J. K. Ingalls.

Vault Cover.

No. 14,456. Patented Mar. 18, 1856.

Fig. 1

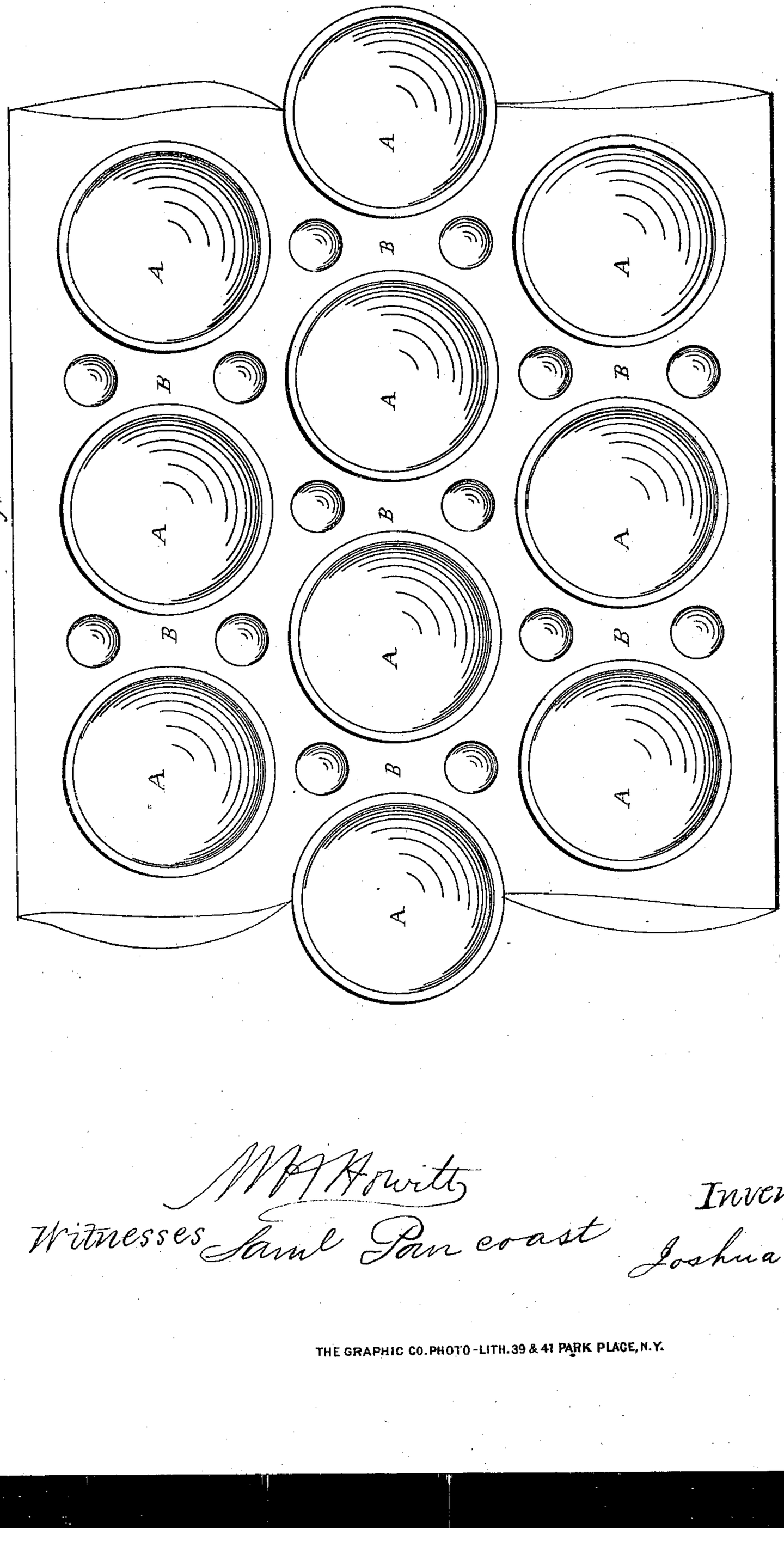
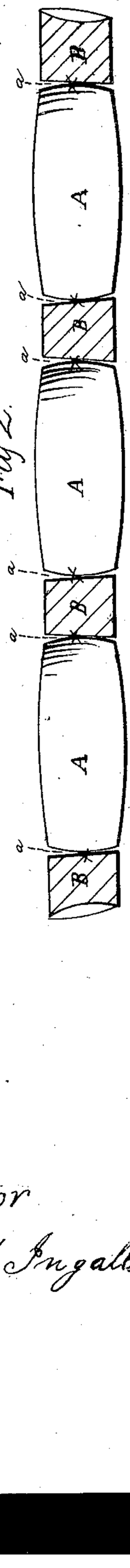


Fig 2.



