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 [31] **46382/67**

2,918,668 12/1959 Stube 240/10.6
 3,135,468 6/1964 Osburn 240/10.6
 3,415,476 12/1968 McDermott 240/81

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[54] **HAZARD LAMPS**
9 Claims, 7 Drawing Figs.

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240/10.6 R, 240/53
 [51] Int. Cl. **F21v 5/00**
 [50] Field of Search. **240/2.18, 2**
B, 10.6, 10.61, 10.63, 10.65, 81, 53; 340/119, 90;
248/163, 176, 188, 432, 434, 435, 168, 169

[56] **References Cited**
UNITED STATES PATENTS
 2,885,539 5/1959 McDermott 240/53

ABSTRACT: An electrical hazard lamp is provided which includes a body member serving as a head member for a multi-legged stand and also as a protective cover above a battery. The head member includes an upper wall and a peripheral downwardly extending flange which collectively define a shallow chamber having an open mouth presented downwardly to receive the upper end of a battery supported from the head member. Leg-receiving sockets are formed in the peripheral flange and legs are releasably secured in these sockets by screws. Alternatively, the legs are irremovably secured in their sockets by rivets arranged to permit the legs to pivot between splayed and compact positions. In the latter arrangement a battery case is releasably attached beneath the head member, the battery case having an outwardly projecting flange which is arranged to constrain the legs releasably in their splayed positions.

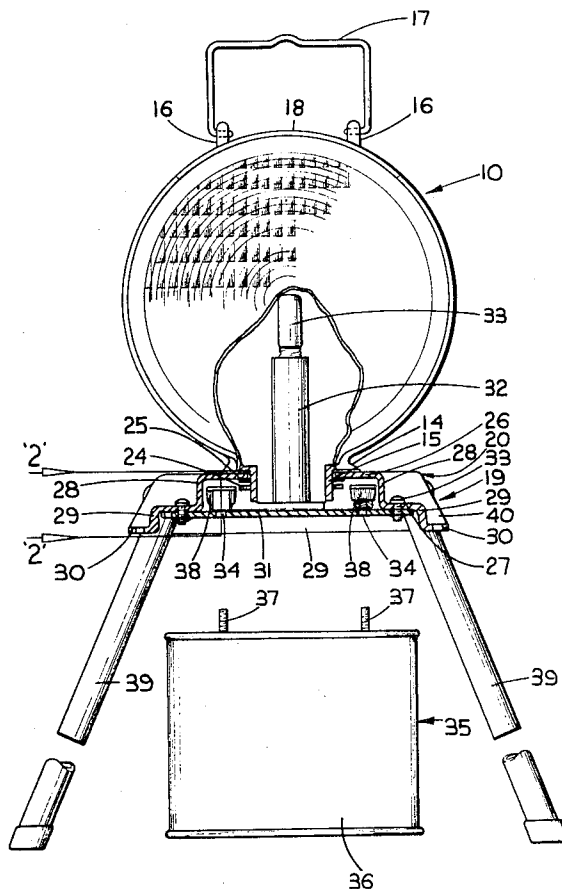


Fig. 1.

