

No. 616,617.

Patented Dec. 27, 1898.

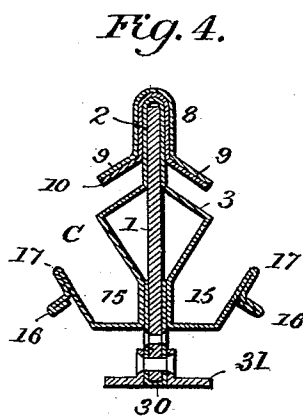
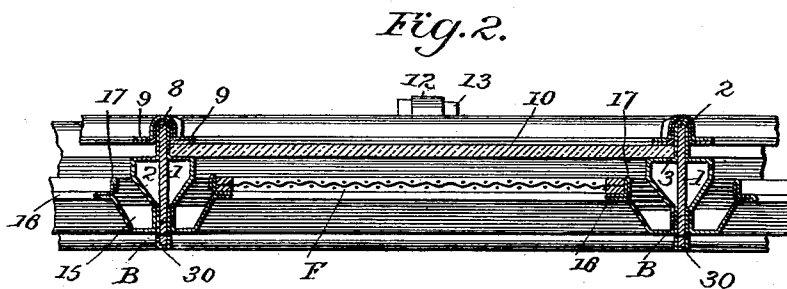
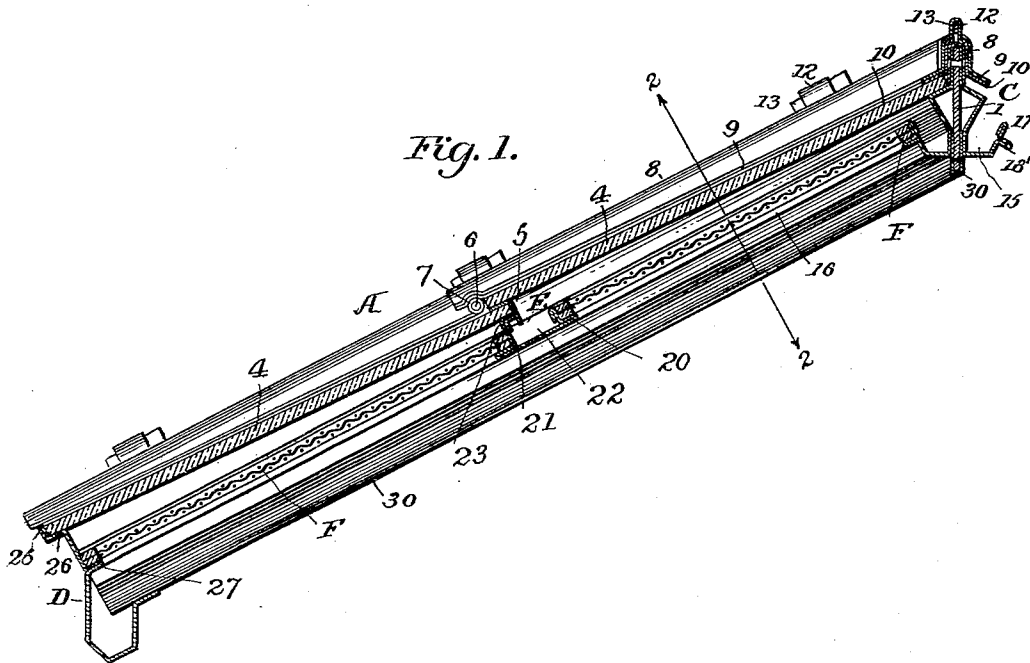
E. J. HULSE.

SKYLIGHT.

(Application filed Mar. 2, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Edgwick
Tanner, Stearns

Inventor

Edgar J. Hulse
by Forster & Freeman
Attorneys

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2 Sheets—Sheet 2.

