

E. BOESCH.

Improvement in Reflecting-Lanterns.

No. 132,433.

Patented Oct. 22, 1872.

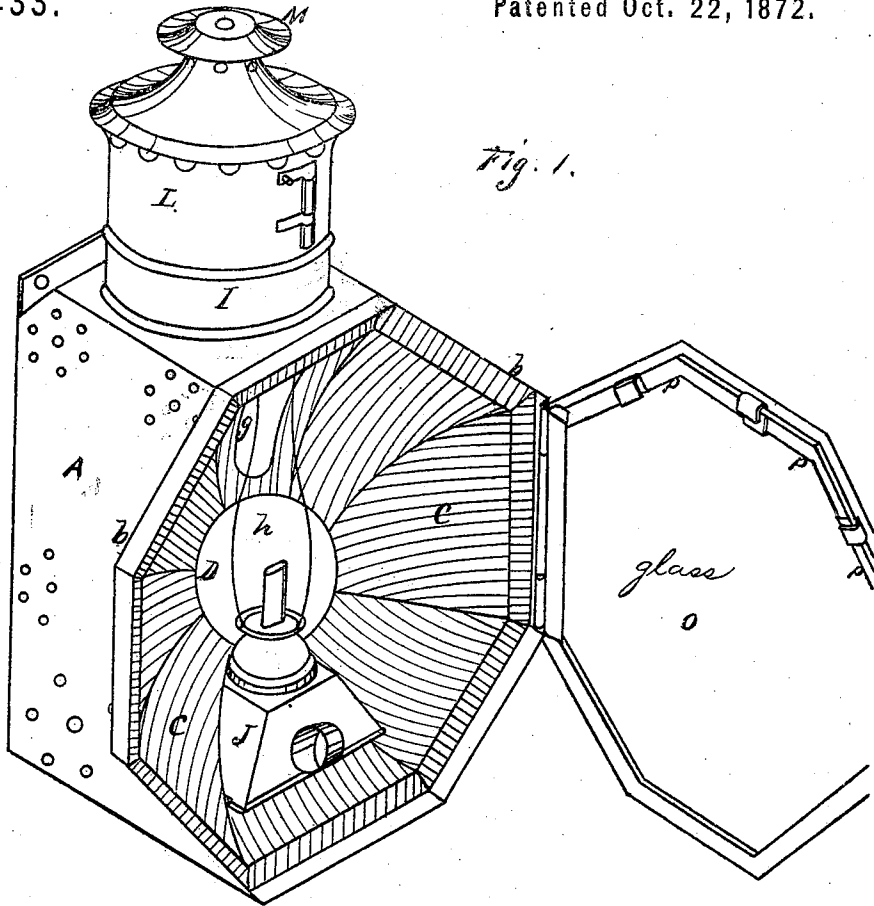


Fig. 1.

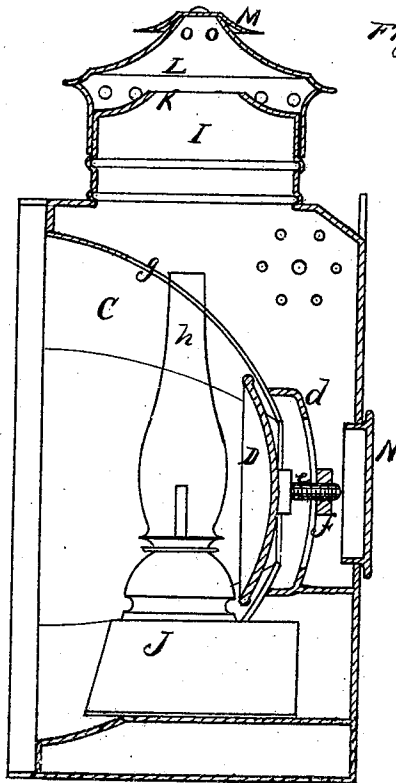


Fig. 2

Witnesses

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# UNITED STATES PATENT OFFICE.

EMIL BOESCH, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN REFLECTING-LANTERNS.

Specification forming part of Letters Patent No. **132,433**, dated October 22, 1872.

### *To all whom it may concern:*

Be it known that I, EMIL BOESCH, of the city and county of San Francisco, State of California, have invented an Improvement in Reflecting-Lanterns; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to that class of lanterns which are used for throwing an intense light in one direction, such as mining-lamps, locomotive head-lights, and the like. My lantern is intended more particularly for lighting up a bank of earth in hydraulic mining during the night, in place of the usual bonfire or cord-wood light. My improved reflection-lantern is so constructed that while a most brilliant and far-reaching light is produced, every part is provided with a free circulation of cool air, and sufficient means are provided for the escape of the heated air so that no part will become unduly heated.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a perspective view of my lantern. Fig. 2 is a vertical section.

