Oct. 5, 1937. W. MASS 2,094,801

ROOF FOR GARDENS

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Fig. 1.

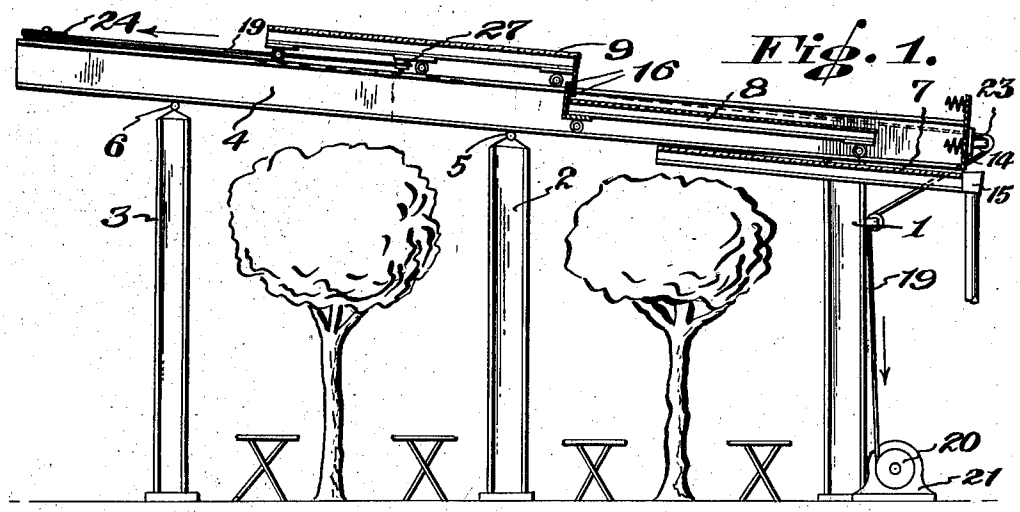


Fig. 2.

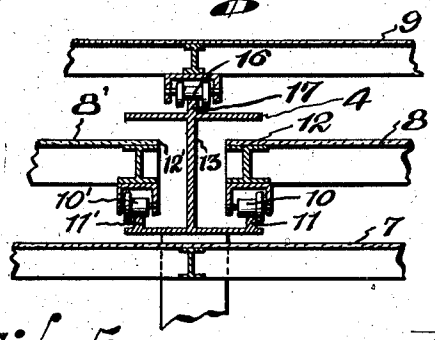


Fig. 2a.

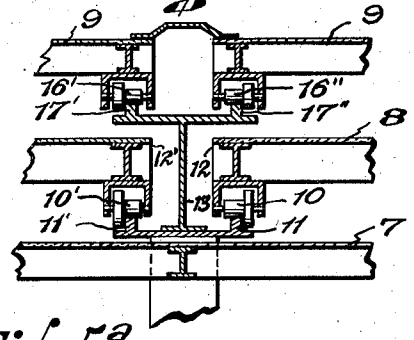


Fig. 5.

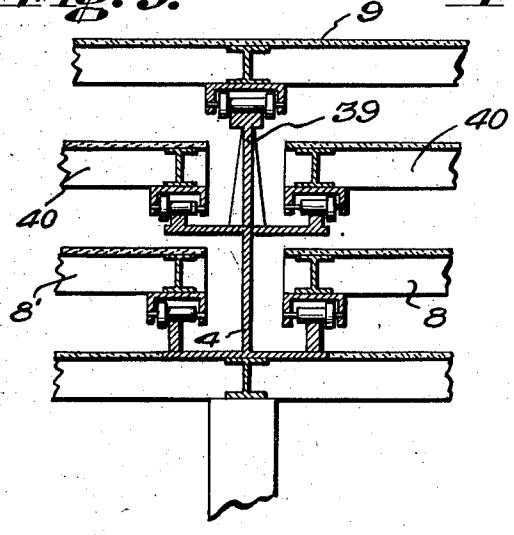
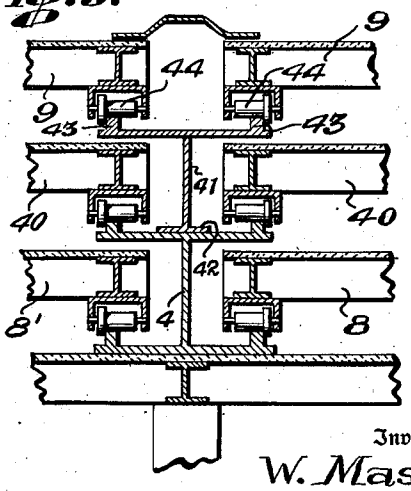


Fig. 5a.



