Dec. 22, 1959 F. F. STUBE 2,918,668

FLASHER WARNING LAMPS

Filed March 4, 1957 2 Sheets-Sheet 1

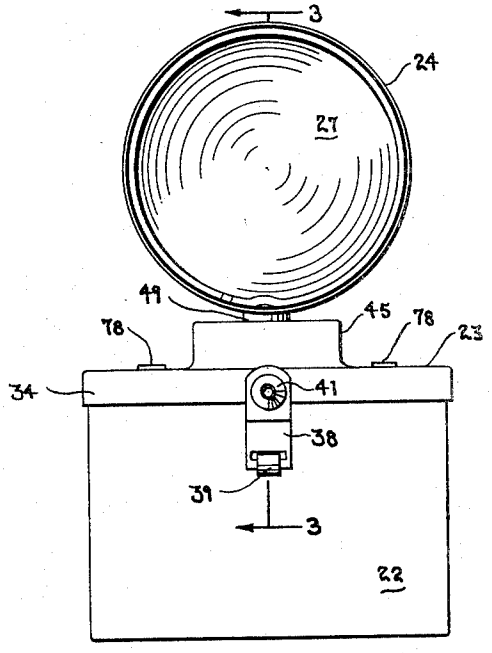

FIG. 1

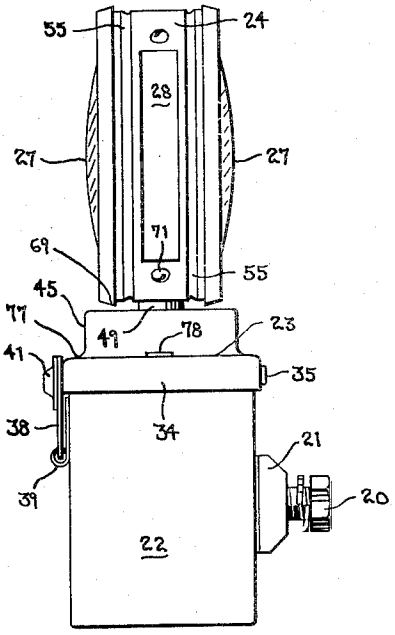

FIG. 2

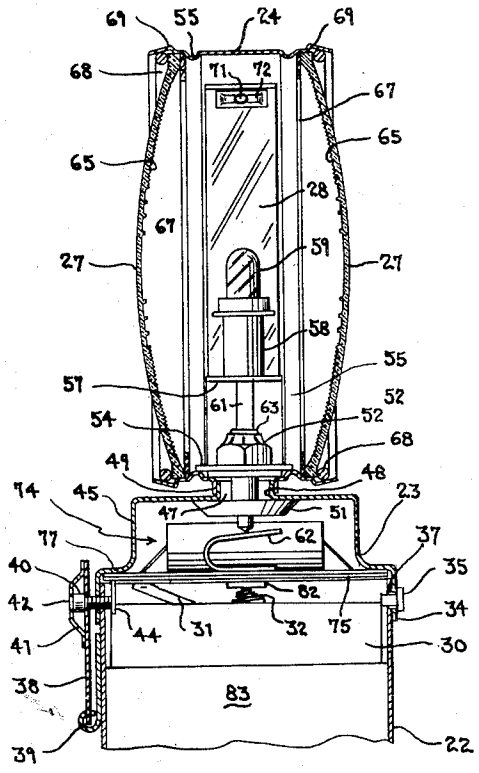

FIG. 3

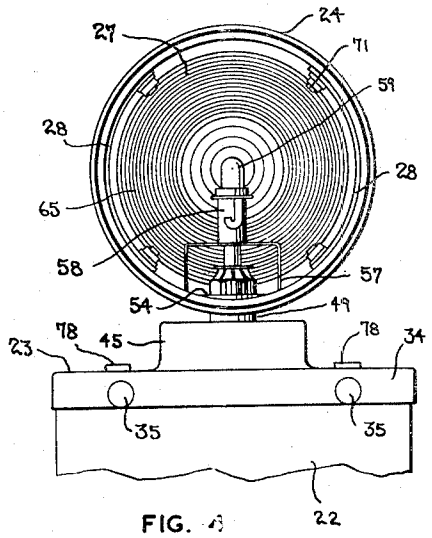

FIG. 4

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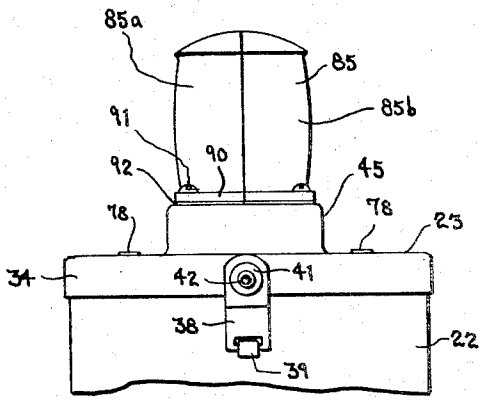

