

(No Model.)

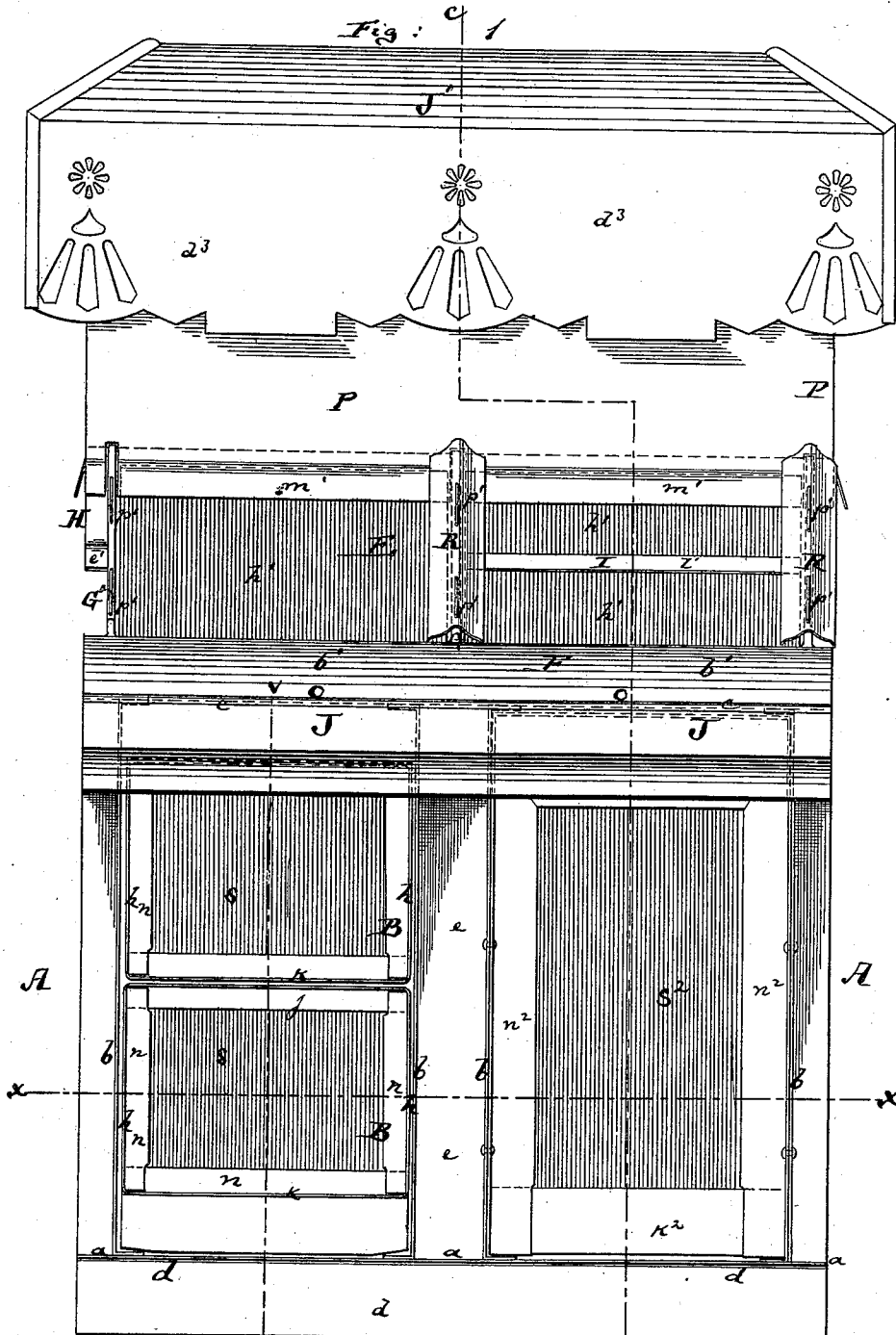
A. & G. BICKELHOUP.

3 Sheets—Sheet 1.

SKYLIGHT.

No. 273,247.

Patented Mar. 6, 1883.



Witnesses:
Henry F. Parker.
John C. Timbridge

Inventors:
Adam Bickelhaupt
George Bickelhaupt
by their Attorneys
Briseno & Bates

(No Model.)