A represents the body or outer case of the lantern, which is represented in the present instance as having the main body made square, with the flaring projections *b* on each side so as to form a front or face opening of the desired area. Inside of this flaring face I place a reflector, C, which consists of parabolic sections united together at their edges so as to provide a reflector of the desired concavity. At the inside center of this reflector I secure a small central focus-reflector, D, which can be adjusted up or down as desired, in order to change the focus of the light without changing the level of the lantern. In order to render this small reflector adjustable a circular plate, *d*, is secured just back of the main reflector C, and this plate is slotted vertically at its center, as shown, and a stem, *e*, on the back of the reflector D, passes through this slot and is secured by a nut, *f*, on the inside of the lantern A, and at the back of the cir-

cular plate. Directly beneath the reflector D a portion of one of the sections of the reflector C is cut away so as to provide a space of sufficient size to admit the lamp into it, thus permitting the light to be brought close up to the reflector D, by which a greatly intensified light is produced. This opening also supplies air to the lamp. A slot, *g*, is also made through one of the sections of the reflector C, directly above the reflector D, through which the chimney *h* of the lamp can pass, and thus be in line with the chimney-top I of the lantern. This slot extends from just above the center reflector C, thus providing an escape for the hot air, which generally lodges above the lamp and is the cause of breaking of the glass front, but also allowing the lamp J to be drawn out in a horizontal plane when it is desired to remove it from the lantern. The entire space behind the reflector and inside of the square portion A of the lantern is open and forms two air-chambers, a partition above the hole which receives the lamp dividing it horizontally into two compartments. The lower air-chamber, which also serves as a stand for the lamp, has a raised base-plate which connects with the lower edge of the opening in the reflector, and which serves as a slide to receive the lamp. A space is left around the lamp so that the air can pass in around it and feed the flame. The lamp can be moved back and forth along the slide so as to give the light a different range, as desired, by approaching it to the focus-reflector or drawing it away. Without the partition the air which enters the lower chamber would rise and pass out through the chimney, leaving the flame of a red color, owing to the want of air. The upper air-chamber is also perforated, so that the hot air which passes through the upper slot in the reflector in this chamber will be diluted and cooled, while it does not interfere with the ordinary draft of the lantern-chimney, which is used merely for the purpose of draft and carrying away the smoke from the lamp. The frame in which the glass front is secured does not fit snugly inside of the outer edge of the flaring face; but a small space is left entirely around it, through which the cool air can pass, while the space is protected from the wind and rain by the overhanging edges. The circular plate *d* is set sufficiently back from

the back of the reflector to permit the cool air to circulate freely between it and the reflector, so that the reflector is kept from being overheated. The chimney I is contracted at its top by an inclining or conical flange, K, and a cap, L, is secured over it by a double-bayonet lock. This cap also has an inclined or conical top, at the apex of which an inverted dish, m, is secured. Holes are made in the conical top under the inverted dish, and also beneath the projecting rim on the sides, through which the draft escapes to the open air. By this means the holes are protected from rain and wind, and a deposit of soot prevented, which usually covers the under side of the top of the cap, and falls down through the lamp-chimney upon the flame when no openings are left at the center of the top through which it can escape to the outside. This cap is not only made removable for cleaning it inside, but also for regulating the draft when required—as, for instance, when there is no wind the cap is raised until the pin enters the lower angular slot of the bayonet-joint, thus giving a stronger draft; but when the wind is high it should be crowded down until the pin enters the upper slot. By this means the wind has no chance to get down into the lamp. An opening, n, is left in the back of the lamp-body A, which is covered by a cap, as shown, so that by removing the cap the focal-reflector can be adjusted and changed without soldering. The glass O which forms the door of the lamp is secured in the door-frame in the following manner: The lower half of the frame is provided with a groove on the inside, which is formed by turning up the metal rim of the frames. The glass face is then slid down into the groove and the upper half fastened by short metal

strips. These strips have one end turned over the outside plate p, thence they are bent around under the frame, and up inside of it over the edge of the glass, and then down, so as to provide hooks to keep the glass in place, thus permitting of their being changed when broken without soldering or expense. By bending these strips upward the glass will be freed and can be removed.

By this means I provide a reflecting-lantern which can be employed in hydraulic mining, as head-light for locomotives, and in many other places.

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

1. The reflector C, consisting of the parabolic sections, in combination with the adjustable focal-reflector D, substantially as and for the purpose above described.
2. The combination of the reflector C, having the openings for the insertion of the lamp, as shown, with the adjustable focal-reflector D and sliding adjustable lamp J, as described.
3. The chimney I with its contracted upper end, in combination with the adjustable cap, perforated as described, for the purpose specified.
4. The manner above described for securing the glass in a frame, consisting of the removable metal binding or hook strips, applied as described, for the purpose specified.

In witness whereof I hereunto set my hand and seal.

EMIL BOESCH. [L. S.]

Witnesses:

J. L. BOONE,  
C. M. RICHARDSON.