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Davis

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[54] **PORTABLE ELECTRIC TUBE LIGHT**

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[52] **U.S. Cl.** ..... **240/6.4 B,** 240/10.66

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

[58] **Field of Search** ..... 240/6.4 B, 2 P, 10.66

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[57] **ABSTRACT**

Dry cell batteries or battery forming materials are contained within end portions of an elongated tubular housing. The housing includes an elongated side window situated axially between the batteries. A reflector is provided along the inner wall of said tubing towards the window. A light bulb extending coaxially with the tube is positioned between the reflector and the window. The light may be secured to a support placing it generally above the writing portion of a clipboard or the like, and may be provided with a member extending from the support over the window region of the light, to serve as both a shield and a reflector for the light.

7 Claims, 7 Drawing Figures

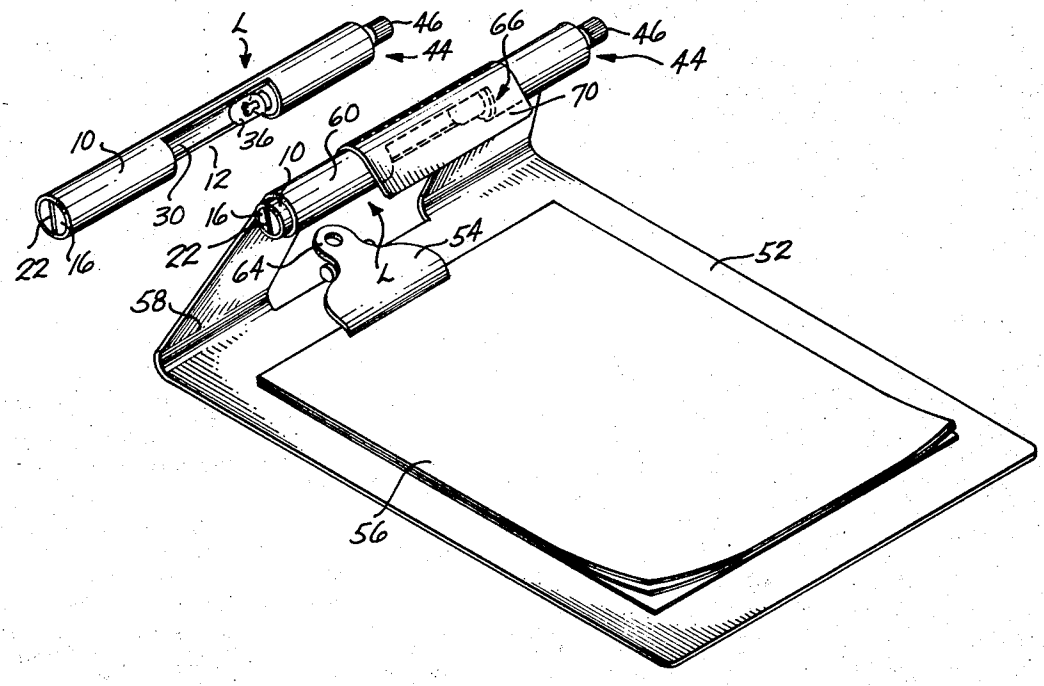


Fig. 1

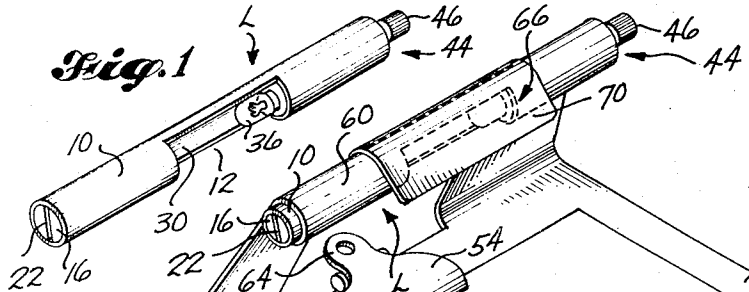


Fig. 2