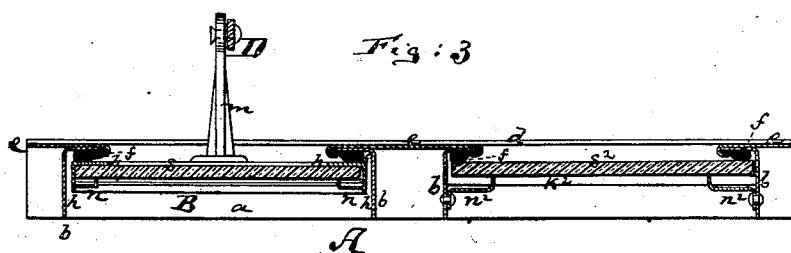
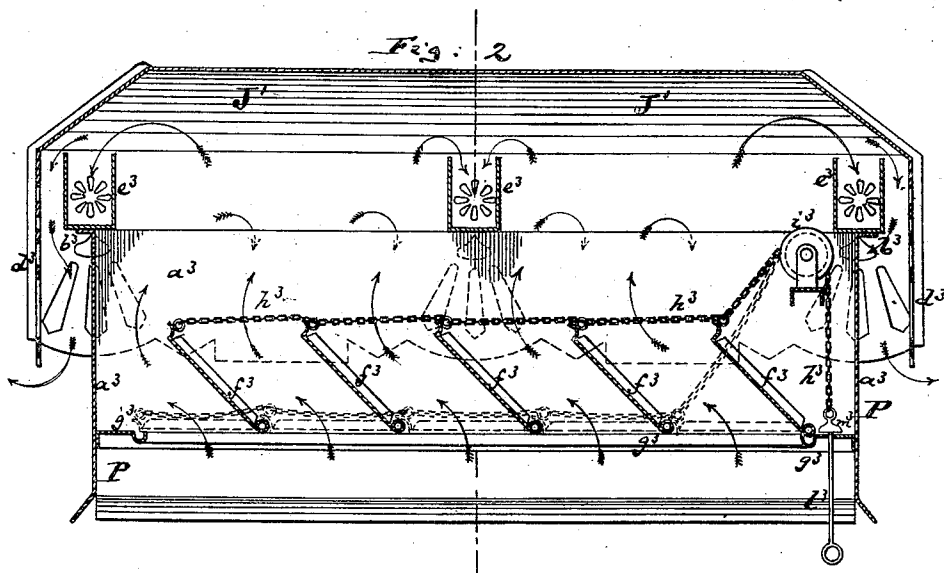
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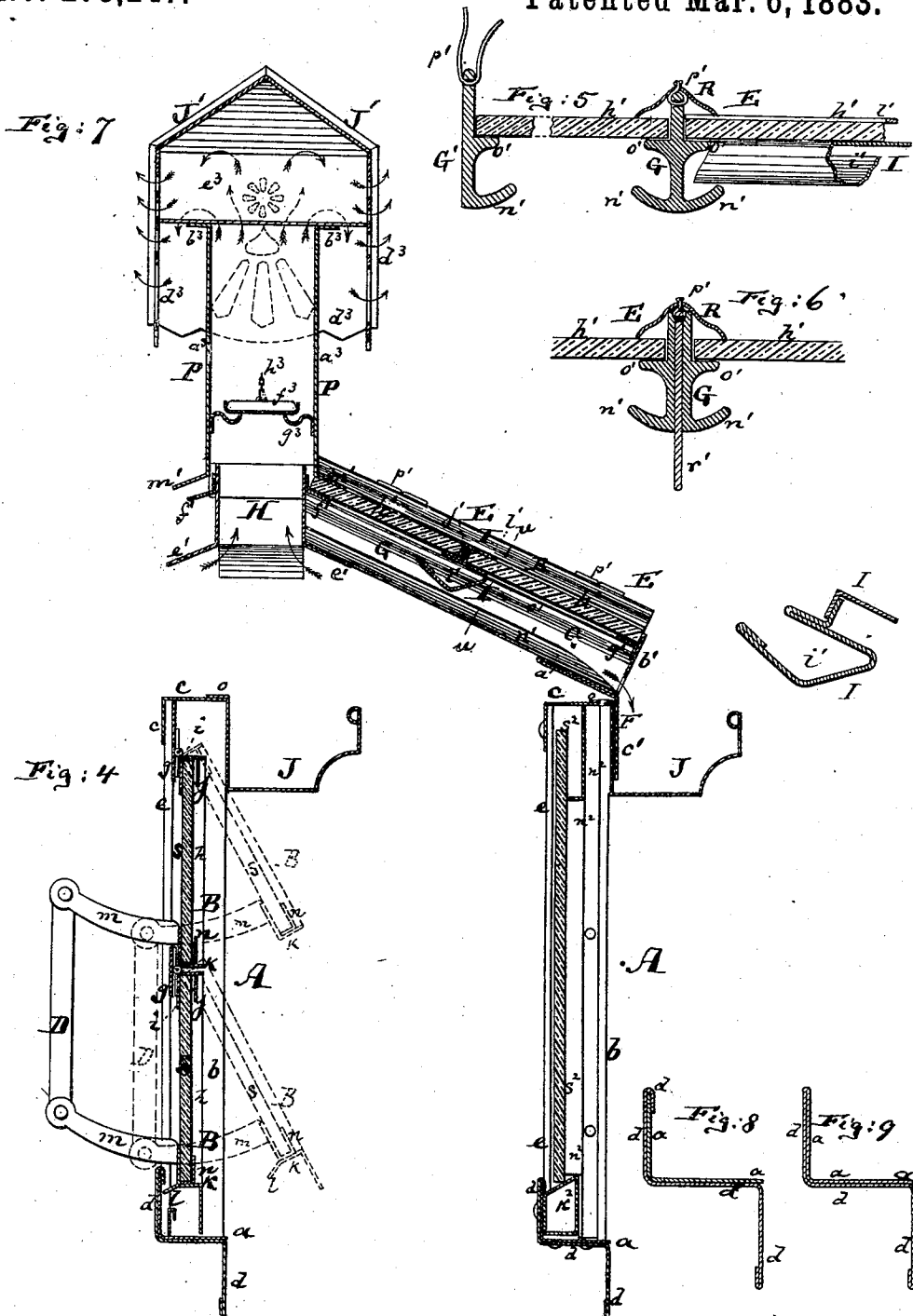
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Brisson & Co.

