W. E. RENDLE.

Glazed Structure.

No. 224,608. **Patented Feb. 17, 1880.**

Fig. 1.

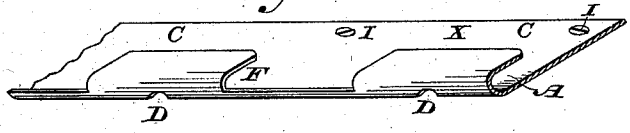


Fig. 2.

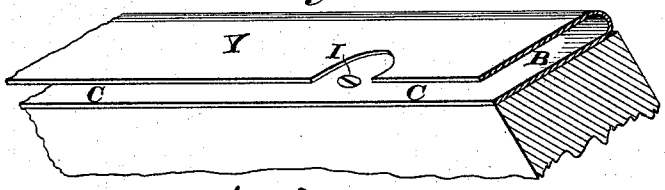


Fig. 3.

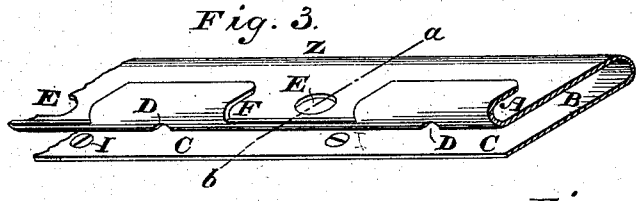


Fig. 3ˣ

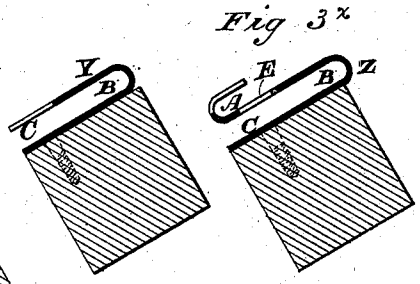


Fig. 7.

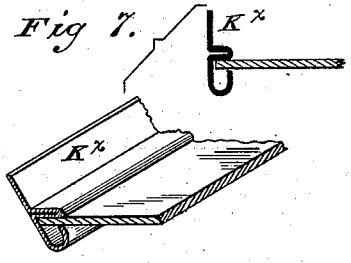


Fig. 8.



Fig. 4.

Fig. 5.

Fig. 9.

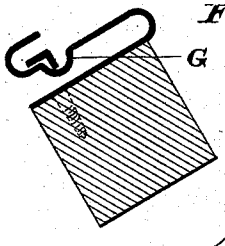


Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM E. RENDLE, OF WESTMINSTER, ENGLAND.

GLAZED STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 224,608, dated February 17, 1880.

Application filed October 15, 1879. Patented in Great Britain, May 11, 1870, and January 15, 1877.

To all whom it may concern:

Be it known that I, WILLIAM EDGCUMBE RENDLE, of 3 Westminster Chambers, Victoria street, in the city of Westminster, England, engineer, have invented new and useful Improvements in Glazed Structures for Horticultural and other Purposes, (for which I have received Letters Patent of Great Britain, dated May 11, 1870, No. 1,349, and January 15, 1877, No. 201,) which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention has for its object improvements in glazed structures for horticultural and other purposes—such, for example, as for railway stations and sheds, winter-gardens, exhibition-buildings, skating-rinks, markets, public buildings, workshops, weaving-sheds, skylights, and other such structures.

This invention, while to some extent like that embraced in the first of my above-recited British patents, is in most respects and essential features similar to the later patent mentioned, relating to improvements upon the first.

For supporting the sheets of glass I employ bars of sheet metal bent, as hereinafter described, in such manner as to form grooves or channels to hold the top and bottom edges of the sheets of glass. I also form the bars in such manner that any water collecting in the groove or channel which receives the lower edges of the sheets of glass may readily run off from it, and also form them in such manner that they can readily be fixed to horizontal purlins of a sloping roof or to other supports.

Where only a single row of squares or panes of glass is used the lower ends or edges of the glass are received in metallic bars X, of the form shown in Fig. 1, and the upper ends or edges in metallic bars Y, of the form shown in Fig. 2, and where there are more than one row of glass I use a middle bar, Z, of the form shown in Fig. 3, where the glass meets, and bars of the form shown in Figs. 1 and 2, to receive, respectively, the lower edge of the lowest and upper edge of the uppermost rows of glass. The top and bottom edges of the rows extend horizontally, and the joints are transverse thereto, between the respective panes of a row, which are inclined from top to bottom; or they may be vertical in some instances.

The groove or channel A of the intermediate bar, Z, is employed to receive the lower ends of the panes, while the deeper groove or channel B receives the upper end of the panes of glass. The flat portion C of the bent metal may be affixed to wooden purlins or other supports placed at intervals apart.