Fig. 3

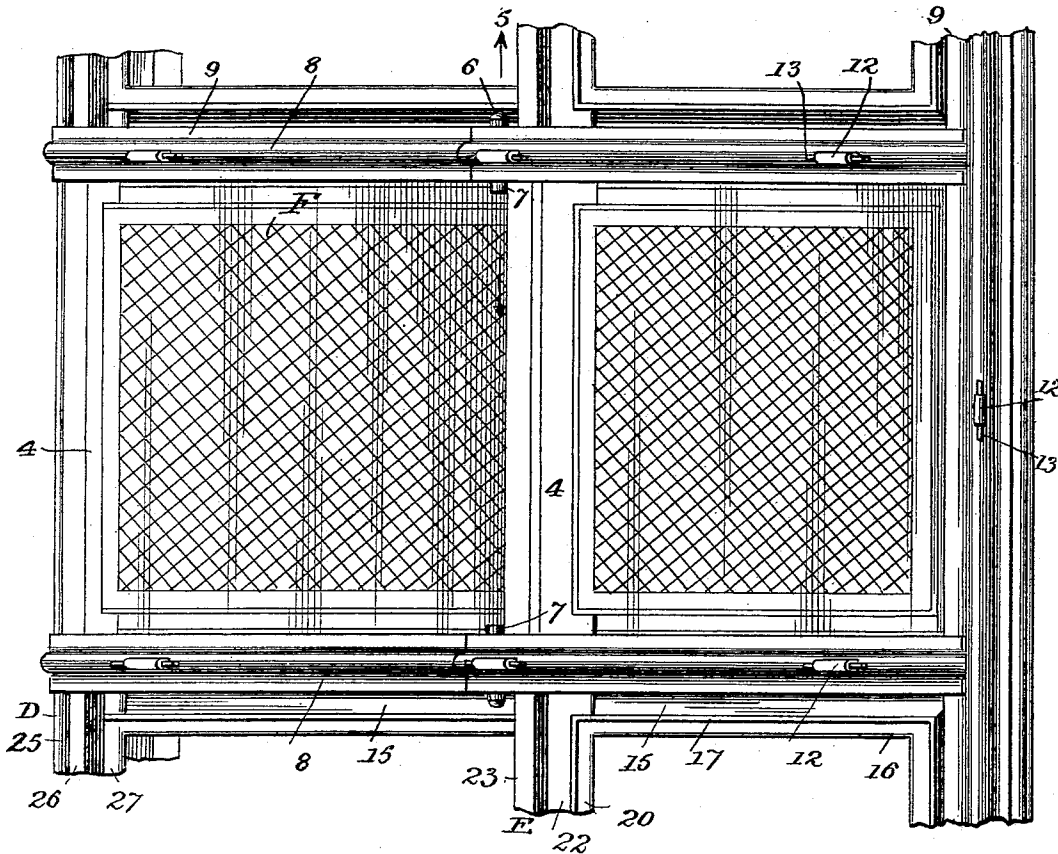


Fig. 5.

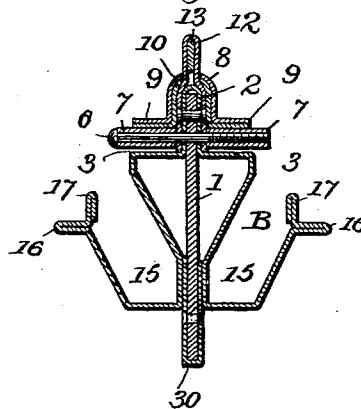
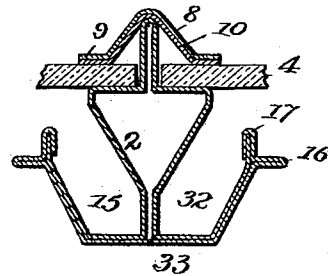


Fig. 6.



Witnesses
J. H. Hinkel
James W. Stearns

Inventor
Edgar J. Hulse
by *Robert Freeman*
Attorney

UNITED STATES PATENT OFFICE.