Witnesses M. M. Howitt, Saml Pancoast

Inventor Joshua K. Ingalls

UNITED STATES PATENT OFFICE.

JOSHUA K. INGALLS, OF WILLIAMSBURG, NEW YORK.

ILLUMINATING-GRATING.

Specification of Letters Patent No. 14,456, dated March 18, 1856.

To all whom it may concern:

Be it known that I, JOSHUA K. INGALLS, of the city of Brooklyn, county of Kings, and State of New York, have made a new and useful Improvement in Illuminating-Gratings; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a horizontal view. Fig. 2 is a section, showing lens and method of setting.

A, is the lens, B, the grating or perforated plate, and *a* is the space filled with putty or cement, and *x* shows the points of bearing or contact.

The methods heretofore adopted especially with iron sash or grating, have involved the loss of twenty-five and even fifty per cent. of the illuminating medium, where the apertures are small, as in vault lights, in consequence of the seat and rabbet. The only exception to this, being the lens, with beveled circumference to fit an aperture with a corresponding bevel or taper. But as this requires mechanical fastening, and as the angles formed by the sides and surfaces, are constantly liable to fracture, the method has been abandoned.

The nature of my invention consists in making a lens or pane with rounded edges, so as to present no angle for contact with the material in which it is set. I then prepare the grating, or sash, with the spaces for light of a suitable size, and of a taper form, so as to admit the lens or pane from the exterior surface, and hold it in place by the lateral pressure. I provide a lining of putty or hydraulic cement, to make the joint water proof and to equalize the bearing of the lens; or I use a lining of prepared pasteboard or paper, or of thin sheet metal, between the lens and sash.

I prefer to make the apertures of a slight and regular taper and of a circular form, and my lenses of a spheroidal form, either oblate or prolate. But I do not confine myself to a right line of taper, nor to the spheroidal form of lens, any further than such form is involved in having the edges so rounded as to secure the point of bearing near the middle of the thickness of the lens. I also make the taper slightly curved in certain kinds of work, and the apertures of a square or angular form, instead of the circular, with lenses or panes to correspond.

I place a number of lenses in a grating as described and apply it as a vault cover, or I combine a number of separate gratings and cover basement extensions, floors, roofs and sides of buildings.

By making the apertures in the planks of vessels' decks or sides, I am enabled to force these lenses into place in such manner as to make the joint perfectly tight, and to resist all ordinary action of bodies passing over them, or efforts to remove them from place. It is evidence that in wood, the aperture may be made without the taper, if made a little smaller than the lens.

The advantage of my invention, consists in its enabling me to dispense with the seat and rabbet, and to secure the lens against fracture from any unequal pressure, or from the contact of the angles, formed by a lens having beveled edges with the sides of the aperture in which they are set. It also enables me to make, cheaply, a secure and water tight joint, since all pressure forces the lens more firmly in place, and the rounded or spheroidal form of the lens causes the grating to bind and hold it fast in place. There is also no opportunity for the insertion of a tool by any person mischievously inclined, as there would be with a tapering lens, or with lens with seat and rabbet, held in by metallic packing, or by cement of any kind.

Having therefore described my invention, in such manner as to enable others skilled in similar work to make my illuminating grating, what I claim and desire to secure by Letters Patent is:

1. The spheroidal lens, or pane with rounded edges, set in grating or perforated plates of wood or metal as set forth.

2. The grating of wood or metal with tapering apertures, and glazed with lens or panes, of the form, and in the method, and for the purposes set forth.

JOSHUA K. INGALLS.

Witnesses:
M. H. HOWELL,
SAML. PANCOAST.