Feb. 8, 1944. C. W. M. MORRIS 2,341,189

SIGNAL LAMP

Filed Aug. 25, 1941

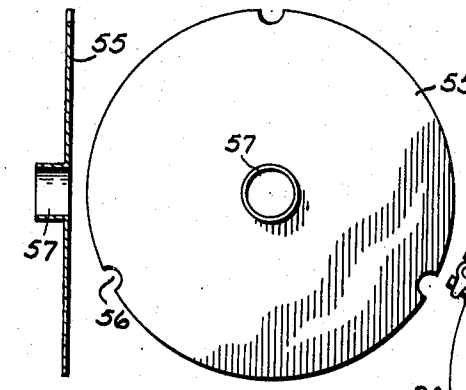


Fig. 5. Fig. 4.

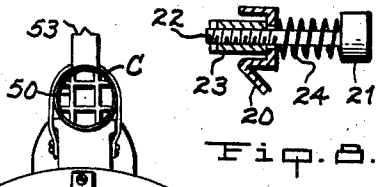


Fig. 8.

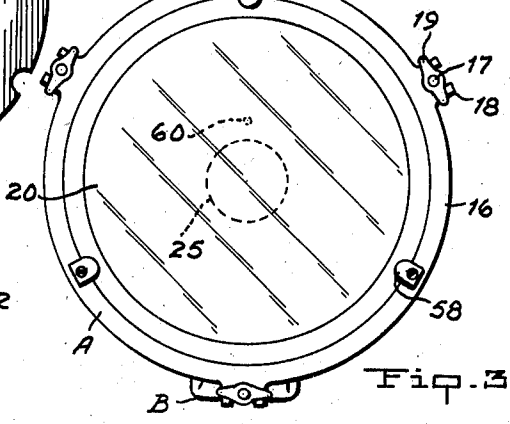


Fig. 3.

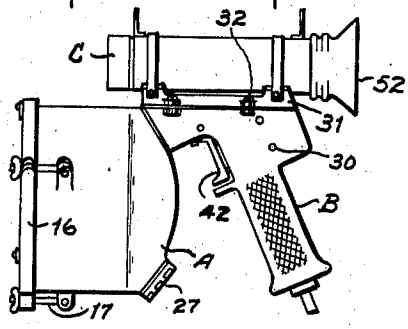


Fig. 1.

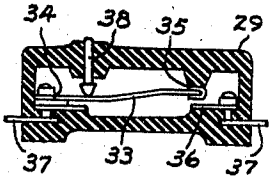


Fig. 6.

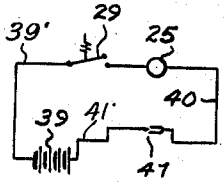


Fig. 7.

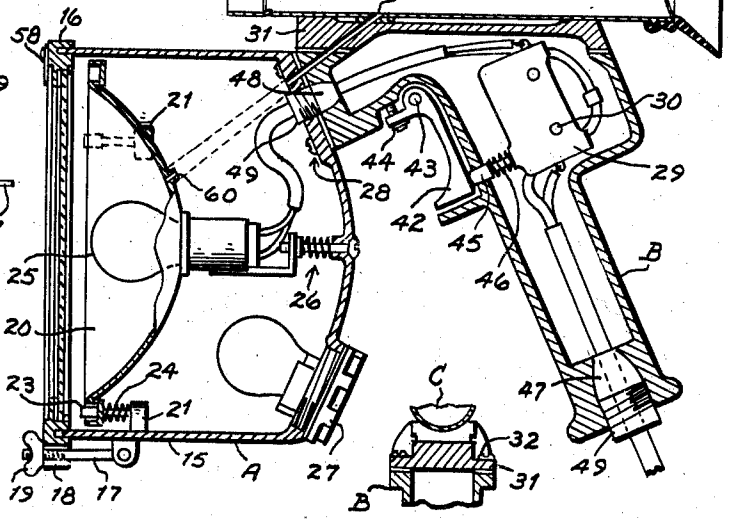


Fig. 2.

Fig. 9.

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Patented Feb. 8, 1944

2,341,189

UNITED STATES PATENT OFFICE

2,341,189

SIGNAL LAMP

Cedric W. M. Morris, Hamilton, Ontario, Canada

Application August 25, 1941, Serial No. 408,247

4 Claims. (Cl. 177—329)

This invention relates to signal lamps, more particularly that type of lamp employed for purposes of transmitting messages by means of flash signals.

One of the objects of the present invention is to provide a device of this character which will transmit messages in the form of light flashes either by day or night.