UNITED STATES PATENT OFFICE.

ADAM BICKELHOPT AND GEORGE BICKELHOPT, OF NEW YORK, N. Y.

SKYLIGHT.

SPECIFICATION forming part of Letters Patent No. 273,247, dated March 6, 1883.

Application filed May 17, 1882. (No model.)

To all whom it may concern:

Be it known that we, ADAM BICKELHOPT and GEORGE BICKELHOPT, of New York, in the county and State of New York, have invented a new and useful Improvement in Skylights, of which the following is a specification.

Figure 1 is a front elevation of our improved skylight. Fig. 2 is a vertical longitudinal section of the cap of the same. Fig. 3 is a horizontal section on the line *xx*, Fig. 1. Fig. 4 is a vertical cross-section on the line *vv*, Fig. 1. Fig. 5 is a cross-section through the line *uu*, Fig. 7. Fig. 6 illustrates a modification of the construction shown in Fig. 5. Fig. 7 is a vertical cross-section on the line *cc*, Fig. 1. Fig. 8 is a detail vertical cross-section of the step for supporting the vertical portion of the skylight. Fig. 9 is a similar section, showing a modification thereof.

This invention relates to a new construction of the caps and metallic framing and sashes of roof-ventilators, skylights, and analogous structures; and it consists in a novel combination of parts for opening and closing the dampers that lead to the cap of the skylight and aid the escape of the hot air from said cap, and also in a novel construction of the framing and sashes which hold the glass in the sloping portion of the skylight, so as to give great strength and at the same time render the parts readily adjustable.

It also consists in a novel arrangement for opening and holding open the windows in the vertical portion of the skylight, in a peculiar construction of rafter and of gutter used in the structure, and in the new arrangement of parts for supporting the slanting portion on the vertical part of the skylight, and in various details of construction, all hereinafter more fully described.

In the accompanying drawings, A represents the lower vertical framing of the skylight. This is formed out of a sheet-metal base-piece, *a*, on which stand the sheet-metal posts *b*. The lower ends of the posts *b* are bent outward, as shown in Fig. 1, and riveted to the base-plate *a*. The upper ends of said posts are bent over in similar manner, as indicated by dotted lines in Fig. 1, and riveted to the top plate, *c*. The conformation of said top plate, *c*, in cross-section is clearly shown in Figs. 4 and 7.

The frame A, composed of the posts *b*, bottom plate, *a*, and top plate, *c*, is preferably constructed out of wrought-iron, which may be readily rolled to form the shapes described and shown. This frame A rests upon the step *d*, which forms an angular recess, into which the bottom plate, *a*, fits and sets, the step *d* being turned over the upper edge of the L-shaped plate *a* and clamped, as shown in the detail view given in Fig. 8. Fig. 9 shows a modification of this arrangement, where both the step and the base (indicated by *d* and *a*, respectively) are constructed by bending and doubling one piece of metal over upon and within itself. The posts *b*, where they are single, as at the ends of Fig. 3, and the spaces between double posts, as in the center of Fig. 3, are lined with back strips, *e*, preferably made of galvanized iron. Every such back strip, *e*, is riveted at its lower portion, between the vertical back wall of the step *d* and the posts *b*, and at its upper portion it is riveted between the vertical back wall of the top plate, *c*, and the posts *b*. Each back strip, *e*, passes across the back of the post or posts *b* to which it belongs, and has its edge bent sharply around the inside edge of said L-shaped post or posts, the lap extending a short distance beyond the front face of the post, so as to form a gutter, within which may be inserted a strip of packing, *f*. (Shown in Fig. 3.)

