March 29, 1932. C. P. DAVEY 1,851,275

PORTABLE ELECTRIC LIGHT

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Fig. 1.

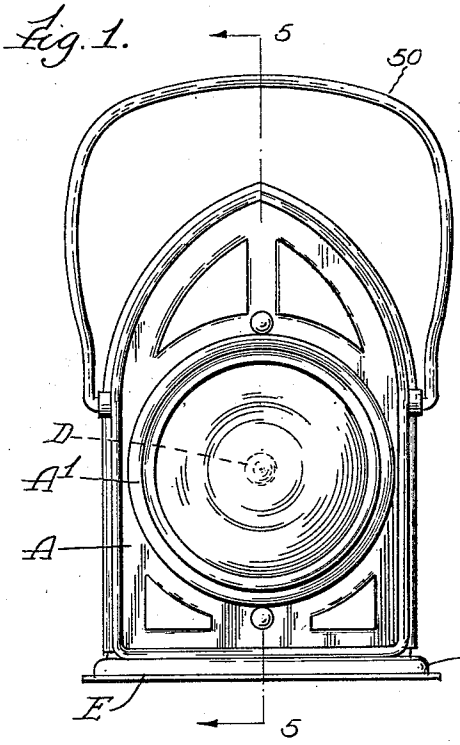

Fig. 2.

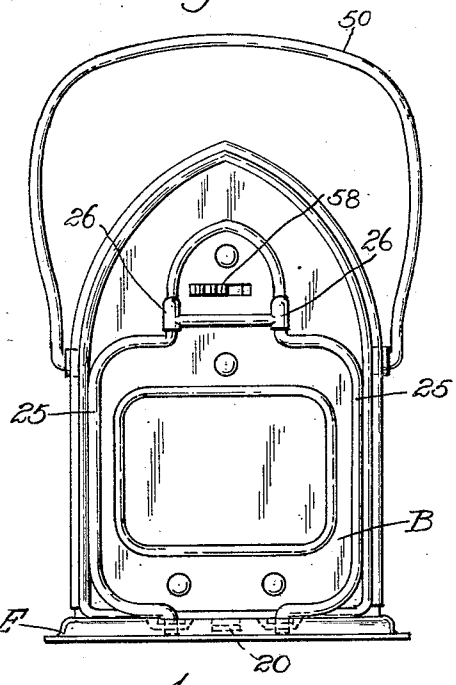

Fig. 4.

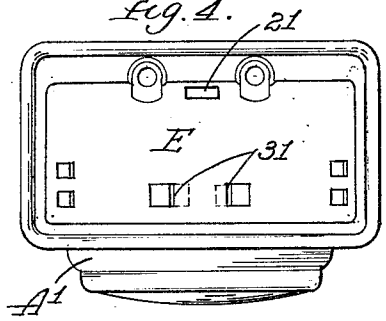

Fig. 3.

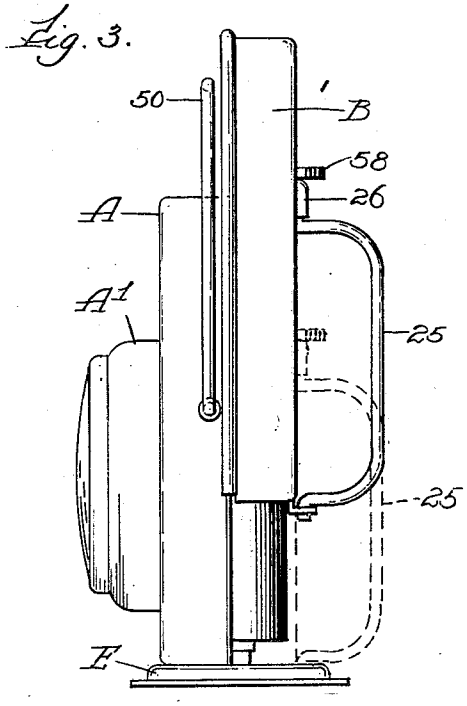

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Fig. 5.

