United States Patent [19]

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[11] **3,739,167**

[45] **June 12, 1973**

[54] **LIGHT FOR HUNTING WEAPON**

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[22] Filed: **Apr. 8, 1970**

[21] Appl. No.: **26,551**

[52] **U.S. Cl.** ..... **240/2**, 42/1 A, 240/6.41

[51] **Int. Cl.** **F21v 33/00**

[58] **Field of Search** ..... 240/2, 2 F, 2.14, 240/6.41, 8.18, 18, 68, DIG. 5; 42/84, 1, 1 A; 89/125; 273/102; 285/261, 270; 287/87, 91

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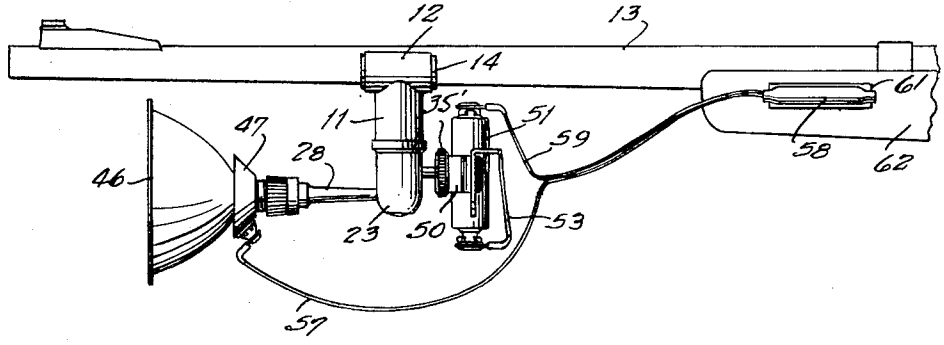
[57] **ABSTRACT**

A spot light for use in night hunting includes a standard having means for attachment to a weapon such as a rifle, shotgun or bow. The standard includes a swivel housing, for adjustably supporting a swivel which carries a light holder and reflector, and clamping means for locking the swivel in a selected position to aim the spot light. The housing provides a mounting for a battery, and a remote switch connected to the unit through appropriate conductor wires is mounted on the weapon in position to be conveniently actuated by the hunter at the appropriate time.