Another object of the present invention is to provide a device of this character wherein signal messages may be flashed from one distant point to another, such for example, ship to ship, shore to ship, airplane to ship, airplane to airplane and so on.

A further object of the invention is to provide a device of this character wherein the light beam of the flash forming the signal message may be accurately focused and concentrated upon a given object, moving or otherwise, wherein the interceptive path of travel of the light beam may be restricted.

Still a further object of the invention is to provide a device of this character which is portable in nature and one that may easily and conveniently be brought into operation.

The yet further object of the invention is to provide a device of this character wherein circuit closing means is housed in a sealed unit and within a sealed chamber to provide a substantially explosion-proof signal lamp.

Having regard to the foregoing and other objects and advantages which will become apparent as the description proceeds, the invention consists essentially in the novel combination and arrangement of parts and elements hereinafter described in detail and illustrated in the accompanying drawing in which:

Fig. 1 discloses an embodiment of the present invention.

Fig. 2 is an enlarged sectional elevation taken longitudinally through the center of the assembled structure.

Fig. 3 is a front elevational viaw of Fig. 2.

Fig. 4 is a front elevational view of the apertured mask.

Fig. 5 is a sectional elevation taken through the center of the mask shown in Fig. 4.

Fig. 6 is a section taken through the center of the sealed circuit closing switch.

Fig. 7 is a schematic diagram of the circuit embodied in the signal lamp.

Fig. 8 is an enlarged sectional detail of the mounting means for the reflector, and

Fig. 9 is a transverse section taken through the upper portion of the pistol grip showing the cover mounting.

Referring now to the drawing wherein like letters and numerals of reference designate corresponding parts in the various illustrations herein, the letter A indicates the signal lamp, the letter B the pistol grip and the letter C the sighting means for the signal lamp.

As more particularly exemplified in Fig. 2, the signal lamp includes a housing or casing **15** of suitable contour, form and material provided with a detachable lens carrying cover member **16**. For purposes of detachably retaining the cover member in position, pivotal arm members **17** are mounted on the housing and are adapted to engage the forked lugs **18** of the cover member while suitable securing means such as thumb screws **19** are employed for retaining the cover in position. Packing such as cork, rubber or the like is disposed on either side of the lens in the cover for sealing purposes and to provide shock absorbing means.

Mounted within the housing **15** in spaced concentric relationship thereto is the light reflector **20**. The reflector is adjustable as to position in order that the path of the light beam from the lamp may be varied for coordination with the sighting means. For this purpose I provide the interior of the housing with a series of spaced projecting lugs or bosses **21** in which are mounted dowel screws **22**. The outer periphery of the reflector is preferably of channel like formation and the dowel screws extend through the channel and are connected therein by means of screw nuts **23**, while mounting on the dowel screws between the bosses and the rear of the reflector channel are expansion springs **24**. From the foregoing it will be seen that the reflector is held in suspension within the lamp housing, is readily adjustable to or from any angle to direct the path of the light beam as required. Additionally, the suspension support means provides shock absorbing means for the reflector, lamp and related structure. Here it is perhaps well to mention that the reflective properties of the reflector are so multiplied that a light projected from a 12 volt bulb has an intensity of approximately 110,300 beam candle power.

Arranged centrally of the reflector in suitable socket means is the lamp or light bulb **25**. Any well known means such as is indicated at **26** may be employed for purposes of adjusting the relative position of the lamp with respect to the reflector in order that proper focusing may be conveniently effected. Adjacent the base of the

housing 15 I provide a threaded opening which is adapted to be engaged by a closure cap or nut 27, the latter being designed to support and carry a spare bulb for the signal lamp.

Adjacent the upper portion of the lamp housing 15 I mount the substantially hollow, compartment forming pistol grip B. The grip may be composed of any suitable material, preferably non-conductive and waterproof in character and is secured to the housing as at 28 by screw bolts or like securing means, while mounted within the hollow compartment of the pistol grip and completely enclosed and sealed therein is the switch unit 29 which is detachably retained therein by bolt means 30.

It is to be observed that the pistol grip as a whole is formed in two sections, i. e., the handle or grip proper which is preferably cast, moulded or otherwise formed as a single unit and a closure cap or cover member 31 which is secured to the grip proper as by means of bolts 32 (see Fig. 1). Providing the grip with a detachable cover member enables the sight means to be properly aligned with efficiency and expedition before the cover is secured to the pistol grip body, permits accurate registration of the tell-tale opening, later referred to, between the sighting means and the cover member, enables the switch 29 to be removed or replaced without tampering with the gland nuts through which the conductor wires extend and presents greater all-around efficiency and accuracy in aligning the sighting means with respect to the lamp body.

