No. 626,627. Patented June 6, 1899.

E. D. MIDDLEKAUFF.

BICYCLE LAMP.

(Application filed May 21, 1898.)

(No Model.) 2 Sheets—Sheet 1.

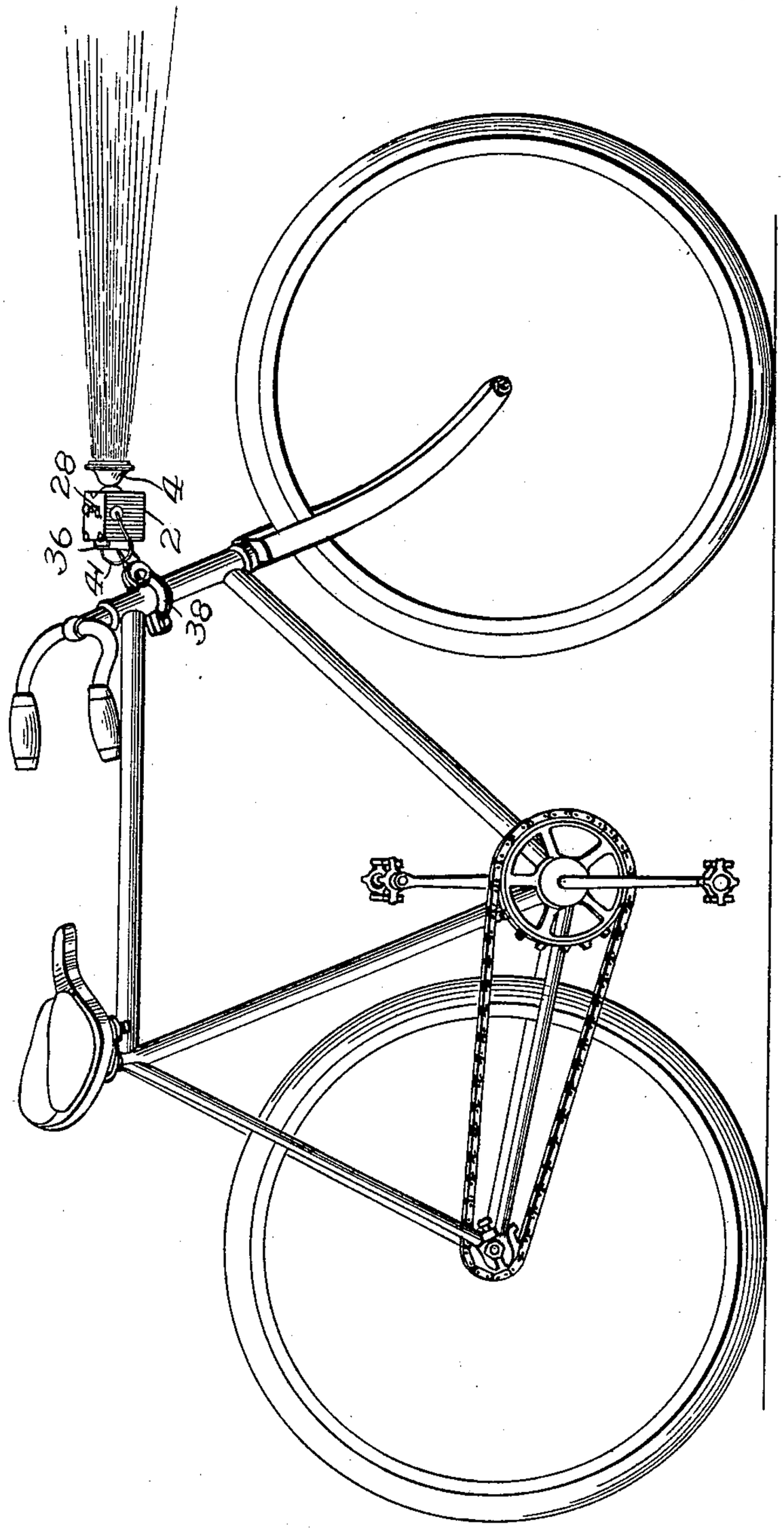

Fig. 1.

Witnesses;
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M. E. Cooley

Inventor;
Ellsworth D. Middlekauff.
By Paul & Hawley
his attorneys.