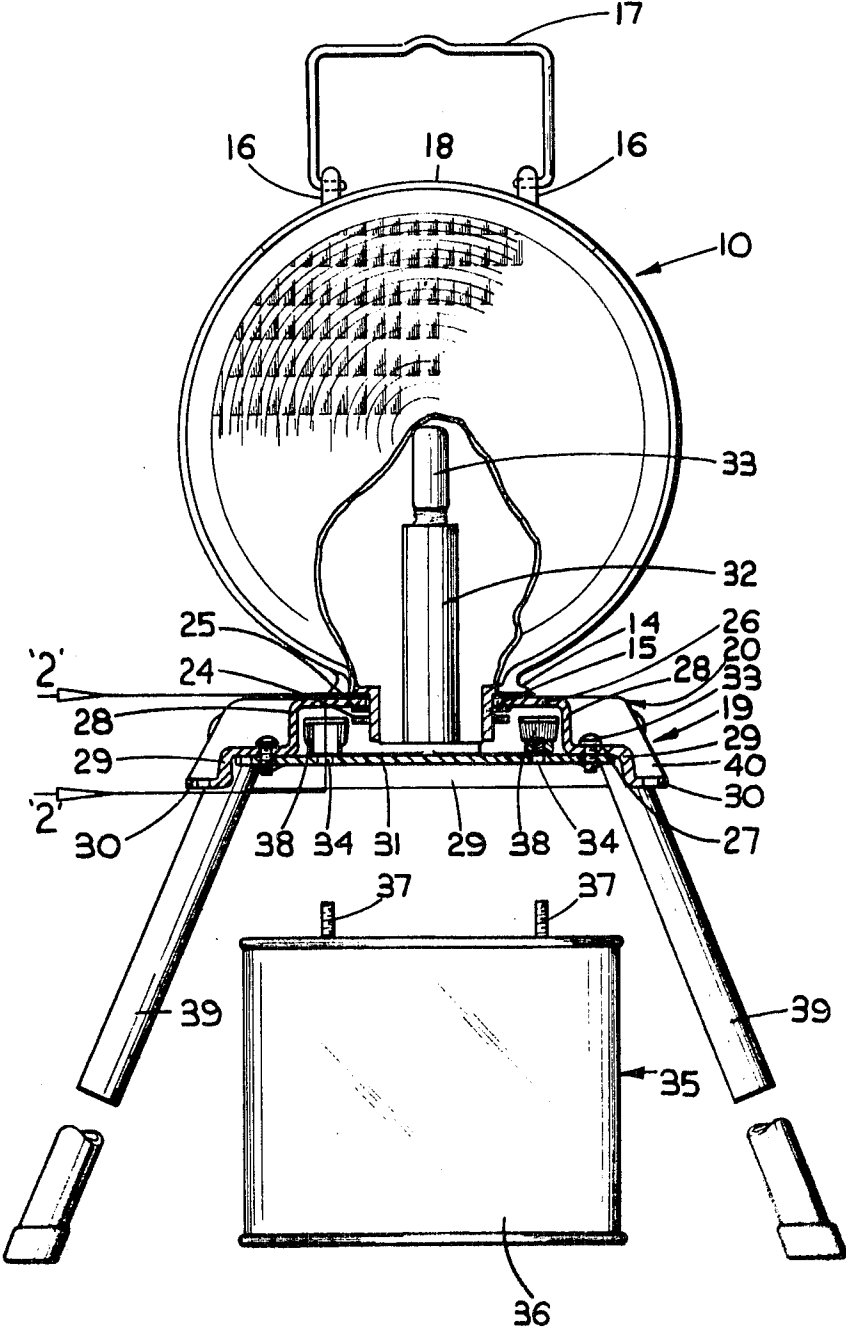


Fig. 3.