Fig-5-

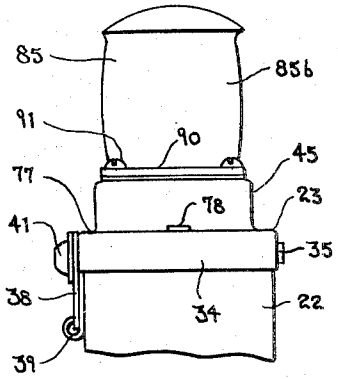

Fig-6-

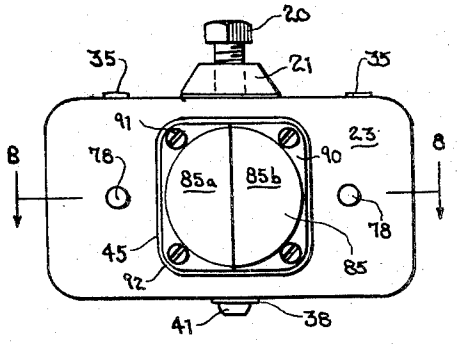

Fig-7-

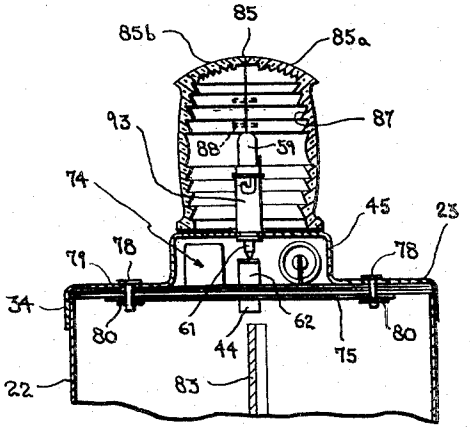

Fig-8-

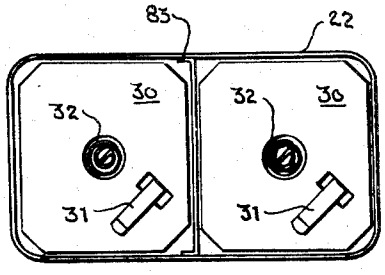

Fig-9-

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FLASHER WARNING LAMPS

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Application March 4, 1957, Serial No. 643,786

8 Claims. (Cl. 340—331)

This invention relates generally to warning devices for traffic hazards, and has particular reference to portable flasher warning lamps of the barricade and traffic cone types.

A general object of the invention is to provide an improved construction and arrangement for flasher warning lamps of the above types which results in lamps that are exceedingly dependable in operation and highly effective in the performance of the warning function.

Another object of the invention is to provide an improved battery operated flasher warning lamp which operates with superior efficiency and hence is capable of performing longer with conventional batteries and lamp bulbs than has heretofore been possible with lamps of this type. Moreover, other than for infrequent replacement of the batteries or bulb, substantially no care or repair is required for the lamp because wearable parts have been reduced to a minimum.

A further object of the invention is to provide an improved flasher warning lamp having a substantially tamper-proof construction so that it will be difficult for an unauthorized person to turn the lamp off or otherwise meddle with it when it is left unattended to mark a traffic hazard.

A still further object of the invention is to provide an improved flasher warning lamp having a weathertight construction so that the operation thereof will normally be unaffected by rain or snow.

Still another object of the invention is to provide an improved flasher warning lamp construction which is strong and durable and yet can be manufactured and marketed relatively inexpensively. In this connection, it will be seen as the description proceeds that the lamp is so constructed and arranged that it can be assembled in an extremely quick and efficient manner.

A more specific object of the invention is to provide a flasher warning lamp construction wherein the housing for the lamp can be locked shut and the locking mechanism also serves as the on-off switch for the lamp. This dual purpose locking mechanism can only be actuated by a special tool so that casual meddlers can neither operate the switch nor gain access to the interior of the lamp.

Other objects and advantages of the invention will become apparent from the following detailed description thereof read in conjunction with the accompanying drawings which illustrate representative embodiments of the invention for the purpose of disclosure.