3 Claims, 10 Drawing Figures



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SHEET 1 OF 2

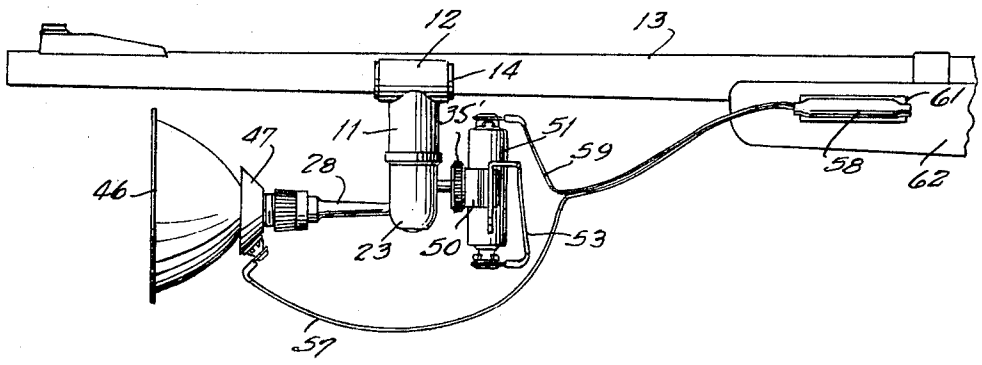

Fig.1

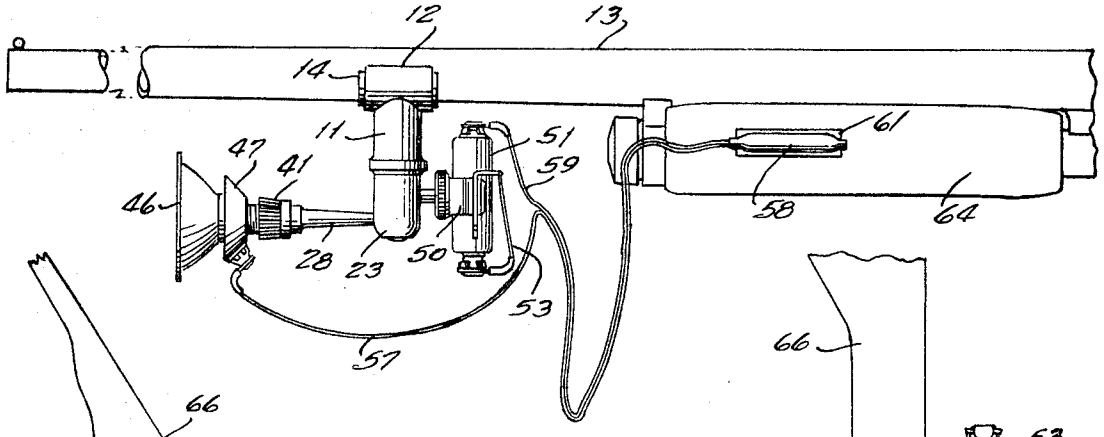

Fig.2

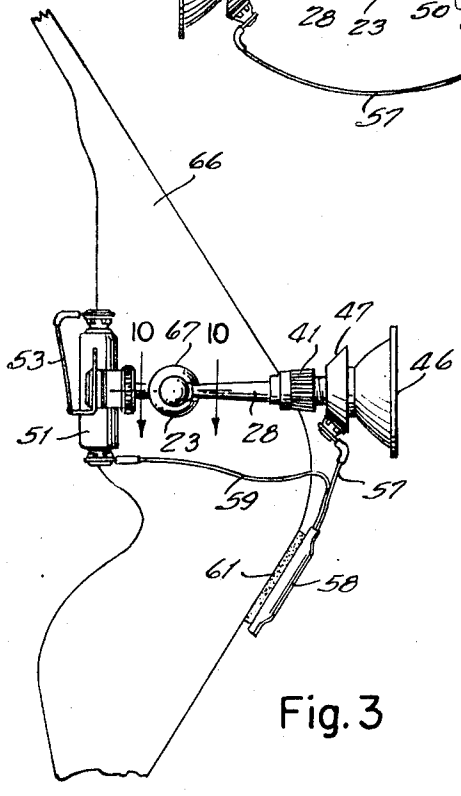

Fig.3

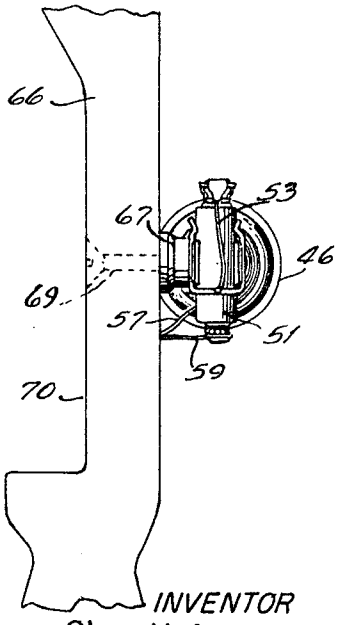

Fig. 4

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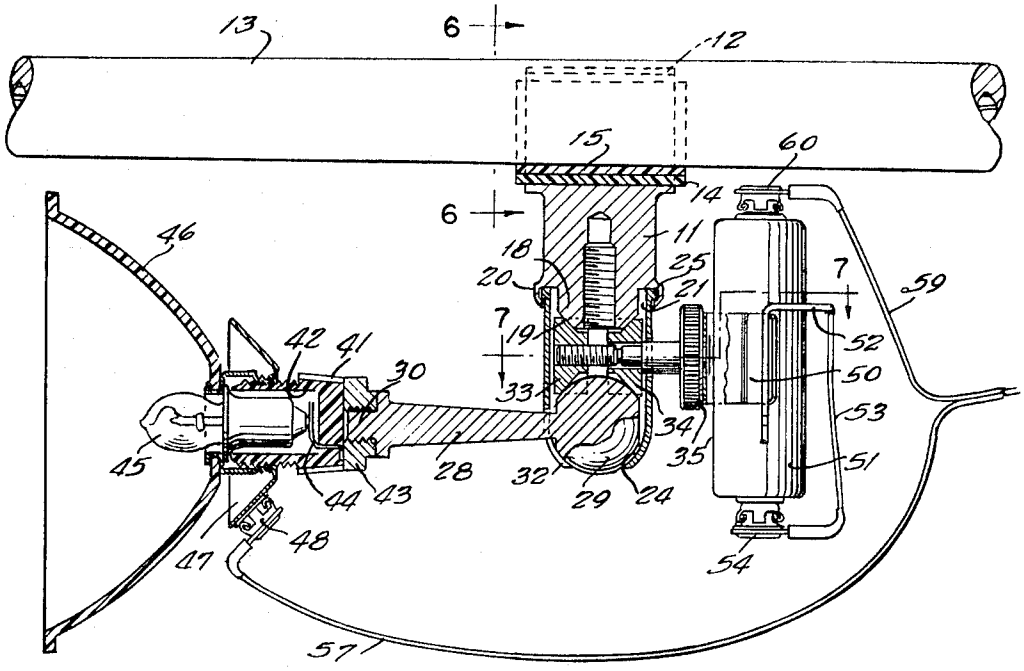

