W. E. O'BRIEN.

ELECTRICALLY LIGHTED LEVEL AND PLUMB.

APPLICATION FILED JUNE 28, 1913.

1,110,456. Patented Sept. 15, 1914.

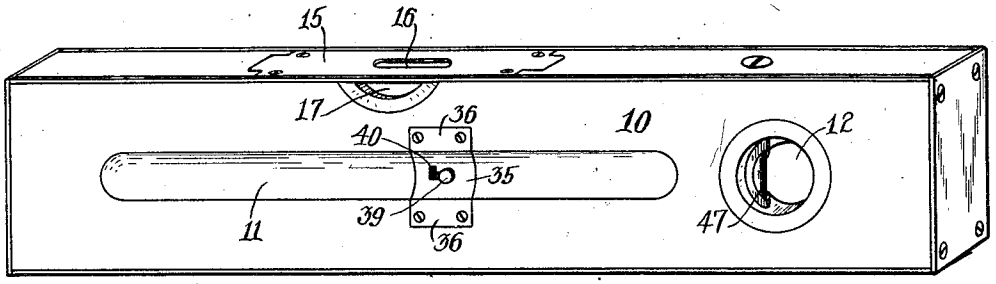


Fig. 1.

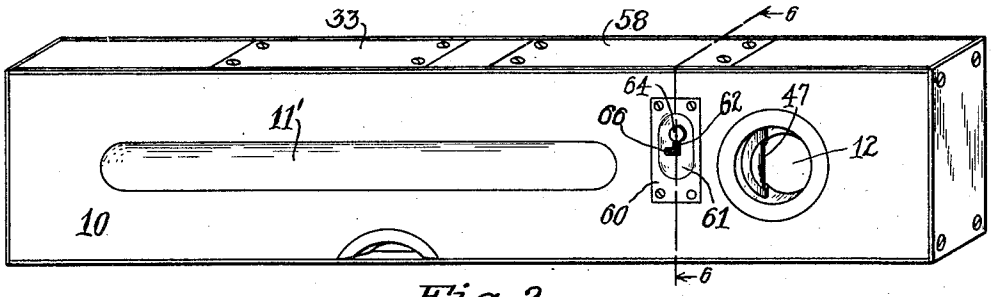


Fig. 2.

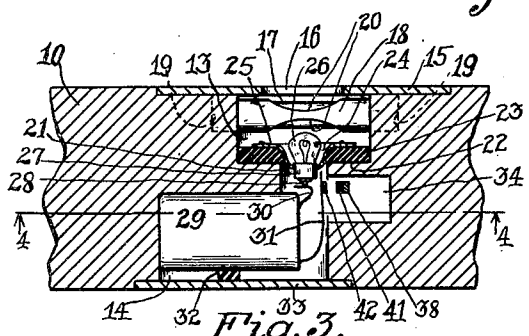


Fig. 3.

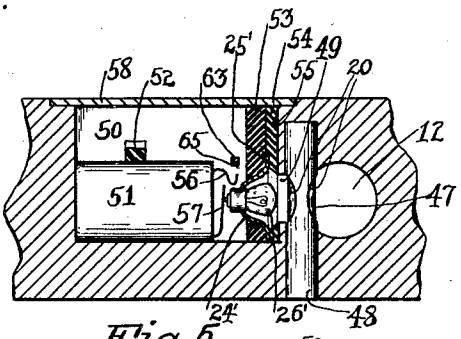


Fig. 5.

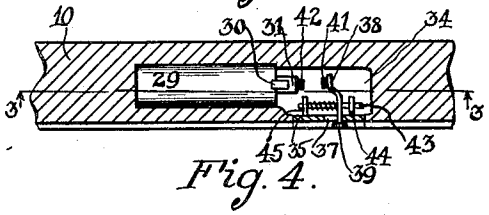


Fig. 4.

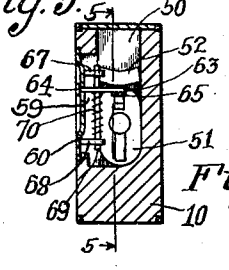


Fig. 6.

Witnesses.

Albert G. Reczenthowski.

Urban P. O'Brien

Inventor.

William Edward O'Brien

Foster, Freeman, Watson & Coit.

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM EDWARD O'BRIEN, OF PROVIDENCE, RHODE ISLAND.

ELECTRICALLY-LIGHTED LEVEL AND PLUMB.

1,110,456. Specification of Letters Patent. Patented Sept. 15, 1914.

Application filed June 28, 1913. Serial No. 776,405.

To all whom it may concern:

Be it known that I, WILLIAM E. O'BRIEN, a citizen of the United States, residing at Providence, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Electrically-Lighted Levels and Plumbs, of which the following is a specification.

