event that the device is struck by a vehicle wheel, as will be described more fully hereinafter.

The resilient ring 18 carries a metal insert ring 21 (see Figs. 6 and 7) which serves to rigidify the inner portion of ring 18 and also serves as a backing support for the flange 22 of a lamp-carrying plate 23. The flange 22 is insertable within a recess 24 immediately below ring 21 and defined by a circular lip 25. To insure proper orientation of the lamp unit and to prevent rotary movement of said unit, there are provided indexing means in the form of a projection 26 (see Fig. 6) on ring 21 and a complementary recess 27 on flange 22. For this same purpose, and to facilitate attachment of plate 23 to the supporting ring 18, the lip 25 is cut away at 28 (see Fig. 7), and flange 22 is offset at 29 to enter the recess 28. These latter interfitting elements are preferably located diametrically opposite the interfitting elements 26 and 27. Since the lip 25 is highly resilient and flexible, the edge of flange 22 may be readily inserted in the recess 24 and the lip 25 may be caused to snap over the said edge portion throughout its entire periphery. The downwardly projecting rib on lip 25 enables the lip to be "thumbed" outward to facilitate insertion of flange 22. Likewise, the plate 23 may be readily removed from the bottom by forcibly extracting the edge of flange 22 against the resilient holding action of the lip 25. The removal may be facilitated by inserting a prying tool, such as a screw driver, in the offset portion 29 and causing lip 25 to relax its grip at that point.

Plate 23 serves to support the lamp socket 30 and the lamp 31, and it also carries color screen retainers 32. These retainers comprise resilient metal fingers 33 by means of which the color screens 34 are held in place, as shown in Fig. 1. The current supply cable for the lamp 30 is shown at 35, and this cable enters the inner sump 9 through an opening 36 therein, as shown in Fig. 1. Preferably, a suitable two-part connector 37 is included in the cable within sump 9 in order that

the device may be employed in the different manners set forth hereinafter.

The lamp-supporting ring 18 also supports lens members 38 and 39, the latter being in the form of an enclosing globe. To this end, the ring 18 is provided with inner and outer lips 40 and 41 which serve to removably retain the lens members as illustrated. Since these lips are flexible, the lens members may be readily engaged with or disengaged from the supporting ring. If desired, a light screen shown in dot-and-dash outline at 42 may be placed over the lamp unit to control the light. For example, this screening member may be formed of opaque material and may have openings or windows therein to direct the light in a particular direction or directions. This may be desirable in certain instances where it is desired that the light shall not be visible except from certain directions. The screening member may be removably supported in any suitable manner, for example its lower edge may frictionally engage the outer surface of lip 41. If desired, the lip 41 and the screen 42 may be provided with interlocking means in the form of a bulge on one member and a complementary recess on the other.

The dome-shaped member 13 is preferably provided with integral upwardly extending projections or pedals 43 arranged circularly about said member in spaced relation, as shown in Fig. 2. The purpose of these projections will be explained presently.

The dome-shaped member is also preferably provided with one or more openings 44 normally closed by a resilient flap 45, as shown in Fig. 4. The purpose of this feature will also be explained presently.

Considering the specific use of the device as a ground lamp unit for an air-field, the device will normally be disposed in proper position to serve a particular purpose, such as a runway marker. In the event that the ground becomes covered with snow to such a depth as to warrant raising the lamp, the dome-shaped member 13 may be readily detached from the retaining ring 3, as previously described, and may be elevated and placed on the surface of the snow. In this position, the device not only serves its primary purpose, such as a runway marker, but it also indicates the position of the sump. Thus the operator of a snow plow will be apprised of the presence of the sump and can readily avoid running over it. In other words, the device serves as a buoy. When the elevation of the lamp unit is no longer necessary, the dome-shaped member may be attached to the retaining member 3 as before.