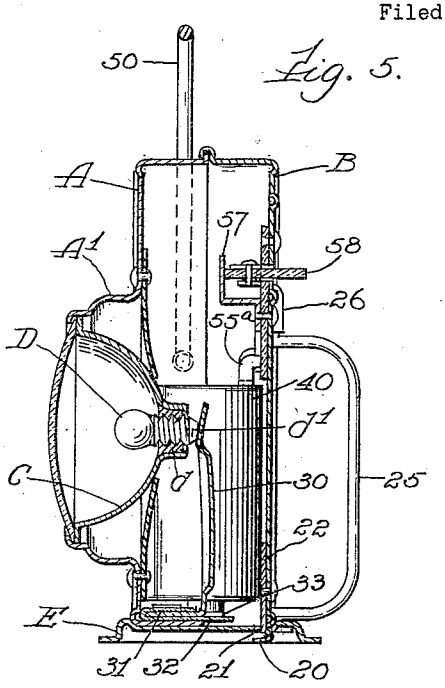


Fig. 6.

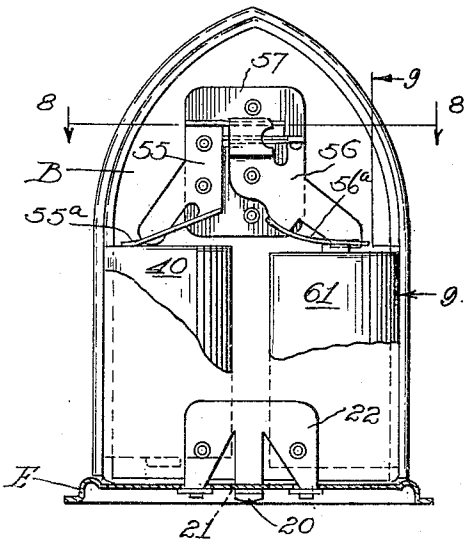


Fig. 8.

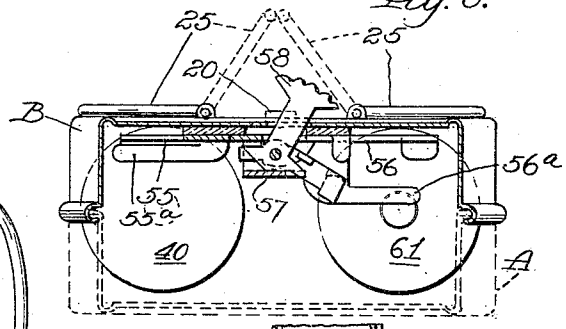


Fig. 7.

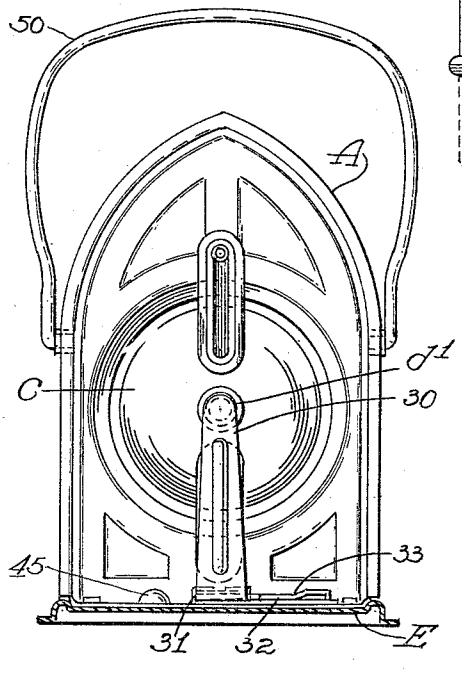
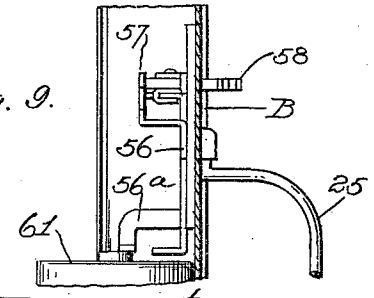


Fig. 9.