Fig.5

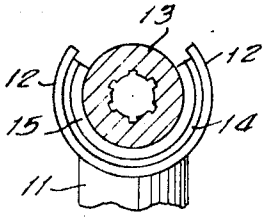

Fig.6

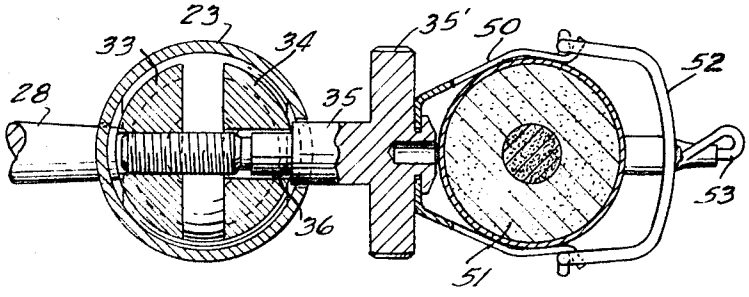

Fig.7

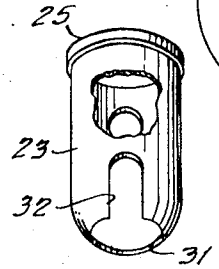

Fig. 8

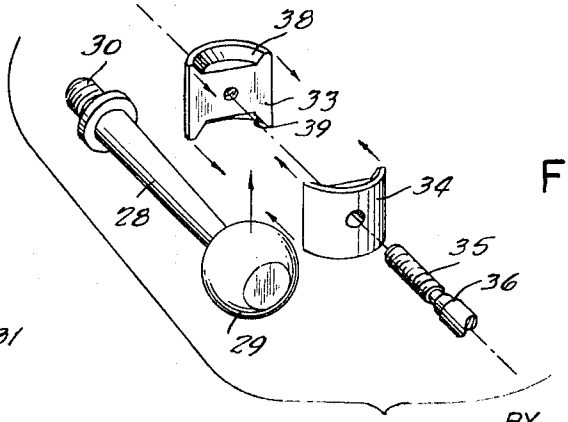

Fig.9

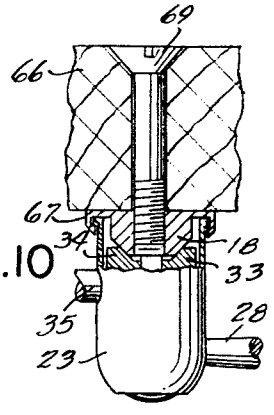

Fig.10

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LIGHT FOR HUNTING WEAPON

SUMMARY OF THE INVENTION

This invention relates to a spot light for use with and attachment to a hunting weapon.

An object of this invention is to provide a spot light adapted to be readily attached to a hunting weapon, such as a rifle, shotgun or bow for use in the night hunting of predatory animals.

Another object of this invention is to provide a spot light for attachment to a hunting weapon which is conveniently attached to or detached from the weapon and which is readily adjustable to aim the light relative to the weapon.