Referring again to Fig. 1, the device is particularly constructed and adapted to meet the hazard of its being struck by the wheel of an airplane or other vehicle. More particularly, the device is constructed so as to insure that the lamp unit shall become detached from the dome-shaped member 13 and shall be forced into the inner sump 9 whenever the device is struck. If it be imagined that an airplane wheel is approaching along the ground 2, it will be seen that a small or medium sized wheel will engage one or more of the upstanding pedals or projections 43 before striking the lamp unit. This will cause the dome-shaped member 13 to flex downward and consequently will lower and tilt the supported lamp unit toward the wheel, causing the wheel to strike the lamp unit at a sufficiently high point thereon to exert downward pressure tending to detach ring 18 from dome-shaped member

13 and to force the attached lamp unit into the sump 9. Thus the projections 43 insure that the lamp unit shall be forced into the sump 9, rather than separated externally from the dome-shaped member, by insuring that the lamp unit shall be lowered and tilted before being struck by the wheel. This is particularly important in the case where a wheel of small diameter strikes the device since such a wheel would tend to strike the lamp unit from the side and knock it loose from member 13 along the ground. Moreover, this feature is particularly important in wet weather when there is less friction between the wheel and the lamp unit and consequently there is a greater tendency for the wheel to knock the lamp unit loose from dome-shaped member 13 externally thereof. In the case of a wheel of such large diameter that it does not first engage the projections 43, the wheel will engage the lamp unit at a sufficiently high point to force it into the sump 9.

By insuring that the lamp unit shall fall into the inner sump 9, as above described, the lamp unit is protected against breakage or injury, it being remembered that the sump 9 is formed of rubber or like material. Moreover, the lamp unit is prevented from becoming a hazard to airplanes or vehicles, as it would be if it were knocked loose from the supporting structure along the ground.

The wall tapering of member 13 causes it to return more readily to its normal position in the event that a wheel runs over the outer part of the device and does not cause detachment of the lamp unit. This is largely due to the fact that the wall tapering causes the wall to roll rather than bend sharply.

The openings 44 and flaps 45 serve a dual purpose. These elements serve as air release valves to release the air confined within the dome-shaped member 13 whenever the latter is flexed downward. This air-releasing action permits the member 13 to flex more readily and enhances the above-described operation of the device. In addition, the openings and flaps may be employed to admit a current supply cable, as shown in dot-and-dash outline in Fig. 4. At times, it may be desired to remove the dome-shaped member 13, together with the supported lamp unit, and to utilize this assembly as a portable lamp at positions remote from the sump structure. In such event, current may be readily supplied to the lamp unit by means of a cable inserted through one of the openings 44. Preferably the lower outer edge of member 13 is provided with fingers or ribs 46 which enable the said member to better grip any surface on which it may be placed.

In Fig. 10, there is illustrated a modified form of the device. In this instance, the retaining ring designated 3a takes the form of a stamping instead of a casting. Obviously such a ring may be used in the device of Fig. 1. As illustrated, the stamped ring may be channeled to accommodate the fastening bolts. Of course, the ring is also formed to provide retaining portions for interlocking engagement with the associated elements. In this figure there is also illustrated a modified form of the lamp-supporting member which is formed integrally with sump 9 and is designated 13a. Of course in this instance the lamp-supporting member cannot be elevated or moved about, but otherwise the device functions in the manner above described.

In Fig. 11, there is illustrated a modified form of the inner sump 9. In this instance, the inner

sump designated 9a has its upper portion formed as illustrated to provide a flexible hinge portion 48 and an integral flange 49 which also acts as a seal between the retaining ring 3b and the flange 4. The hinge port on 48 renders the upper part of sump 9a very flexible and permits the sump to recede more readily into the outer sump 1 in the event that a vehicle wheel runs over the device.

In Fig. 12, there is illustrated a further arrangement by which the dome-shaped member 13 and the supporting lamp unit may be immobilized when they are used separately from the stationary support. In this instance, a stamped ring 3a of the type shown in Fig. 10 carries a resilient ring 51 of channel-like cross-section, and a plurality of bolts 52 extend through the two rings and carry nuts 53 provided with serrations 54. When the dome-shaped member 13 is removed from its fixed retaining ring for use separately therefrom, as described above in connection with Fig. 1, the arrangement shown in Fig. 12 may be utilized to prevent movement of member 13. For example, suppose that the lamp-carrying member 13 is elevated and placed on the surface of snow or ice covering the ground. By interlocking the ring 3a with member 13, as shown in Fig. 12, the serrated nuts 53 may be utilized to grip the surface of the ice or snow, thereby resisting movement of the lamp-supporting assembly.