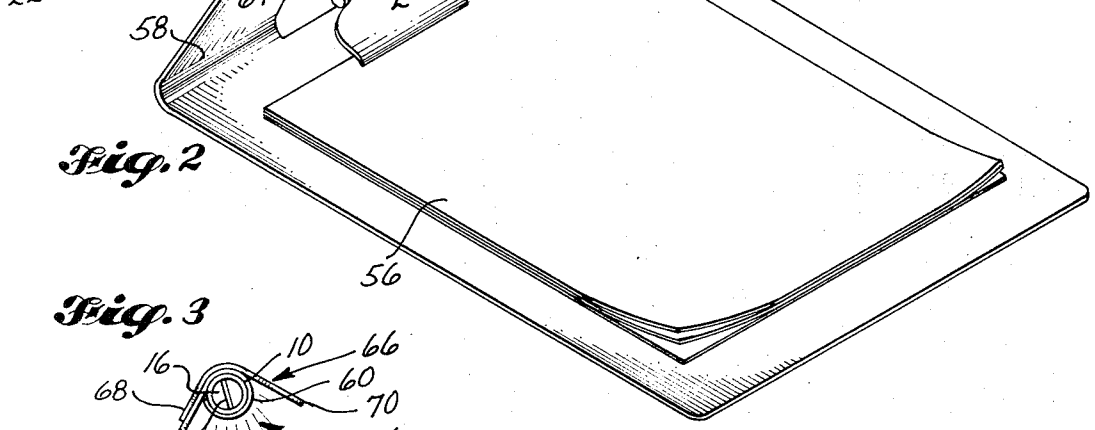
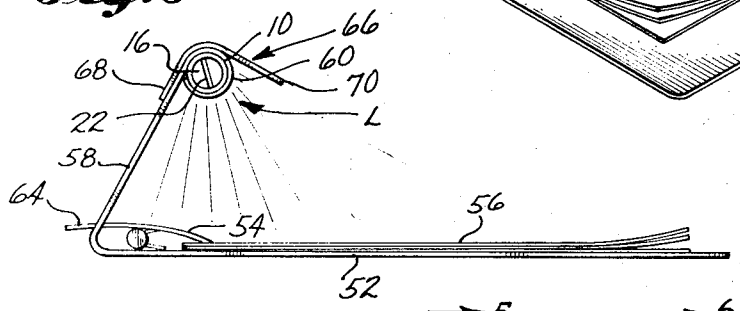


Fig. 3



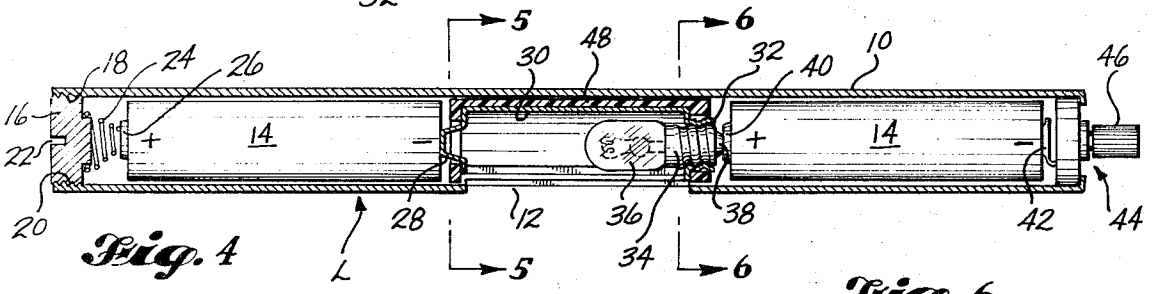


Fig. 4

Fig. 6

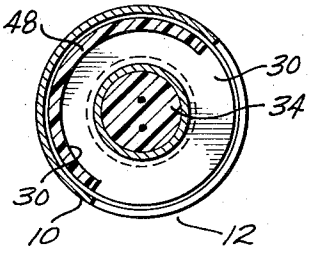
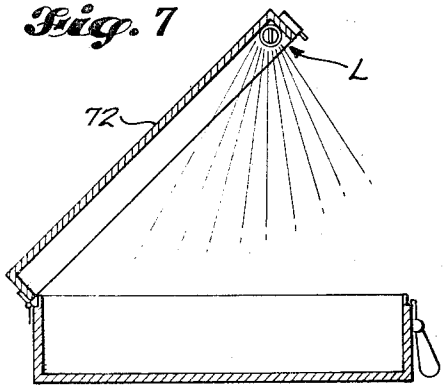


Fig. 7



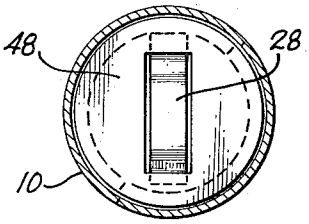


Fig. 5

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PORTABLE ELECTRIC TUBE LIGHT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to portable electric lights, and in particular to a relatively small battery powered tubular electric light adapted to project light laterally of the tube, and to a combination of such a light and a novel type of clipboard.

2. Description of the Prior Art

It is recognized that a very large number of portable battery powered electric lights are and for some time have been readily available on the market. Some are provided for general use and others are adapted for special use. They all comprise a housing for one or more dry cell batteries, a light bulb powered by the batteries, a reflector for the light, and control circuitry including an off-on switch. The differences amongst these prior lights involve the relative arrangement of parts and constructional details.