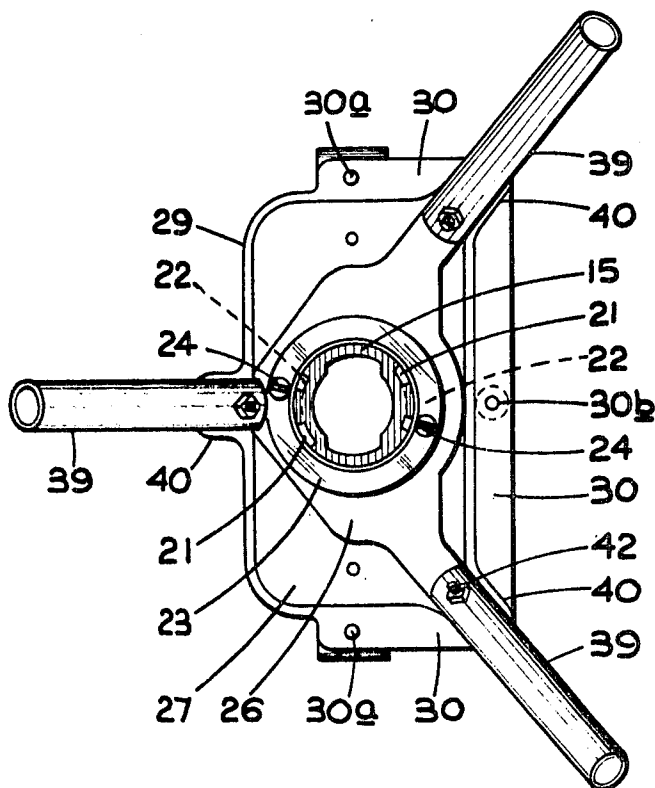


Fig. 2

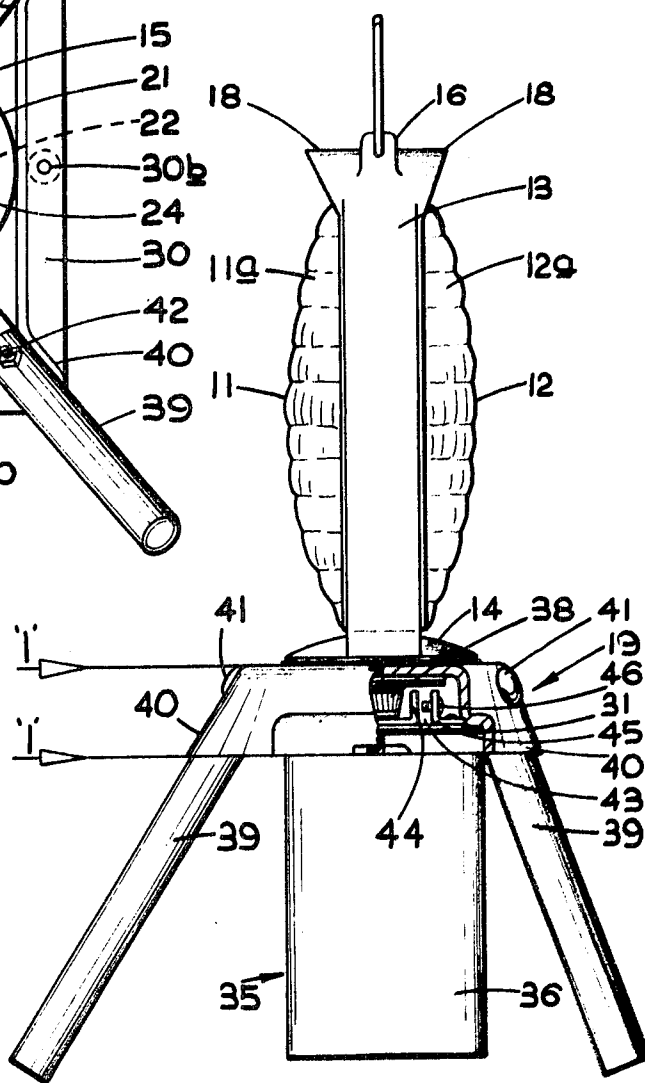