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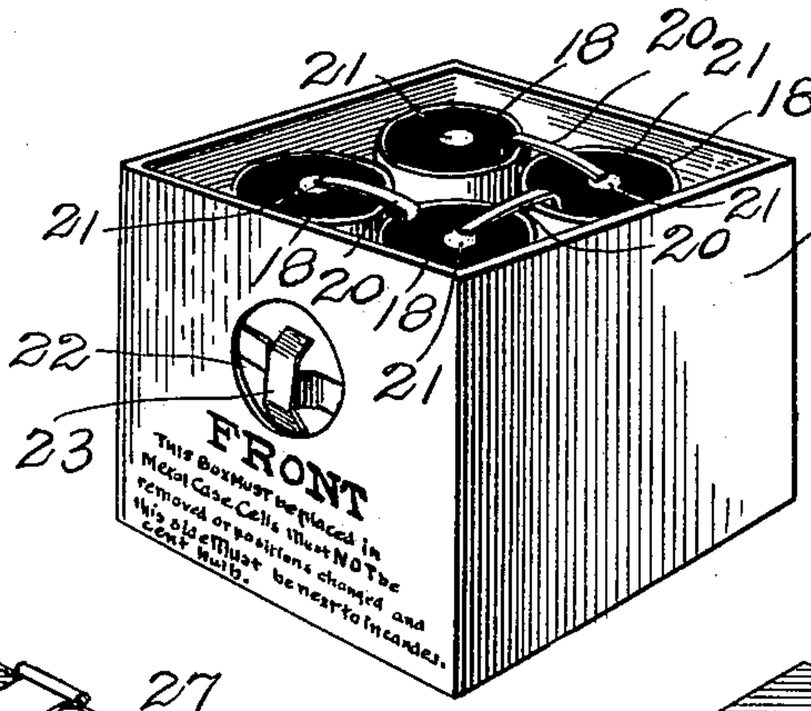


Fig. 5.

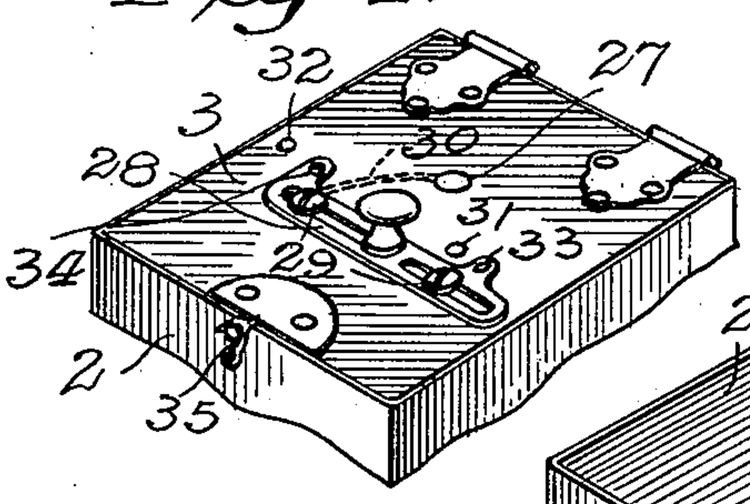
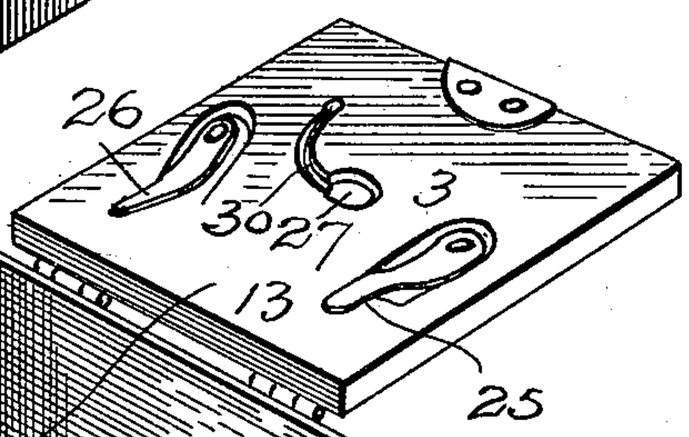


Fig. 4.