EDGAR J. HULSE, OF WASHINGTON, DISTRICT OF COLUMBIA.

SKYLIGHT.

SPECIFICATION forming part of Letters Patent No. 616,617, dated December 27, 1898.

Application filed March 2, 1898. Serial No. 672,261. (No model.)

To all whom it may concern:

Be it known that I, EDGAR J. HULSE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Skylights, of which the following is a specification.

This invention relates to certain new and useful improvements in skylights or glass roofs, having for its object to provide effective means for preventing leakage of water from the exterior to the interior of the skylight and to collect the water of condensation which forms upon the inner surface of the glasses and convey it away to some suitable point.

A further object of the invention is to provide means which, while not intercepting the light passing through the skylight, serves to catch and support the pieces of glass should one of the glass panes of the skylight become broken.

With the above objects in view the invention consists in the novel construction, arrangement, and combination of parts hereinafter more particularly described.

In the accompanying drawings, forming a part of this specification, and in which like letters and numerals of reference indicate corresponding parts, Figure 1 is a longitudinal sectional view of a skylight embodying the invention. Fig. 2 is a transverse sectional view thereof on the line 5 5, Fig. 3. Fig. 3 is a plan view thereof. Fig. 4 is a detail sectional view of the top bar. Fig. 5 is a similar view of one of the longitudinal bars. Fig. 6 is a sectional view of a modification.

Referring more particularly to the drawings, A designates the frame of the skylight, which may be supported in any suitable manner and comprises two or more parallel longitudinal bars B, a top bar C, bottom bar D, and one or more transverse bars E, extending at separated points from one longitudinal bar to the other intermediate the top and bottom bars. These bars are preferably formed of sheet metal and are all connected together at their meeting-points in any suitable manner—as, for instance, by riveting, soldering, &c.—and they are each formed with bearings for the skylight-glasses and for suitable screen-frames, and each bar is also formed with a

channel or gutter which communicates with the gutters of the other bars and serves to convey the water of condensation from the inner surfaces of the glasses to some suitable point.

Each of the longitudinal bars B comprises a center or core piece 1, which may be either of wood or metal, preferably the latter, and bent centrally of its width to extend upon and conform to the opposite sides and tops of the core-pieces is a strip 2, of sheet metal, such as galvanized iron, copper, or the like. At short distances below the top of the bar, upon each side thereof, the strip 2 is bent out at right angles to the side of the bar in different planes to form two or more flat bearings 3, which serve to support the side edges of the glasses 4. These bearings 3, while they extend longitudinally of the bars B, are not continuous nor are they parallel to the top edges thereof. On the contrary, they extend in different planes, the lower end of one bearing being above the upper end of the next succeeding bearing, forming a shoulder 5 between the bearings, which in height is equal to the thickness of the skylight-glasses 4. The upper surfaces of the bearings are parallel, and when the glasses 4 are placed in position the under face of one glass at its lower edge will overlap and rest in contact with the upper surface of the next succeeding glass at its upper edge, the extreme upper edge of the overlapped glass being held in contact with the shoulders 5. Interposed between the overlapped surfaces of the glasses is a packing-strip 5^a, preferably formed of soft sheet metal, such as lead, which strip compensates for any inequalities in the surfaces of the glasses and forms a perfectly water-tight joint between them. At the upper edge of the overlapped glass this strip is bent downward and extends below the plane thereof, its purpose being to arrest the water of condensation which collects upon the under face of the upper glass and direct it into a channel or gutter in the transverse bar below the strip. In order to support the glasses and prevent them from slipping by gravity upon their bearings when in inclined positions, screws 6 are passed through the longitudinal bars to project upon opposite sides thereof, and these screws receive collars 7 upon their ends, which collars

constitute bearings for the extreme lower edges of the glasses 4 and support the same against longitudinal movement upon the bearings 3.

