C. S. WELLS.
Lighting-Apparatus.

No. 204,639. **Patented June 4, 1878.**

Fig. 1.

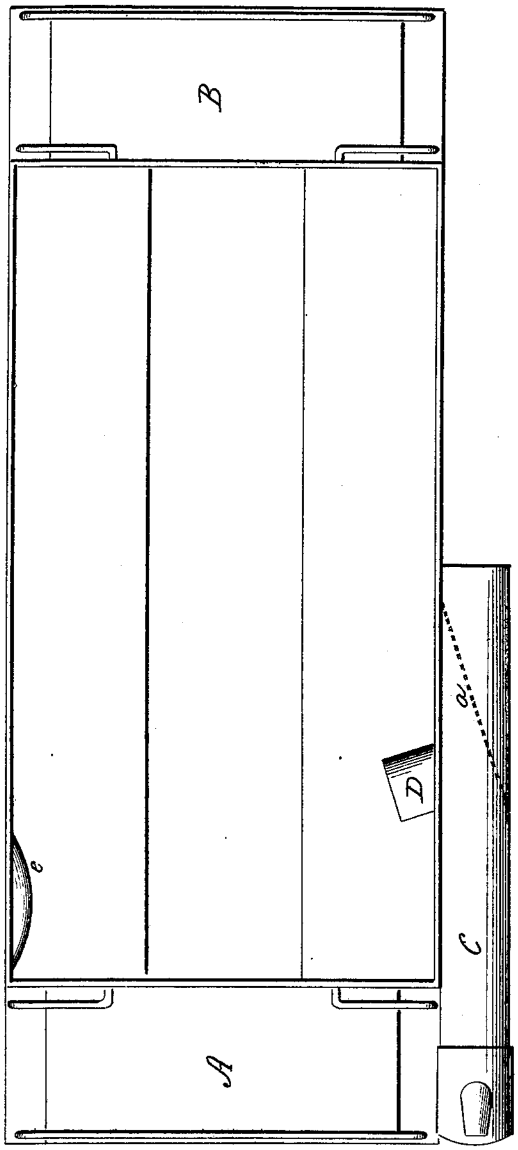
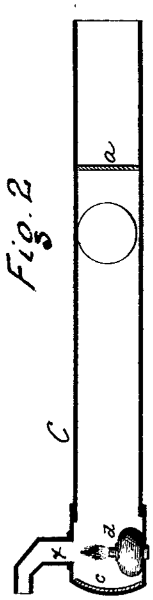


Fig. 2



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES S. WELLS, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN LIGHTING APPARATUS.

Specification forming part of Letters Patent No. **204,639**, dated June 4, 1878; application filed May 16, 1878.

To all whom it may concern:

Be it known that I, CHARLES S. WELLS, of New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Lighting Apparatus, of which the following is a specification:

Figure 1 is a plan view of a car made by a horizontal section near its top, showing seats running lengthwise of the car, A and B being its platforms. Fig. 2 is a vertical section of the tube arranged on the outside of the car, showing a light and reflectors.

My invention relates to lighting the interior of cars by means of a light on the outside of the same; and consists in the arrangement of a tube or chamber on the outside of a car provided with a light and reflectors and of reflectors within the car for diffusing the light throughout the interior of the same.

In Fig. 1, C is a cylindrical pipe or chamber arranged on the outside of a car near its roof or top, and extending beyond the body of the car, so that its end may be reached from the platform. A side pipe, D, of equal diameter, connects with and opens into the pipe C, making an acute angle with it. The pipe C has an opening in its end near the platform, through which the light *d* is reached. It is provided with the concave reflector *c*, Fig. 2, and with a reflector, *a*, which is indicated by broken lines in Fig. 1. This reflector *a* is placed at such an angle with the pipe C and beam of light coming from the light *d* and reflector *c* as to throw the beam of light through the side pipe D onto the reflector *e*. The pipe C is also provided with the light *d*, Fig. 2, which may be any ordinary light, but, preferably, a calcium-light, in which case the cylinders holding the gases are arranged on the top of the car and are connected by pipes with a burner, which throws its jet of flame onto lime arranged in the position of the light *d*. The opening or chimney *x* allows the products of combustion to escape.

In Fig. 1, *e* is a reflector of any required form, which is placed on the inside of the car and arranged in line with the side pipe D.

The construction and arrangement of the elements may be varied without a departure from my invention. For example, the pipe C may be extended as far as the body of the car extends, and another side pipe, like D, be united to it. If this form of construction is adopted the reflector *a* is altered and made to extend only one-half the way across the pipe C, and another reflector is inserted near the end of the pipe. Another reflector is also arranged within the car, corresponding to the reflector *e*.

The elements of my apparatus being thus constructed and arranged, the light from the light *d* and reflector *c* is reflected by the reflector *a* onto the reflector *e*, which diffuses it throughout the interior of the car, the intensity of the light within the car varying with the intensity of the light *d*.

Having described my lighting apparatus, what I claim as new, and desire to secure by Letters Patent, is—

The pipe C, arranged on the outside of a car, and provided with the side pipe D, reflectors *a* and *e*, and light *d*, in combination with the reflector *e*, arranged within the car and in line with the side pipe D, as shown and set forth.

CHARLES S. WELLS.

Witnesses:
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