A further object of this invention is to provide a spot light for attachment to a hunting weapon which is self-contained, including its own power supply, which is adapted for mounting on the weapon so as not to interfere with the normal functioning thereof, and which includes switch means adapted to be mounted on the weapon for convenient actuation by the hunter during the sighting of the weapon.

Still another object of this invention is to provide a spot light for attachment to a hunting weapon including a universal mounting and positive clamping means for accurately aiming the spot light relative to the weapon.

Broadly, the invention comprises a swivel housing means for attachment to a weapon; a swivel universally supported in the swivel housing, and mounting a bulb holder and reflector; clamping means in the swivel housing for locking the swivel in a selected position; battery holding means mounted on the swivel housing; and switch means adapted to be mounted on the weapon in spaced relation to the swivel housing for convenient actuation by the hunter.

The invention has particular application in the night hunting of varmints or other predatory animals, whether by rifle, shotgun, or bow and arrow. The spot light is appropriately aligned on the weapon so that when the weapon is on target, the light is also on target; and the actuating switch is appropriately mounted so that when the weapon is sighted on the target the spot light may be conveniently actuated by the hunter to positively identify the target prior to firing the weapon or releasing an arrow.

The novel features of the invention, as well as additional objects and advantages thereof, will be understood more fully from the following description when read in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of a light unit, according to the invention mounted on a rifle, with a portion of the rifle barrel and stock being shown;

FIG. 2 is an elevational view of a light unit embodying the invention mounted on a shotgun, with a portion of the latter being shown;

FIG. 3 is an elevational view of a light unit embodying the invention mounted on a bow, with the bow being shown fragmentarily in side elevation;

FIG. 4 is a view related to FIG. 3 showing the light unit and the fragmentary portion of the bow as viewed in rear elevation;

FIG. 5 is an enlarged sectional view of the light unit of FIG. 1 as mounted on a rifle barrel;

FIG. 6 is a view taken on the line 6—6 of FIG. 5, looking along the rifle barrel and showing the relation of the light unit standard to the barrel;

FIG. 7 is a sectional view taken on the line 7—7 of FIG. 5 showing details of the swivel clamping mechanism and the battery holder;

FIG. 8 is a perspective view, partially broken away, of the swivel housing member which is a part of the lighting unit standard;

FIG. 9 is an exploded view of the swivel arm and elements of the clamping mechanism for the swivel arm; and

FIG. 10 is a fragmentary view partially in section taken on the line 10—10 of FIG. 3 illustrating details of a unit as mounted on a bow.

FIGS. 1 and 2 of the drawing illustrate spot light units adapted for use respectively with a rifle and with a shotgun. The units of FIGS. 1 and 2 are identical except as to the size of the reflector. Since a rifle, of course, has a longer range, it is desirable to provide a larger reflector which serves to throw the beam further and to confine the width of the beam for better elimination at the longer range. The spot light unit adapted for use with a rifle should preferably throw a light beam 300 yards or more to enable kills at 150 to 200 yards. In the unit adapted for use with a shotgun it is desirable to provide a larger beam and the range need not be so great. It is desirable that this unit throw a larger beam 150 yards or more, and the smaller reflector illustrated serves this purpose.

FIGS. 3 and 4 are general views of a light unit as mounted on a bow, and this unit is identical to the units of FIGS. 1 and 2 except for the housing standard which is designed for attachment to the bow in a different manner. The bow lighting unit again includes a smaller reflector since a light with a beam range of 100 to 150 yards enables the hunter to see his prey.

A lighting unit for attachment to a rifle or shotgun will now be described in detail with particular reference to FIGS. 5 through 9, which are particularly related to the rifle mounted unit of FIG. 1. As indicated above, this description will be fully applicable to the shotgun mounted unit.