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Fig. 3.

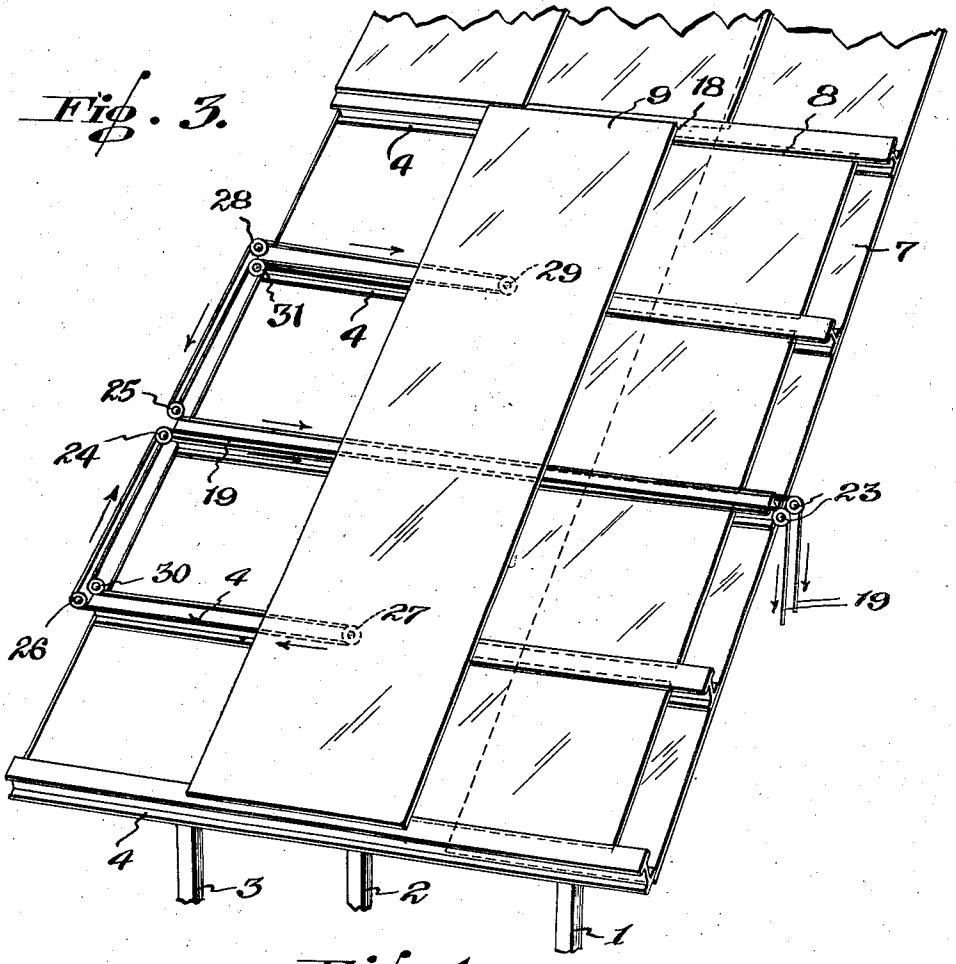
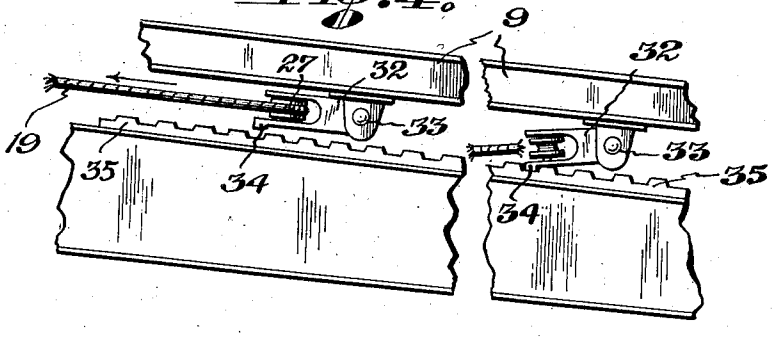


Fig. 4.



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ROOF FOR GARDENS

Willy Mass, Bad Godesberg, Germany

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In Germany May 19, 1934

5 Claims. (Cl. 108—16)

This invention relates to a kind of roof for garden inns, concert gardens, open air theaters and similar establishments.

