D26-123 AU 291 EX
MTR2D XR 389,878

(No Model.)

C. A. DUHRING.

LANTERN LENS.

No. 389,878. Patented Sept. 25, 1888.

FIG. 1.

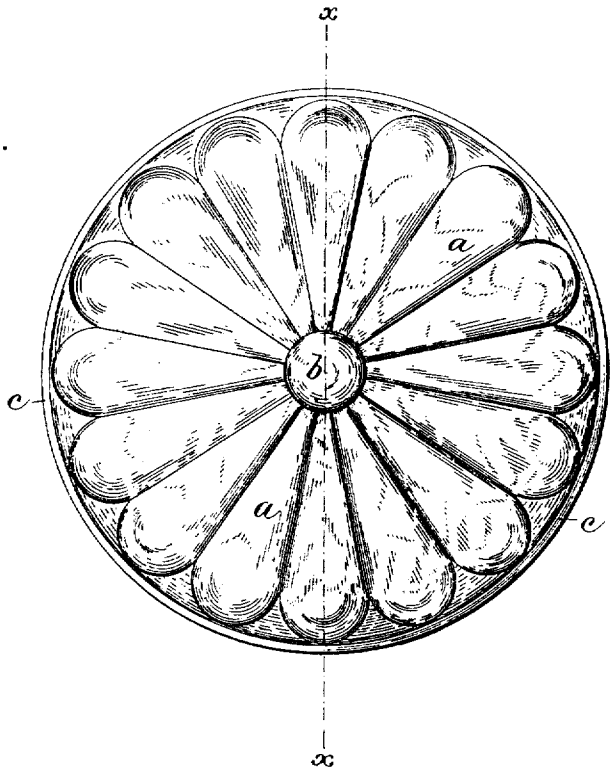
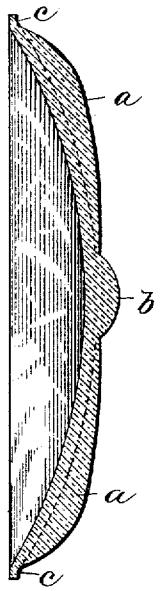


FIG. 2.



Witnesses:
C. G. Conner Jr.
Severance

Inventor:
Charles A. Duhring.
by W. Baxwell & Son
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UNITED STATES PATENT OFFICE.

CHARLES A. DUHRING, OF PHILADELPHIA, PENNSYLVANIA.

LANTERN-LENS.

SPECIFICATION forming part of Letters Patent No. 389,878, dated September 25, 1888.

Application filed December 8, 1887. Serial No. 257,274. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. DUHRING, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Lantern-Lenses; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention has relation to an improvement in the construction of lantern-lenses of the kind generally used for railway and marine purposes; and it consists in a glass lens so shaped by pressing in a mold that its outer convex surface shall be provided with a number of outwardly-convex ribs extending radially from a common center to the rim of the lens and increasing in size from the center outward.

This invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of one of these lenses, and Fig. 2 is a vertical diametrical section on the line *x x* of Fig. 1.

Like symbols of reference indicate like parts in each.

In the drawings, *a a* are the convex radial ribs above mentioned, and *b* is a boss in the center of the lens from which they radiate. At the periphery of the lens it is flattened, so as to afford a rim, *c*, for the attachment of the lens to the lantern. The back of the lens is either concave, as shown in Fig. 2, or it may be flat, as preferred.

The general contour of the article is that of a lens which is made of varying thickness at different points, so as to be adapted to refract and concentrate the rays of light, and the convex ribs, while breaking the uniformity of the surface of the lens and serving to diffuse the light which passes therethrough, do not spoil the function of the lens as such, but only serve to prevent too great concentration of the light.

The advantages of my invention are, first, that a lens constructed as I have specified is very serviceable for the purpose for which it is intended, the convex ribs serving to throw the rays of light from the lantern a great distance, and, secondly, the lens is very easy to manufacture, and since there are no sharp edges on the ribs to be easily nicked or broken the risk of breakage both in the manufacture and in handling and transporting them is very small.

There is a serious practical difficulty in the manufacture of pressed-glass lenses having an unbroken surface, which arises from the fact that the metal surfaces of the plunger or mold produce streaks or marks on the glass, and thus impair its transparency and detract from the commercial value of the article. For this reason such lenses are not fit for use where a fine quality of the article is desired. The Fresnel lenses commonly employed in signal-lamps, while not subject to this objection, are difficult to make, because the sharp edges of the circular ribs are apt to be broken either in the process of their manufacture or in their handling. For these reasons a cheap and serviceable lens made of pressed glass has not heretofore been produced. These objections are, however, obviated when the lenses are made with convex rounded ribs. These ribs, by breaking the regularity of the surface, prevent the formation of streaks during the pressing process, and are not subject to be broken or chipped, as are the angular ribs of the Fresnel lenses. They are also very serviceable for the uses for which they are intended, since the ribs do not impair the general lens-like contour of the article, and serve only to diffuse the light somewhat after the manner of a Fresnel lens.

The lenses may be colored in any suitable way, and may be applied to use in railroad signal-lights, in block-stations, or moving trains, to marine use, and generally to all uses to which such lenses are applicable.

I claim—

1. A pressed glass lens having a body whose general outline is of lens form, and whose surface is provided with a series of ribs of convex curved contour in cross-section, substantially as and for the purposes described.

2. A pressed-glass lens having a body whose general outline is of lens form, and whose surface is provided with a series of radial ribs of convex curved contour in cross-section, which increase in size from the center outwardly, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 6th day of December, A. D. 1887.

CHARLES A. DUHRING.

Witnesses:
COLUMBUS W. GABELL, Jr.,
WM. J. PHILLIPS, Jr.