Referring particularly to FIGS. 5 and 6, the light unit includes a standard 11 having fixed jaws 12 which define an arcuate grip for clamping engagement with the barrel 13 of a rifle. As best seen in FIG. 6, the jaws 12 define a partial sleeve having an inner cylindrical wall surface having an arcuate extent substantially greater than 180° so that the standard may be slipped over the rifle barrel and retained on the barrel in operative relation therewith. In order to accommodate the unit to a particular rifle barrel, one or more inserts or sleeves of plastic or other suitable material, such as the two inserts 14 and 15, are provided. A standard 11 would be selected having a jaw diameter somewhat larger than the diameter of the barrel on which the unit is to be mounted, and the plastic inserts serve as arcuate sleeves or bushings to provide a snug engagement between the standard jaws 12 and the barrel 13 to anchor the unit. Since rifle barrels are conveniently provided with a slight taper, the standard is slipped over the barrel from the front end and, with appropriately selected spacers 14 and 15, the unit is moved rearwardly until snug and rigid engagement of the standard and the gun barrel is effected. As best seen in FIG. 6, the spacers 14

and 15 have an arcuate extent substantially the same as that of the fixed jaws 12.

The standard 11 defines a shank extending radially with respect to the rifle barrel upon which it is mounted and defines, at its end opposite from the jaws 12, a central boss 18 providing a frusto-conical surface 19. An annular axially extending flange 20 surrounds the boss 18 and defines therewith an annular recess 21, with the flange 20 providing an inwardly directed lip.

A swivel housing 23 is a cup-shaped member defining an internal semi-spherical surface or socket 24 at its closed end. The open end of the swivel housing 23 is cylindrical and is provided with a radially outwardly extending lip 25. The housing 23 and lip 25 are dimensioned to be received within the annular recess 21, with the lip 25 being interlocked with the lip of the standard flange 20 to axially lock the standard 11 and housing 23 for relative rotation.

A swivel 28 comprises an elongated arm having a spherical ball 29 at one end and a threaded boss 30 at its other end. The swivel ball 29 is dimensioned to be received in the spherical socket 24 and, as best seen in FIG. 8, this socket portion of the swivel housing 23 is provided with a bottom opening 31 and an adjoining elongated slot 32. The bottom opening 31 is provided for the purpose of assembling the swivel to the housing member 23, the opening being sufficiently large to pass the swivel boss 30. The slot 32 is provided for the necessary adjustment of the swivel arm 28 as will be described.

For the purpose of locking the swivel arm 28 in a selected position relative to the swivel housing and to the standard 11, a pair of adjustable clamping jaws 33 and 34 are disposed within the housing 23 and are compressed toward each other by means of a threaded member 35, including a knurled head 35' and adjacent shank portion, the shank portion defining an axially facing shoulder 36 and a threaded end portion. The jaw members 33 and 34 are compressed toward each other in a transverse direction relative to the longitudinal axis of the cup-shaped housing 23, the jaws together defining upper and lower frusto- conically formed surfaces 38 and 39, respectively. As best seen in FIG. 5, the upper frusto-conical surfaces 38 are disposed for engagement with the frusto-conical surface 19 of the standard boss 18, while the lower frusto-conical surfaces 39 are in engagement with the ball 29 of the swivel 28.

As best seen in FIG. 7, the jaw member 33 is provided with a threaded bore for threaded engagement with the threaded member 35, while the jaw member 34 is provided with a larger bore which passes the threaded shank of the threaded member. The shoulder 36 of the threaded member engages the outer wall of the jaw member 34, so that this jaw member is confined between the shoulder and the confronting jaw member 33. It will be seen then that turning of the threaded member 35 in one direction affects movement of the jaw members toward each other, and that turning of the threaded member in the opposite direction permits relative separation of the jaw members.

As best seen in FIG. 5, when the jaw members are compressed toward each other the camming action affects a wedging of the jaw members between the standard boss 18 and the swivel ball 29. This wedging action is effected since the ball 29 is confined against axial movement relative to the standard by the swivel housing socket 24. Hence, as a result of this wedging action, the standard 11, the housing 23, the ball 29, and the jaws 33 and 34 become as an integral member. The ball 29 then is locked against movement relative to the housing 23 and, due to the tensile forces acting between the standard 11 and the housing 23, rotation of the swivel housing 23 relative to the standard 11 is prevented.

A bulb holder 41 mounted on the swivel 28 includes an externally threaded cup-shaped socket 42 fabricated of plastic or other electrically insulating material for accommodating the base of a flange type incandescent bulb 45 commonly used in electric lanterns and flashlights. A socket 42 is cemented or otherwise secured to a metallic washer or collar 43 provided with a threaded recess for engagement with the threaded boss 30 of the swivel 28. A spring contact 44 at the base of the socket 42 is mounted in electrical contact with the collar 43.