5 Suitable means is provided for maintaining the glasses 4 in close contact with the bearings 3, the means shown comprising cap-pieces 8, which extend upon opposite sides of the longitudinal bars and are provided at
10 their longitudinal edges with flanges 9, which conform closely to the upper or outer faces of the glasses 4 at their side edges. These cap-pieces may be used without packing between them and the glasses; but it is preferred to interpose between the said pieces and the glasses
15 strips 10, of sheet lead or other equivalent material, which may not only be pressed by the cap-piece into close conformity with the surfaces of the glasses, thereby serving as a
20 packing to prevent water leaking through the skylight, but said strips also compensate for any expansion or contraction of the cap-pieces or glasses. These packing-strips extend upon opposite sides of the tops of the
25 bars B and, like the cap-pieces, are provided with longitudinal edge flanges which extend between the corresponding flanges of the cap-pieces and the faces of the glasses.

In order to hold the packing-strips and cap-pieces in position and at the same time permit
30 of their ready removal from the bars B when a glass is to be removed, loops 12 are provided, which loops are riveted to the bars and project above the top edges thereof at separated
35 points. These loops are adapted to extend through coinciding slots in the packing-strips and cap-pieces and to receive wedge-shaped locking-keys 13 in their outer ends, which
40 pieces lock the strips and cap-pieces firmly to the bars B.

From the bearings 3 the strips 2 are bent downwardly at right angles to said bearings, then inwardly toward and into contact with the sides of the core-pieces 1, thence outwardly and upwardly, forming gutters or channels 15, and finally the strip is bent horizontally, then doubled upon itself to form a horizontal bearing 16, and then bent vertically and doubled upon itself to form a second vertical bearing 17. These vertical and horizontal bearings are below the horizontal plane of the bearings 3 and without the vertical plane thereof, but are parallel therewith, and their purpose will be presently described.

55 It will be obvious that after forming the gutter 15 instead of bending the strip horizontally and then vertically it may be first bent vertically and doubled upon itself and then bent horizontally and doubled upon itself, as illustrated in Fig. 4.

60 The construction of the top bar C is identical with that of the longitudinal bars B, except that they are formed with flat bearings for the under faces of the glasses at their upper edges, which bearings, as well as the bearings 16', are inclined with respect to the faces of the bar instead of being at right angles

thereto, as is the case with the corresponding bearings of the bars B, with which they register, and said bearings extend parallel to the top edge of the bar. As the construction of the bar C is the same as that of the bars B, except in the particular noted, the same reference-letters have been employed to designate the corresponding parts of the two bars.

75 Extending from one longitudinal bar to the other intermediate the ends thereof is the transverse bar E, which is supported at its opposite ends upon the horizontal bearings 16, the vertical bearings 17 being cut away to permit the said bar E to bear directly upon the bearings 16. This bar E is preferably formed of a single strip of sheet metal bent at its upper edge to form an L-shaped bearing 20, thence extended downwardly and
85 doubled upon itself to form a second bearing 21, thence upwardly, forming a gutter 22, which communicates with the channels or gutters of the bars B, and finally the strip is bent at right angles to its upwardly-extended portion to form a bearing 23 for the overlapped glass, the said bearing being above and parallel to the bearing 21. The bearings 20 21 of the bar E register with the bearings 16 of the side bars, and said bearings, together with the corresponding bearing of the top bar C, register to form a rectangular bearing-surface surrounded by a vertical flange, and upon this surface, within the flange, is supported a screen-frame F, the said frame
100 being beneath and out of contact with the glasses 4 in position to catch the pieces should any one of the glasses become broken.