Examples of known battery powered lights associated with holders for pads of papers, and adapted for directing a beam of light towards the paper, are shown by U.S. Pat. No. 1,145,848, granted July 6, 1915 to Thomas Robins; by U.S. Pat. No. 1,978,553, granted Oct. 30, 1934 to Paul Saunders; by U.S. Pat. No. 2,806,715, granted Sept. 17, 1957 to Henry O. Smith; and by U.S. Pat. No. 3,092,335, granted June 4, 1963 to Forrest H. Wilson.

SUMMARY OF THE INVENTION

Portable electric lights of this invention are characterized by an elongated, slim tubular body divided axially into three sections. The center section includes an elongated side port or window which is nearly semicylindrical. The remaining center portion of the tubular body carries a reflector arranged to reflect light through the window. The two end sections carry batteries or battery forming material and a light bulb projects from one of the end sections into the center section. A control switch is located at one end of the tube. The switch is a part of a control circuit which in the preferred embodiment includes a metallic member situated in the center section which functions as a reflector for the lgiht, a conductor of the electrical current, a holder for the light bulb and a contact for the batteries at the end of said member opposite the bulb.

The present invention also relates to a novel style of clipboard into which one of the portable lights of the invention is incorporated.

These and other features of the invention will be apparent from the following description of the preferred embodiments and the accompanying drawing relating thereto.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is an isometric view looking from above and toward one side and one end of an embodiment of the portable light of this invention;

FIG. **2** is an isometric view taken from the same aspect, but showing the light in combination with a clipboard, such combination being novel and an aspect of this invention;

FIG. **3** is a side elevational view of the clipboard;

FIG. **4** is a longitudinal sectional view of the portable light, with some parts shown in side elevation;

FIG. **5** is a cross-sectional view taken substantially along line **5—5** of FIG. **4**;

FIG. **6** is a cross-sectional view taken substantially along line **6—6** of FIG. **4**; and

FIG. **7** is a vertical sectional view taken through an open attache case equipped with the portable light of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIGS. **1** and **4–6**, the light is shown to comprise a tubular body **10** having a generally semicylindrical window **12** cut in its side intermediate its ends. A pair of batteries **14** are located inside the housing **10**, one endwise outwardly of each end of the window **12**. A removable closure element **16** is provided at one end of the housing **10**. By way of typical and therefore nonlimitive example, this element **16** may be in the form of a plug having external threads **18** matable with a set of internal threads **20** formed in the end portion of the housing **10**. A slot **22** may be provided in the outer end of plug **16** for receiving a dime, screwdriver, etc.

In the illustrated embodiment a coil spring **24** is shown between the inner end of member **16** and the positive terminal **26** of the near battery **14**. The opposite end of such battery is in contact with a formed end portion **28** of a metallic reflector member **30**. The opposite end portion **32** of reflector member **30** is formed into a set of threads for receiving the screw base **34** of a flashlight bulb **36**. Intermediate its ends the reflector member **30** includes a generally semicylindrical side wall and presents a polished reflector surface directed toward the window **12**. The bulb **36** is generally coaxially related to the reflector member **30** and the tube **10**.

The contactor button **38** at the end of bulb **36** is in contact with the positive end **40** of the second battery **14**. The base end of this battery **14** makes contact with a first terminal **42** of a switch mechanism **44**. The second contact (not shown) of the switch **44** is in contact with the tubing **10**, if the tubing **10** is metallic, or with a conductor which leads therefrom down to the metallic cap **16** if a non-metallic tube is used. The switch mechanism **14** includes a rotatable or push button type control knob **46**, or the like, for selectively making and breaking contact between the two conductors. The batteries **14** are conventional off-the-shelf items and they come with insulative jackets on them. The reflector member **30** is supported by a member **48** made from an insulative material so that it holds the metallic reflector element **30** outwardly from the metallic tubing wall **10**.

It is to be understood that most of the constructional details of the light of this invention can vary in detail to a considerable extent without departing from the invention. For example, an entirely different type of end closure member could be substituted for the member **16**, and the spring could be located elsewhere in the series of members, and it could just as well take a different form. Also, a different type of switch might be employed. One end of the tube might be permanently closed and the switch incorporated in a removable end closure member for the opposite end. Also, the light may be constructed to be a throw away unit in which the batteries are permanently located within the housing **10**, e.g. the housing **10** may constitute the side walls

of the batteries. Furthermore, the reflector surface may be a non-metallic surface (e.g. polished plastic), in which case the reflector member would not be a part of the circuit, but rather would be replaced by a conductor bridging through the region of the reflector **30.**