A reflector unit 46 includes a reflector dish which may be fabricated of any desired material, and also includes a metallic collar 47 defining a threaded recess for accommodating the externally threaded portion of the bulb holder 41. In assembled relation, the flange of the bulb is clamped against the collar 47 for electric contact therewith. While the socket contact 44 maintains electric contact with the base terminal of the bulb, the male element of a snap-type connector 48 is secured to the collar 47 for the external circuit which will be described.

A battery holder 50 consists of a generally U-shaped spring clip which, in the illustrated form, is secured to the head of the threaded member 35 by means of a metallic rivet, or other device. The holder 50 is designed to hold a battery, such as a 4.5 volt dry cell 51 which, in the form shown in the drawings, is an elongated cylindrical cell having terminals at each end in the form of male elements of snap-type connectors. A wire clip 52 connects with the battery clip 50 to assist in retaining the battery within the battery holder, and the wire clip also performs an electrical function. For this purpose a conductor wire 53 is connected at one end to the wire clip 52, and the female snap connector element 54 is secured to the other end of the conductor 53 for connection to one terminal of the battery 51.

One conductive path between the battery 51 and the bulb 45, then, includes the conductor 53 and the wire clip 52 and the following elements which have already been described and all of which are necessarily then fabricated of metals having good electrical conducting properties, these elements being the battery holder 50, the threaded member 35, the clamping jaws 33 and 34, the swivel 28, and of course the bulb holder collar 43 and associated socket contact 44.

The other conductive path is provided by a conductor wire 57, having attached at one end the female element of the snap-type connector 48, for connection to the reflector collar 47, and having its other end connected to a switch 58. A conductor wire 59 has at one end the female element 60 of a snap-type connector for attachment to the other terminal of the battery 51, with the other end of the wire also being connected to the switch 58. The switch 58 comprises, for example, a reed type switch having a pair of spring contacts normally biased out of engagement with each other. The switch contacts are preferably enclosed in a resilient envelope for protecting the contacts and facilitating the closure of the contacts by a slight pressure on the switch envelope. For mounting the switch 58 on a suit-

able portion of the weapon, a resilient pad 61 may be permanently cemented to the switch envelope with the surface of the pad being provided with a pressure-sensitive adhesive for readily securing the switch to a weapon surface. A conductive path then between the other battery terminal and the bulb includes the conductive wires **57** and **59**, the switch **58**, and the conductive collar **47** of the reflector assembly.

As seen in FIG. **1**, the switch **58** is suitably mounted on the forward portion of the stock **62** of the rifle which is normally supported by the hunter in sighting the rifle. The switch is readily closed by slight pressure exerted by the thumb, for example, preferably when the target is sighted and just prior to squeezing the trigger.

As seen in FIG. **2**, the switch **58** is similarly mounted on the pumping member **64** by means of which the shotgun is supported during firing.

Referring now particularly to FIGS. **3**, **4** and **10**, a light unit for mounting on a bow **66**, shown fragmentarily in the drawings, is identical to the above described units in the sense of having the same parts, except that the standard **67** by means of which the unit is attached to the bow has a configuration different from the above described standard **11**.

As best seen in FIG. **10**, the standard **67** consists of a relatively shallow disc member providing a base and a support for the swivel housing **23**, in the same manner as the standard **11**. One face of the disc member **67** is flat, and an internally threaded bore **68** opens to this flat surface for receiving the threaded end of a screw **69**. As best seen in FIGS. **4** and **10**, the standard is anchored to the bow by means of the flat head screw **69** extending through a transverse counter sunk bore opening to the bow window **70**. The screw is countersunk so as not to interfere with the positioning of the arrows within the bow window.

The face of the standard **67**, opposite from the flat face, provides the boss **18** having a frusto-conical surface **19**, and an annular flange **20** surrounding the boss **18** and defining the annular recess **21** in the same configuration as the standard **11**.

As seen in FIG. **3**, the switch **58** is mounted on the forward surface of the grip portion **71** of the bow for convenient operation by the hunter while sighting the arrow and just before release of the arrow.

