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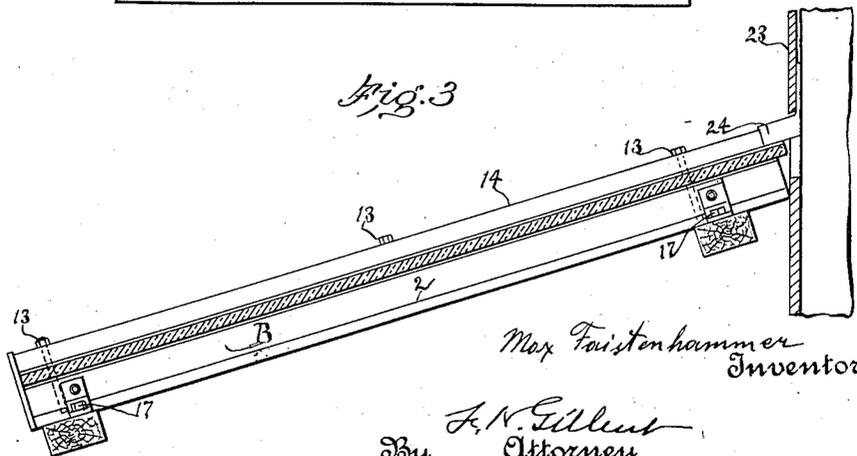
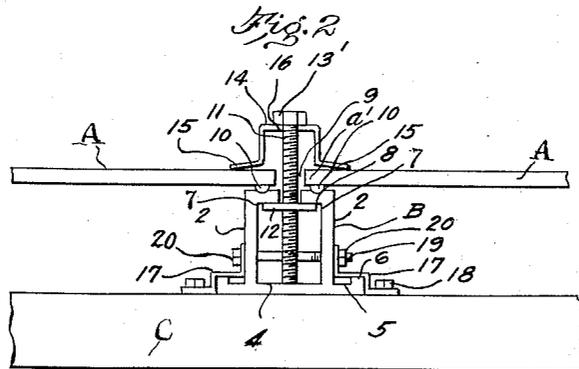
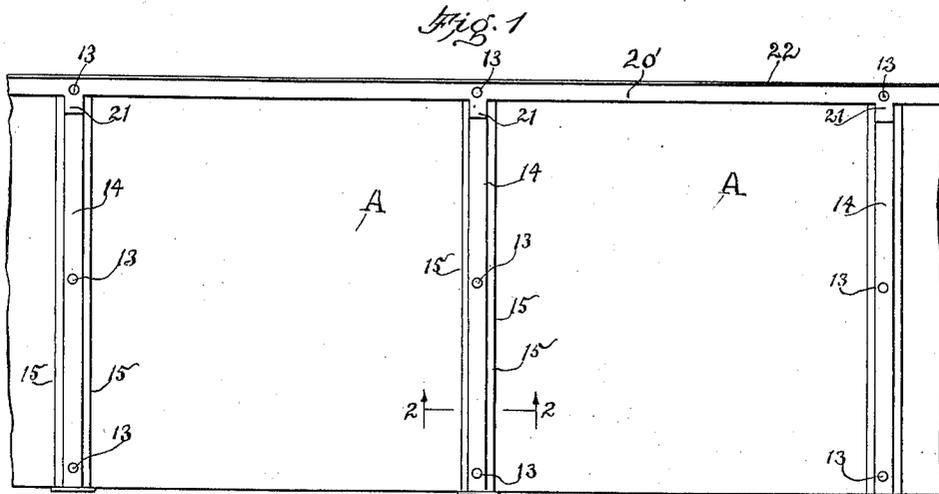
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2,022,541