The switch unit 29 herein disclosed and illustrated includes a spring arm 33 fixedly mounted as at 34 and provided with a movable contact 35, terminal plate 36, terminals 37 and spring arm operating plunger 38. By special reference to Fig. 6 it will be seen that pressure exerted upon plunger 38 will move the spring arm 33 downwardly and cause member 35 to be brought into contact with the terminal plate 36 for closing a circuit. Here it is perhaps well to mention that due to the comparatively close position of the plunger 38 to the fixed position of the spring arm 33, there will be relatively less movement of the plunger 38 than of the member 35. Thus on the lever principle, a movement of the plunger a distance of approximately .001 part of an inch is sufficient to move the member 35 into or out of contact with the plate 36 to close or open a circuit according to operative movement.

The circuit herein for furnishing the lamp with current supply includes battery 39, 39', switch unit 29, lamp 25 and lead 40 which through jack 41 and lead 41' completes the circuit with battery 39. It is observed that the circuit herein is normally open and may be closed only by operation of the trigger means hereinafter referred to.

In order that the lamp may be conveniently operated by finger movement when in position, I provide the handle grip with a trigger member 42. The trigger member is pivotally mounted as at 43 and is provided with an adjusting screw indicated at 44, the latter enabling the trigger to be adjusted relative to the plunger operating pin 45. Mounted between a shoulder formed on the pin 45 and a shoulder formed on the unit 29 is an expansion spring 46. This spring is essentially designed to normally maintain the trigger member and the plunger operating pin out of operative contact with the plunger 38 of the switch 29 to insure a normally open circuit.

The handle or pistol grip is designed to be substantially explosion proof in order that it may be employed in occupations where hazards exist, for example, where there is a presence of combustibles or combustible gases or fumes and vapors. For this purpose not only the switch unit 29 is sealed but the compartment of the pistol grip wherein the switch is housed is effectively sealed from the atmosphere. The sealing means illustrated include conoidal insulating plugs 47 and 48 located in the conductor wire openings in the base and upper section of the grip respectively. These plugs are adapted to sealingly embrace the conductor wires which lead to and from the pistol grip and are retained under leak-proof compression by means of gland nuts or the like 49. Suitable gaskets are interposed between the pistol grip and the cover cap previously referred to as well as the pistol grip and the lamp housing.

Where flash signals are transmitted over distances measured in the broad term of miles, it is essential that such flash signal be closely trained and maintained upon the object of the transmitted signal whether moving or otherwise. In order to accomplish this I provide the signal lamp with sighting means C which is preferably mounted upon the upper extremity of the handle or pistol grip.

As herein illustrated, the sight means may be connected by strap means which embrace the barrel thereof, the ends of the straps overly protruding shoulders and are secured therebeneath by screws or like securing means, the shoulders as illustrated forming means for connecting the strap ends under tension.

The sighting member C illustrated is of the barrel type and is provided with interior sighting means comprising crossed wires or a stamped frame 50 forming a squared circle and which is located adjacent the front extremity of the sight barrel while a peep-sight 51 is located adjacent the rear of the barrel. A flexible rubber eye-piece 52 embraces the sight barrel at the peep-sight and enables the operator to hold the sighting means to the eye for range finding and during operation without injury to the eye and at the same time sun rays and reflections are blanked out during sighting or operation. External sighting means include front sight 53 which terminates at its upper extremity in substantially inverted V shape formation and rear sight 54 which terminates in substantially normal V shape formation. While I have illustrated and described a barrel type of sighting means, it is not to be understood that restriction is implied since telescopic sighting means may be substituted.

Ordinarily, the signal lamp is employed for transmitting signal messages over considerable distances. Where however signals are to be transmitted relatively short distances, such for example, less than a mile, I provide an apertured mask such as is disclosed in Figs. 4 and 5. In structure the apertured mask is of relatively thin, flat material and circular in form as indicated at 55. The outer periphery of the mask is provided with a series of equidistantly spaced recesses 56 and a restricted, centrally disposed aperture 57. When it is necessary or desirable to transmit signal messages relatively short distances, the mask 55 is placed upon the face of the cover member 16 with the recesses 56 fitting neatly over the fixed, spaced stops or lugs 58 and then given a reasonable amount of concentric turn so that it may be firmly retained

in position by the member 58. With the mask in position, a narrow or restricted light beam is projected from the lamp. Thus in case or cases of grave emergency, the narrow restrictiveness of the light beam reduces the field of intermediate reception to a point where it is substantially at the zero point.