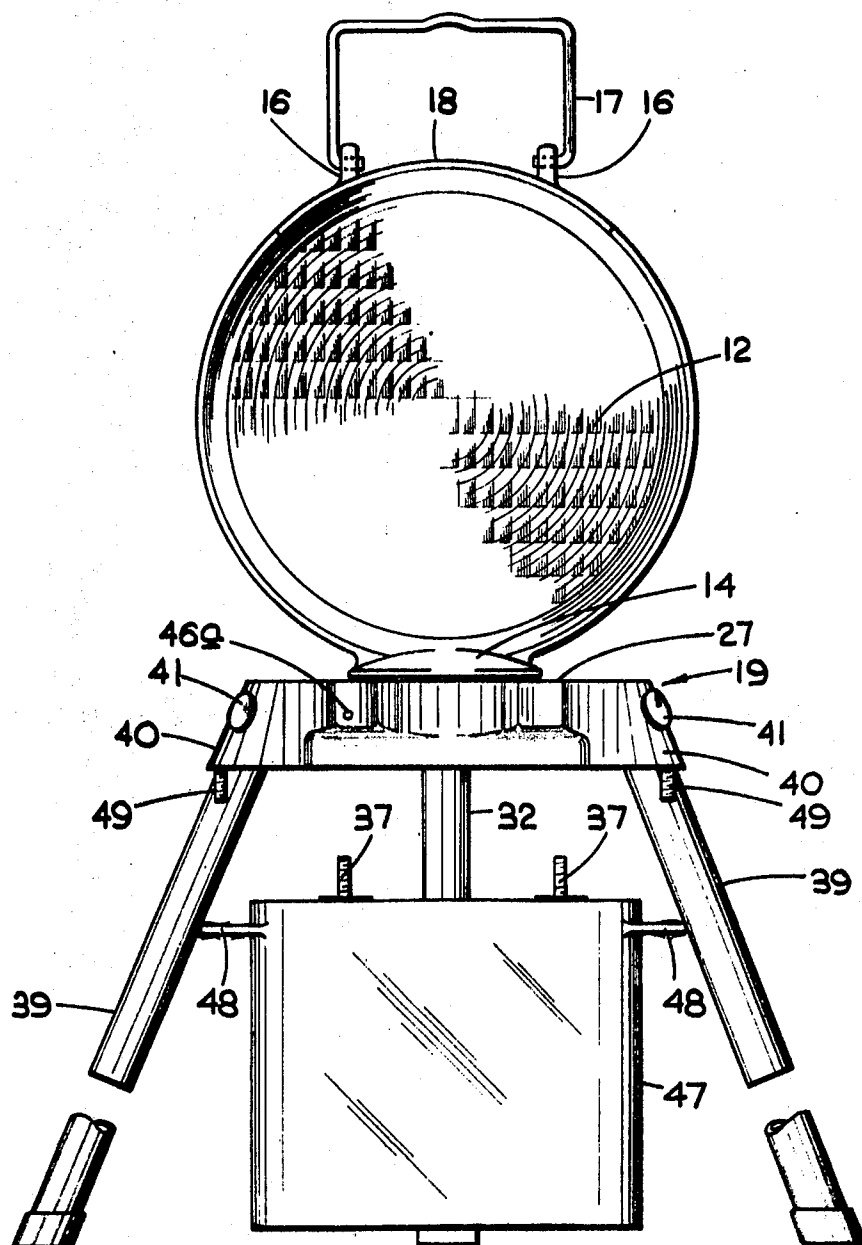
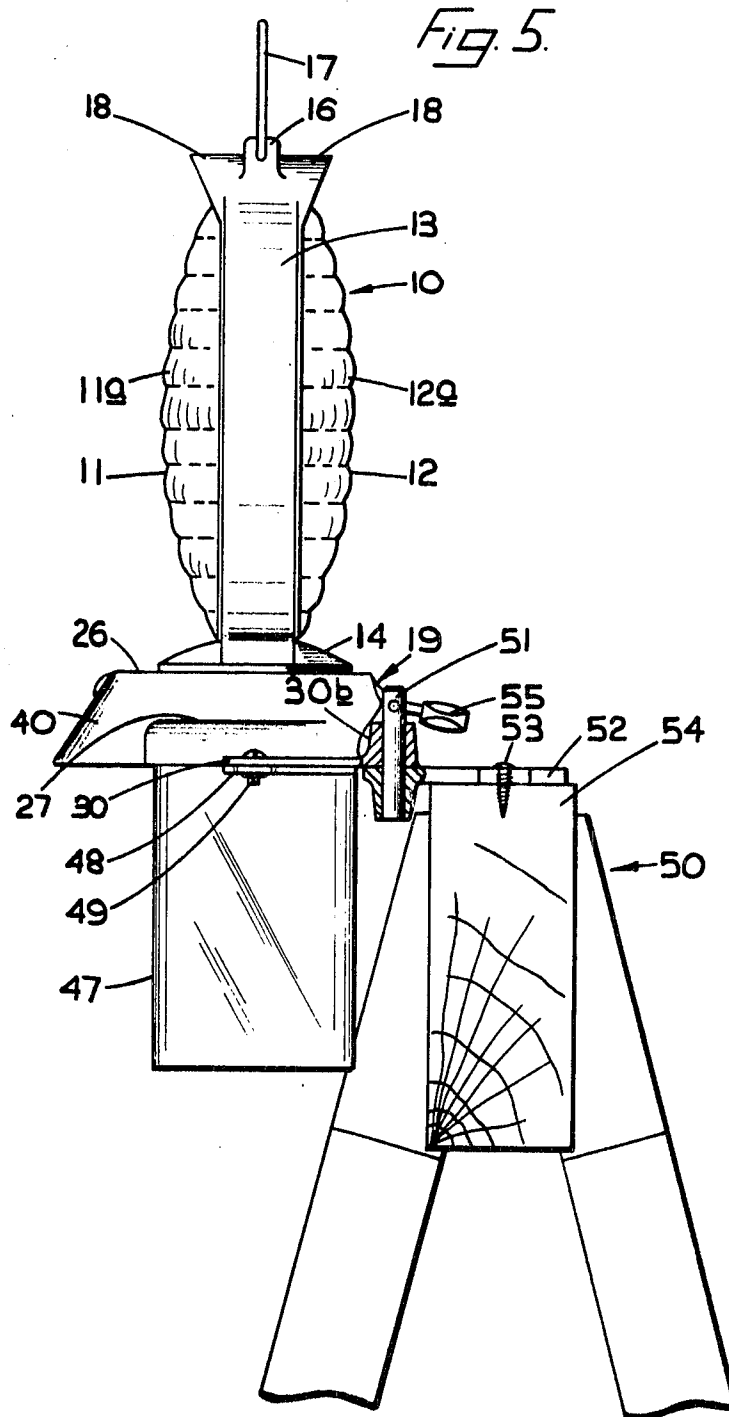