In the event that the dome-shaped member 13 is to be placed on concrete or the like, the elements 51 and 52 may be inverted so that the resilient ring 51 is located below the supporting ring 3a and the serrated nuts 53 are above ring 3a. In such case, the resilient ring 51 will serve as a friction support which resists movement of the lamp-supporting assembly along the supporting surface.

In Figs. 13 and 14, there is illustrated a different suspension of the lamp-supporting plate 23, which may be employed instead of the previously-described suspension. In this instance, the lamp-supporting ring 18a has an inserted metallic ring 55 with a pair of spaced openings to accommodate a pair of pins 56 which extend through the resilient ring 18a and through the said openings. Each of these pins has an enlarged knob 57 at its lower end serving to seat the flange 22a of the lamp-supporting plate 23a. The flange 22a has a recess 58 located in relation to pins 56 as illustrated in Fig. 13, and the resilient ring 18a has a protuberance 59 which is adapted to seat in recess 58. Ring 18a also has a lip 60 below protuberance 59 to seat flange 22a. This structure is generally similar to elements 25, 26 and 27 of Fig. 6. It will be seen from Fig. 13 that this structure provides a three-point suspension of plate 23a. The plate is mounted by first engaging the edge of flange 22a with lip 60 with elements 58 and 59 interlocked, and then exerting lateral force outwardly on knobs 57 so as to seat the edge of flange 22a at those points. The seating of the pins 56 within the soft rubber ring 18a permits such movement of the pins. It will be noted also that the openings in ring 55 are large enough to permit such manipulation of the pins. When it is desired to remove the lamp-supporting plate, the procedure is reversed.

From the foregoing description, it will be seen that the resilient portions of the device must be formed of material having a high degree of resilience and flexibility. Rubber or rubber compositions are now available having the desired

properties. That type of rubber which is commonly referred to as "live" rubber is well suited for the purpose.

The resilient elements may be formed conveniently by a molding operation. Since the dome-shaped member 13 is fully exposed, it is desirable to provide a protective fabric sheet on the outside of this member to protect the rubber. This sheet may be impregnated with rubber or synthetic rubber and it may be formed integrally with the rubber body by first placing the sheet in the mold and then placing the rubber in the mold in contact with the sheet. In this way, the dome-shaped member may be molded as a composite element.

This method of constructing the dome-shaped member also lends itself to permanent coloring of the same. The above-mentioned fabric sheet may be impregnated with synthetic rubber having a desired color thus imparting a permanent color to the outside surface of the dome-shaped member. It is also possible to provide camouflage coloring of the outside surface in this same manner.

It will be seen that the device is readily capable of three modes of operation which may be designated permanent, semi-permanent, and portable. When the lamp-supporting assembly is secured to the fixed retaining ring 3 over the fixed sump, the device is adapted for permanent operation. By simply removing the said assembly from ring 3, the device is adapted for portable use. Further, by utilizing the ring 3a as shown in Fig. 12, the device may be staked down in a semi-permanent manner simply by inserting stakes in place of the bolts 52. Thus the lamp-supporting assembly may be staked down over temporary ground hole or pit serving as a sump. It will be apparent, therefore, that the device is extremely flexible in its capabilities of various usages.

Further, it is characteristic of the device that it is easy to service and repair due to the interchangeability of the parts. Should one of the parts become damaged, it may be replaced very readily. Moreover, certain parts, such as the ring 3a are capable of multiple usages.

It will be understood, of course, that the invention is not limited to the structural details shown in the drawings since it is obvious that various further modifications of the structure are possible without departing from the principles of the invention. Therefore, the scope of the invention is defined only by the appended claims.

I claim:

1. A ground lamp mounting device, comprising a sump adapted for disposition below the ground level, a mounting ring secured to the top peripheral portion of said sump, an inner resilient sump held by said ring within said first-mentioned sump, a dome-shaped resilient member held by said ring in superposed relation to said inner sump, and a lamp unit detachably supported by said dome-shaped member above said inner sump, whereby said unit may fall into the inner sump when depressively detached from said dome-shaped member.