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UNITED STATES PATENT OFFICE

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PORTABLE ELECTRIC LIGHT

Application filed August 12, 1931. Serial No. 556,628.

The purpose of this invention is to provide an improved construction of a portable electric light or electric lantern more economical in construction and convenient in use than the prevailing types of such devices. The invention consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings:

Figure 1 is a front elevation of a portable electric light or lantern embodying this invention.

Figure 2 is a rear elevation of the same.

Figure 3 is a left-hand side edge elevation.

Figure 4 is a bottom plan view of the same.

Figure 5 is a fore-and-aft medial section as at the line 5—5 on Figure 1.

Figure 6 is a front inner side view of the rear casing member, separated from the front member, showing the energizing cells in position partly broken away.

Figure 7 is a rear inner side elevation of the front casing member, separated from the rear member, with the reflector in position in said front member.

Figure 8 is a section at the line 8—8 on Figure 6 for showing the controlling switch.

Figure 9 is a detail section at the line 9—9 on Figure 6.

The construction of the casing will be first described. This casing comprises two members, A and B, hereinafter referred to as the front casing member and the rear casing member. These casing members are separably joined at a vertical parting plane approximately midway between the front and rear walls of the casing in its entirety, so that each member contains a substantial part of the total of the entire casing cavity. As illustrated, the casing members are sheet metal stampings; and the front member, A, has at the front side a protruding hollow boss, A^1, struck from the integral metal sheet of which said front member is formed; and this boss is apertured concentrically at its forward end forming what is hereinafter referred to as a light aperture, being the opening from which the light beam is projected when the lantern is in use. At this light aperture there is mounted a suitable reflector, C, preferably parabolic or approximately parabolic, said reflector having its forward open end stopped at the inner side of the margin of the light aperture, and protruding inwardly of the casing and formed at the center for serving as a socket to receive the electric light bulb lamp, D, whose outer circuit contact, d, is conductively related to the socket feature of the reflector, the central contact member, d^1, being exposed inside the casing for contact with the circuit connections as hereinafter described.

The casing members are formed at their mating edges at the parting plane for tongue-and-groove engagement by sliding relatively to each other in the vertical direction of the parting plane, the tongues protruding outwardly and the grooves opening inwardly with respect to the casing cavity and with respect to the outer vertical casing members, said tongues being continuous over the upper arched ends of the front casing member which is shown having the tongue feature, and the groove feature being similarly continuous over the arched upper end of the rear casing member. These upper arched end elements of the casing members supplement each other for forming the top wall of the casing cavity. The bottom element of the casing cavity is carried in entirety by the front casing member, being formed by a foot plate, E, joined permanently, as by soldering, to the lower end of the front casing member, A, which latter, to afford substantial means for holding the foot plate by soldering, is stamped to form a bottom web, a, of the same width as the side web or flange which carries the tongue as described, said bottom web being without tongue. The rear casing member, B, is formed without any bottom

element, but having the flange which carries the groove continuous about the vertical sides and over the arched top.

Upon considering the construction thus far described, it may be understood that the casing members are assembled together and engage with each other at their parting plane by entering the tongue features of the front member at the upper limit of the straight portion of the tongue,—where it begins to curve over the arched top,—in the open bottom end of the groove of the rear casing member, and thrusting the rear member down to stopped position on the rearwardly protruding bottom element formed with the foot plate, E.

For automatically engaging the rear casing member with the foot plate to hold the two members in inter-locked position of the tongue-and-groove features, a spring catch, 20, is provided at the lower edge of the web which forms the rear wall element of the rear casing member, and the foot plate has a hole, 21, with which the catch snaps into engagement at the limit of the down-thrust for interlocking the tongue-and-groove features; the spring catch being accessible at the under side of the hood plate is readily disengaged for withdrawing the rear casing member upwardly for access to the casing cavity for removing and replacing cells and other attention as hereinafter described.