The above described light units provide for a maximum of adjustability of the swivel arm **28** relative to the standard **11** or **67** so that the light beam may be aimed or sighted easily and accurately. As best seen in FIG. **5**, the preferred mounting of the unit on a rifle or shotgun barrel is to anchor the standard **11** on the barrel so that it extends downwardly therefrom. With this orientation, the standard flange **20** and the lip **25** of the swivel housing define a rotary coupling which permits 360° of rotation about a vertical axis. Additionally, the swivel arm **28** may swing from the horizontal position illustrated in FIG. **5** through an arc greater than 90° to a position beyond the vertical, this movement of course being permitted by the slot **32** in the swivel housing **23**. It will be seen then that the swivel arm **28** could be oriented in any position in or below the horizontal plane parallel to the plane of the above mentioned rotary coupling.

Adjustment or readjustment of the swivel arm is readily accomplished merely by loosening the threaded member **35** to free the jaws **33** and **34** permitting rotation of the swivel housing relative to the standard and also permitting pivoting of the swivel arm relative to the swivel housing. When the arm is fixed in the desired position, the threaded member is again tightened, locking the swivel arm against all movement relative to the standard or to the swivel housing.

For the bow mounting, the standard is aligned horizontally so that the arm may be rotated 360° about a transverse horizontal axis. Rotation of the arm about this axis will position it at the desired elevation relative to the flight of the arrows, and the proper lateral positioning of the arm relative to the direction of flight is accomplished through the pivoting movement of the swivel arm within the swivel housing **23**.

The wide range of adjustability of the unit may be particularly useful in other applications of the described light unit.

Although the invention has been described with reference to particular preferred embodiments, changes and modifications will become apparent to those skilled in the art in view of the foregoing description which is intended to be illustrative and not limiting of the invention defined in the claims.

What is claimed is:

1. A light fixture for a hunting weapon comprising:
housing means for attachment to the weapon; said housing means comprises a standard for attachment to the weapon, a swivel housing, and means rotatably coupling said standard and said swivel housing about a first axis;
a swivel universally supported in said housing means to swing about a second axis transverse to said first axis; a bulb holder and reflector assembly mounted on said swivel;
clamping means in said housing means for locking said swivel in selected positions; said clamping means locking said swivel housing relative to said standard, and said swivel relative to said swivel housing;
battery holding means mounted on said swivel housing;
conductor means including switch means for electrically connecting the bulb holder and reflector assembly to a battery supported in said battery holding means; said switch means being adapted for mounting on the weapon for selective actuation;
said standard and said swivel housing include axially extending flanges with interlocking lips defining said rotational coupling means about said first axis;
said standard including a boss extending into said swivel housing; said swivel including a spherical end member supported in a spherical socket in said swivel housing;
and said clamping means comprising a pair of cam members and means urging said cam members into wedging engagement between said boss and said spherical end member.

2. A light fixture for a hunting weapon comprising:
housing means for attachment to the weapon;
a swivel universally supported in said housing means; a bulb holder and reflector assembly mounted on said swivel;
clamping means in said housing means for locking said swivel in selected positions;
battery holding means mounted on said swivel housing;
conductor means including switch means for electrically connecting the bulb holder and reflector as-

sembly to a battery supported in said battery holding means; said switch means being adapted for mounting on the weapon for selective actuation;

wherein the conductor means defining one path for the flow of electric current between a battery and a bulb includes said battery holder, said housing means, and said swivel; and wherein said conductor means defining another path for the flow of electric current between said battery and said bulb includes external conductor wires and said switch for mounting on a weapon remote from said housing means.

3. A light fixture for a hunting weapon comprising:

housing means for attachment to the weapon;

a swivel universally supported in said housing means; a bulb holder and reflector assembly mounted on said swivel;

clamping means in said housing means for locking said swivel in selected positions;

battery holding means mounted on said swivel housing;

conductor means including switch means for electrically connecting the bulb holder and reflector assembly to a battery supported in said battery holding means; said switch means comprising a reed switch enclosed in a flexible envelope and adapted for mounting on the weapon for selective actuation by light manual pressure on the envelope;

and said switch means including a mounting pad affixed to said flexible envelope; said pad having adhesive means for securing the envelope to a weapon surface for actuation by light manual pressure.

* * * * *