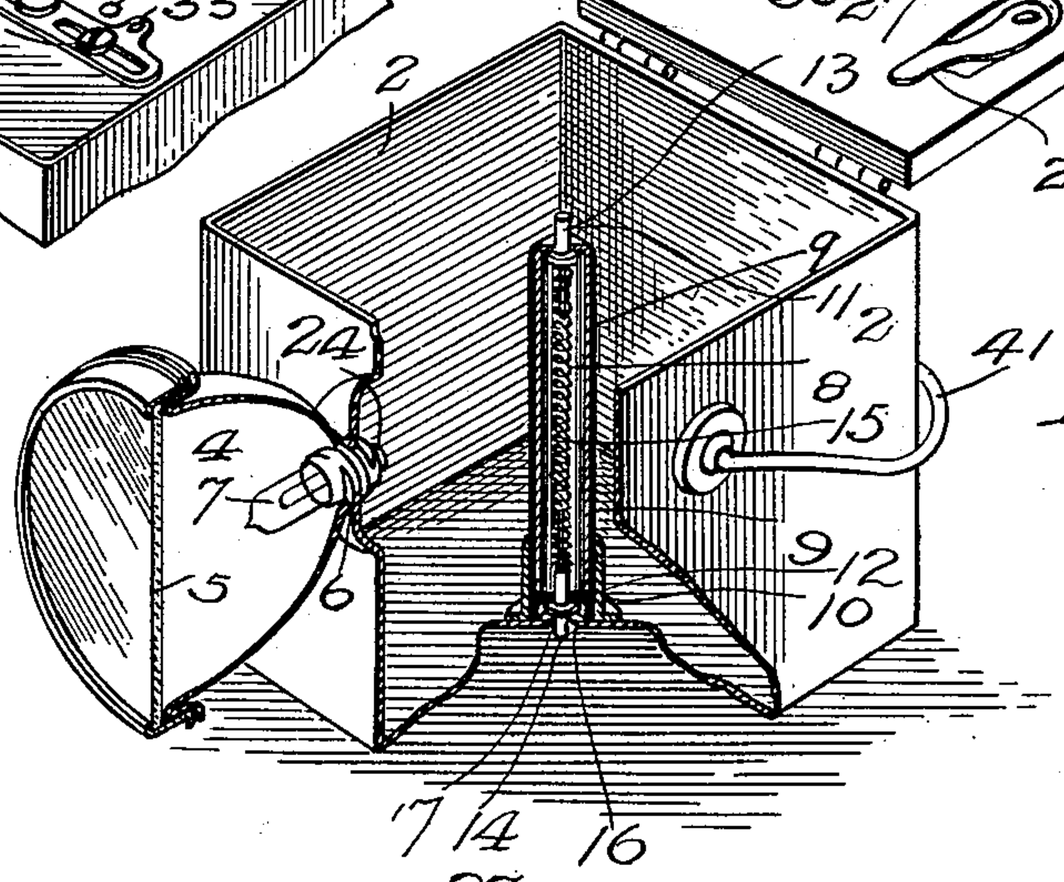


Fig. 3.

