C. S. Lee.
Wm. M. Baldwin } Fig. 1

# Reflector.

117089

PATENTED JUL 18 1871

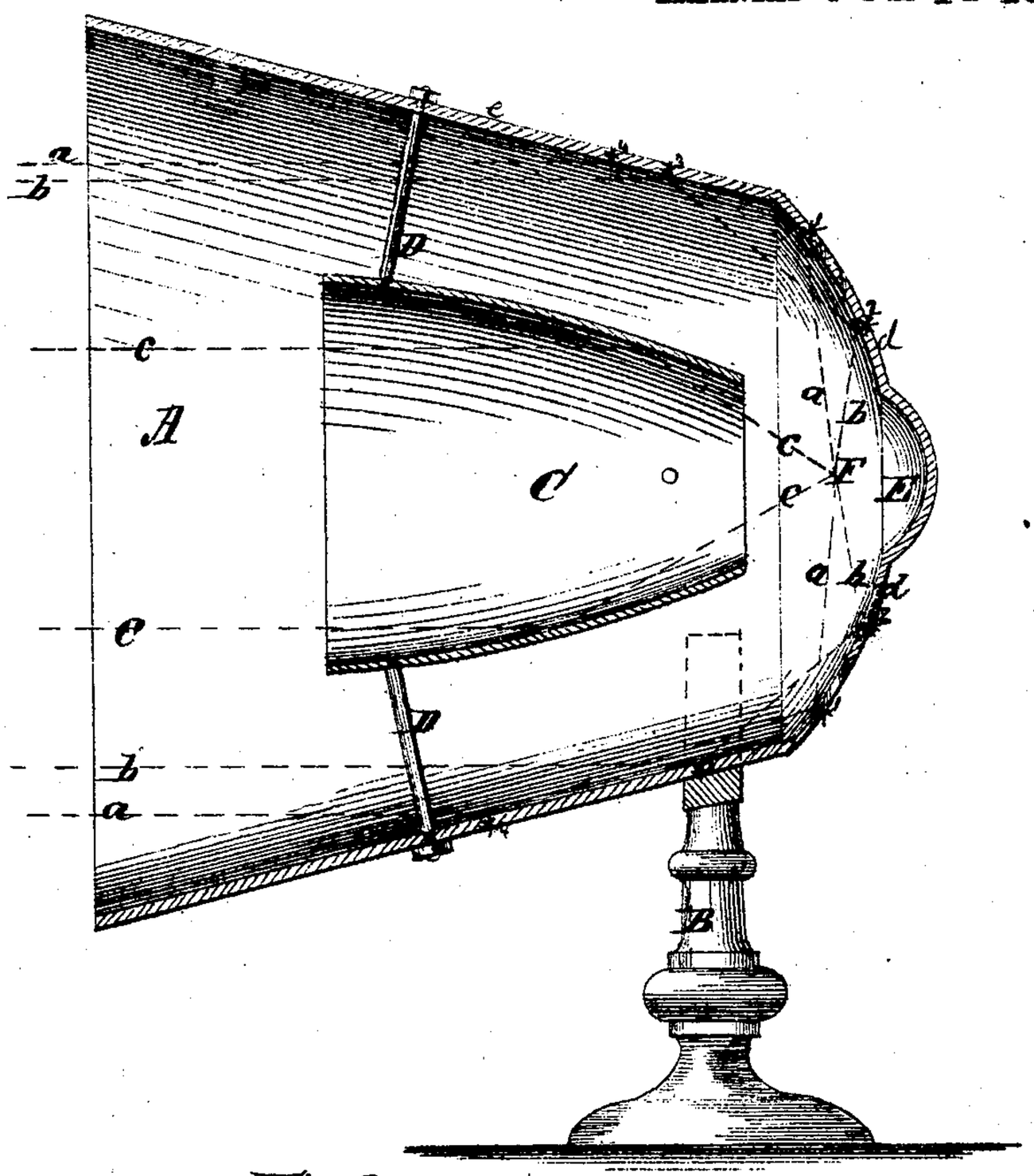
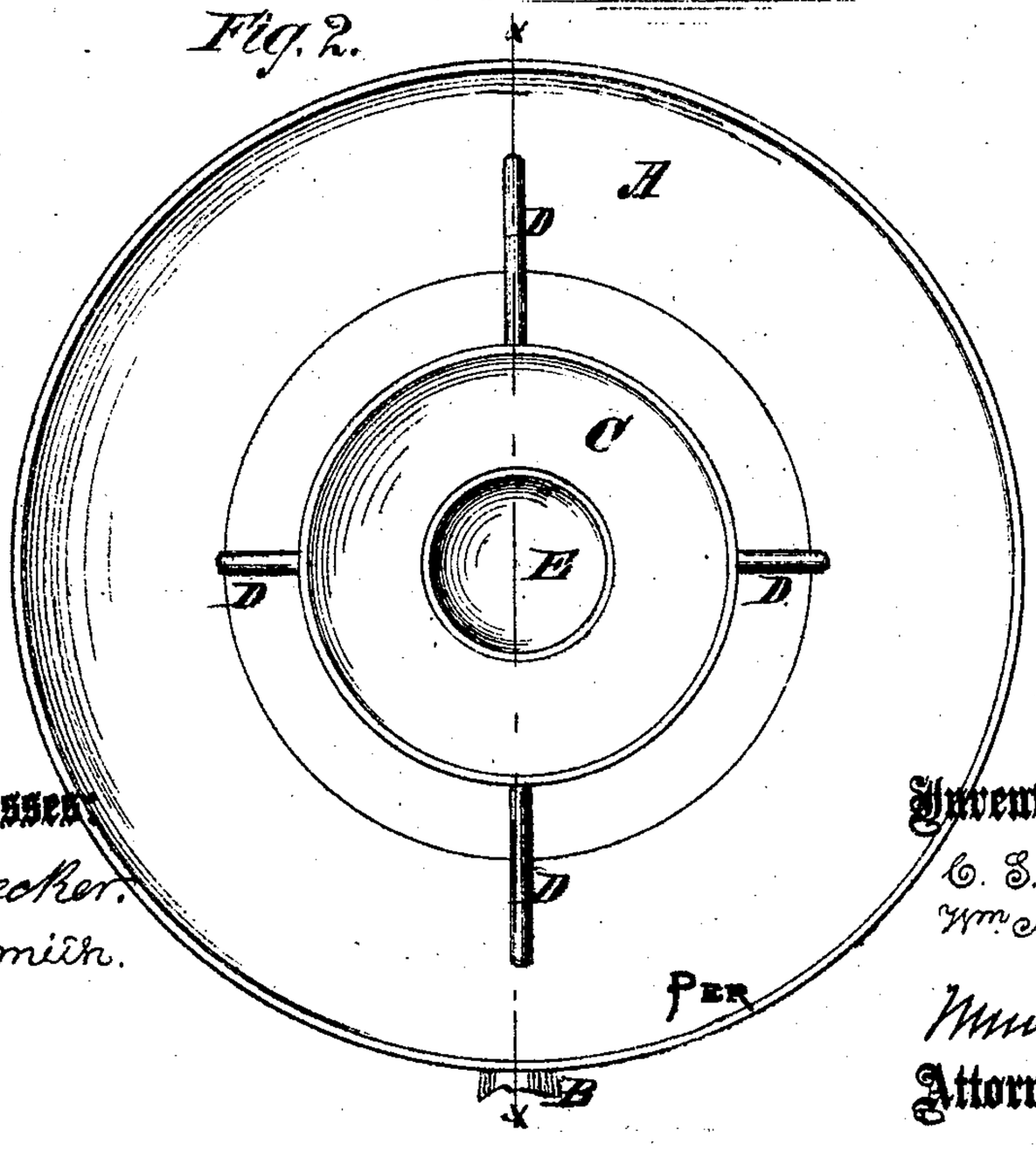