Fig. 4 shows the arrangement of the vertical portion of the skylight when it is fitted with windows that will open and close. B is the frame of one of these windows. It is made of two upright strips, *h h*, Fig. 3, of angle-iron, with cross-strips fastened thereto at top and bottom, also made of angle-iron, the top cross-strip, *i*, of each frame B being fastened by hinges to a cross-strip, *g*, extending between the posts *b b*. On these hinges each frame B is free to move. The frame B is also provided with an upper front cross-piece, *j*, leaving room between it and the main portion of the frame B for the insertion of the upper ends of the glass panes *s*. The frame B is also provided with a bottom rest or plate, *k*, on the lower part thereof, said bottom strip having a lip, *l*, projecting backward therefrom to strike against the vertical portion of the base-piece *a* when the window is closed. The glass pane

s can be slipped into the cavity formed between the back portion of the frame B and the upper cross-strip, *j*, and is then firmly confined in its place by rectangular or other shaped metal strips *n n*, that overlap the side and lower ends of the pane, and that are secured to the frame B by solder or otherwise.

The frame B of the upper window shown in Fig. 4 is substantially like the frame B of the lower window, except that its bottom rest is not angular and is without the lip *l*. To the lower portion of the frames B B are attached rigid arms *m m*, which project backward therefrom, and which are connected at their free ends by an upright bar, D, pivoted thereto, so that as this bar is pushed out or drawn in, the frames B B will be swung to open or close the windows. (See dotted lines in Fig. 4.)

When the window is not designed to be opened or shut, but has an immovable glass pane in it, then the glass *s*² fits against the packing *f*, as shown on right-hand side of Fig. 3, or directly against the folds of the back plate, *e*. The lower edge of the glass *s*² rests on a hollow sill or plate, *h*², that is set upon the base-piece *a*, as shown in Fig. 7. The glass *s*² is finally confined in place by strips *n*² *n*², that are soldered or riveted to the posts *b* and top strip, *c*. These strips *n*² may be united into one framing or separately applied.

Over the front edge of the top plate, *e*, fits the gutter J, bent up out of galvanized iron or other suitable metal, and held in place by the lip *o*, that rests on the plate *e*, as shown in Figs. 4 and 7.

On top of the vertical portion of the skylight just described, and above the gutter J, is the sloping portion E of the skylight. The edge of this sloping portion E, where it rests on the angle formed by the bent lip *o*, is made of a piece of angle-iron, F, forming three projecting wings, *a'* *b'* *c'*, extending radially from a common center, and which wings may be all made in one piece. Instead of forming the said wings in one piece, the two wings *a'* and *c'* may be in one piece, and the wing *b'* may have a flanged bottom in one piece therewith, adapted to rest on and be fastened to the wing *a'*. This bar F, formed as described, supports and lines the sloping portion E of the skylight. The vertical wing *c'* rests against the gutter J, along the vertical portion thereof, which is next to the framework A, and is fastened thereto. The backwardly-projecting wing *a'*, together with the upwardly-projecting wing *b'*, forms an angular corner, which holds the frame-work of the sloping skylight E. This frame-work is composed of the bars or rafters G, supported at their lower ends by the wings *a'* and *b'*, and at their upper ends by the flange *e'* of the ventilator-shaft H. The inner side of the wing *b'* carries a bracket, *g'*, and the outer side of the ventilator-shaft H carries a similar bracket, *f'*. Upon these brackets *f'* *g'* rest the panes *h'* of glass, with their upper and lower ends, respectively. If it is desired to use more than one glass *h'*

between the shaft H and wing *b'*, the guttered clip I (shown in Fig. 7) is interposed between them. This clip I is made in two pieces. The lower piece is bent to form the gutter *i'* and an upwardly-extending rib, *j'*, that enters between the glasses. The top of the gutter supports both glasses. The upper piece, *l'*, of the clip I is L-shaped, one of its wings entering between the glasses, next to the rib *j'*, and the other wing overlapping the lower glass. This construction of clip in two pieces is far superior to the clip made in one piece, heretofore used, as it admits of ready access to the entire structure for repair and other purposes. The upper end of the glass *h'*, which is in contact with the shaft H, is held down by the flange *m'* of the ventilator-cap P.

