A. QUERNER & T. BURKE.

Sky-Light.

No. 166,890. Patented Aug. 17, 1875.

Fig. 3.

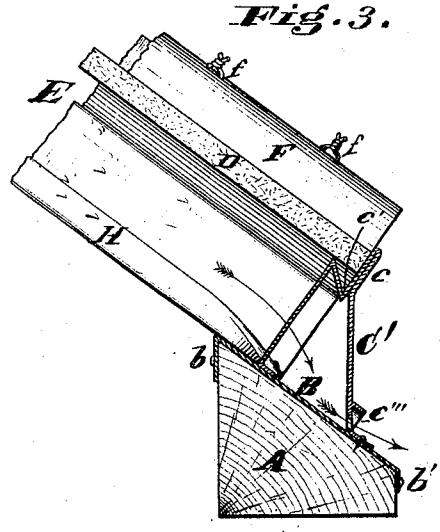


Fig. 1.

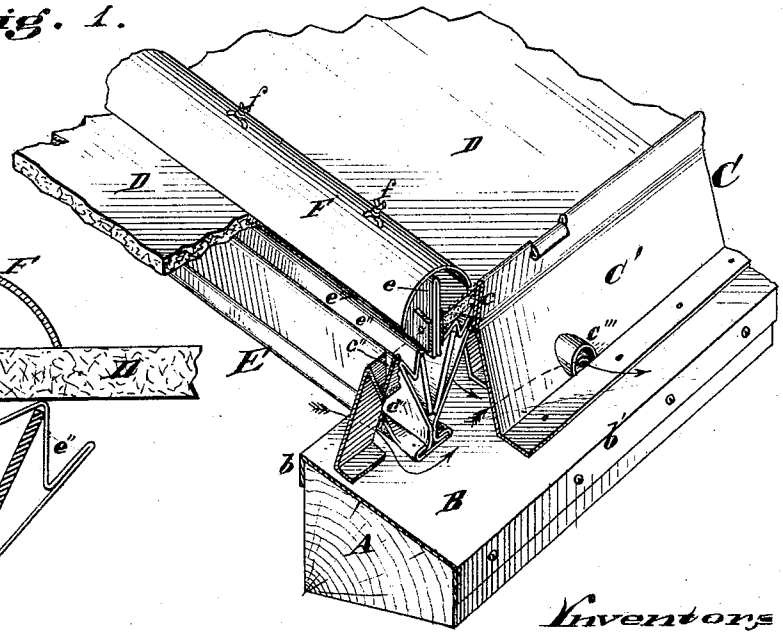
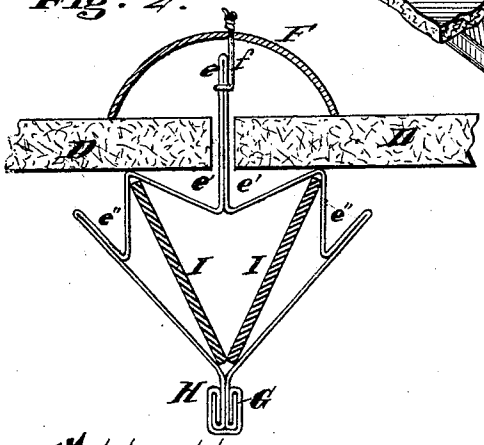


Fig. 2.



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UNITED STATES PATENT OFFICE.

AUGUSTUS QUERNER AND THOMAS BURKE, OF CINCINNATI, OHIO.

IMPROVEMENT IN SKYLIGHTS.

Specification forming part of Letters Patent No. **166,890**, dated August 17, 1875; application filed April 17, 1874.