Normal equipment for the signal lamp would include a suitable container (not shown) within which the battery 39 would ordinarily be housed and in which the apertured mask would be carried while any suitable type of plug jack is readily connected to the battery through a terminal as and when required. A suitable length of conductor wire connects the lamp with the battery thus providing every facility for maneuvering and portability that could be desired.

During the operation of the signal lamp, particularly during the hours of daylight, the operator is not always too sure that the signals are being properly flashed when ordinary signal lamps are employed. With the present invention therefore I provide a tell-tale opening 59 which extends from the interior of the sight C to the interior of the lamp housing 15. I also provide a minute aperture or opening 60 in the reflector immediately above the lamp 25 and in register with the opening 59; the intermediate space may be sealed, if desired, by suitable pipe means or the like. Thus as signal messages are being transmitted, the flashes thereof are visible to the operator through the tell-tale opening in the sighting means and as promptly as the flash of a signal ceases to exist, the operator is immediately aware of it.

For operative purposes, the jack 41 is plugged into the battery terminal for current supply for the lamp, it being understood that other sources of current supply such as line wire may be employed. Having grasped the pistol grip, the lamp is swung to the position of eye level of the operator and then through the medium of the sighting means is focused upon the object of communication. Signal messages are then flashed by intermittent pressure and release of the finger on the trigger member 42 which alternately closes and opens the current supply circuit causing the lamp to flash the necessary signals. It is worthy to note that the time period between the full flash of the lamp and a ninety per cent extinction is measured in terms of approximately .023 part of a second. Thus there is a very definite and pronounced black-out between signal flashes in a very short period of time which produces efficient and clearly readable signals either by day or night.

From what has been set forth and described it will be seen that I have provided a signal lamp which may conveniently be held and operated by hand and readily transported from place to place during signalling operation or otherwise wherein signal flashes are controlled by trigger operated means, where the flash signals are visible to the operator and where the operating means are enclosed in a substantially explosion-proof handle. It is to be understood however that the invention disclosed may be embodied in other specific forms without departing from the spirit or essential characteristics of the invention. The present disclosure is therefore to be considered in all respects as illustrative rather than restrictive and that all changes coming within the meaning and range of equivalency of the claims are intended to be embraced therein.

What I claim as my invention is:

1. In a signal lamp, a housing member provided with a lens closed opening, a reflector member mounted in the housing in spaced concentric rlationship thereto, a lamp mounted in the reflector, a circuit including a source of current supply for the lamp, a pistol grip of substantially hollow formation mounted on the housing and formed with an open end, a detachable cover member for closing the open end of the pistol grip, a switch unit mounted in the hollow pistol grip and removable through the open end of the said grip, sighting means mounted on the cover member, the said sighting means providing means for focusing a light beam from the signal lamp upon a selected object, means for adjusting the reflector to coordinate the directional path of the light beam with the sighting means and trigger means for operating the switch to close the circuit.

2. In a signal lamp, a housing member provided with a lens closed opening, a reflector member mounted in the housing in spaced concentric relationship thereto, a lamp mounted in the reflector, a circuit including a source of current supply for the lamp, a substantially hollow pistol grip mounted on the housing member provided with inlet and outlet openings for the passage of conductor wires to and from the pistol grip, a circuit closing switch within a sealed casing mounted in the hollow pistol grip for closing and opening the said circuit and normally maintaining an open circuit, plug means for sealing the conductor wires at the inlet and outlet openings, sighting means for the lamp, means for adjusting the reflector to coordinate the directional path of a light beam from the lamp with the sighting means and trigger means carried by the pistol grip for operating the switch to close the circuit.

3. In a signal lamp, a housing member provided with a lens closed opening, a reflector member mounted in the housing in spaced concentric relationship thereto and provided with a minute aperture, a lamp mounted in the reflector, a circuit including a source of current supply for the lamp, a pistol grip mounted on the housing, a switch mounted in the pistol grip, sighting means mounted on the pistol grip, for focusing a beam of light from the signal lamp upon a selected object, the said sighting means being provided with a tell-tale opening for establishing communication between the interior of the sighting means and the minute aperture to enable signals from the lamp to be visible to the eye through the sighting means and trigger means for operating the switch to close the circuit.

4. In a signal lamp, a housing member provided with handle means and a lens closed opening, a reflector mounted in the housing member, an electric bulb mounted in the reflector, a circuit including a source of current supply for the electric bulb, sighting means for the signal lamp, the said sighting means and the signal lamp being formed with communicating means for establishing communication between the electric bulb and the sighting means to cause a beam of light from the said bulb to be made visible to the eye through the sighting means and a trigger operated switch in the circuit for controlling the current supply to the electric bulb.

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