A. S. ALSCHULER.

ROOF CONSTRUCTION.

APPLICATION FILED NOV. 29, 1918.

1,317,470.

Patented Sept. 30, 1919.

2 SHEETS—SHEET 1.

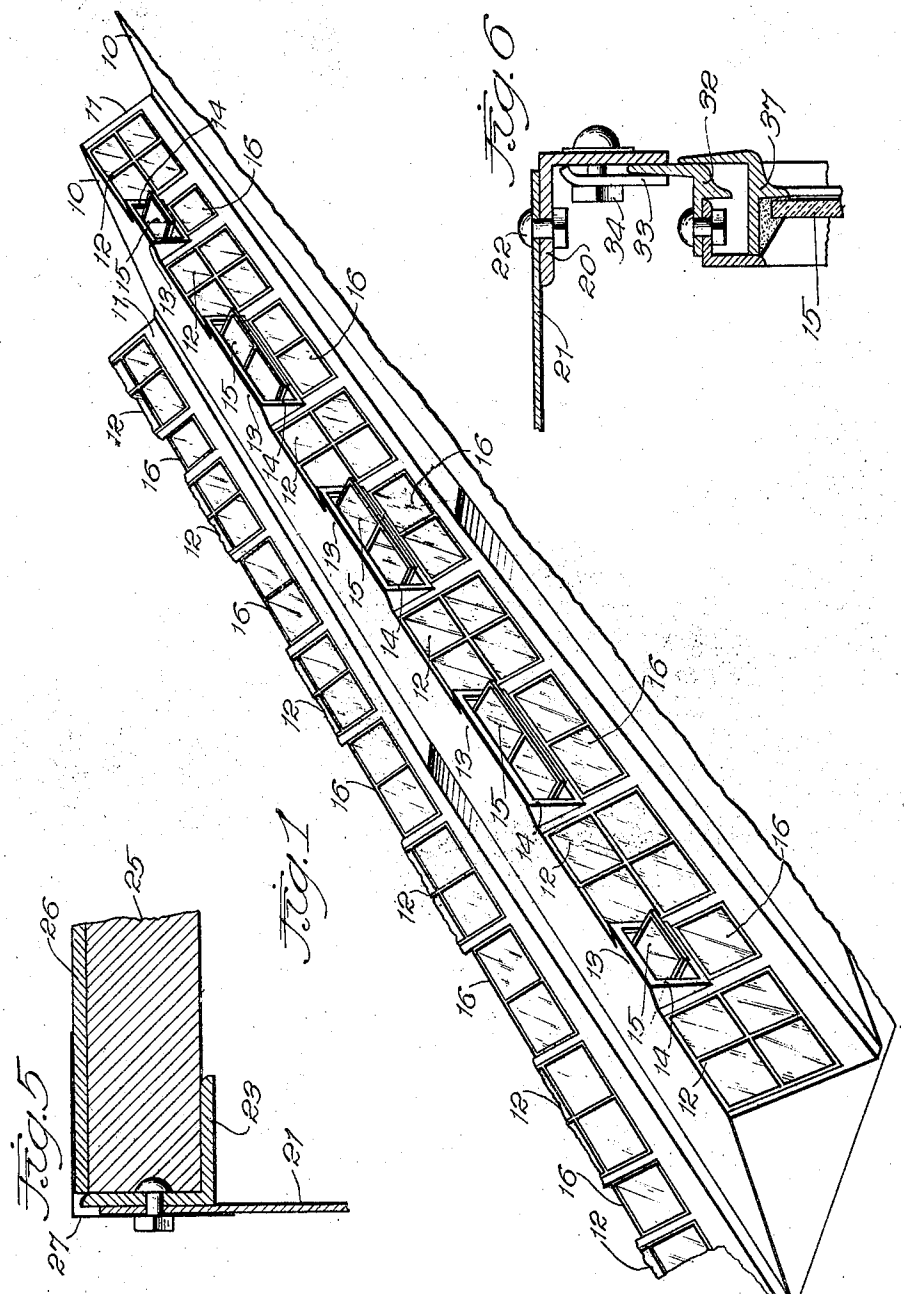


Fig. 1

Fig. 6

Fig. 5

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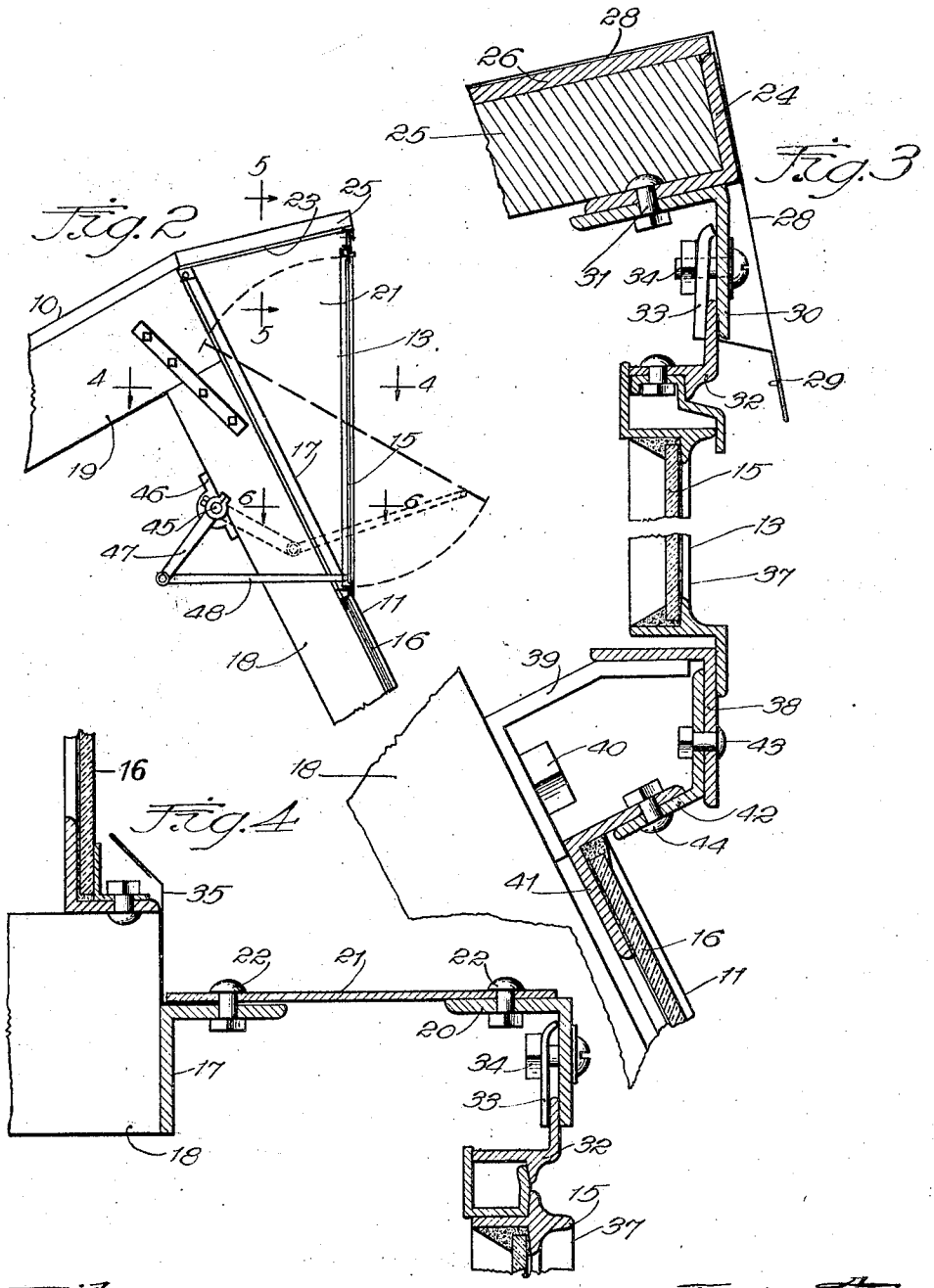
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UNITED STATES PATENT OFFICE.

ALFRED S. ALSCHULER, OF WINNETKA, ILLINOIS.

ROOF CONSTRUCTION.

1,317,470. Specification of Letters Patent. Patented Sept. 30, 1919.

Application filed November 29, 1918. Serial No. 264,544.

To all whom it may concern:

Be it known that I, ALFRED S. ALSCHULER, a citizen of the United States, residing at Winnetka, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Roof Construction, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in roof construction, and is especially concerned with improvements in that type of roof which is commonly referred to as a "sawtooth" roof. My invention is not, however, necessarily limited to roofs of this construction, and might be employed with the monitor and other types of roofs, in which a portion of the windows are inclined to the vertical.