The ridge-bars or rafters G of the sloping skylight are of the form shown in Fig. 5, anchor-like in shape, what might be called the "flukes" of the anchor forming gutters *n' n'*, one on each side. The bar G is also provided with angular projections *o' o'*, forming flanges, upon which the glasses *h'* of the skylight rest, said glasses being held down upon the bar G by the metallic cap R, fitting over the projecting center of the bar. The caps R are fastened to the bars G by flexible wires *p'*, that are passed horizontally through the upper portions of the bars G, and thence extend up through the caps R. The ends of these wires are then turned over on top of the caps, as shown, to lock the same in place. The ridge-bar G, just described, is the one adapted to be used for bars situated at points not on the outside edges of the skylight. For the end bars, at either side of the skylight, the bar G' is used, having the projecting fluke *n'* and ledge *o'* on one side only. The flukes *n'* of the bars G and G' also form resting-places for supporting the clips I, already described, the said clips running across the skylight from one bar G or G' to another.

Fig. 6 shows a modification of the bar G, where a central upright plate, *r'*, is inserted between two rafters, constructed each like a rafter G', and fastened thereto for the purpose of strengthening the bar, the construction in all other respects being the same as above described, excepting that the wires *p'* are drawn through the plate *r'*. The gutters *n'* rest their lower ends on the wing *a'*, which, with *b'*, forms a trough to receive any water that may be discharged by said gutters. From this trough the water escapes through suitable apertures in the front wing, *b'*, as indicated by the arrow in Fig. 7. The bar G, with its central stem, and shoulders *o'* and *n'*, is made of one single piece of rolled metal, the ribs *n'* and *o'* being obtained by applying strong pressure to the plate of which the bar is formed. This produces a far more reliable device than the sheet-metal structures heretofore used.

P represents the ventilating-cap, which forms the top of the skylight. The upright walls *a*³ of this cap are bent out at their top portion to form flanges *b*³, on which the beams

5 e^3 , carrying the sloping roof J' of the cap, are supported. This roof is provided with overhanging eaves d^3 , which are perforated, as shown. An open space is left between the walls a^3 and these eaves d^3 . At or near the bottom of the chamber formed between the walls a^3 are a series of dampers, f^3 , forming the floor thereof. Each of these dampers is pivoted at one end to an open framing, g^3 , which is set into the lower wall of the ventilator-cap. The free ends of all the dampers f^3 are united to a chain, h^3 , which runs over a pulley, i^3 , and has its lower end connected with the rod l^3 , running through a hole in the framing g^3 , and provided with a handle below it, and with a stop or shoulder, m^3 , which prevents the chain being pulled down too far. The action of this mechanism is that when the rod l^3 is pulled downward the chain h^3 is drawn over the pulley i^3 and opens all the dampers f^3 simultaneously, leaving a free escape for the air through the spaces between the dampers, and upward and out through the space between the eaves d^3 and the walls a^3 , or through the openings cut in the eaves; but when the rod is pushed upward the chain is loosened, and the dampers fall by their own weight and close the openings into the lower portion of the skylight.

30 The ventilator-cap P, constructed as above described, sets over the ventilator-shaft H, and, by its flanges m' , rests on the glass h' of the sloping skylight.

35 We do not claim the clip I when made in one piece with L-shaped piece l' .

I claim—

1. In a skylight, the combination of the step

40 d , contiguous L-shaped base-piece a , posts b , back plates, e , and angular top piece, c ; substantially as shown and described.

2. The combination of the step d , contiguous base-piece a , posts b , back plates, e , packing f , and top piece, c , substantially as herein shown and described.

3. In a skylight, the combination of the posts b , frames B B, cross-pieces i , j , and k , pivoted bar D, arms m m , and back strips, e e , substantially as shown and described.

4. The cross-clip I, for supporting the abutting panes of skylights and analogous structures, the same being made of the lower piece having gutter i' and rib j' , and of the upper L-shaped piece, l' , inserted next to the rib j' , between the two panes, substantially as herein shown and described.

5. The framing A, having top piece, c , combined with gutter J, having lip o , and with bar F, having wings a' , b' , and c' , for use in a skylight, substantially as herein shown and described.

6. The ventilator-cap P, constructed of walls a^3 , hollow beams e^3 , roof J' , perforated eaves d^3 , dampers f^3 , framing g^3 , chain h^3 , pulley i^3 , and rod l^3 , having shoulder m^3 , all combined for operation substantially as herein shown and described.

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Witnesses:

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 WILLIAM H. C. SMITH.