In the drawings:

Figure 1 is a front elevation of a flasher warning lamp embodying the invention, the lamp shown being of the barricade type with a double faced lens signal head;

Figure 2 is a side elevation of the lamp shown in Figure 1;

Figure 3 is transverse vertical section taken along line 3—3 of Figure 1;

Figure 4 is a fragmentary back elevation of the lamp shown in Figure 1 with the back lens removed;

Figure 5 is a view corresponding to Figure 1 showing the lamp with a 360° lens signal head;

Figure 6 is a side elevation of the lamp shown in Figure 5;

Figure 7 is a top plan view of the lamp shown in Figure 5;

Figure 8 is a longitudinal vertical section taken on line 8—8 of Figure 7;

Figure 9 is a top plan view of the lamp with the top removed.

Having reference now to the drawings, wherein like reference numbers designate the same parts in each of the views, Figures 1–4 illustrate a flasher warning lamp of the barricade type, the lamp being adapted to be detachably secured to a suitable bracket on a traffic barricade as by a bolt **20** threaded into a boss or bracket **21** on the back of the lamp. The exterior portions of the lamp are essentially comprised of a battery case **22**, a top **23** for the case and a signal head **24** mounted on the top. The signal head is of the double faced lens type having oppositely facing main lenses **27** on the front and back thereof and a pair of smaller, diametrically opposed lenses **28** on the sides thereof, the latter permitting the warning signal to be seen from the sides as well as the front and back of the lamp.

The battery case **22** is adapted to contain two conventional 6 volt batteries **30** as is best shown in Figure 9, the positive and negative terminals **31**, **32** of the batteries projecting upwardly from the tops thereof. The top **23** for the battery case is formed with a depending flange **34**, and a pair of inwardly projecting studs or rivets **35**, Figures 3 and 4, are secured to the back side of this flange and are received with a free fit in a pair of aligned holes **37** in the back wall of the case when the top is positioned thereon. In assembling the top on the case, it is held in a tilted position until the studs **35** have passed thru the holes **37** and is then pivoted downwardly to bring the front side of the flange into overlying engagement with the front wall of the case.

In accordance with the invention, the top **23** can be locked on the battery case so that unauthorized persons cannot gain access to the interior of the lamp and, to this end, a hasp **38** is mounted on the front wall of the case as by a hinge connection **39** for locking engagement with the top. An Allen screw **40**, or Allen headed machine screw, Figure 3, extends with a free fit thru the outer end of the hasp and is permanently attached thereto by means of a cap **41** on the hasp which overlies the head of the screw but does not prevent free rotation thereof. The cap **41** is provided with a hole **42** which is smaller than the head of the screw so that the latter cannot fall out but is large enough to allow an Allen wrench to pass through it to tighten or loosen the screw.

When the hasp **38** is in locking position as shown in Figure 3, the screw **40** is passed through an aligned hole in the front side of the top flange **34** and threaded by means of the Allen wrench through a second aligned hole in the front wall of the battery case. This positively locks the top in position on the case, and since the average person does not normally carry an Allen wrench about with him, the lamp is reasonably safe from tamperers and pranksters. The maintenance man in charge of the warning lamps will, of course, carry Allen wrenches of the proper size with him as standard equipment. The arrangement just described has a second very important function which is to actuate the on-off switch for the lamp, this being accomplished by threading the screw **40** into or out of engagement with a conductor plate **44** mounted in the top **23** as will be explained hereinafter.

The top **23** for the battery case is formed with a raised portion **45** which forms a chamber within the top for the

flasher or signal generator circuit. The top wall of the raised portion has a centrally disposed hole 47 therethrough and this hole is encircled by a narrow upstanding flange 48. The signal head 24 is provided with a corresponding hole and flange 49 at the bottom thereof, and the latter fits over the flange 48 in telescoping relation thereto to seal the interior of the flasher circuit chamber and signal head against rain, snow or dust.

A signal head retainer bolt 51, Figure 3, is secured as by spot welding to the inside of the top 23 so that its shank extends upwardly through the hole 47. This bolt serves to secure the signal head in position on the top and, to this end, a nut 52 is threaded onto the upper end of the bolt within the head, the nut being brought into engagement with a washer 54 which spans a pair of annular beads 55 extending circumferentially around the head. This arrangement permits the signal head to be angularly adjusted relative the remainder of the lamp after the latter has been secured to a barricade, the head flange 49 rotating on the top flange 48 during such adjustment.