The objects of my invention are—

First: To provide a roof construction which is weathertight and economical to construct,

Second: To provide a roof construction of the above type which will provide ample ventilation, and at the same time comprise a minimum number of movable sash,

Third: To provide a roof construction which will insure thorough ventilation in the central portions of buildings of excessive width, and

Fourth: To provide a roof construction in which glass of minimum thickness can be safely employed.

Further objects will appear as this description progresses, reference being had to the accompanying drawings in which—

Figure 1 is a perspective view showing a portion of a roof constructed in accordance with my invention,

Fig. 2 is a more or less diagrammatic view of a portion of a roof constructed in accordance with my invention, illustrating the arrangement of the various parts relative to the roof struts, and also disclosing the mechanism for opening and closing the pivotally mounted sash,

Fig. 3 is an enlarged vertical transverse section through one of the dormers of my improved roof construction, portions of the sash being broken away,

Fig. 4 is an enlarged horizontal sectional detail taken upon line 4—4 of Fig. 2,

Fig. 5 is an enlarged vertical sectional detail taken upon line 5—5 of Fig. 2; and

Fig. 6 is an enlarged horizontal sectional detail taken upon line 6—6 of Fig. 2.

In the several figures of the drawings similar reference characters refer to similar parts.

Referring to Fig. 1, which discloses a portion of roof of a building constructed in accordance with my invention, my invention comprises in general a sawtooth construction having the inclined roof surface 10 and the side 11, which is slightly inclined from the vertical and which comprises a plurality of bays 12 of stationary sash. The length and height of these bays, so far as my invention is concerned, are immaterial. Projecting from the inclined face of the sawteeth at points between the bays 12 of stationary sash, are a plurality of dormers 13, the roofs of which form continuations of the side 10 of the sawtooth. These dormers comprise vertical window frames 14 in which are horizontally and centrally pivotally mounted the sash 15. It will be noted that the sash 15 adjacent the ends of the sawteeth are narrower than the pivotally mounted sash affording ventilation for the central portions of the building. Such construction is necessary in buildings having excessive width, for the reason that I have discovered that if the sawteeth are provided to afford as much ventilation adjacent the ends of the sawteeth as at the central portions thereof, practically all of the ventilation takes place through the windows adjacent the ends of the sawteeth, and the air at the central portions of the building is more or less stagnant. By restricting the ventilating apertures adjacent the ends of the teeth I cause a certain percentage of the ventilation, which would otherwise occur at points adjacent the ends of the sawteeth, to take place through the window openings at the central portions of the sawteeth, and thereby insure movement of the air at the central portions of the building. Stationary sash 16 occupy the portions of the inclined face 11 of the sawtooth immediately beneath the dormers 13.

I will now describe the details of the construction of the dormer. Angle irons 17 extend upwardly along the outer faces of the struts 18 and are secured thereto in any suitable manner, and extend across the ends of the rafters 19, as shown in Fig. 2. Vertical angle irons 20 have their lower ends secured to the angle irons 17 in any suitable

manner, and the spaces between the angle irons 17 and 20 are closed by the sheet metal plates 21 which may be secured to the angles 17 and 20 by means of bolts 22, or in any other suitable manner. Angle irons 23 connect the upper ends of the angles 17 and 20 and the upper ends of the angles 20 on opposite ends of the dormer are connected by means of the angle iron 24, (see Fig. 3). A roof piece of wood or concrete 25 rests upon the substantially horizontal flanges of the angles 23 and 24 to form the roof of the dormer, and may be covered with composition roofing 26, if so desired. Suitable flashings 27 cover the joint between the roofing 26 and the angles 23, and another flashing 28 covers the joint between the roofing and the angle 24. The lower side of the flashing 28 is reversely bent upon itself as shown at 29, and the free end thereof is clamped between the angle 30 which is secured to the angle 24 by means of the bolts 31 and the frame members 32. The frame members 32 are clamped against the lower edge of the angle 30 by means of the clamps 33 and the bolts 34. These frame members are of standard construction, those illustrated being of a type commercially well known, and for this reason detailed description thereof is believed to be unnecessary. Flashings 35 are secured between the end plates 21 of the dormers and the angle 17, and extend over the stationary sash 16 of the adjacent bay. The window sash 37 shown in horizontal section in Figs. 4 and 6 and in vertical section in Fig. 3 is also of standard construction and may be purchased in the open market, and need not be described in detail.