As shown, the spring catch, 20, is formed as a lug of a plate, 22, which is riveted to the rear wall element of the rear casing member for furnishing pivotal engagement for the lower ends of a pair of loop handles, 25, 25, which have their upper ends pivotally engaged in suitable out-struck and apertured bosses, 26, 26, toward the upper end of the rear casing member. These handle members are adapted to fold over against the outer side of the casing member when not in use for handling the lantern, and are adapted to be swung into contact with each other, as seen in Figure 8, for being grasped together for handling the lantern somewhat rigidly for directing the beam, especially when it is to be directed downwardly or upwardly, which cannot be done by handling it by the bail handle next described.

For the ordinary handling of the device after the manner of a lantern to be carried pendant and required to be turned only for varying the horizontal direction of the beam, there is provided a bail, 50, pivotally attached to the front member at the upper end, that is, at a point substantially above the center of gravity of the total structure when occupied by cells.

Upon considering the construction particularly with respect to the relation of the two handling elements, viz., a pair of loop handles at the rear of the rear casing member, and the bail attached to the front casing member,—it may be noted first,—as to the rear handle, that the means of engagement of the two casing members with each other by the vertically telescoping tongues and grooves respectively projecting and opening in the direction of the parting plane, enables the rear casing member held by the rear handles to carry the front casing member safely against liability of said front member to escape from the holding of the front member. And with respect to the bail handle, it will be noted that the engagement of the two casing members with each other by the tongue and groove features of which the tongue is on the front casing member and is accordingly as to its extent across the top of the casing under the groove of the rear member at the part extending across the top, makes the front member to which the bail handle is attached to uphold the rear casing member against any liability of the latter to strip down along the side engagement, regardless of the rearwardly extended bottom element of the front member which it will be recognized also and indepently of the relation of the tongue and grooves at the top, serves the same function of enabling the front casing member to uphold the rear casing member.

The details of interior construction for locating the cells in circuit with the lamp and switch members will now be described.

As mentioned above, the parabolic reflector intrudes from the forward side into the casing cavity, and the boss, A^1, accommodates a substantial portion of the actual dimension of the reflector, in that its inner end which, as mentioned, constitutes the socket for the lamp does not protrude beyond the parting plane of the casing members; and in view of its taper to the equal spaces between it and the opposite side of the casing cavity are sufficient to accommodate the cells respectively at opposite sides of the reflector; and the casing is transversely dimensioned relatively to the diameter of the standard dry cells which are available for equipment of such a light device so that the cells while not pinched between the reflector and the casing side walls are positioned safely against liability to escape from proper contact of their poles with the adjacent circuit elements.

These circuit elements include a receiving clip, 30, which is mounted insulatedly on the bottom element of the front casing member, as seen at 31, the insulation being indicated at 32. This clip is positioned in the fore-and-aft vertical plane of the axis of the parabolic reflector for making contact with the center contact of the lamp as seen at d^1, and at its lower end it has a laterally extending arm, 33, which through its whole extent overhangs the insulation, 32, and which is stopped on the latter, which in turn rests flatly on the bottom element, E, of the front casing member; so that said bottom element

becomes a positive support for said extended arm, and thereby for the cell, 40, which is stepped on said arm, its lower bulb making conductive contact with the arm and thereby putting the cell in circuit with the lamp. At the other side of the inwardly intruding taper end portion of the reflector there is located between the reflector and the wall of the casing the other cell of the pair which the casing is arranged to accommodate. This second cell is stepped directly on the bottom wall of the casing which may have a slight up-struck boss, seen at 45, for making the conductive contact of the casing, which, as hereinafter noted, forms the "ground" part of the circuit,—with the lower end exposed hole of the cell. The circuit is completed by the conductive terminal members, 55 and 56 of the switch device which is carried as to all its elements by the rear casing member, said switch device comprising the two similar but not identically formed conductive members, 55 and 56, both mounted insulatedly and fixedly on the rear web wall of the rear casing member, B, the switch member, 55, having a resilient arm, 55a, extending to a position for contacting and reacting rearwardly on the upper exposed pole of the first described cell.

