

The D-cell Battery in Mine Lighting

by Dave Thorpe

Carbide lighting was introduced to the mining industry in 1900 with the Baldwin Full Moon lamp — a time when portable electric lamps were already in general use.

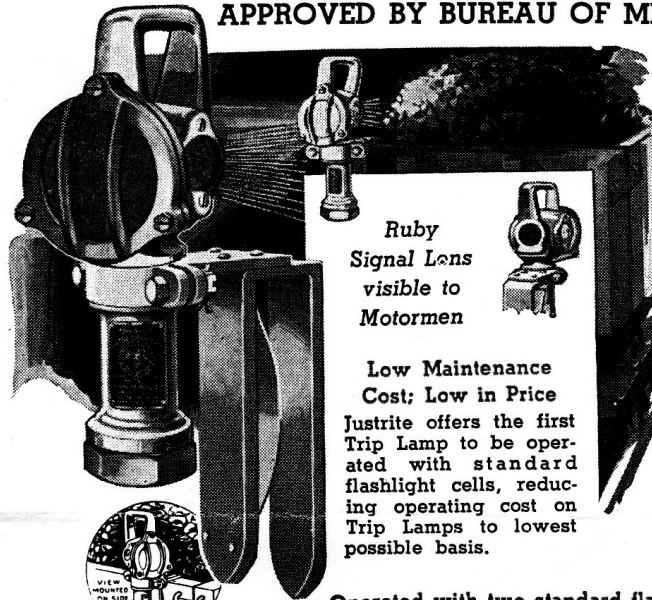
Dry cell batteries were immensely popular for flashlights but never predominated in the mining world. There were disadvantages when compared to acetylene. The batteries were heavy enough that a set of four could not be worn comfortably on the helmet and two batteries would not last an entire shift. The alternative was to carry a battery pack on the waist with electric cords running up the body to the headlamp. These were and still are a nuisance in the confines of a tight and dark work area. The dry cell could not be recharged repeatedly and was therefore costly for full-time work use. When concerns for explosive mine gases led to a phase out of flame lighting over the 1920s, miners compromised by using an electric headlamp with a heavy rechargeable wet cell carried on the waist. Although cumbersome, the wet cell electric lamps were indefinitely rechargeable. Limestone cave explorers on the other hand do not encounter explosive gases and the carbide lamp remained their choice until the late 1990s when powerful LED lamps with rechargeable lightweight helmet-mounted lithium batteries reached a satisfactory level of development.



The D-cell battery (commonly known as the flashlight battery) was invented by The National Carbon Company of Cleveland, Ohio in 1898. The company was founded in 1886 W. H. Lawrence along with Webb Hayes, son of U.S. President Rutherford B. Hayes. A coincidental association in the history of mine lighting is that Regina Hayes, another descendant of the president, was married to Alexander Jenkins of Baltimore and helped manage his Alexander Milburn Company, a major manufacturer of acetylene lamps. National Carbon had produced their first dry cell battery in 1896: a sealed 6-inch cylinder trademarked as the “Columbia.” The D cell soon followed and business prospered. The company merged with The American Ever Ready Company and in 1914 became simply Eveready. Today the same company makes Eveready and Energizer brand batteries.

Justrite SAFETY ELECTRIC MINE CAR TRIP LAMP

APPROVED BY BUREAU OF MINES



Ruby
Signal Lens
visible to
Motormen



Low Maintenance
Cost; Low in Price
Justrite offers the first
Trip Lamp to be oper-
ated with standard
flashlight cells, reduc-
ing operating cost on
Trip Lamps to lowest
possible basis.

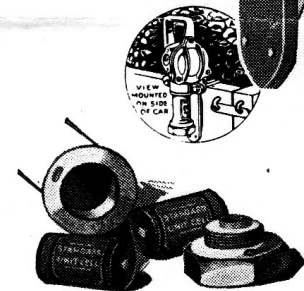
APPROVAL



No. 1013

Operated with two standard flashlight cells, giving a powerful light for a 35 or 40-hour week.

Easy loading—insert two cells just like a flashlight. High grade Railway Signal Lens 3½ inches diameter and 3 Ruby Signal Lenses, one on each side of trip lamp, giving visibility to motorman permitting him to see light on end of trip or train of cars.



Bulb—long life 250-hour Bulb sets on spring cushion to absorb all shocks. Positive bulb and battery contacts—giving a steady, non-flickering light at all times.

Practically indestructible—least number of parts—recharging eliminated.

Very little attention required for maintenance.

A Trip Lamp of sturdy construction built to stand the abuse required of a lamp of this kind. Lamp body constructed of malleable iron, cadmium plated—RUSTPROOF.

Hooks are made in three sizes. Specify size or order by catalog number, as follows:

- No. 340-A Lamp for car bodies ¾" to 1½" thick. Price.....
- No. 340-B Lamp for car bodies 1½" to 2¼" thick. Price.....
- No. 340-C Lamp for car bodies 2¼" to 3 " thick. Price.....

SUPPLY PARTS

- | | |
|----------------------------------|--|
| No. | No. |
| 340-A-5 Large Front Lens | 340-A-16 Seals, per 100 |
| 340-A-6 Small Rear and Side Lens | 340-A-17 Lamp hook for car bodies ¾" to 1½" thick |
| 340-A-7 Large Rubber Lens Gasket | 340-A-18 Lamp hook for car bodies 1½" to 2¼" thick |
| 340-A-8 Small Rubber Lens Gasket | 340-A-19 Lamp hook for car bodies 2¼" to 3" thick |
| 340-A-9 Key | 340-A-20 Base Plug Complete |
| 340-A-10 Bulb Retaining Wire | 340-A-21 Bulb Socket Complete |
| 340-A-11 Lens Guard | |
| 340-A-12 Guard Screws | |
| 340-A-14 Batteries | |
| 340-A-15 Bulb (Packed 10 in Box) | |

One lamp using dry cell batteries did see use in the mines. With weight not being an issue for mine car lights, Justrite Mfg. Co. produced a cast iron trip lamp powered by two D-cells. Ads have been seen as early as 1912 and it was listed in Justrite catalogs into the 1930s. In a manner similar to safety lamps used for testing gas, a special key (kept outside the mine) was needed to open the lamp since an electric spark could also ignite methane.



This unused Justrite trip lamp still lights its original bulb when loaded with two D-cell batteries. There is no on/off switch. A spring-loaded bracket was used to mount it to the mine car. The front “ruby” lens is three inches in diameter and three smaller lenses are mounted on the sides and back. All lenses are sealed with adhesive and gaskets. The lamp is extremely rugged. Advertisements state that it was cadmium plated and rustproof. Thanks to Neil Tysver for providing a copy of the advertisement.