PUTTYLESS GLASS ROOF

Filed April 19, 1930

2 Sheets-Sheet 1



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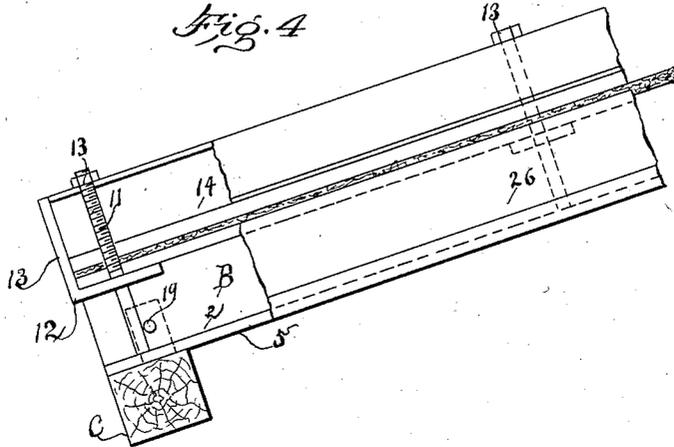
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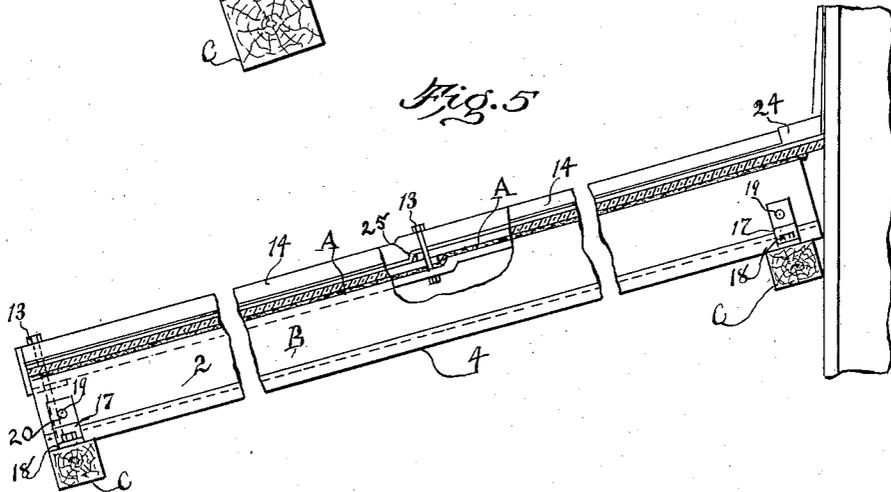
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2 Sheets-Sheet 2

*Fig. 4*



*Fig. 5*



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# UNITED STATES PATENT OFFICE

2,022,541

## PUTTYLESS GLASS ROOF

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Application April 19, 1930, Serial No. 445,800

2 Claims. (Cl. 108—16)

My invention relates to improvements in puttyless glass roofs or composition roofs, and it has for its object to provide a roof in which no putty is used in its construction, and where the same may be constructed of glass, sheet metal or other sheet material and assembled and connected without producing leakage.

My invention especially relates to sky-light roof formations, including glass roofs for green houses and for operating rooms in hospitals, or for similar purposes in any other building.

With these objects in view my invention consists of certain novel features of construction and arrangement of parts as will be hereinafter fully described and pointed out in the claims. Reference being had to the accompanying drawings, in which:—

Fig. 1 is a plan view of my device.

Fig. 2 is an end fragmentary view of my device.

Fig. 3 is a side view of a part of my device, partly in cross section.

Fig. 4 is a side view of a fragmentary part of my device, partly in cross section.

Fig. 5 is a side view in fragmentary form, partly in cross section of a modified form of my device.

The same reference characters denote like parts in each of the several figures of the drawings.

In my construction, as shown in Fig. 1, the glass surface is composed of sheets represented by A, and may be so laid on as to have one overlapping the other if desired.

In constructing my device, I have a series of rails B, B, forming trusses adapted to be spaced apart at any given distance for the support of sheets of glass or other roof materials for the roof structure. These rails are of the structure and formation as shown by the end view of the same in Fig. 2, and a side view of the same, as shown in Figs. 3, 4 and 5, and having the two vertical side wall projections 2, 2, spaced apart and forming an interior longitudinal recess 3 and having the bottom 4. The said rails B, B have on each side the horizontally projecting outer side flange 5, and each of said outer flanges have an outer spaced apart upturned edge 6, from the flange 5, as shown in Fig. 2. At the upper edges of the vertical sides 2, 2, of rails B, there are projected inwardly projecting flanges 7, on the upper surfaces of said flange projections 7 I have a horizontal curved channel 8. The inner edges of projections 7, 7 are spaced apart from each other and leaving an open channel 9.

As a further part of construction of my device,

I have removably mounted in the horizontal channels 8, 8 a section or portion of tarred rope or cord, or other substance impervious to water 10.

As a further part of my device, I have vertically and removably mounted in the channel 9 of rail B the bolt 11, its lower end resting on the bottom 4 in channel 9, of rail B, as shown in Fig. 2 and Fig. 4.