The switch member, 56, has a light resilient arm, 56a, extending for resting conductively and resiliently on the upper end of the cell, 61. The switch members, 55 and 56, are arranged in relation to a conductive snap member, 57, mounted on the rear web wall of the rear casing member for being conductively connected by the snap member, 57, when said snap member is manipulated by the operator for snapping into circuit closing position, for which manipulation there is provided a snap trigger, 58, protruding from the rear casing member, as seen in Figures 8 and 9, the construction being a familiar type of snap-over switch which will be understood from the drawings without further detail description.

The operation in respect to the course of the current in circuit through the cells, lamp, contact making clips, reflector body and casing forming the "ground" portion of the circuit and the switch members at circuit closing position of said members will be understood from the foregoing without further description.

I claim:—

1. A portable electric light comprising a two-part casing with cavity for accommodating lamp-energizing cells, one part including a horizontally extending bottom and the front part of the casing extending up for the forward half of the bottom, the two casing members having their meeting edges in a vertical plane formed for tongue-and-groove sliding engagement, and an automatic catch device for engagement of the rear member with the horizontally extending bottom of the front member.

2. A casing for a portable electric light having a cavity for accommodating lamp-energizing cells, said casing comprising two vertically extending members, one of which carries rigidly with its vertically extending part a horizontally extending bottom element, said vertically extending members having respectively their lateral edges at their meeting plane formed with outwardly projecting tongues and inwardly opening grooves for slide engagement of the tongues with the grooves, and having the bottom element of the first mentioned member and the lower end of the second mentioned member furnished with co-operating parts of an automatically operating catch device.

3. A casing of a portable electric light having a cavity for accommodating lamp-energizing cells, said casing comprising two vertically extending members, one of which carries rigid with its vertically extending part a horizontally extending bottom element, said vertically extending members having respectively their lateral edges at their meeting plane formed with outwardly projecting tongues and inwardly projecting grooves for slide engagement of the tongues with the grooves, said casing members having at their lower ends means for disengageably engaging the lower end of the second members and the bottom element of the first member.

4. A casing for a portable electric light having cavity for accommodating lamp-energizing cells, said casing comprising two casing members, one of which contains the front wall and the other the rear wall of the casing, and of which each contains a substantial part of the casing cavity, with marginal flanges bounding said cavity portion, the marginal flanges of the two members as to the opposite lateral portions of each, being furnished respectively with co-operating tongues and grooves arranged for sliding engagement in assembling and dis-assembling the casing, and means for disengageably engaging said members at the full interlocked position of their tongues and grooves.

5. A casing for a portable electric light having cavity for accommodating lamp-energizing cells, said casing comprising two casing members, one of which contains the front wall and the other the rear wall of the casing, and of which each contains a substantial part of the casing cavity with marginal flanges bounding said cavity portion, one of said members having a bottom element protruding from the open side of said member for extending across to form the bottom end of the cavity of the other member, both of said members having their cavity-bounding flanges extending continuously with their lateral portions for bounding the cavities at the upper end of the casing, the casing

member which has the bottom element having the tongue, and the other members having the grooves, said tongues and grooves being continuous at the top element of the cavity-bounding flanges.

6. In the construction defined in claim 4, the casing member having the bottom element being furnished also at the upper part with a carrying bail.