Fig. 2.

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117,089

# UNITED STATES PATENT OFFICE.

CHARLES S. LEE AND WILLIAM M. BALDWIN, OF TROY, NEW YORK.

## IMPROVEMENT IN REFLECTORS FOR LOCOMOTIVE HEAD-LIGHTS.

Specification forming part of Letters Patent No. 117,089, dated July 18, 1871.

*To all whom it may concern:*

Be it known that we, CHARLES S. LEE and WILLIAM M. BALDWIN, of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in Reflectors for Locomotive Head-Lights and other purposes of illumination; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a side sectional elevation of our improvement through the line *x x* in Fig. 2. Fig. 2 is a front or plan view of the same.

Similar letters of reference indicate corresponding parts.

Our invention relates generally to locomotive head-lights, but particularly to the reflecting-surfaces by which the light is intensified. The object in all such cases is to emit as many rays as possible in a direction parallel to the axis of said reflector and at a short distance therefrom. We have approximated much more nearly than usual to a perfect attainment of this object by an improved combination of reflectors, as hereinafter fully described and subsequently specified in the claim.

In the drawing, A represents one of our improved locomotive head-light reflectors, supported on a stand, B, as shown. The walls or reflecting-surfaces *d e* are made and arranged in reference to each other, as shown in Fig. 1, so that the rays from the lamp, which is to be of the ordinary kind, its flame placed at F, will strike against the reflecting-surface *d* and be reflected to the surface *e*, thence outward horizontally to the light, being thus reflected twice. Referring to Fig. 1, it will be observed that the rays of light *a b* strike, respectively, at *1 *2 on the reflecting-surface *d*, are reflected thence to *3 *4 on the reflecting-surface *e*, thence outward on the line *a′ b′*, the rays being thus twice reflected. Within the reflector A is a secondary and smaller reflector, C, open at its back, as shown, and secured to the reflector A by rods D. The rays *c* fall upon the interior surface of the reflector C at *5 and pass out on the lines *c′*, as shown.

By the use of these improvements we produce a locomotive head-light having greatly-increased intensity and brilliancy. Our improvements may be adapted to various purposes of illumination.

We do not limit or confine ourselves to the form of any of the parts herein shown and described, as they may be varied without departing from our invention.

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

In combination with an outer reflector, A, that receives and reflects once or twice, according to their obliquity, all the rays on one side of the lamp, the inner reflector C, which allows the horizontal rays on the other side to pass therethrough, but also reflects the oblique ones horizontally into the same pencil of rays, as and for the purpose specified.

CHARLES S. LEE.
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