To all whom it may concern:

Be it known that we, AUGUSTUS QUERNER and THOMAS BURKE, both of Cincinnati, Hamilton county, and State of Ohio, have invented a certain new and useful Improvement in Ventilating-Skylights, of which the following is a specification:

Our invention relates to that class of skylights in which the rafters for supporting the plates of glass are made of wrought-iron plates, suitably bent up and doubled, to form a hollow beam of the required stiffness, having gutters for conducting off any water that may condense on the under side of the glass or leak through the joints. Our improvement consists in making these rafters each of a single plate of metal, so bent and doubled that the ends will come together at the bottom side or edge of the rafter, and strengthening the rafter thus formed by a seaming-plate, which tacks the ends of the rafter-plate together. Our improvement further consists in the use of an abutment-beam bent up from a single piece of metal in such a manner that its exterior side will stand obliquely to the plane of the skylight, and thus form a stiff brace against any tendency of endwise movement of the panes of glass which abut against its upper end.

Figure 1 is a view of the skylight or glass roof at the eaves. Fig. 2 is a cross-section of one of the rafters and portion of the glass plate. Fig. 3 is a vertical section of a portion of the skylight at the eaves of the roof.

A is the wooden base for the vertical wall of the building, and B is the metallic base fitted above it. C represents a metallic abutment for the support of the lower ends of the rafters and the lower sides of the glass plates. D represents the plates of glass, and E the metallic rafters. F is the cap for covering the joints of the glass, this cap being secured by copper-wire connections *f* to the web *e* of the rafter. Each rafter is made as follows: The metal is doubled at the crown of the web *e*, so as to bring the plates together to form the web *e* of double thickness. It is then spread out on each side of the web immediately under the glass, at an acute angle with the web, so that gutters or chutes *e'* are thereby formed, by which leakage of water past the cap F may be carried to the eaves of the skylight. After the formation of these chutes or gutters *e'*, the metal is bent down to form the sides of the rafter, and again bent up on each side at an acute angle with these sides, to form chutes or gutters *e''*, for the purpose of carrying off the water resulting from the condensation of vapors on the under surface of the glass plates. The metal, after the formation of these chutes *e''*, is doubled back upon the metal which forms the bottom of the chutes *e''*, and is joined at the bottom by a seaming-plate, G, which is folded over the ends of the rafter-plate, so as to make a stiff rib, H. To give this structure great stiffness without necessitating soldered joints, we insert on each side of the rafter, inside, a thick plate of wrought-iron, I, which together make a V-shaped bracing for the metal composing the rafter, and a stiff support for the weight of the glass.

It will be seen that the cap F extends laterally a considerable distance over the edges of the glass, and its edges conduct the water to the eaves, so that but little leaks inside, and what little water may leak past its edges toward the joints of the glass is delivered between the joints of the glass to the chutes *e'*, and by reason of this provision of chutes *e'* for the discharge of leakage the necessity for the making of any joint between the plates of glass by putty or otherwise is entirely avoided, and the glass is therefore left entirely free for expansion and contraction under different temperatures.

The abutment C is formed, as shown, so that a double thickness of metal forms the web *c*, and an acute bend in the metal forms a chute, c^1, which causes what little water may not have run over the glass and web to the openings c^2 to be delivered into the interior of the abutment, and run off at the openings c^3. The openings c^4 deliver the condensed vapors for discharge at the same openings c^3. The abutment-beam is bent up from a single plate of metal, and its exterior side C' extends downward from the web *c* in an oblique outward direction, forming a brace, as it were, which not only gives additional strength or stiffness to the web *c*, but also provides for a

better support of the beam against lateral strain.

The inclined chutes *a* carry off condensed vapors and rain, and deliver the same to the exterior of the skylight. The wall or base plate B is made with two bends, *b b'*, to embrace the wall, and is secured by riveting to the abutment C for mutual support.

We claim—

1. The rafter E, bent up from a single plate of metal into the form shown, in combination with the seaming and stiffening plate or rib G, substantially as specified.

2. The abutment-beam C, bent up from a single piece of metal, in the manner shown, and having an oblique exterior side, C', substantially as and for the purpose specified.

In testimony of which invention we hereunto set our hands.

AUGUSTUS QUERNER.
THOMAS BURKE.

Witnesses:
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