At the lower edge of my improved roof structure I provide angular lugs 12 having upturned edges 13 as shown in Figure 4. These lugs 12 have threaded openings through which the lower row of bolts 11 pass as will also be obvious upon reference to Figure 4. Upon turning of the 15 bolts 11 the lugs 12 will be drawn upward to contact with the lower edges of flanges 7—7. The upturned edges 13 of the lugs serve as stops for the lower row of glass plates or sheets during the assembly. The bolt 11 may be provided with an 20 enlarged polygonal nut 13' as shown in Figure 2 and the inner ends of the glass plates A are adapted to rest upon the yielding material 10 also shown in Figure 2.

With the bolts intermediate the ends of the 25 roof surface as shown in Figs. 2 and 3, the angular lugs 12 do not have the upturned edges 13, as they are unnecessary.

As a further part of my device I have the elongated cap 14, having the outer extending edge 30 flanges 15, which flanges rest upon the surfaces of the glass plates A near their contiguous edges, as shown in Fig. 2. In construction the cap 14 has openings therein as at 16. The upper end of bolt 11 projects vertically and the nut 13' may be 35 mounted thereon and is adapted to draw down cap 14 with its flanges 15 to contact with the surface of the glass A.

In the construction of my device, it is designed that the rails B having the rail bottoms 4, 40 which rest upon the cross beam C of the roof structure, and are there held in place by the step clamps 17, 17. The lower end of the clamp has thru it the bolt 18, projected into beam C, while the upper end of 17 has thru it the bolt 19, which 45 bolt 19 passes thru the sides 2, 2 of rail B, and has mounted thereon the nut 20, as shown in Fig. 2. Such construction is adapted to draw the clamp to firm position to the sides 2, 2, of rail B, and hold the rail in firm contact with the roof 50 structure.

As a further part of my device, and projected horizontally along the upper edge of my roof structure, I have the flap 20', extending over the 55 upper edge of glass section A, and having down-

ward projecting lugs 21 integral therefrom and spaced apart which extend over the upper surface of caps 14, 14, as shown in Fig. 1. Said flap 20' has also integral therewith a vertical projection 22, adapted to extend up under a siding 23, of a building when the upper edge of the roof is adjacent to an under side wall as shown in Figs. 3 and 5. The flap 20' has a projected end portion 24 which is adapted to be bent over so as to project vertically downward and against the outer surface of cap 14 and the sides of the roof structure to prevent leakage therein.

As a further part of my device, it is designed that in certain forms of roof structure where the glass A is placed in layers overlapping each other to have the rail B vertically stepped in formation, as shown in Fig. 5, and adapted to permit one section of glass A to overlap the edge of the lower adjacent glass plate A, as shown in Fig. 5, in which structure the cap 14 of the roof structure at the point 25 is also bent in step formation, as shown in Fig. 5, to be adapted to the outer surface of the roof structure.

As a further part of my device, I have an outer side cap 26, adapted to be bent over and mounted on the outer surface of an end roof rail B, as shown in Fig. 4, to protect the outer end surfaces of the roof structure when completed.

Having thus described my invention, what I claim as new, and for which I desire Letters Patent is as follows:

1. In a puttyless glass roof, a plurality of parallel girders spaced apart, each girder formed

with a channeled upper surface, supporting means for the girders, rows of glass plates supported by the girders, the edges of the glass plates resting on the girders and spaced apart, elongated caps disposed along the girders and having flanges engaging adjacent rows of glass plates, means for clamping the caps upon the plates, and lugs in the lower ends of the girders and having upwardly extending portions outside of the girders against which the lower row of glass plates abut, said lugs being connected to a part of the clamping means for the top plates.

2. In a puttyless roof of glass and the like, a plurality of parallel girders spaced apart, each girder having a channel in its upper surface, supporting means for the girders, rows of glass plates supported by the girders, the edges of the glass plates resting on the girders and spaced apart, elongated caps disposed along the girders above the glass plates and having flanges engaging adjacent rows of glass plates, means for clamping the caps upon the plates, angular lugs having portions disposed in the lower ends of the girders and having upwardly extending portions abutting the ends of the girders and projecting above the same to provide stops for the spaced apart edges of the lower row of glass plates, and threaded bolts passing through the cap and threaded through the portions of the lugs within the channels for clamping the lower edges of the plates and the channels together.

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