I form slots in the outer lip of the bars in the manner shown at D, Figs. 1 and 3. I also form holes E in the upper part of the bar Z, to allow any water to run off onto the square of glass below, also holes I in the bars Z, opposite the holes above mentioned, for driving screws to fix the bars, as will be clearly seen in the cross-section, Fig. 3×, and which is taken through the line *a b*, Fig. 3. This plan will prevent water being sucked up by capillary attraction, and also facilitates the fixing of the bars in position.

The half-bends which are left at the lower part of the slots F come flush with the glass in certain parts, and act as a wind-guard to prevent wind entering below the glass. The bars may be either in long or short lengths, as desired.

It will be seen that with these bars the groove or recess which is to receive the upper edges of the sheets of glass is always deeper than the groove or recess which receives the lower edges of the sheets of glass. Thus any one of the sheets of glass can at any time be lifted out or a fresh one introduced in its place without interfering with any of the other sheets of glass. To lift out any sheet of glass it is only necessary to raise it until its lower edge is clear of the lower groove or recess, and it can then be drawn back and lifted away.

When supporting and holding the panes of glass in grooved or channeled bars, as above described, the side edges of the squares or panes of glass may overlap each other, as shown in Fig. 4, to form the transverse inclined or vertical joints of a row; but as this is not suitable for all degrees of inclination, more especially for moderate slopes or for exposed situations, I, in some cases, in place of allowing the side edges of the sheets of glass to overlap one another, interpose between the sides of the adjoining sheets a small inclined or vertical bar, K, arranged transversely to the row, and formed from thin sheet metal bent to form in the manner shown at Figs.

5 and 6, so as to obviate draft and water penetrating. The bar is placed between the adjoining squares of glass, and is nearly of the same length as the glass. The horizontal bars which receive the ends of the squares of glass are notched to allow the lower ends of the vertical bars to come over and rest on the upper ends of the vertical bars below, as seen at Fig. 6, so that any water that enters the grooves or channels by one vertical or inclined transverse bar runs off upon the capping of the transverse bar below. At the extreme ends of the glazing or skylights I use a half metallic bar, $K^{\times}$, of the form shown at Fig. 7. When using cross-bars K $K^{\times}$, as above described, I form the horizontal metal bars with a recess or gutter, as shown at G in Fig. 6, and sometimes use a small piece of angle metal, as shown at Fig. 8, laid into the gutter, as shown at Fig. 9, as additional wind-guards, and for the better collection and quicker removal of water lodging at the lower edges of the glass.

As a support for the transverse bars, where long squares of glass are used, I fix immediately underneath one or more of the bars a T-iron or bar of other suitable section, as shown at Fig. 6, (marked H.)

The horizontal and cross bars are of different gages for the various kinds of glass in use.

The bars K are peculiarly formed, as clearly shown by the drawings, with the view both to economize in material and give the requisite strength, each being made of a single piece of metal flat at top and bent under and inward to the center to form the lapping flanges which project over the edges of the panes at their transverse joints of double thickness, thence downward to form the double upright rib or two-part web, and finally outward and upward to form the two gutters of single thickness. The end or half bar, $K^{\times}$, is, with a single exception, the exact counterpart of one-half of the bar K, the exception being the top rib or upwardly projecting side flange for its attachment and to prevent leakage.

Having thus described the nature of my invention, and the manner of performing the same, I would have it understood that I claim as my improvements in glazed structures for horticultural and other purposes—

1. The bottom bar, X, having groove or channel A, slots D, and holes I, substantially as and for the purpose set forth.

2. The intermediate bar, Z, having groove or channel A, groove or channel B, slots D, and holes E and I, substantially as and for the purpose set forth.

3. The bar Z, having the gutter G, substantially as described and shown, for the purpose set forth.

4. The transverse bar K, having the double overlapping flange for the joint between two panes, the double rib or web, and the gutters, of single thickness, formed of a single piece of metal bent into shape, substantially as described and shown.

5. The transverse half-bar or end cross-bar, $K^{\times}$, having the single gutter of one thickness, the double flange for overlapping the glass, and the upright rib or side flange, also of a single thickness, substantially as described and shown.

6. The combination of the bar Y and the bar X, for respectively receiving and holding the top and bottom edges of the panes of glass of a glazed structure, substantially as hereinbefore set forth.

7. The combination of the intermediate bar, Z, for receiving and holding the adjacent top and bottom edges of the panes of glass of two rows, with the bars Y and X, for respectively receiving and holding the top and bottom edges of the marginal rows of panes, substantially as hereinbefore set forth.

8. The combination of the bars Y, the bars X, and the transverse bars K, these parts being constructed and operating substantially as hereinbefore set forth.

9. The combination, substantially as hereinbefore set forth, of a series of horizontally-extending rows of panes of glass, the top bars, Y, the bottom bars, X, the intermediate bars, Z, the transverse bars K, and the half-bars $K^{\times}$ at the ends of the rows.

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