P. BERNARD.

SKYLIGHT WINDOW FOR HOG HOUSES.

APPLICATION FILED APR. 24, 1917.

1,286,508. Patented Dec. 3, 1918.

Fig. 1.

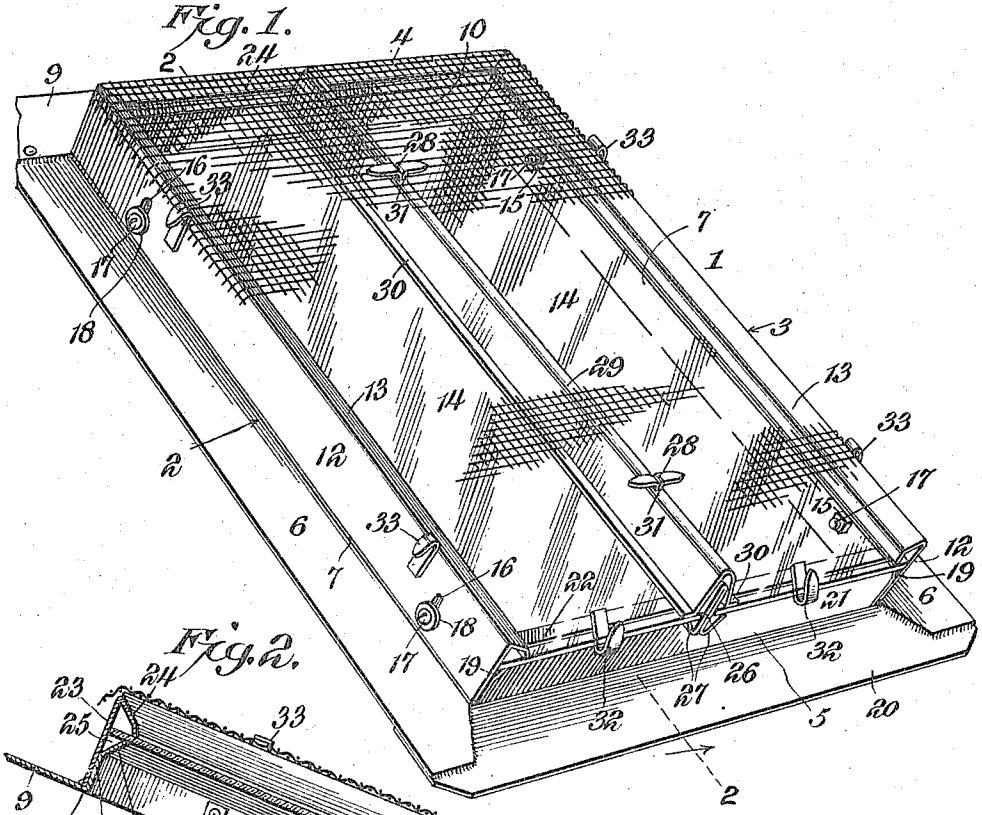


Fig. 2.