As is known, the economy of such establishments depends upon the weather. Often great preparations and provisions are in vain since the weather does not permit to stay in the open air.

The invention consists therein that the area to be covered is subdivided by a framework consisting of uprights and supporting rails and surpassing the height of trees in such manner that removable, frameless transparent roof-plates can be inserted in rows which are arranged to slide on the supporting rails and when opened can be placed one above the other, thus laying open a considerable part of the area of the garden. In such manner the character of the open garden is retained to the garden establishment without the risk of being disturbed by the irregularities of the weather.

In detail the accomplishment of the new roofing depends upon the situation and the form of the garden plant. A rectangular plant is preferably subdivided longitudinally and transversely, the rails supporting the roof elements being inclined more or less. In order to permit of a convenient disposal of the gutters the undermost sections may be stationary so that the sections lying above can be lifted obliquely like Venetian blinds.

The invention is illustrated by the annexed drawings showing a rectangular roof having two and/or three sliding sections above one stationary section.

Fig. 1 is a cross section taken between two supporting rails, and showing my improved roof with two sliding sections,

Fig. 2 is a vertical cross section of a part of the roof shown in Fig. 1, the roof sections being carried by a broad flanged double-T-beam this view illustrating the supporting means for the portion of the upper section intermediate its ends,

Fig. 2*a* is a view similar to Fig. 2, but showing the manner of supporting the adjoining ends of a pair of upper roof sections,

Fig. 3 is a perspective view showing diagrammatically the method of leading the rope to the outer (upper) roof section,

Fig. 4 shows the suspension of a pulling roll or pulley at an outer roof section.

Fig. 5 is a vertical cross sectional view similar to Fig. 2, but showing three slidable roof sections, and Fig. 5*a* is a vertical cross sectional view similar to Fig. 2*a*, but illustrating three slidable roof sections.

In Figures 1 to 3 1, 2, and 3 are uprights on which one of the broad flanged double-T-rails 4 are supported. The rail 4 is welded together with the upright 1, whereas it rests on the uprights 2 and 3 by rolls 5 and 6 to withstand influences of temperature. The stationary roof section 7 is arranged beneath the rail 4, whereas the middle roof section 8 is movable between the upper and the lower flange, and above the upper flange of the rail 4 each outer roof section 9 moves. The roof sections 8 and 8' are supported by means of rolls 10 and 10' on rails 11 and 11' secured at the edge of the lower flange of the rail 4. The projecting edges 12 and 12' of the middle roof sections partially overlap the space between the rib 13 of the rail 4 and the rails 11, so that rain water or the like runs from the roof section into the gutters formed between 11, 11' and 13 and from here is conducted to the end 14 of the rail 4, where eaves 15 receive the water.

Each one of the upper roof sections 9 may freely extend over several rails 4, as shown in Fig. 3, and said sections may be supported on rollers 16, 16', 16'' mounted on guide rails 17, 17', 17'' secured to the upper surface of the supporting rails 4. As shown in Fig. 2, the guide rails 17 supporting the intermediate portion of each upper section is secured to the central portion of the supporting rail 4, whereas the guide rails 17', 17'' supporting adjoining ends of a pair of said upper sections are secured to the outer edges of said supporting rail 4 so as to form another gutter between said adjoining roof sections for the regular withdrawal of rain water.

In the event three or more slidable sections are to be employed in the construction of my improved roof, the two lower sliding sections will be constructed and operate in the same manner, with the exception that the lower one of said two sections will be supported on guide rails secured to the lower flange of the cross beam or rail 4, while the second or upper one of these two sections will rest on guide rails secured to the outer edges of the upper flange of the supporting rail 4. As shown in Fig. 5, the portion of the upper sliding section 9, intermediate its ends, is supported by a single guide rail 39 secured to the upper surface of the supporting rail 4. The guide bar or rail 39 in this embodiment of the invention is disposed between the adjoining ends of a pair of intermediate sliding sections 40 and extends upwardly from the upper surface of the supporting rail 4 a distance sufficient to permit the upper section 9 to slide freely thereon. In Fig. 5*a*,

I have illustrated the manner of supporting the adjoining ends of a pair of upper sections 9 where three slidable sections are employed in the construction of the roof. In carrying out this feature of my invention, I employ a second double T-beam 41 mounted on the lower double T-beam or supporting rail 4. This second beam 41 is provided with a narrow lower flange 42 adapted to fit between the guide rails on the upper surface of the lower beam 4. The upper flange of the beam 41 is provided with a pair of guide rails 43, similar to the guide rails 17', 17'' of the structure shown in Fig. 2a. The rails 43 are adapted to receive rollers 44 carried by the adjoining ends of two sections 9.

