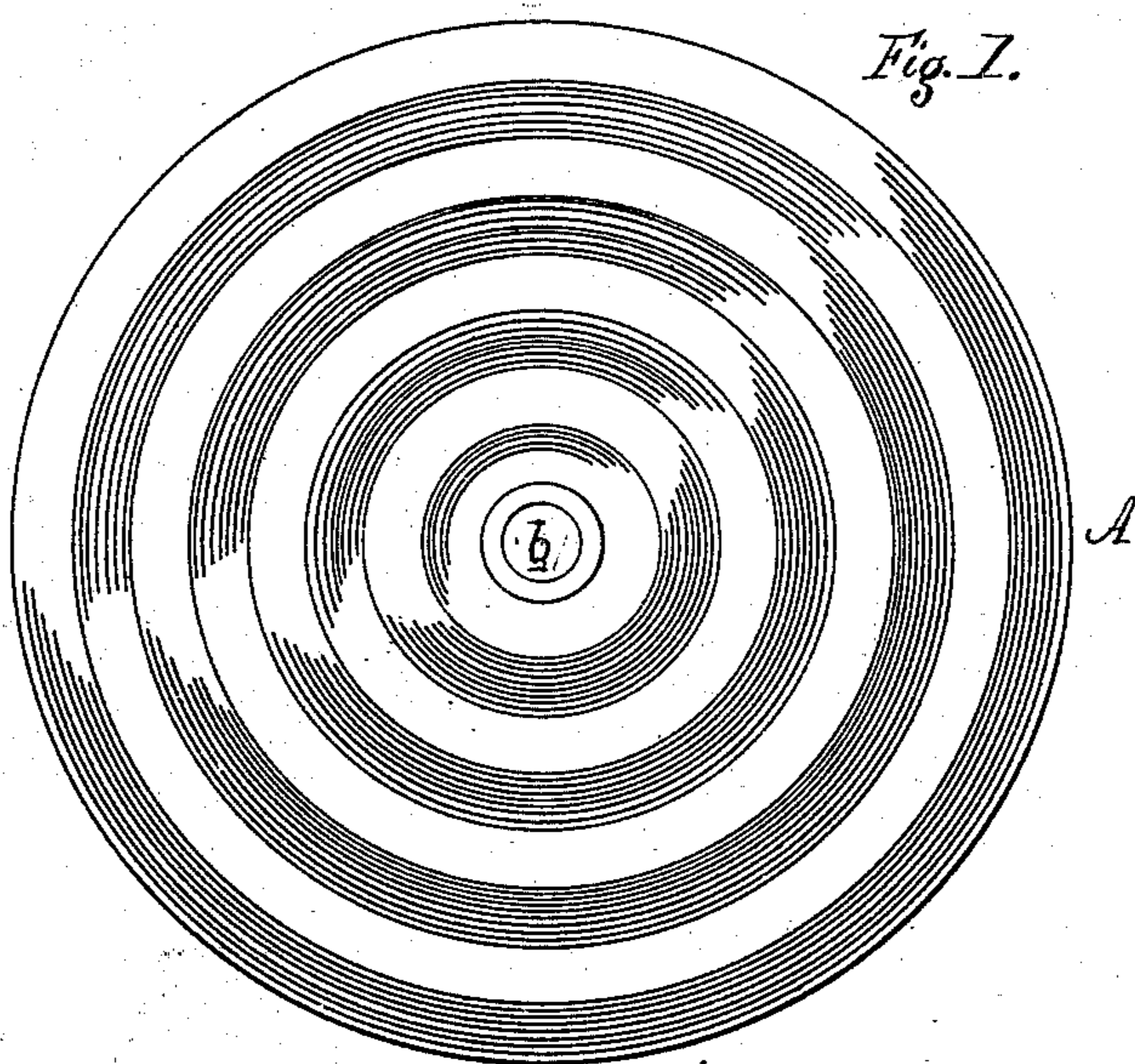
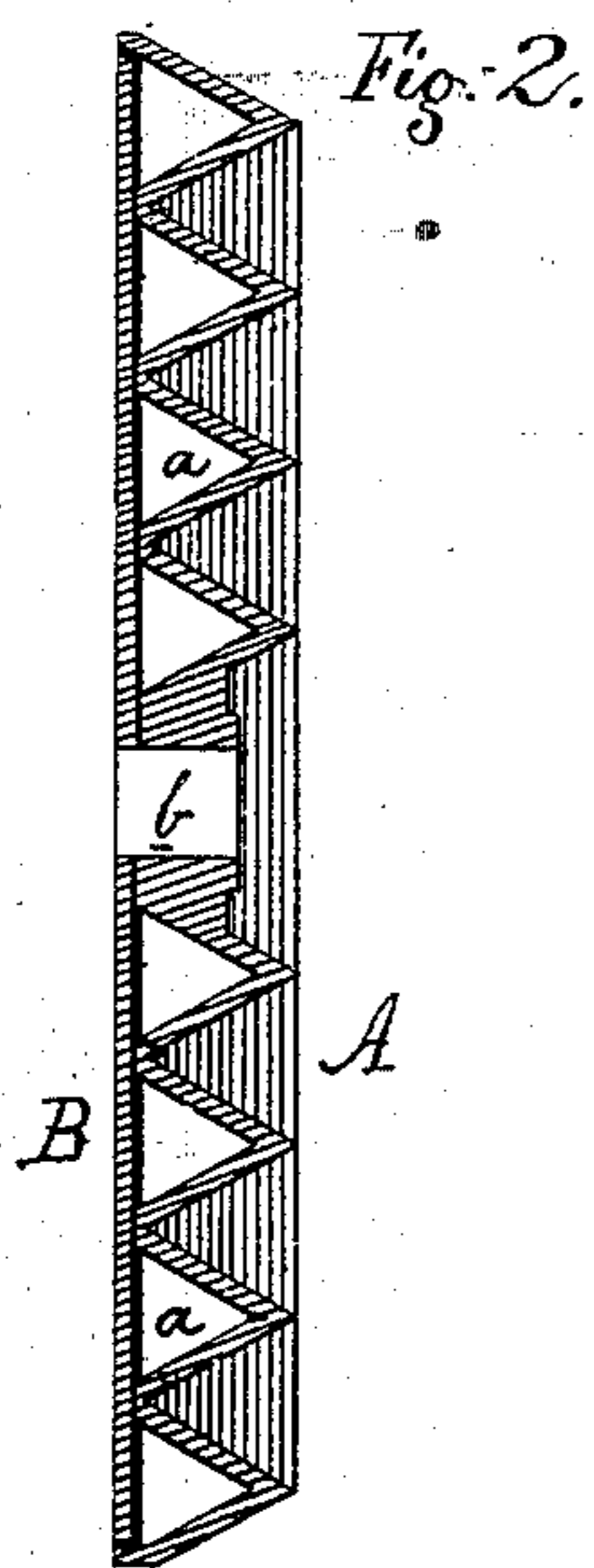