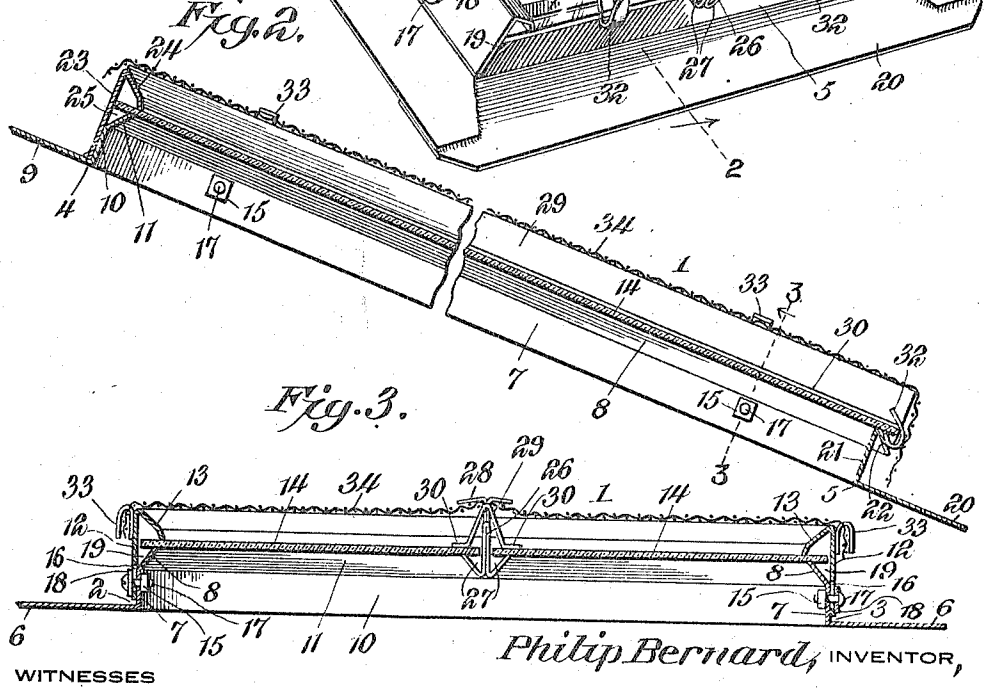


Fig. 3.

WITNESSES

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SKYLIGHT-WINDOW FOR HOG-HOUSES.

1,286,508. Specification of Letters Patent. Patented Dec. 3, 1918.

Application filed April 24, 1917. Serial No. 164,185.

To all whom it may concern:

Be it known that I, PHILIP BERNARD, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Skylight-Window for Hog-Houses, of which the following is a specification.

This invention has reference to skylight windows for hog houses, and its object is to provide a window for the purpose, of inexpensive and at the same time efficient construction, in which glass panes may be initially inserted or subsequently replaced if broken without the necessity of dismantling any parts, or even separating any parts to a greater extent than is necessary to permit the insertion of the glass or to release it, while the glass panes are so firmly held when installed as to effectively prevent any looseness liable to produce rattling.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified, so long as such changes and modifications come within the scope of the appended claims.

In the drawings:—

Figure 1 is a perspective view of a skylight window embodying the invention.

Fig. 2 is a longitudinal section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Referring to the drawings there is shown a metallic rectangular window frame 1, made up of side bars 2, 3, respectively, an upper and lower end bars 4, 5, respectively. The two side bars 2 and 3 are substantially alike, and each is composed of a flat base flange 6, which in the installed window serves as flashing, and along one edge of the flange 6 is an upstanding flange 7 at substantially right angles to the flange 6, said upstanding flange consisting of a lower vertical portion and an acute angle portion 8 along what constitutes its upper end, said angle portion 8 being bent inwardly away from the vertical position of the flange 7 on that side thereof remote from the flange 6 and forming one-half of the gutter. The upper end bar 4 has a flat base flange 9 which is somewhat wider than the flanges 6, and also is utilized as flashing. Upstanding from the flange 9 is another flange 10 consisting of a lower vertical portion terminating in an acute angle portion 11 bent inwardly away from the flange 10 on the side thereof remote from the flange 9, and also providing a section of the gutter at the top.

Each side bar 2 and 3 is provided with a separate strip 12 or cap member which, along what constitutes its upper edge, is bent into a channel sufficiently wide and directed toward the other edge of the strip to constitute a longitudinal cap 13 wider than the angle portion 8, so that it somewhat overrides the angle portion 8 toward the center of the frame. The strip 12 is of such width that when a pane of glass 14 is lodged on the angle portion 8, and the cap 13 is brought into firm contact with the outer face of the glass 14, that edge of the strip 12 remote from the cap (viz: the lower edge) is slightly above the upper surface of the flange 6. The flanges 7 of the side bars are perforated, and have nuts 15 fast thereto at suitable intervals, while the strips 12 are provided with slots 16 located similarly to the nuts, so that transverse bolts 17 may extend through the slots 16 with interposed washers 18 and also enter the nuts 15. The heads of the bolts are exterior to the strips 12 so as to be readily accessible, and when the caps 13 are brought into clamping relation to the glass pane 14, the bolts 17, which may have been previously inserted, are screwed up tight into the nuts 15, thus firmly clamping the strips 12 against the outer face of the flange 7. The strips form in conjunction with the angle portions 8 a gutter 19 extending lengthwise of the corresponding side bar underneath what is then the outer edge of the glass pane, and any water which may find its way about the outer edge of the glass pane, drops into the gutter 19 and is conducted to the lower end thereof, and the gutter being slanting on a slanting roof, the water is discharged without finding its way through the window to the interior of the building on which the skylight is installed.