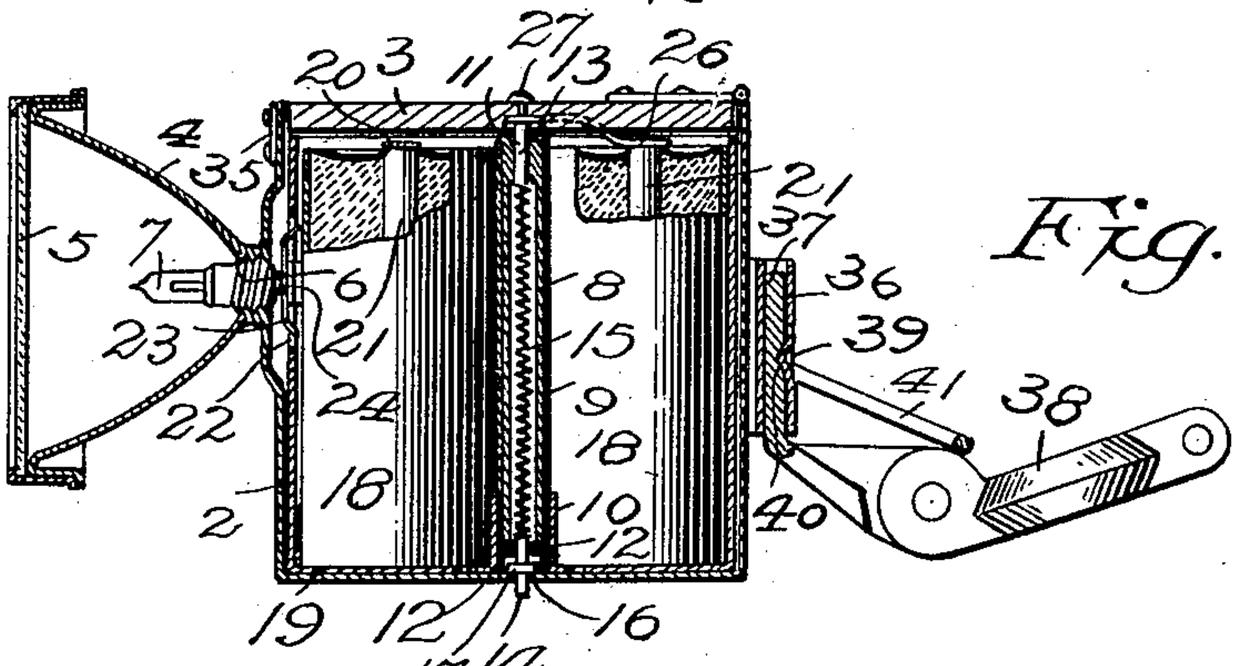


Fig. 2.

Witnesses:
C. E. VanDorn
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UNITED STATES PATENT OFFICE.

ELLSWORTH D. MIDDLEKAUFF, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO WILLIAM E. HALL, OF CHICAGO, ILLINOIS.

BICYCLE-LAMP.

SPECIFICATION forming part of Letters Patent No. 626,627, dated June 6, 1899.

Application filed May 21, 1898. Serial No. 681,295. (No model.)

To all whom it may concern:

Be it known that I, ELLSWORTH D. MIDDLEKAUFF, of the city of San Francisco, county of San Francisco, State of California, have invented certain new and useful Improvements in Bicycle-Lamps, of which the following is a specification.

This invention relates to bicycle-lamps, and particularly to electric lamps for bicycles and like vehicles.

The object of the invention is to provide a small, light, and compact electric lamp for bicycles; and a particular object of the invention is to provide a portable electric lamp which may be easily attached to a bicycle or other vehicle and which may be detached from the same and carried as a hand-lantern and which will be automatically extinguished when the lamp is set down, whereby the energy of the battery will be conserved.

My invention consists in a portable electric lamp comprising a suitable box or casing for the batteries, a lamp-fixture provided thereon, a switch for completing the electric circuit of the lamp and the batteries, and an automatic switch for breaking said circuit when the device is placed upon a table or other flat surface.

The invention further consists in various constructions and in combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 illustrates a portable lamp embodying my invention attached to a bicycle. Fig. 2 is an enlarged sectional view of the device. Fig. 3 is a perspective sectional view showing the casing and the electric switches. Fig. 4 shows the top of the casing or box. Fig. 5 is a perspective view showing the batteries and the paper box containing the same.

As shown in the drawings, 2 represents a sheet-metal box or casing provided with the cover 3, which is preferably of insulating material and is hinged to the box. Upon the end of the box is a reflector 4, containing a glass or lens 5 and provided with a lamp-socket 6 to receive the small electric lamp or bulb 7. The electric-switch device stands upright in the middle of the box and comprises the tube 8, having a cover 9, of insulating material, and resting in the socket 10, provided in the bottom of the box. The upper end 11 of the tube is of metal, and the lower end 12 is of insulating material. A small metal plunger 13 is provided in the upper end of the tube, and a similar plunger 14 is provided in the lower end thereof, and the two are connected and pressed outwardly by a spring 15 within the tube. The plunger 14 extends through a small hole 16 in the bottom of the box, and when the box is lifted the small collar 17 upon the plunger 14 will drop upon the metal bottom of the box or casing, thereby connecting the otherwise-insulated plunger 13 with the metal box or casing. When the box is placed upon a table or other flat surface, the plunger 14 will be forced upward to break the connection between the same and the metal box.