According to the invention, the light may be advantageously employed as a built-in light for a clipboard **50** (FIGS. **2** and **3**). The clipboard may comprise a flat panel **52** of rectangular portions having a spring clip **54** of conventional design connected to it, for clamping one or more sheets or a pad of paper against the panel **52.** The upper end portion **56** of panel **52** may be bent first back at an acute angle to the panel **52** to function as a support for the light unit, and then be wrapped (at **60**) at least partially around the light housing **10** for holding the light unit. This upper end portion **58, 60** of the panel material is cut out at **62** and in the region of the light window **12.** The cut out **62** provides access to the control lever **64** of the clamp **54.** The end sections of the light **10** are snugly received within the cylindrical chambers formed by the two wrapped (at **60**) end parts of the panel **52.** A shield **66,** which also performs a reflecting function, is secured to the sheet metal **60** in the region of the window **12.** It may be of dihedral form, having a first portion **68** which is connected to the support **58** and a second portion **70** which overhangs the window region and functions as both a shield and a reflector for the light.

Of course, it is to be recognized that the light L has general utility and can be used in many other installations. For example, it may be attached in a forward upper corner portion of an attache case **72** (FIG. **7**), an overnight bag, or another piece of luggage, with its window **12** oriented so that the light is directed downwardly into the case **72** when its cover is lifted. Or, the light L may be provided with a clip or other connector device for securing it to the visor of an automobile. These are two examples of many possible additional uses of the light of this invention.

The invention may be embodied in other specific forms without departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore to be embraced therein.

What is claimed is:

1. An elongated, slim portable electric light comprising:

an elongated cylindrical tubular body having two opposite end sections containing small diameter battery means and a light section located between said end sections, with the transverse dimension of said body being small and being close in diameter to the diameter of said battery means, said light section comprising an elongated side window in the side wall of said tubular body, said side window being a generally semicylindrical cut out of an intermediate side wall portion of the body, an elongated reflector generally conforming to the interior contour of the tubular wall remaining in said light section, said reflector being generally coextensive with the remaining portion of the tubular body in said light section of the body, a light bulb supported at one end of said reflector, extending generally coaxially with said tube and overlying said reflector, with a relatively small space existing between the bulb and said reflector;

an off-on switch located at one end of the tubular body, endwise outwardly of one of the battery means containing end sections of the body, said switch having two terminals; and

circuit means connecting said bulb and said switch in series with said battery means, including means for receiving and holding the contact button on the light bulb in direct circuit making contact with a terminal of the battery means in one of the end sections, means extending through the light section and connecting a terminal of the battery means in the other section to the base of the light bulb, and means connecting the second terminals of the two battery means with the terminals of the switch.

2. A portable electric light according to claim **1,** wherein said reflector is a side wall portion of a metallic member which includes opposite end portions, with one of said end portions being adapted to receive and hold a base portion of the light bulb with the base end thereof against a terminal of one of said battery means, and wherein the opposite end portion of said reflector includes contact means for engaging a terminal of the other battery means.

3. A portable electric light according to claim **2,** further comprising an insulative support for said reflector, said support having a curved side wall generally conforming to the interior curvature of the tubular body at the light section, and opposite end walls, said end walls including openings therein for respectively receiving the bulb support and the contact portion.

4. In combination, a clipboard comprising a flat panel providing a writing paper supporting surface, a clip at one end of said panel for use in clamping writing paper against said surface, and a light support extending upwardly from said panel and over a portion of the writing paper supporting surface, said light support means comprises a continuous integral portion of the writing paper supporting panel which is dihedrally related to said panel, and is centrally open generally where it meets said panel, and said paper clamp including a control lever portion projecting into said open region, an elongated light secured to said support, said light comprising an elongated tubular body directed transversely of the clip board, said light having two opposite end sections containing battery means and a light section located between said end sections, said light section comprising a side window in the side wall of said tubular body directed generally toward the writing paper supporting surface of the panel, a reflector generally conforming to the interior contour of the tube wall remaining in said light section, and a light bulb supported at one end of said reflector generally coaxially with said tube, an off-on switch, and circuit means connecting said bulb and said switch in series with said battery means.

5. The combination of claim **4,** wherein the switch is located at one end of the tubular body, endwise outwardly of one of the battery means containing end sections of the body.

6. The combination of claim **4,** further comprising a combination shield and reflector secured to said support and extending over the light section and overhang-

ing a portion of the paper supporting surface of the panel.

7. The combination of claim 4, wherein said light support means includes spaced apart end parts situated outwardly of said centrally open part, said end parts being formed into two cylindrical coaxial chambers in which the end sections of said light are snugly received.

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