(No Model.)

J. S. GOLDSMITH.
Combined Shade and Refractor.
No. 235,866. Patented Dec. 28, 1880.



WITNESSES:-
Charles & Coe
Amis W. F. M.

INVENTOR:-
J. Sidney Goldsmith

UNITED STATES PATENT OFFICE.

J. SIDNEY GOLDSMITH, OF NEW YORK, N. Y.

COMBINED SHADE AND REFRACTOR.

SPECIFICATION forming part of Letters Patent No. 235,866, dated December 28, 1880.

Application filed September 25, 1880. (No model.)

To all whom it may concern:

Be it known that I, J. SIDNEY GOLDSMITH, a citizen of the United States, and residing in the city, county, and State of New York, have
5 invented a new and Improved Combined Shade and Refractor, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and letters of reference marked thereon, in which—

10 Figure 1 is a top view of my improved circular shade and refractor, and Fig. 2 is a vertical central section of the same.

My invention relates to improvements in combined shades and refractors; and it consists of a combined shade and refractor made
15 of glass, in a circular form, and provided with a series of concentric circular grooves having the center of the shade and refractor for a common center, which circular grooves are V-shaped or triangular in cross-section, and hollow, and filled with a liquid, whereby a series
20 of angular lenses are formed adjacent to each other and adapted to refract and modify the rays of light from a burner passing through an orifice in the center of the shade and refractor, as hereinafter more fully set forth.

In the accompanying drawings, A represents the main plate of my improved shade and refractor, made circular in form and of glass.
30 The main plate A is formed by pressing it into a series of concentric circular grooves having the center of the refractor as a common cen-

ter, with V-shaped grooves *a* in cross-section, and a central orifice, *b*. A flat glass plate, B, provided with a central orifice of the same diameter as the orifice *b*, is then cemented into
35 the plate A after the V-shaped grooves have been filled with a suitable liquid.

In use, the light or gas-burner is inserted through the orifice *b* in the shade and refractor, and the light is above the shade and refractor.
40

By this construction a series of adjacent triangular lenses formed by the liquid are brought to refract the rays from the burner and again refract the rays from one lens after
45 having passed through another; thus increasing the illuminating effect of the burner or light to a great degree.

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

The combined shade and refractor herein described, consisting of the circular plate A, having a central orifice, *b*, and a series of circular concentric V-shaped grooves, *a*, filled
50 with liquid, and flat plate B, having a central orifice, substantially as described, and for the purpose set forth.

In testimony whereof I hereunto set my hand this 23d day of September, 1880.

J. SIDNEY GOLDSMITH.

In presence of—

CHARLES G. COE,
LOUIS W. FROST.