In order to sustain the lower ends of the glass panes 14, the lower bar 5 is provided with a flat base flange 20, which instead of being lodged beneath the shingles or other roof covering of the building, is exposed

above the shingles. The flange 20 of the lower end bar 5 has an upstanding flange 21 bent downwardly at an acute angle at the top to constitute a stiffening web 22 and a support or ledge for the glass pane 14. The gutters 19 discharge at their lower ends upon the flange 20, and the lower ends of the glass panes, which are made long enough to extend beyond the web 22, also discharge upon the flange 20, whereby rain water or the like is conducted on to the roofing beyond the window frame and leakage into the building is thereby prevented.

The upper end bar is also provided with a cap member or strip 23 corresponding to the strip 12, which strip 23 terminates in a cap 24 corresponding to the cap 13 and designed to rest upon the glass pane, said cap 24 overhanging and being sufficiently spaced from the angle portion 11 of the flange 10 to hold the glass pane in place, and yet permit its insertion and removal at will. The strip 23 is so arranged as to need no adjustment and therefore is soldered to the flanges 9 and 10, forming with the angle portion 11 a gutter 25 corresponding to the gutters 19, and in the installed position of the parts discharging into the gutters 19.

It should be noted at this point that the side bars and the upper end bar are of composite formation, being made up of a rigid part or bar and a separate removable part or strip, the two parts forming the glass support, the gutter, the cap for holding the glass, and a support for a screen, said parts being relatively adjustable and when in normal locked position mutually bracing each other and providing a bar of two ply or thickness construction.

When the structure is assembled, the base flanges 6, 9 and 20, the upstanding flanges 7, 10, 21, and the angle portions 8, 11, are soldered together, or otherwise secured at their meeting points, and the angle portions 8 of the side bars are soldered to the ends of the lower end bar, the latter being shaped to receive said angle portions, whereby a stiff and strong frame is produced, the parts being usually made of galvanized sheet iron of sufficient gage for the purpose.

Extending lengthwise of the frame from the upper bar 4 to the lower bar 5 is a middle bar 26. Of course, there may be two or more intermediate bars in case of a frame requiring three or more panes of glass, but it may be considered for purposes of illustration that only a single middle bar is used. This bar is formed of sheet metal folded intermediately upon itself for strength and rigidity, and the free edges are bent into angular relation to the mid portion of the bar to constitute pane supports and gutters 27. The middle bar is soldered or otherwise secured at its ends to the upper bar 4 and lower bar 5, the upstanding flanges 10 and 21 with the bent portions 11 and 22 being suitably cut out to accommodate the gutters 27, the upper edges of which are about flush with the tops of the bent portion 11 and flange 21 to serve as pane supports and also to allow communication between the gutter 25 of the upper end bar and the gutters of the middle bar. At suitable points clips 28 are made fast to the bar 26 by solder or otherwise, and these clips are customarily made of copper because of its weather resisting and flexible nature. In the installed position of the parts the clips 28, which are each made with two free legs, are upstanding. Applied to the bar 26 is a longitudinal cap strip or member 29 provided with outstanding foot flanges 30 arranged to bear upon glass panes on opposite sides of the center bar, and the center cap 29 is perforated, as shown at 31, at suitable points to permit the clips 28 to extend above the cap. The height of the cap strip 29 is such that when the flanges 30 are resting upon adjacent panes of glass, and the clips 28 extending through the passages 31 have been bent so as to hold the cap strip 29 in firm contact with the glass panes, the upper edge of the bar 26 is spaced away from the inner surface of the crown portion of the cap strip 29, wherefore there is no interference with the clamping action of the cap strip by the bar 26.