The batteries which I employ are small dry cells 18. Four of these are placed in a box 19, of insulating material, preferably paper. This box fits into the metal box or casing 2, and there is room in the center between the batteries for the central tube 8, the paper box having a hole in its bottom to permit it to be dropped down over the switch-tube 8. The dry cells have metal casings and are protected from one another by the usual paper covers. These cells are connected with one another in series by light spring-strips 20, extending from the zinc case of one cell to the carbon pole 21 in the middle of the next cell, as shown in Fig. 5. A hole 22 is cut in the side of the paper box 19, and a contact-spring 23 projects through the same, said spring being soldered to the metal case of the last battery of the series. When the box containing the batteries is placed in the metal box or casing of the lamp, the spring 23 will press upon the metal contact 24 in the butt of the electric lamp 7. The other terminal of the lamp is the metal sleeve thereof, which is screwed into the socket 6 in the side of the metal box 2. The cover 3 of the box is provided with two contact-springs 25 and 26, which when the cover is closed press upon the metal buttons or carbon poles of the first

two batteries of the series within the paper box.

27 represents a metal screw or button set in the center of the cover and adapted to press upon the plunger 13 when the cover is closed. On the top of the cover I provide the sliding switch 28, preferably a simple slotted bar held by two screws 29, to one of which the button 27 is electrically connected by a wire 30, embedded in the cover 3. The switch 28 is adapted to make contact with the points 31 and 32, which are preferably the heads of the screws or rivets by which the springs 25 and 26 are secured. The space between the points 31 and 32 is greater than that between the contact-points or poles 33 and 34 of the bar 28, so that when the bar is first moved the point 33 thereon will make contact with the point 31, and when the bar is moved still farther the contact between the points 33 and 31 will be broken and the bar will engage the contact 32. The contact 31 and the spring 25 connect with the central pole of the second cell within the lamp-casing, and hence when the switch 28 is placed in contact with the point 31 the electric circuit will be completed through but three of the cells, while if the switch is moved to the contact 32 the circuit through the second cell and the switch will be broken and a circuit will be established through all four of the cells to intensify the light. Three of the cells are sufficient to furnish a bright light while the cells are new, and after these have been used for some time the fourth cell may be brought into circuit to maintain the brilliancy of the electric light.

The cover 3 may fit snugly in the top of the box, and the top thereof may be flush with the upper edges of the box, for when the cover is released from the hook or latch 35 it will be pushed open by the spring-stud 13.

The lamp box or casing 2 has the socket 26 on the back to receive the tongue 37 of the adjustable clamp or bracket 38, whereby the device is secured upon the bicycle, as shown in Fig. 1. To prevent the detachment of the lamp except by intent, I provide the socket 36 with a small spring or catch 39, that drops into a recess or notch 40 in the part 37 when the lamp is placed thereon. In addition to the bracket the lamp is preferably provided with a bail 41, whereby it may be carried from place to place. I regard the automatic circuit-breaker in the bottom of the lamp as of particular importance in this class of portable lamps, as the batteries are of small capacity and short life, and the device would be of comparative little value if it were possible for a careless person to leave the same burning when the light was not actually needed. As it is arranged the lamp is extinguished by the breaking of the circuit the moment that the lamp is put down by the person carrying the same, it being unnecessary to shift the manual switch upon the top of the lamp when the lamp is left.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a portable electric lamp, the combination, with a suitable body or casing containing the batteries, of an electric lamp connected with said batteries and upon said casing, a circuit-closing switch, and an automatic switch provided on the bottom of said casing to break the circuit between said lamp and said batteries, when the device is set down, substantially as described.

2. The combination, with the box or casing of the reflector thereon, the electric lamp therein, the battery-cells provided in said box, means connecting the same with said lamp, a two-pole switch in circuit therewith, and an automatic circuit-breaker operated when the lamp is set down, substantially as described.

3. The combination, with the box or casing, of the reflector, the lamp therein, the battery-cells provided in said box or casing, the cover for said box or casing, having contact devices, the switch device extending between the bottom of the box and said cover and provided with a circuit-breaking switch-plunger extending through the bottom of the box, substantially as described.

4. The combination, with the metal box or casing, of the box of insulating material provided therein, the dry battery-cells arranged therein and provided with a terminal extending through the side of said box of insulating material, the electric-lamp socket provided upon the side of said metal box opposite the battery contact or terminal, a lid or cover for said metal box, the opposite terminal of said batteries arranged upon said lid or cover, and the vertically-operative contact or switch device arranged in said box, engaging the terminal upon said lid and connecting the same with said metal box, and operable to disconnect the same therefrom automatically when the lamp is set down, substantially as described.

In testimony whereof I have hereunto set my hand, this 18th day of May, 1898, at Minneapolis, Minnesota.

ELLSWORTH D. MIDDLEKAUFF.

In presence of—
C. G. HAWLEY,
M. E. GOOLEY.