Fig. 4.





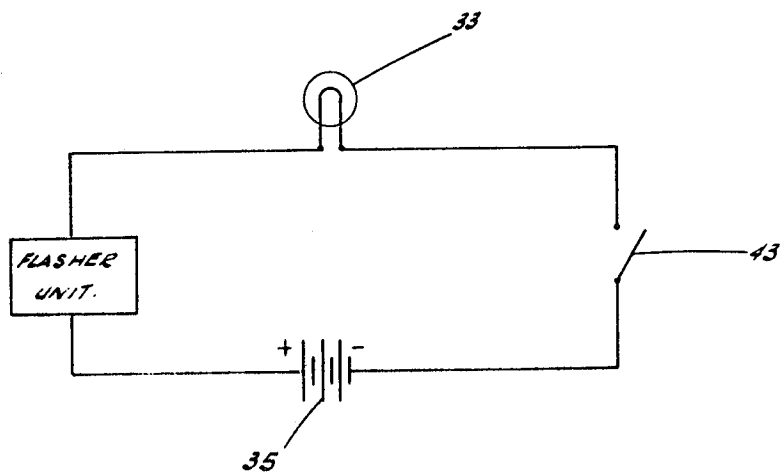


FIG. 7.

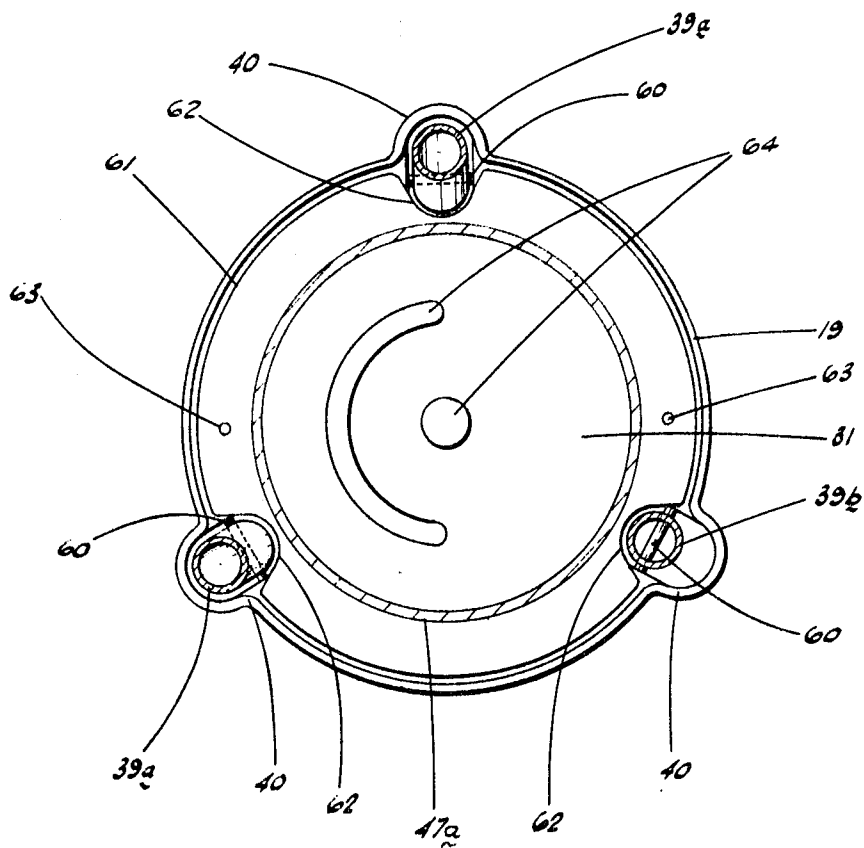


FIG. 6.

HAZARD LAMPS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to lamps of the kind adapted for use to indicate the existence of a hazard such as may exist at the site of roadworks, buildings in the course of construction or repair, or other civil engineering works, as well as other sites at which a hazard exists for those approaching the site, for example where road accidents have occurred or vehicles or other objects are stationed on or adjacent to a road or other path of travel.

2. Description of the Prior Art

The present invention is more specifically concerned with lamps of the kind (hereinafter referred to as the kind specified) comprising a body, a lamp housing formed at least partially of light transparent material and mounted on the body, an electrically energized light source within the housing, means for supporting a battery of electrical cells at a battery station, circuit means for establishing electrical connection between the battery and the light source and means for supporting the lamp above the ground.

Hitherto, the means for supporting a lamp above the ground has comprised a stand which is structurally separate from the lamp. Such a stand comprises a plurality of legs secured at their upper ends to a connecting member which is provided on its upper surface with a lug or attachment member adapted to permit the body of the lamp to be secured to the upper end of the stand.

Whilst this form of construction satisfactorily effects the purpose of raising the lamp housing to the required height, it materially increases the cost of the article as a whole.

SUMMARY OF THE INVENTION

One of the objects of the present invention is to provide an improved construction of hazard lamp of the kind specified which can be produced more economically.

With this object in view, and according to a first aspect of the invention, we provide a hazard lamp of the kind specified wherein the means for supporting the lamp above the ground comprises a plurality of legs structurally separate from each other and wherein the body includes a head member extending over the battery station and having a plurality of leg-receiving formations spaced-apart peripherally of said head member around the battery station and wherein a plurality of fastening means are provided for upper end portion of said legs in respective receiving formations, whereby said head member serves both effectively to connect said legs to each other and to provide weather protection above said battery station.

It is desirable that it should be possible to detach the legs or to retract them from positions in which they are splayed to form a stable support for the lamp to a more compact arrangement to facilitate the transport or storage of the lamp.