With a structure such as described, the glass panes are firmly held in place by the caps 13 and 29, but by merely loosening the clips 28 and the bolts 17, though without the necessity of removing the strips, caps or any parts, the glass panes may be inserted, and then clamped in place, or, if broken and needing renewal, the same loosening of parts permits the withdrawal of the broken glass and the insertion of unbroken glass panes.

In order to prevent the glass panes from slipping lengthwise from the frame, since the lower bar is not a holding bar, but only a supporting bar for the glass, tongues 32 are soldered or otherwise made fast to the webs 22, and are of a length and project in a suitable direction to permit bending of these tongues about the lower edges of the glass panes when installed, whereby accidental lengthwise movement of the glass panes is prevented. The tongues 32 may be made of copper on account of its flexibility and weather resisting qualities.

On the outer faces of the oppositely located side strips 12 are other tongues 33 soldered or otherwise secured to the strips 12 and of a length to extend above the tops of the caps 13.

In order to protect the glass from injury, from hail or stones or the like, which might otherwise break the glass if striking it with sufficient force, there is provided a guard or covering 34 of wire mesh, usually of galvanized iron wire. The covering 34 is trav-

ersed by the clips 28 and also by the tongues 33, and as these clips and tongues are readily bent by hand, it is an easy matter to either secure the guard 34 to the window or skylight frame, or to remove it therefrom. It should be stated here that it is not necessary to actually remove the screen when inserting or removing the glass panes. The clips 28 and tongues 33 are preferably made of a sufficiently heavy gage of sheet copper to answer the purposes of the invention.

It will be observed that the window frame is made of side and end bars, with the side bars provided with adjustable caps and strips, while the upper end bar has a non-adjustable cap and strip. The window or skylight frame is particularly stiff on account of the gutter structure, which is in part an upstanding angle extension of the upright web of the corresponding bar of the frame, while the other part of the gutter is made of a strip with a cap portion for clamping down the window pane onto the pane supporting ledge of the gutter, and, furthermore, the strip carrying the cap forms part of the bar web and the outer wall of the gutter. Moreover, the center bar with its combined gutter and pane support and the pane holding cap strip further contribute to the stiffening of the window frame.

The adjustability of the pane holding caps of the side and center bars greatly facilitates the introduction and removal of the glass panes even without the aid of tools other than a screw driver to loosen the screws or bolts holding the cap flanges on the side bars in place. The other means to be loosened are capable of manipulation by the fingers of the operator.

The bolts 17 and nuts 15 may be simple stove bolts capable of purchase on the market in large quantities and at cheap rates. In connecting the separate cap strips to the side bars, they not only hold the caps down on the glass, but clamp the vertical parts of the strips against the vertical parts of the flanges 7.

What is claimed is:—

1. A skylight or window frame, comprising side and end bars forming a rectangular frame each having a flat base flange or flashing, the side bars and one end bar each being provided along the inner edge of the said base flange or flashing with an integral upstanding flange composed of a vertical portion and an angular upper portion which is bent inwardly from said vertical portion toward the window opening to provide the bottom and one wall of a gutter, the upper edges of the angular portions of said flanges constituting supporting ledges for the glass, and cap members having vertical strips which are disposed on the outside of and against the said vertical portions and extend above said angular portions to constitute the outer walls of the gutters, said strips terminating in caps to hold the glass down on the said ledges of said angular portions, and transversely disposed clamping devices for the cap members of the side bars adjustably connecting said vertical strips to said vertical portions below the gutters, whereby said cap members are movable in a vertical plane so as to clamp and release glass resting on the ledges, and said clamping devices also serving to hold said vertical strips against said side bars.