The movement of the sections is accomplished by ropes engaging the upper roof section 9 to which tappets 18 are secured engaging the middle sections 8, 8' &c. and overlapping the latter draw them along. The rope 19 is wound on a right- and left-handed drum 20 of the lifting jack 21. The two ropes coming from the drum run over the pulleys 22 and 23 to the pulleys 24 and 25 arranged near the front edge of the roof. One rope runs over the pulley 26 to the pulley 27, arranged at the engaging point on the upper roof section 9, whereas the other rope is conducted over the pulley 28 to the second engaging point on the upper roof section 9 and the pulley 29. Then both ropes are returned to the pulleys 30 and 31 between which they unite again. In this way a compensation is accomplished, equal forces always engaging the pulleys 27 and 29, so that no oblique pull can be exerted on the upper roof section.

In view of the considerable weight of the various sliding sections running on inclined tracks it is absolutely necessary to provide for safeguards against accidents in case the rope breaks. For this purpose the pulleys 27 and 29 are suspended, as shown in Fig. 4, in a frame 32 linked at 33 to the lower side of the roof section 9. The frame 32 is shaped at its lower end to form a hook 34, so that on breaking of the rope the pull acting in the direction of the arrow is released, and the frame 32 falls down, and the hook 34 engages one of the abutments 35 provided on the supporting rail 4, whereby the roof section is locked.

To exclude an excessive movement when opening or closing the roof sections, automatic disconnecting means may be provided for the lifting jack 21 in the well-known manner, which means are operated by abutting on the roof section 9. Preferably the sliding roof sections are made to abut on resilient stops as shown in Fig. 1 to a soft arresting of the motions.

I claim:

1. A roofing for a garden or the like, comprising a framework composed of uprights and double T-beams carried by said uprights, rails fixed on the flanges of said beams, and roof sections running on said rails and adapted to slide one above the other and overlap one another like Venetian blinds, the central rib and flanges of each beam, together with the rails on said flanges forming a gutter, said gutter being overlapped by the edge of said roof sections.

2. A roofing for a garden or the like, comprising a framework composed of uprights and supporting double T-beams dividing the area of the garden into a number of sections, and transparent roof sections adapted to slide one above the other, overlapping one another like Venetian blinds and adapted to be retracted in series uncovering a considerable part of the area of the said garden, said sections including a stationary section and three sliding sections arranged one above the other, the lowest of which runs between the central ribs of said supporting beams, and the middle one of which runs on bars fixed on the outer edges of the upper flanges of said supporting beams.

3. A roofing for a garden or the like, comprising a framework composed of uprights and supporting beams dividing the area of the garden into a number of sections, and transparent roof sections adapted to slide one above the other, overlapping one another like Venetian blinds and adapted to be retracted in series uncovering a considerable part of the area of said garden, said roof sections including a stationary section and a plurality of sliding sections, the outermost section being operated by means of a rope engaging said section at two points remote from one another and connected with one another by a device equalizing the forces acting at both points.

4. A roofing for a garden or the like, comprising a framework composed of uprights and supporting beams dividing the area of the garden into a number of sections, and transparent roof sections adapted to slide one above the other, overlapping one another like Venetian blinds and adapted to be retracted in series uncovering a considerable part of the area of said garden, said roof sections including a stationary section and a plurality of sliding sections, the outermost section being operated by means of an endless rope engaging the section at two points remote from one another and connected with one another by a device equalizing the forces acting at both points, the rope being conducted over rollers and connecting the said engaged points.

5. A roofing for a garden or the like, comprising a framework composed of uprights and supporting beams dividing the area of the garden into a number of sections, and transparent roof sections adapted to slide one above the other, overlapping one another like Venetian blinds and adapted to be retracted in series uncovering a considerable part of the area of said garden, said roof sections including a stationary section and a plurality of sliding sections, the outermost section being operated by means of an endless rope engaging the section at two points remote from one another and connected with one another by a device equalizing the forces acting at both points, the rope being conducted over rollers and connecting the said engaged points one of said rollers being mounted in a link adapted to fall into a toothed rack when the rope is broken.

WILLY MASS.