With this object in view and according to a second aspect of the invention we provide a lamp of the kind specified wherein the fastening means and the leg-receiving formations provide for movement of the legs between splayed positions and compact positions and wherein the body includes a leg control element which may cooperate with the fastening means and the leg-receiving formations for rigidly restraining the legs in their splayed positions.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described by way of example with reference to the accompanying drawings in which the several aspects of the invention are illustrated in four embodiments and wherein:

FIG. 1 is a view in front elevation and partly in cross section on the line 1—1 of FIG. 2 of a first embodiment of a hazard lamp in accordance with the invention, with a battery being shown in separated relation from the lamp,

FIG. 2 is a view in side elevation of the same embodiment partly in cross section on the line 2—2 of FIG. 1 with a battery in assembled relation with the lamp,

FIG. 3 is an underside plan view of the same embodiment, the battery and circuit plate being removed,

FIG. 4 is a view in front elevation of a second embodiment of the invention utilizing a lamp housing, the head member and leg assembly common to the first embodiment but provided with a casing for enclosing a battery not equipped with its own protective casing,

FIG. 5 is a view in side elevation of a third embodiment of hazard lamp in accordance with the invention utilizing a lamp housing and head member common to the embodiment of FIGS. 1 to 3 and shown mounted on a trestle by means of a bracket,

FIG. 6 is an inverted plan view partly in section of a fourth embodiment of hazard lamp in accordance with the invention provided with a casing for enclosing a battery and also with a leg control element, and

FIG. 7 is a circuit diagram of the electrical circuit employed in each embodiment described herein.

DETAILED DESCRIPTION

Referring firstly to the embodiment of FIGS. 1 to 3, the hazard lamp comprises a lamp housing 10 formed as a molding from a translucent material preferably of amber color and including domed or part-spherical front and rear walls 11 and 12 united by a peripheral wall 13 incorporating a flange 14 and attachment spigot 15 at its lower end.

At its upper end the peripheral wall incorporates lugs 16 with which is assembled a U-shaped handle 17 beneath which the peripheral wall incorporates visor portions 18.

The front and rear walls 11 and 12 are formed as lenses and may incorporate at their exterior surfaces concentric ribs and at their outer surfaces vertical horizontal rows of locally domed projections, as indicated particularly at 11a and 12a.

Any suitable translucent material may be employed such as a synthetic resin or glass.

The lamp housing is mounted at the upper side of a body 19 which, in the embodiment illustrated in FIGS. 1 to 3, consists of a head member having an apertured top wall 20 through which the spigot 15 extends. The latter has bayonet slots 21 for cooperation with tongues 22 of a retaining ring 23 secured to the top wall by screws 24 engaging in threaded holes in the top wall. A sealing washer 25 of rubber is provided between the base of the spigot and the upper side of the top wall 20.

As viewed in plan the head member is of generally rectangular form as seen in FIG. 3 and an approximately triangular portion 26 thereof is raised relatively to the remainder 27 of the top wall to which the triangular portion is connected by a step 28.

At its periphery the head member includes a downwardly extending integral flange, the lower edge of which projects outwardly along part of its periphery as indicated at 30 to form horizontal webs.

The top wall portions 26, 27 and step 28 in combination with the peripheral flange 29 form a shallow chamber having its open side presented downwardly and within which is disposed a circuit plate 31 which as shown is made of electrically insulating material and on which is mounted centrally an upwardly projecting sleeve-like member 32 carrying a lampholder at its upper end for reception of an electric lamp bulb 33. The sleeve-like member 32 includes a flasher unit. The flasher device may be of a known type, for example including a switch operated by a thermomotive device such as a bimetal strip heated electrically in coordination with closure and opening of the switch means.

Alternatively the flasher device comprises switch means and an electromagnetic operating device.

The circuit plate 31 is secured in assembled relation with the head member as shown at a position intermediate the lower edge and the top wall of the head member by means of fastening elements such as screws 33, preferably of the kind

incorporating hexagonal recesses in their heads since these are less exposed to risk of removal by unauthorized persons.

The circuit plate 31 carries electrical conductors incorporated in the circuit shown in FIG. 7 presenting apertures in aligned relation with the apertures 34 in the circuit plate.

It will be evident from FIG. 1 that the circuit plate divides the chamber afforded by the head member into an upper portion containing elements of the circuit of FIG. 7 as hereinafter described, and a lower portion open at its underside and in which the upper end portion of a battery 35 is received.

The battery 35 may be provided externally with its own protective casing of sheet metal and has externally screw-threaded posts 37 insertable through the apertures 34 and provided with terminal nuts 38 by means of which the battery can be held against the underside of the circuit plate, as seen particularly in FIG. 2.