7. A casing for a portable electric light having cavities for accommodating lamp-energizing cells, said casing comprising two casing members of which one contains a front wall and the other a rear wall of the casing, and of which each member contains a substantial part of the casing cavity with marginal flanges bounding said cavity portions, the marginal flanges of the two members being furnished respectively with co-operating tongues and grooves for sliding engagement to inter-lock the casing members with each other, said flanges and their respective tongue-and-groove features being extended continuously with the opposite lateral portions over the top of the respective casing members, the casing member whose flange has the tongue feature being furnished with a handle member for carrying the lamp pendant.

8. A portable electric light comprising a casing having cavity for accommodating lamp-energizing cells, said casing having a front member and a rear member constructed for mutual engagement and for parting at a vertical plane intermediate the front and rear walls of the casing cavity; a reflector carried by the front member arranged for carrying a lamp conductively mounted therein with the center contact of the lamp exposed interiorly of the casing, a conductive clip carried by the front member for bearing on the inner side of the reflector to conduct the current to the outer contact of the lamp, a resilient conductive clip carried insulatedly by the front casing member and having a limb extended in position for lodgment thereon of an energizing cell at one side of said resiliently conductive strip, said front casing member having a bottom element arranged for lodgment thereon at the opposite side of said clip of a second energizing cell, the rear casing member having mounted insulatedly on the inner side of its rear wall, co-operating switch parts having resilient contact terminals positioned for circuit closing contact with the upper end poles of the cells respectively, said switch members having each a non-resilient lug extending in position for encounter by the upper ends of the respective cells at the limit of a predetermined resilient yielding of the resilient switch terminals to the thrust of the cells due to inversion of the light, or upward jolting of the cells.

9. A portable electric light device comprising a casing for accommodating lamp-energizing cells and circuit connections, means carried by the casing for supporting in up-standing position a pair of cells, said supporting means being included in the circuit energized by the cells, a switch device comprising two switch terminals carried insulatedly by the casing and having each a resilient arm extending for conductive contact and resilient reaction upon the upper ends of the cells respectively, and non-resilient stops carried insulatedly and fixedly by the casing extending for encounter by the upper ends of the cells respectively at the limit of predetermined yielding of the resilient switch terminals to the thrust of the cells through said terminals.

10. An electric light device comprising a casing arranged for carrying an electric lamp and energizing cells and circuit connections, clips carried by the casing for making the circuit connection through energizing cells and the lamp, and a switch device comprising co-operating parts having each a resilient contact terminal for circuit closing contact with the cells respectively, said switch members each having also a non-resilient lug, said lugs extending for encounter of the respective cells at the limit of a predetermined yielding of the resilient contact terminals to thrust of the cells due to inertia of the cells upon abrupt bodily movement of the device longitudinally of the cells.

11. An electric light device comprising a casing, a pair of energizing cells mounted in the casing, cell supporting means carried by the casing at one end of the cells, the cells being stopped endwise between said supporting means and resilient contact terminals of co-operating switch members, said contact terminals carried by the casing at the opposite side of the cells, the casing having mounted in the forward side a reflector of electrically conductive material arranged for carrying a lamp, the lamp being conductively mounted in the reflector with its center contact exposed in the casing, and clips carried by the casing interiorly thereof suitably placed for completing the circuit through the cells which may be the switch members, the switch members having each a non-resilient arm extended for encounter of the respective cells at the limit of predetermined yielding of the resilient contact terminals due to inertia of the cells upon abrupt bodily movement of the device longitudinally of the cells.

12. A portable electric light comprising a two membered casing having a cavity for accommodating lamp-energizing cells and circuit connections, said casing having its two casing members mated for seating on each other at a vertical parting plane, the front member comprising a lamp carrying reflector mounted at a light opening in the front

wall, the two casing members having their two mating edges at their parting plane cooperatively formed for tongue-and-groove vertical sliding engagement with the tongue projecting and the groove opening in the direction of the parting plane, whereby their engagement tends to defeat their separation by stress transversely of said parting plane, the rear member having exterior handling means adapted for holding the lantern face-downward and directing it rigidly for projecting the beam at varying vertical angles.

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