Mounted within the signal head 24 above the nut 52 is a strap 57, Figures 3 and 4, which supports a bayonette type bulb socket 58 so that a lamp bulb 59 mounted therein will be positioned with its filament at the approximate center of the head. The base terminal of the bulb engages the bare upper end of an insulated conductor 61 which extends downwardly from the interior of the bulb socket and passes with a free fit through a longitudinal bore in the retainer bolt 51 into the circuit chamber of the top where it contacts, but is not fixed to, a spring terminal 62 of the circuit. The conductor 61 is biased into contact with the bulb terminal by the spring terminal 62 but is not actually fixed to any part of the signal head or top 23 so that rotation of the head relative to the top will in no way affect or injure the electrical connection. The conductor is, however, prevented from dropping through the top when the flasher circuit is removed therefrom by means of a wire spring clip 63.

The main lenses 27 of the signal head 24 are of the concavo-convex type and are preferably formed of a tough plastic material. The optics of the lenses, in the form of concentric ridges and grooves 65, are molded on the inner or concave sides of the lenses. The peripheral edges of the main lens abut against annular gaskets 67 which in turn abut against the circumferential beads 55 formed in the head. The lenses are retained in position by means of relatively heavy wire snap rings 68 which are forced into annular grooves 69 formed in the head outwardly of the lens edges. The side lenses 28 of the head are also provided with bordering gaskets and are secured to the head as by screws 71 and spring washers 72.

The flasher circuit for the lamp is preferably a transistor oscillator circuit of the type disclosed in copending application Serial No. 621,343, filed November 9, 1956 by Elihu Root, 3rd now Patent No. 2,829,257, said patent and the present application being commonly owned. Accordingly the electrical arrangement and operation of the circuit per se play no part of the present invention, and reference is made to said application for a complete disclosure thereof. This circuit is employed in the lamps herein disclosed, however, because it can be assembled in a very compact form, is simple and economical in construction, and also is highly stable and efficient in operation.

In view of the foregoing, the circuit is illustrated schematically in the drawings where it is generally indicated at 74. In accordance with the present invention, however, the circuit is arranged so that it will fit within the circuit chamber of the top 23 and can be assembled in or removed from the top as a unit. To this end, the circuit is separately assembled on a pair of supporting plates 75 formed of non-conducting material such as heavy cardboard or plastic, and these plates are cut to fit within the top in abutting engagement with the shoulder 77 thereof which surrounds the circuit chamber. The plates are detachably secured in this position by means of a pair of studs or rivets 78 which extend downwardly through the top and pass through aligned holes 79, Figure 8, in the plates, nylon washers 80 or the like being frictionally engaged on the studs below the plates to hold them in position. With this arrangement, the washers need only to be pushed into position on the studs or pulled away therefrom to mount the circuit in or remove it from the top.

To facilitate the construction of the transistor oscillator circuit as a separate unit, the circuit is arranged so that it has but a single pair of terminals which are adapted to be connected in series with the lamp bulb and batteries. Furthermore, in order to facilitate assembly and disassembly of the lamp as a whole, the circuit terminals are not permanently attached as by soldering to the electrical connection for the bulb and batteries, one of the terminals being the spring contact 62 which engages the conductor 61 for the base terminal of the bulb, as previously mentioned. The other terminal of the circuit is a metal strap 82, the ends of which are engaged by the negative spring terminals 32 of the batteries 30, Figures 3 and 8.

The positive spring terminals 31 of the batteries abut against the conductor plate 44 which is adapted to be engaged by the Allen screw 40, the plate also being mounted on the circuit supporting plates 75 but being completely insulated from the transistor oscillator circuit. Accordingly, when the screw 40 is in locking position and is threaded into engagement with the conductor plate 44, the lamp circuit will be completed from the negative terminals of the batteries, through the flasher circuit to the base terminal of the lamp bulb, and from there through the bulb socket 58, signal head 24, top 23, Allen screw and conductor plate to the positive terminals of the batteries. Conversely this circuit is opened and the lamp made inoperative by backing off on the screw until it no longer contacts the conductor plate.

In connection with the foregoing, it should be noted that flasher circuit terminal 82 and conductor plate 44 are common to the negative and positive terminals, respectively of both of the batteries so that the lamp can operate if necessary on only one battery in which case the operating hours for the lamp will be reduced but the brightness of the illumination and other characteristics will not be affected. However, in the event that only one battery is put into the battery case 22, a divider plate 83 is provided for the case, Figure 9, to prevent the battery from sliding around and to insure that its terminals will be in proper position to contact the terminal 82 and conductor plate 44.

