

**B. GOETZ.**  
**Reflector.**

No. 160,584.

Patented March 9, 1875.

FIG 1

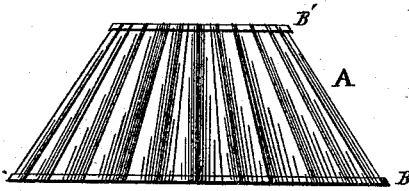


FIG 2

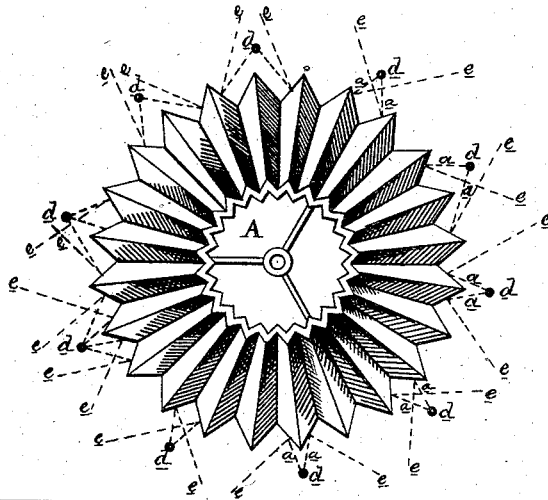


FIG 3

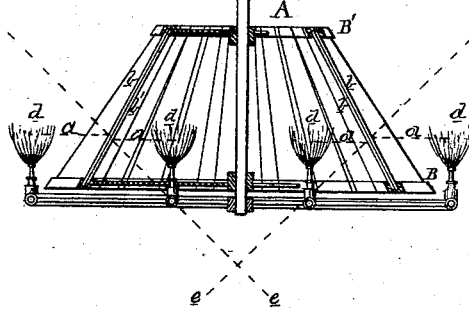
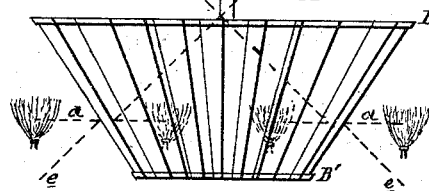


FIG 4



WITNESSES.

*Isaac R. Oakford.*  
*Alexander H. Morgan*

INVENTOR.

*Bernard Goetz*

# UNITED STATES PATENT OFFICE.

BERNARD GOETZ, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO FREDERICK KLEMM, OF SAME PLACE.

## IMPROVEMENT IN REFLECTORS.

Specification forming part of Letters Patent No. 160,584, dated March 9, 1875; application filed February 11, 1875.

*To all whom it may concern:*

Be it known that I, BERNARD GOETZ, of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Reflectors, of which the following is a specification:

This invention relates to that class of reflectors which are usually suspended from the ceiling or overhead surface, and are generally composed of a number of inclined sides, from the interior of which the rays of light produced by gas-flames are reflected. These reflected rays are all turned or thrown downward to illuminate the surface beneath.

The object of my present invention is to turn and diffuse the rays of light upward as well as downward; and for this purpose I construct the reflector with an exterior and interior reflecting-surface, and so arrange the gas-flames or radiants around it that the incident rays fall or impinge on the outside reflecting-surface, and the reflected rays pass upward and strike on the ceiling or overhead surface; at the same time the reflected rays from the interior reflecting-surface pass downward.

It will be seen from this peculiar construction of the reflector that it is particularly adapted for use in public halls, churches, theaters, and other places where it is desired to have the ceiling brilliantly illuminated, as it frequently occurs that the beauty of an ornamental or frescoed ceiling is impaired by the want of a proper light.

Figure 1 is a side view of my improvement in reflectors. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section of the same, showing it suspended from a ceiling and the gas-burners applied. Fig. 4 is a side view of the reflector, showing it suspended from the ceiling in an inverted position.

The contour of the reflector A is that of a forty-eight-sided polygon with inclined re-entering angular sides or faces composed of silvered glass, plain or fluted, which are secured at their upper and lower ends in suitable metallic frames B and B'. These pieces or sections of glass, forming the sides of the angles and of the reflector proper, are placed in position in two parts, as shown in Fig. 3. The pieces *b b b b*, &c., compose the exterior reflecting-surface, and the pieces *b' b' b' b'*, &c., the interior reflecting-surface.

The reflector thus constructed may be suspended from the ceiling in any suitable man-

ner, as shown in Fig. 3, and surrounded by a ring of gas-burners or radiants, the incident rays *a a a*, &c., from the flames of which fall on the exterior inclined reflecting-surface, and are reflected upward and impinge on the ceiling D, as shown at *e e e*, &c. In the center of the reflector a ring of gas-burners is also placed, the rays of light from which are reflected downward in the usual manner.

The exterior and interior reflecting-surfaces may be made of plain, fluted, or corrugated glass, or plain, fluted, or corrugated metal covered with glass, and of any number of angles, sides, or faces of any of the well-known polygonal forms.

In some cases the interior reflecting-surface may be dispensed with, and the exterior surface *b b* used entirely to reflect the light upward. It may also in some cases become necessary to alter the inclination or taper of the sides to reflect the light at a greater or less angle, or to illuminate certain portions of the ceiling.

Although the reflector, with its exterior reflecting surface or surfaces, is more especially adapted for illuminating frescoed or ornamental ceilings, it is also applicable for use in various positions, such as illuminating the interior of a dome, or for reflecting light upward to illuminate other overhead surfaces or ornamentations. It may also be suspended or supported in an inverted position, as shown in Fig. 4. In this position the rays of light are reflected downward by the exterior surface, and upward by the interior surface.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, in the reflector A, of the exterior and interior reflecting-surfaces *b* and *b'*, arranged to throw the rays of light both upward and downward, substantially as herein shown and described.

2. In combination with an inclined many-sided reflector and its surrounding gas flames or radiants, the exterior reflecting-surface *b'*, whereby the rays of light are thrown upward to illuminate a ceiling or other overhead surface, substantially as herein shown and described.

BERNARD GOETZ.

Witnesses:

ISAAC R. OAKFORD,  
ALEXANDER H. MORGAN.