This invention relates to a combined plumb and level and more particularly to a device of this type in which the glass bubble-containing bulb is electrically illuminated.

My invention has for one of its objects to provide a simple and inexpensive arrangement whereby either the bulb of the level or the bulb of the plumb may be separately illuminated when desired and the lamps may be flashed or the switch therefor may be locked so as to maintain the illumination without a continued pressure on a push button or the like.

Further objects of the invention are to provide a device of this character in which the stock is not unnecessarily weakened by cavities which extend throughout the interior thereof; to provide a separate cell for each lamp so that if any cell becomes exhausted it may be renewed without disturbing the others and there will be no need of wiring and the requisite wiring channels between the cavities occupied by the lamps and accessories will be eliminated.

The above and other objects and the novel features of the invention will be apparent from the following description taken in connection with the drawings, in which:

Figure 1 is a perspective view of the level and plumb showing three faces thereof. Fig. 2 is a similar view, the level being inverted to show the opposite longitudinal faces to those shown in Fig. 1. Fig. 3 is a cross section on the line 3—3 of Fig. 4 showing the level bulb and the lighting outfit and cavity therefor. Fig. 4 is a cross section along the line 4—4 of Fig. 3 looking in the direction of the arrows, the cell being shown in elevation. Fig. 5 is a cross section along the line 5—5 of Fig. 6 showing the plumb and the lamp and cell therefor. Fig. 6 is a cross section on the line 6—6 of Fig. 2 showing the construction of the switch for lighting the lamp to illuminate the plumb.

Referring to the drawing Figs. 1 and 2 illustrate the level and plumb which, as usual, comprises a rectangular stock 10 of wood, metal or other suitable material, its broad longitudinal faces being provided with the flutings 11, 11′, and the faces being joined by the transverse sight opening 12 for the plumb.

Intermediate the ends of the stock 10 there is a cavity which comprises the two compartments 13 and 14 opening at opposite edges of the stock 10. The compartment 13 is covered by the plate 15 flush with the edge of the stock and having an oblong sight opening 16 therein disposed directly over the glass level bulb 17. The level bulb 17 is supported in a brass tube 18, the ends of which fit in recesses 19, 19 in the side walls of the compartment 13 and the brass tube is cut away at opposite sides intermediate its ends as at 20 so that the level bulb 17 may be seen from above and illuminated from below.

A passageway 21 connects the compartments 13 and 14 and an annular shoulder 22 is thereby formed at the bottom of the compartment 13 to support the soft rubber ring 23. A metal cup-shaped holder and reflector 24 has a flange 25, by means of which it is supported in the compartment 13 and on the rubber ring 23 and the depressed part thereof projects through the opening in the ring and depends into the passageway 21. The cupped holder 24 has an opening therethrough at the bottom of the cupped part thereof to receive the base of an electric incandescent lamp 26 and the cupped member therefore forms a lamp socket or support and a reflector for the lamp supporting the latter directly beneath the cut-away part 20 in the brass tube 18 and on the opposite side from the sight opening 16. The lamp 26 is provided at its base with a peripheral lamp terminal 27 and a central lamp terminal 28, the peripheral lamp terminal 27 being of any suitable construction to hold the lamp securely in the cup-shaped holder 24. The rubber ring 23 upon which the cup-shaped holder 24 is yieldingly supported suitably insulates the lamp from other metallic parts of the level. An electric cell 29 of any suitable construction is provided with resilient contacts 30 and 31, both of which extend into the passageway 21, the contact 30 being constructed so as to have permanent engagement with the central lamp terminal 28. The resilient contact 31 also extends into the passageway 21 to a

point adjacent the lamp terminal 27 on the base of the lamp and to which it may be connected by suitable switch mechanism. The cell 29 may be of any suitable construction and is held securely in the bottom of the compartment 14 by means of a block 32 of rubber or other yieldable material which fits between the cell and the plate 33 that is screwed onto the stock 10 to close the compartment 14.

At the side of the passageway 21 there is a cavity 34 which communicates with the compartment 14 and which constitutes a compartment for the switch. The cavity 34 has a cover plate comprising a concave part 35 which fits the fluting 11 of the level and is provided with two flanges 36, by means of which it is secured flush to the side face of the stock 10. The concave part 35 of the cover plate has an opening 37 therein through which the switch bar 38 extends, the outer end of the bar 38 having a button 39 secured thereto. Since the switch plate conforms to the shape of the fluting it affords a sufficient countersink for the operating button 39 which moves on the outside thereof and therefore will be disposed flush with or below the flat face of the stock 10. At one end the opening 37 has a notch 40 which forms a catch for the bar 38 when it is moved to the extreme position and it is desired to keep the switch in a closed position for any length of time. At its inner end the switch bar 38 is provided with a facing 41 of insulation that contacts with a similar facing 42 on the spring contact 31 so that the switch and contact on the cell will be insulated from the metal parts of the level. Intermediate its ends the switch has an opening, not shown, to receive a rod 43 mounted in standards 44, 45 at opposite sides of the opening 37 and on the inner face of the concave part 35 of the switch plate. A spiral spring 46 surrounds the rod 43 and at one end bears against the standard 45 and at its opposite end bears against the slidable bar 38, thereby tending to keep the bar 38 out of engagement with the contact 31 and thus keeping the circuit open except when the bar is locked in the notch 40.