The bottom bar D, like the top, longitudinal, and transverse bars, is also formed of a single strip of sheet metal, the upper edge of which is bent upon itself to form a bearing 25 for the lower edge of the glass 4. The strip is then bent at right angles to the bearing 25 to form a second bearing 26, upon which the under face of the glass, at its lower edge, rests. From thence the strip extends downwardly for a short distance and is bent at right angles to the downwardly-extended portion to form a third bearing 27, which aligns with the bearings 16 of the bars B. The strip is then bent upon itself and extended still farther downward out of contact with the lower ends of the bars B and formed into a transverse gutter, with which the gutters 15 of the bars B communicate, the extreme lower edge of the strip being extended upwardly into contact with the bottoms of the bars B.

In order that the longitudinal and top bars may present a more finished appearance at their under sides, U-shaped strips 30 are provided which extend upon opposite sides of the whole length of the bars and are riveted or otherwise secured to the core-pieces at points below the gutters of the bars and serve as a means by which the skylight-frame may be riveted or bolted to the girders or frame of a building. As a convenient means of effecting this angle-irons 31 are bolted to the de-

pending portions of the bars, as illustrated in Fig. 4, the flanges of these bars projecting upon opposite sides of the bars at angles thereto, such flanges being adapted to receive securing-bolts from the frame-bars of the building.

From the foregoing it will be apparent that a simple and efficient skylight is provided which may be easily manufactured at comparatively small cost and without the employment of special machinery.

In skylights of small dimensions and with few glasses a heavy frame is not required and the core-pieces of the bars may be omitted, in which event the strip 2 is bent, as shown in Fig. 6, the downwardly-projecting portions thereof being brought close together at 32, and in order to impart additional rigidity to the bar a bracing-strip 33 is bent to closely conform to the lower face thereof, which strip at its opposite edges is bent out horizontally and doubled upon itself to form the bearing 16 and is then bent vertically to form the bearing 17 and finally doubled around the edges of the strip 2.

Without limiting myself to the exact construction and arrangement of the parts shown and described, since it will be obvious that various changes in such construction and arrangement may be made without departing from the scope or spirit of the invention and some of the features thereof used without others,

What I claim is—

1. In a skylight, the combination with the frame-bars formed below their upper edges with bearings for the glasses and provided at their upper edges with loops, of cap-pieces upon the exterior of the frame embracing and conforming to the contour of the upper edges of the bars and bearing upon the glasses, said cap-pieces being formed with slots through which the loops of the bars project, and locking-keys adapted to pass through the loops, substantially as described.

2. In a skylight, the combination with the frame-bars formed below their upper edges with bearings for the glasses and provided at their upper edges with loops, of cap-pieces upon the exterior of the frame conforming to

the contour of and embracing the upper edges of the bars and bearing upon the glasses said cap-pieces being formed with slots through which the loops of the bars project, and wedge-shaped locking-keys adapted to pass through the loops, substantially as described.

3. A frame-bar for skylights formed with a core-piece surrounded by sheet metal bent to form two or more longitudinally-extending bearings for the glasses, said bearings being in different planes at the side of the bar, substantially as described.

4. In a skylight, the combination with the frame comprising longitudinal and transverse bars, of glasses supported thereon with their edges overlapped, and bearings extending laterally from the sides of the longitudinal frame-bars for engaging and supporting the lower edges of the glasses, substantially as described.

5. In a skylight, the combination with the frame, of glasses supported thereon the said frame being formed beneath the glasses with a gutter, a rectangular bearing-surface and a surrounding flange interposed between the gutter and bearing-surfaces, and a screen supported upon said bearing out of contact with the under faces of the glasses, substantially as described.

6. A frame-bar for skylights comprising a core-piece and a sheet of metal secured to the same and bent to form an upper and a lower longitudinal bearing with an intervening gutter, the upper one of said bearings being inclined with respect to the longitudinal edges of the bar, substantially as described.

7. A frame-bar for skylights comprising a core-piece and a metallic strip bent centrally of its width around the core-piece and having each of its sides turned to form upper and lower longitudinal bearings, an intermediate gutter, and a flange intermediate the lower bearing and gutter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDGAR J. HULSE.

Witnesses:

CHARLES E. FOSTER,

C. S. DRURY.