The body is raised above the ground by legs 39. These are assembled with the head member by reception of their upper ends in formations 40 situated respectively at two adjacent corners of the top wall of the body member and midway along the opposing side face, as seen in FIG. 3, wherein it will also be noted that the legs are spaced angularly at approximately equal intervals.

The formations 40, as shown, are preferably in the form of sockets integrally connected with the top wall portion, the step portion 28 and the flange, and each socket is approximately U-shape in horizontal cross section presenting its open side towards the center of the head member.

The legs, which are conveniently formed of tubular material, e.g. mild steel or possibly aluminum, are of a diameter to be a close fit in the socket and therefore, intrinsically are constrained against angular movement relative to the head member.

Moreover they are secured in their respective sockets by releasable fastening elements in the form of screws 41 and nuts 42. The heads of the screws are preferably devoid of any slot or recess and the nuts 42 are only accessible upon removal of the battery 35, so that the presence of the latter is a safeguard against unauthorized removal of the legs.

The head member thus performs the combined function of firstly a mounting means for the circuit plate which carries the flasher unit and lamp bulb, as well for as the lamp housing, and for the battery, and secondly a head member for the stand constituted in part by the legs.

The legs 39 may, if desired, be irremovably secured in their sockets. They may each incorporate relatively movable leg portions, for example telescopically slidable sections capable of being secured in one or more extended positions or collapsed if required for compactness in storage or transport.

The circuit plate may serve also as a mounting for switch means 43. This may comprise a bracket 44 forming a fixed contact and a further bracket 45 carrying a screw 46 forming a movable contact both connected electrically in that part of the circuit of FIG. 7 carried by the circuit plate. Such screw may be operated to open and close the switch through a small diameter hole (not seen in FIGS. 1 to 3 but seen in FIG. 4 at 46a).

A key having an end conforming to a hexagonal recess in the head of the screw may be provided for operation of the switch means.

In the second embodiment illustrated in FIG. 4 parts corresponding to those already described are designated by like numerals of reference and the preceding description is to be deemed to apply.

In this case however, the battery is not provided with its own protective casing and consequently the body of the lamp includes a further component, namely a casing 47 open at its upper side to receive the battery, the terminal posts 37 whereof are seen projecting. The casing 47 includes integral laterally projecting lugs 48 apertured to receive securing screws 49 projecting downwardly through openings in the web 30, as seen particularly at 30a (FIG. 3).

It will be evident that economy is effected in that the components of the embodiment of FIG. 4, other than the casing 47 and screws 49, are common to the embodiment of FIGS. 1 to 3.

In the third embodiment shown in FIG. 5 parts corresponding to those already described are designated by like numerals of reference and the preceding description is to be deemed to apply.

In this case the legs 39 are omitted and the body is mounted on a trestle 50 such as that commonly utilized as a barrier at the site of roadworks or other civil engineering works. The web 30 extending between the two sockets 40 situated at the corners of the head member is formed centrally of its length with a female part in the form of a boss 30b apertured to permit of upward projection therethrough of a male part in the form of a spigot 51 on a bracket arm 52 which can be secured by screws such as 53 to the top face of the upper horizontal member 54 of the trestle. The upper end of the spigot 51 preferably has a transverse hole to permit of the hasp of a padlock 55 being passed therethrough as a means for securing the lamp against unauthorized removal from the bracket.

In the fourth embodiment shown in FIG. 6 parts corresponding to those already described are designated by like numerals of reference.

The head member 19 is of generally circular form when viewed in plan. The leg-receiving formations 40 are formed integrally with the head member and are disposed with approximately equal intervals at the periphery thereof.

The upper end of each of legs 39a and 39b is fastened to a respective leg-receiving formation 40 by a rivet 60 which passes through an aperture in a first sidewall of the formation 40, through diametrically opposed apertures in the leg and through a corresponding aperture in a second sidewall of the formation 40. The diameter of the aperture in the legs is sufficiently greater than the diameter of the rivets 60 to permit the free rotation of each leg about a horizontal axis defined by the longitudinal axis of its associated rivet.

A battery case 47a of generally cylindrical form, closed at its lower end and open at its upper end is provided with a leg control element in the form of a flange 61 which projects laterally from the major part of the upper end of the battery case 47a. The several portions of the flange 61 are separated from each other by generally semicircular notches 62. The angular spacing of these notches around the battery case corresponds with the angular spacing of the leg-receiving formations 40 around the head member.

The flange 61 is provided with two screw-threaded apertures disposed on the same diameter of the battery case which cooperate with screws 63 releasably to fasten the battery case 47 to the head member. Heads of screws 63 abut the upper face of the head member and the shanks thereof extend downwardly through unthreaded apertures in the head member which correspond with the screw-threaded apertures in the flange 61. By this means the battery case may be selectively fastened in either a first or a second position to the head member. The orientation of the battery case with respect to the head member differs by 180° in the two positions.