Figures 5–9 illustrate a barricade type flasher warning lamp which is in all respects identical to the lamp shown in Figures 1–4 except for the signal head and lamp bulb mounting within the head. The signal head 85 here shown is known as a 360° lens type since the entire head is comprised of the lens itself which is substantially cylindrical in shape and therefore is visible from any point around the lamp. The lens 85, like lenses 27, is preferably made of molded plastic with the optics, i.e. the ridges and grooves 87, being formed on the inside. However, in order to facilitate the molding of the lens, it is preferably made in two complemental parts 85*a*, 85*b*, which are held together by an adhesive cement and reinforcing pins indicated in phantom lines at 88, Figure 8. The lens 85 is also provided with a base flange 90 by means of which it is fixed to the top of the circuit receiving chamber as by screws 91, a gasket 92 being interposed between the flange and top. With this type of lens, the bulb socket 93 is secured directly to the top of the circuit chamber as shown in Figure 8, rather than to a strap in the signal head as shown in Figure 4.

From the foregoing description it will be apparent that the invention disclosed herein provides a greatly improved and highly practical construction and arrangement for flasher warning lamps of the above described types. The invention, however, may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiments disclosed are therefore to be considered in all respects as illustrative rather than restrictive, the scope of the invention being indicated by the appended claims.

What is claimed is:

1. In a flasher warning lamp including a lamp bulb, a battery case, a battery mounted in said case having a pair of terminals neither of which is in electrical contact with the case, a detachable current conducting top for said case including means for supporting said lamp bulb, and means on said case and engageable with said top to lock the top in position on said case, said locking means completing a normally open circuit through one of said battery terminals, said lamp bulb, said top and said other battery terminal.

2. Structure as defined in claim 1 together with a 360° lens mounted on said top and enclosing said lamp bulb.

3. Structure as defined in claim 1 together with a lens supporting head mounted on said top for rotation relative thereto, said head enclosing said lamp bulb.

4. In a flasher warning lamp including a lamp bulb, a battery case, a battery mounted in said case and having a pair of terminals neither of which is in electrical contact with the case, a detachable current conducting top for said case including means for supporting said lamp bulb, and means on said case engageable with said top to lock the top in position on said case, said locking means including a hasp having a rotatable screw element attached thereto, said screw being adapted to extend through said top and make an electrical connection between the top and one of said battery terminals thereby completing a normally open circuit through the other of said battery terminals, said lamp bulb and the top.

5. In a flasher warning lamp including a lamp bulb, a battery case, a battery mounted in said case having a pair of terminals neither of which is in electrical contact with the case, a detachable current conducting top for said case including means for supporting said lamp bulb, a removable circuit supporting plate positioned in said top, a signal generator circuit mounted on said supporting plate, said circuit having terminals in abutment with but not secured to one of said battery terminals and a lamp bulb terminal to permit the circuit and supporting

plate to be assembled in and removed from said top as a unit, and means on said case engageable with said top to lock the top in position on said case, said locking means completing a normally open circuit through said one battery terminal, said signal generator circuit, said lamp bulb, said top and said other battery terminal.

6. A flasher warning lamp as defined in claim 5 together with a 360° lens mounted on said top and enclosing said lamp bulb.

7. In a flasher warning lamp including a lamp bulb, a battery case having means for mounting the case on a traffic warning structure, a battery mounted in said case having a pair of terminals neither of which is in electrical contact with the case, a detachable current conducting top for said case including means for supporting said lamp bulb, a lens supporting head rotatably mounted on said top and enclosing said bulb supporting means, a removable circuit supporting plate positioned in said top, a signal generator circuit mounted on said supporting plate having a pair of terminals respectively making an electrical connection with one of said battery terminals and a lamp bulb terminal, a conductor member mounted on said circuit supporting plate independently of said signal generator circuit and making an electrical connection with the other of said battery terminals, and means on said case engageable with said top to lock the top in position on said case, said locking means also serving as a switch means for said lamp and including a hasp having a rotatable Allen screw permanently attached thereto, said screw in locking position being threaded through said top and case into engagement with said conductor member to complete a normally open circuit through said one battery terminal, signal generator circuit, lamp bulb, top, conductor member and said other battery terminal.

8. A flasher warning lamp as defined in claim 7 wherein said battery case is adapted to contain two 6 volt batteries, said case including a battery positioning member adapted to separate the batteries and properly position either of them in the event that but a single battery is employed.

References Cited in the file of this patent

UNITED STATES PATENTS

2,051,506	Wallace	Aug. 18, 1936
2,224,742	Muldoon	Dec. 10, 1940
2,303,086	Muldoon	Nov. 24, 1942