The angle iron 38, forming the lower side of the frame for the sash 37 is supported by the brackets, 39, which are in turn supported from the struts 18 by means of lag screws 40, or any other suitable means. The angle 41 of the stationary sash 16 may be secured to the angle 38 by means of a third angle 42 and the bolts 43 and 44. In Fig. 2 I have illustrated one means which may be used for oscillating the sash about their axes, this means comprising a shaft 45 which extends the entire length of the sawtooth, and is secured to the struts 18 by means of suitable bearing blocks 46. Crank arms 47 are secured to the shaft 45 and are connected by means of links 48 with the lower sides of the sash 15. When the shaft 45 is rotated in the proper direction the sash 15 will be opened so as to permit the air in the building to escape over the upper edge of the sash and allow fresh air to enter at the lower edge of the sash.

By the combination of inclined stationary sash and vertical sash pivoted to rotate about a horizontal axis, preferably near the center of said sash, I am able to combine the advantages of the inclined sash, so far as their illuminating characteristics are concerned, and the weather-proof characteristics of vertical disposed sash. These vertical disposed sash may be standard side wall sash which can be made absolutely weathertight and have great advantages over sash which are hinged at the top and are very difficult to keep weathertight. By employing vertical sash in the dormers I am able to use factory ribbed ⅛ inch thick glass, whereas with inclined sash it is necessary to use ¼ inch wire glass. My construction is accordingly much cheaper than that in which all of the sash of the sawtooth are inclined. Furthermore, by arranging the dormers so as to secure forced ventilation of the central portions of the building, I have overcome one of the objections to the constructions at present in use for ventilating buildings through the roofs thereof.

While I have described the preferred embodiment of my invention, it is to be understood that my invention is capable of other adaptations and modifications, and is not to be limited to the details of construction illustrated and described herein. In particular it should be clearly understood that my invention is not limited to the use of steel sash such as those disclosed and described herein, but may employ any type of sash constructed of either metal or wood, or other suitable material, and that my invention is not limited to the use of angle iron in the construction of the dormers or in the construction of the stationary sash. Furthermore, the means which I have illustrated for opening and closing the pivoted sash is well known and forms no part of my invention except as set forth in the combinations recited in the appended claims.

While I have illustrated and described my improved roof construction as comprising dormers extending outwardly from the inclined face of the sawtooth at intervals throughout the entire length of the sawtooth, it may possibly happen that in certain buildings ventilation is required through but a portion of the sawtooth, and under these conditions it will be necessary to provide dormers along that portion, only, of the sawtooth through which ventilation is desired, and my invention is to be construed as covering such a construction.

Having thus described my invention, what I claim is:—

1. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window-frames, window sash centrally and horizontally pivotally mounted in said frames to swing inwardly at their upper sides, stationary inclined sash interposed between said dormers and at the bot-

toms thereof, the dormers adjacent the ends of said sawtooth comprising means for providing less ventilation than those adjacent the center of said sawtooth, and common means for opening and closing said pivotally mounted sash.

2. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window frames, window sash centrally and horizontally pivotally mounted in said frames to swing inwardly at their upper sides, stationary inclined sash interposed between said dormers and at the bottoms thereof, and the dormers adjacent the ends of said sawtooth comprising means for providing less ventilation than those adjacent the center of said sawtooth.

3. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window frames, window sash centrally and horizontally pivotally mounted in said frames to swing inwardly at their upper sides, and stationary inclined sash interposed between said dormers and at the bottoms thereof.

4. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window frames, window sash centrally and horizontally pivotally mounted in said frames to swing inwardly at their upper sides, and stationary inclined sash interposed between said dormers.

5. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window frames, window sash horizontally pivotally mounted in said frames to swing inwardly at their upper sides, and stationary inclined sash interposed between said dormers.

6. A roof comprising a sawtooth construction, one side of said sawtooth being inclined from the vertical, a plurality of dormers extending from said inclined side and comprising vertical window frames, window sash pivotally mounted in said frames, and stationary inclined sash interposed between said dormers.

7. A roof having a side portion inclined from the vertical and comprising a pair of bays of stationary window sash, a dormer extending from said inclined side and interposed between said bays, the said dormer comprising a vertical window frame, and a sash pivotally mounted in said frame to swing about a horizontal axis.

In witness whereof I hereunto subscribe my name this 19th day of November, A. D. 1918.

ALFRED S. ALSCHULER.

Witnesses:
EDW. C. PEIRCE,
MARY A. COOK.

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