2. A skylight or window frame having side bars and one end bar each composed of an inner rigid part or bar in one piece, and an outer separate part or strip in one piece, the side bars having connections whereby the outer strip is adjustable on the inner rigid bar toward and from the basic portion of the latter, said end and side bars each being formed with a flat base flange or flashing, and provided along the inner edge of the latter with an upstanding flange composed of a vertical lower portion and an acute angle upper portion which is bent inwardly from said vertical portion to provide the bottom and one wall of a gutter, and also a supporting ledge for a glass pane, and the outer strip having one edge formed into a cap in overriding relation to the gutter wall for clamping the glass pane against the pane supporting ledge of the inner bar, and said outer strip having a substantially vertical wall forming the outer wall of the gutter and below the gutter bearing flat against the outside of said vertical portion, and means for adjustably connecting the outer strip and inner bar together below the gutter, said means being accessible from the outside of the strip and permitting said strip with its cap to be moved vertically to clamp and release the glass pane.

3. A skylight or other window, comprising side and end bars forming a frame, with the side bars and one end bar each composed of an inner part or member in one piece, and an outer separate strip or bar in one piece, said end and side bars each being formed with a flat base flange or flashing and provided along the inner edge of the latter with an upstanding flange, composed of a vertical lower portion and an angular upper portion which is bent inwardly from said vertical portion to provide an incomplete gutter and also a supporting ledge for a glass pane, the outer strip having one edge formed into a cap in overriding relation to the gutter for clamping the glass pane against the said ledge, and said outer strip having a substantially vertical wall forming the outer wall of the gutter and below the gutter bearing flat against the outside of said vertical portion, means for adjustably connecting said outer strip and said inner bar below the gutter to clamp and release

glass lodged on the ledge and also hold said strip against said side bar, the upper end bar having its cap member permanently united thereto, leaving sufficient space for the insertion of a glass pane between the cap and the ledge, and the lower end bar constituting merely a support for the glass, and having no gutter or cap but provided with means to engage the edge of the glass, the gutters of the side bars being open at their lower ends and communicating at their upper ends with the gutter of the upper end bar, and the supporting ledges for the glass of the side bars being in the same horizontal plane with the supporting edge of the lower end bar where the end bar joins with the side bars, whereby the glass may be inserted or withdrawn by merely loosening the fastening means and without removing the outer strips of the side bars.

4. A skylight or window frame having side bars and one end bar formed of flat base flanges and upstanding flanges in one piece, the latter having their upper ends bent to form the bottom and inner walls of gutters and also constituting glass pane supporting ledges, bolts fitted to the side bars below the gutters and projecting transversely outward therefrom, and separate strips applied against the outside of said side bars and end bar, said strips being channeled to form caps for clamping the glass against said ledges, and said strips where opposite the gutter walls forming the completing walls for the gutters, the strip for the upper end bar being permanently united thereto, and the strips for the side bars being provided with vertical slots through which said bolts are passed, and the upstanding flanges of the side bars having nuts on their inner sides matching said slots and fitted on the inner ends of the bolts, the heads of the bolts being accessible from the outside of the strips, said bolts and slots being located below the gutters.

5. A skylight or window frame comprising side and end bars forming a rectangular frame, each having a flat base flange or flashing, the opposite side bars and one end bar being provided with upstanding flanges having angle portions inturned toward the window opening to provide gutter members and ledges along the upper edges of said flanges, cap members with vertical strips placed against the upright flanges of the bars to constitute the remaining portions of the gutters, means for adjustably connecting the cap members to the side bars below the gutters for clamping and releasing the glass panes resting on the ledges, the upper end bar having its cap member permanently united thereto and the lower end bar constituting merely a support for the glass and having means to engage the edge of the glass, said frame also having a middle bar with gutters with their upper edges upturned to constitute supporting ledges for glass panes, and a cap member for the middle bar having glass pane engaging portions and a crown part for overriding the middle bar and of a height to stand out of contact with the top of said middle bar when installed, said middle bar being provided with releasable fastening means accessible from the top for holding the cap member individually thereto in clamping relation to the installed glass panes, the gutters of the side bars and middle bar being open at their lower ends and communicating at their upper ends with the gutter of the upper end bar, and the supporting ledges of the side bars and middle bar being in the same horizontal plane as the supporting edge of the lower end bar where they join with the latter, whereby the glass may be inserted or withdrawn without removing any of the cap members.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

PHILIP BERNARD.

Witnesses:

ANNA EBERHARDT,

E. ANDERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."