In the construction shown in detail in Figs. 5 and 6 the plumb glass 47 is visible from the exterior through the transverse opening 12 and is supported in a brass tube 48 which is shaped like the tube 18 of the level and is supported in opposite sides of the cavity 49 which communicates with the cavity 50 in which the electric cell 51 is supported. The cell 51 is wedged in the compartment 50 by means of the rubber block 52 and the lamp 26′ and a holder and reflector 24′ therefor, which are of substantially the same construction as the lamp and holder shown in Fig. 3, are located between the bubble tube 47 and the cell 51 as in the arrangement of the level tube. The flange 25′ of the cup-shaped holder 24′ is clamped between two rubber rings 53 and 54 which are supported on a shoulder 55 adjacent the cavity 49 so as to yieldingly support the lamp.

The resilient contacts 56 and 57 are secured to the cell and conduct current to the electric lamp 26′, the contact 57 being in permanent connection with the central terminal on the lamp and the connection of the contact 56 to the other lamp terminal being effected by a switch. The cell compartment is closed by a cover plate 58 and a switch compartment 59 opens into the cell compartment 50 and is covered by the switch plate 60. The plate 60 is fastened flush to the outer broad face of the level and plumb and has a countersunk part 61 provided with an opening 62 through which extends the switch bar 63. The outer end of the switch bar 63 has a button 64 thereon and the inner end is provided with a facing 65 of insulation so that the switch will be insulated from the spring contact 56 when the latter is moved into engagement with the base of the lamp. A notch 66 is provided in the opening 62 to lock the switch bar 63 in closed position when it is desired to keep the lamp lighted. Standards 67 and 68 formed integral with the inner face of the cover plate 60 support a rod 69 and a spiral spring 70 surrounds the said rod 69 to keep the switch bar 63 in an off position when the button is released, the said bar 63 sliding along the rod 69 similar to the construction in Fig. 4.

The use of the device will be clear from the foregoing description and it will be obvious that I have provided a simple arrangement in which the lamp is supported beneath the bubble tube so as to properly illuminate the latter and at the same time prevent any injury to the lamp from shock, doing away with all wiring and other complications. Each of the lamps has its central terminal permanently connected with a spring contact terminal of an electric cell, the spring terminal thereby also serving to yieldingly engage and support the fragile lamps and prevent any damage thereto. Minor modifications are contemplated and it is therefore not intended to limit the invention to the exact details shown and described except as required by the appended claims.

Having thus described the invention what is claimed as new is:

1. In a device of the class described, the combination of a supporting stock having a cavity therein, a bubble tube in the cavity and visible from the exterior, a lamp adjacent the bubble tube, a ring yieldingly supporting said lamp, reflecting means for the lamp, a cell for supplying current to the lamp and having spring contact terminals,

one of which is directly in contact with one of the terminals of the lamp, and means for connecting the other contact terminal of the cell in contact with the lamp, said means comprising a bar adapted to engage said other contact terminal and accessible from the exterior and adapted to be releasably locked in closed position.

2. In a device of the class described, the combination of a supporting stock having a cavity therein, a bubble tube, a tubular member for holding the bubble tube, said tubular member having openings at its opposite sides to expose the bubble tube, one of said exposed parts of the bubble tube being visible from the exterior, a lamp adapted to illuminate the other exposed portion of the bubble tube, and means for supplying current to the lamp.

3. In a device of the class described, the combination of a supporting stock having a cavity therein, a bubble tube supported in the cavity and visible from the exterior, a lamp in the cavity adapted to illuminate the bubble tube, a cupped reflector and holder for the lamp having a flange, an elastic ring engaging the flange of said holder and yieldingly supporting the lamp and holder, a cell provided with spring contact terminals, one of which is constantly connected to one of the lamp terminals, and means for connecting the other spring contact terminal of the cell to the other lamp terminal and adapted to releasably lock the contact terminal in connected relation with the lamp terminal.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM EDWARD O'BRIEN. [L. S.]

Witnesses:

OLOF L. ANKAR,

CARL E. JOHNSON.