In the first position of the battery case the continuous portions of the flange 61 engage the legs 39a and 39b below the rivets 60 and restrain the legs in splayed positions such as is indicated at 39a.

In the second position of the battery case the notches 62 are situated adjacent to the leg-receiving formations 40 and the legs may assume compact positions such as is indicated at 39b.

A circuit plate 31 which supports on its upper side a flasher unit and a lamp bulb is disposed centrally of the underside of the head member. Contact plates 64 are provided on the underside of the circuit plate to enable electrical connection to be established between the flasher unit, bulb and the terminals of a battery which is supported in the battery case when the latter is fastened to the head member.

The circuit shown in FIG. 7 is common to all of the embodiments described herein. The circuit comprises a battery indicated at 35, a switch 43, a bulb 33, and a flasher unit connected in series with each other.

I claim:

1. In a hazard lamp comprising a body, a lamp housing formed at least partially of light transparent material and mounted on the body, and electrically energized light source disposed within the housing, means for supporting a battery of electrical cells at a battery station, circuit means for establishing electrical connection between the battery and the light source, and means for supporting the lamp above the ground, the improvement wherein:
 - a. said means for supporting the lamp above the ground comprises legs;
 - b. said body comprises a head member in the form of a cover extending over said battery station;
 - c. fastening means connected to the cover and spaced apart from each other peripherally of said head member around said battery station for fastening said legs to the cover whereby said head member serves both effectively to fasten said legs in supporting relation thereto and to provide weather protection above said battery station;
 - d. the head member includes a top wall and an integral downwardly extending peripheral flange defining a chamber having a downwardly presented opening;
 - e. means are provided for supporting the battery with its upper end portion in said chamber for cooperation between a part of said circuit means within said chamber and terminals of said battery;
 - f. a plate member for supporting at least part of said circuit means is provided;
 - g. said plate member being mounted in downwardly spaced parallel relation to said top wall and upwardly of the lower edge of said downwardly extending peripheral flange to define upper and lower portions of said chamber;
 - h. said upper end portion of said battery being received in said lower portion of said chamber;
 - i. and said upper portion of said chamber containing elements of said circuit means.
2. The structure claimed in claim 1 wherein:
 - a. said legs are structurally separate from each other;
 - b. said fastening means provide for movement of said legs between splayed positions and compact positions;
 - c. the body includes a leg control element;
 - d. means are provided for securing the leg control element to the head member selectively in either of a first and a second position;
 - e. said leg control element is provided with means which, when it is secured to the head member in the first position,

- tion, cooperate with said fastening means for rigidly restraining the legs in their splayed position;
- f. said leg control element is formed for cooperation with said fastening means for permitting said legs to assume their compact positions when the leg control element is in its second position.
3. Structure claimed in claim 1 wherein:
 - a. said fastening means comprise sockets formed integrally with said peripheral flange and
 - b. the means for supporting the battery comprise a battery case having an upwardly presented opening and being releasably secured beneath the top wall of the head member by securing means arranged for detachment of the case from the head member while the head member and the lamp housing remain supported by the legs.
4. The structure as claimed in claim 3 wherein: the fastening means detachably connect the legs to the cover and a bracket is provided on said peripheral flange for enabling the lamp to be mounted on a separate support.
5. The structure claimed in claim 4 wherein:
 - a. said head member is a one-piece member, and
 - b. the bracket and the body are releasably attached to each other by interfitting male and female parts, one on the bracket and the other being an integral part of the body.
6. The structure claimed in claim 1 wherein:
 - a. the plate member has apertures therein,
 - b. the battery has terminals projecting through said apertures and provided with means for holding the battery in assembled relation with said plate member.
7. The structure claimed in claim 1 wherein:
 - a. the downwardly extending peripheral flange includes a generally horizontal step portion extending outwardly from the lower end of an upper wall portion to the upper end of a lower wall portion of said flange,
 - b. said plate member is secured releasably to said step portion.
8. The structure claimed in claim 1 wherein:
 - a. said top wall of said head member has an aperture,
 - b. said housing has a spigot means open at its lower end releasably secured in said aperture,
 - c. said circuit means extends from said upper portion of said chamber through said spigot means into said housing.
9. The structure claimed in claim 2 wherein:
 - a. the means for supporting the battery comprises a battery case having an upwardly presented opening,
 - b. the battery case is releasably secured to the underside of the head member and projects below the head member,
 - c. the battery case is formed at its upper end with an outwardly extending flange which constitutes the leg control element.

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