2. A ground lamp mounting device, comprising a sump adapted for disposition below the ground level, a mounting ring secured to the top peripheral portion of said sump, an inner resilient sump held by said ring within said first-mentioned sump, a dome-shaped resilient member held by said ring in superposed relation to said inner

sump, said member having a central opening therein, and a resilient lamp-carrying member detachably supported by said dome-shaped member within said opening above said inner sump, whereby said lamp-carrying member may fall into the inner sump when depressively detached from said dome-shaped member.

3. A ground lamp mounting device, comprising a dome-shaped resilient support member for supporting the lamp near the ground, a lamp unit detachably carried by said member and adapted to free itself therefrom when struck, a receptacle disposed below said lamp unit to receive the same in the event of depressive detachment of said unit from said member, and projections on said member about said lamp unit engageable by a vehicle wheel to depress said member and lower and tilt the lamp unit toward said wheel, thereby to insure that said lamp unit when struck shall be forced into said receptacle.

4. A ground lamp mounting device, comprising a dome-shaped resilient member having a central opening therein, a resilient ring disposed in said opening and removably engaging said member, a lamp-supporting plate removably carried by said resilient ring, a lamp carried by said plate, means on said plate for holding a color screen adjacent to said lamp, and means on said resilient ring for removably holding a lens structure in cooperative relation with said lamp.

5. A ground lamp mounting device, comprising a rigid support member adapted to be fixedly mounted substantially at ground level, a flexible concavo-convex annulus adapted to be disposed with its convex side upwardly, and being of relatively shallow depth and of greater width than depth, complementary means on the lower edge of said annulus and on said support member for removably attaching the annulus to the support member, a lamp assembly including a lamp, a lens and a common support element therefor, and complementary interlockable portions at the inner edge of said annulus and on said support element, whereby the lamp assembly is removably supported as a unit at the central upper part of said annulus and is depressively detachable therefrom in the event of its being struck by a vehicle wheel or otherwise.

6. A ground lamp mounting device, comprising a sump adapted for disposition below the ground level, a flexible dome-shaped member adapted to cover said sump, a lamp assembly including a lamp and a lens removably mounted as a unit at the top of said member and protruding above the same, said lamp and lens unit being depressively detachable from said dome-shaped member, means securing the peripheral edge of said member to the top of said sump, and an inner resilient sump within said first-mentioned sump for receiving said lamp and lens unit in event of depressive detachment thereof from said dome-shaped member.

7. A ground lamp mounting device, comprising a sump adapted for disposition below the ground level, a flexible dome-shaped member adapted to cover said sump, a lamp assembly including a lamp and a lens removably mounted as a unit at the top of said member and protruding above the same, said lamp and lens unit being depressively detachable from said dome-shaped member, means securing the peripheral edge of said member to the top of said sump, and an inner resilient sump suspended from the top of said first-mentioned sump and disposed therein to receive said lamp and lens unit in event of de-

pressive detachment thereof from said dome-shaped member.

8. A ground lamp mounting device, comprising a sump adapted for disposition below the ground level, a flexible dome-shaped member adapted to cover said sump, a lamp assembly including a lamp and a lens removably mounted as a unit at the top of said member and protruding above the same, said lamp and lens unit being depressively detachable from said dome-shaped member, means securing the peripheral edge of said member to the top of said sump, and an inner resilient sump integral with said dome-shaped member and suspended therefrom within said first-mentioned sump to receive said lamp and lens unit in event of depressive detachment thereof from said dome-shaped member.

9. A ground lamp mounting device, comprising

a rigid support member adapted to be fixedly mounted substantially at ground level, a flexible concavo-convex annulus adapted to be disposed with its convex side upwardly, complementary means on the lower edge of said annulus and on said support member for removably attaching the annulus to the support member, a lamp assembly including a lamp, a lens and a common support element therefor, and complementary interlockable portions at the inner edge of said annulus and on said support element, whereby the lamp assembly is removably supported as a unit at the central upper part of said annulus and is depressively detachable therefrom in the event of its being struck by a vehicle wheel or otherwise.

JOHN B. BARTOW.