United States Patent [19]

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[45] Oct. 9, 1973

[54] **WEATHER PROTECTING AND VIEW OBSTRUCTING SCREEN**

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[51] **Int. Cl.** **E04b 7/16**

[58] **Field of Search** 52/63, 64, 68, 72, 52/74, 75, 78, 125, 222, 473; 160/183

[56] **References Cited**

UNITED STATES PATENTS

3,390,495	7/1968	Dalby	52/222
3,186,712	6/1965	Kessler	52/222 X
2,788,550	4/1957	Andrews	52/473 X
2,642,018	6/1953	Weeber	52/72 X

FOREIGN PATENTS OR APPLICATIONS

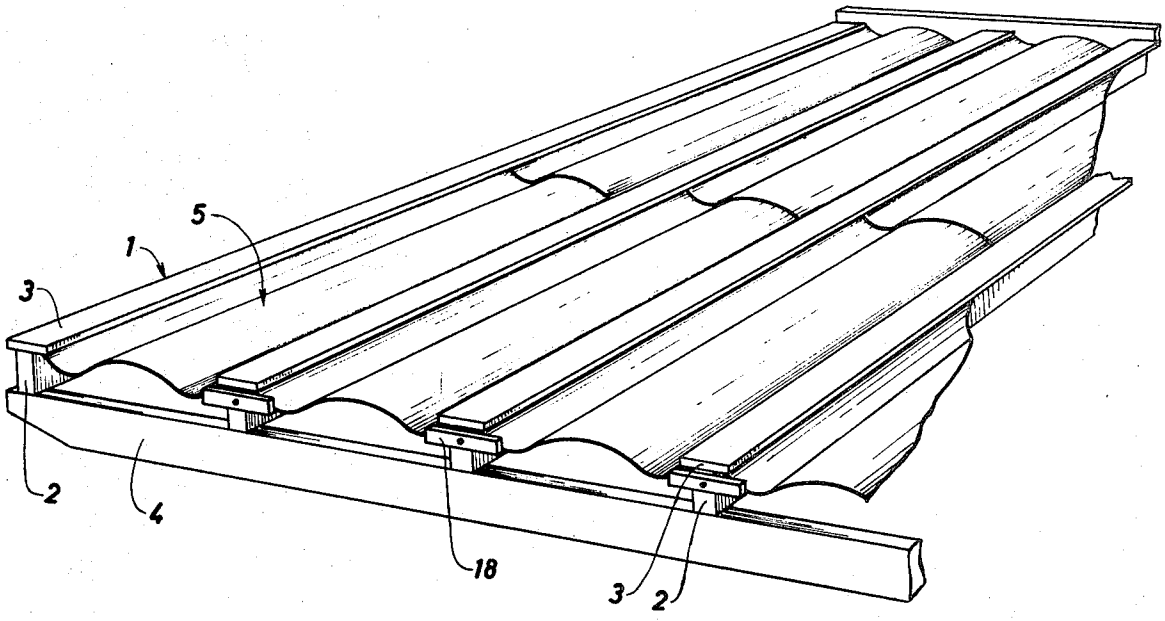
420,562	3/1967	Switzerland	52/64

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[57] **ABSTRACT**

A roofing structure with a supporting frame having spaced apart beams with cover elements slideably connected at their edge portions to said beams, spanning the space between said beams and positioned on superposed levels and overlapping so that said cover elements can be slid onto or along said beams as desired.

2 Claims, 3 Drawing Figures



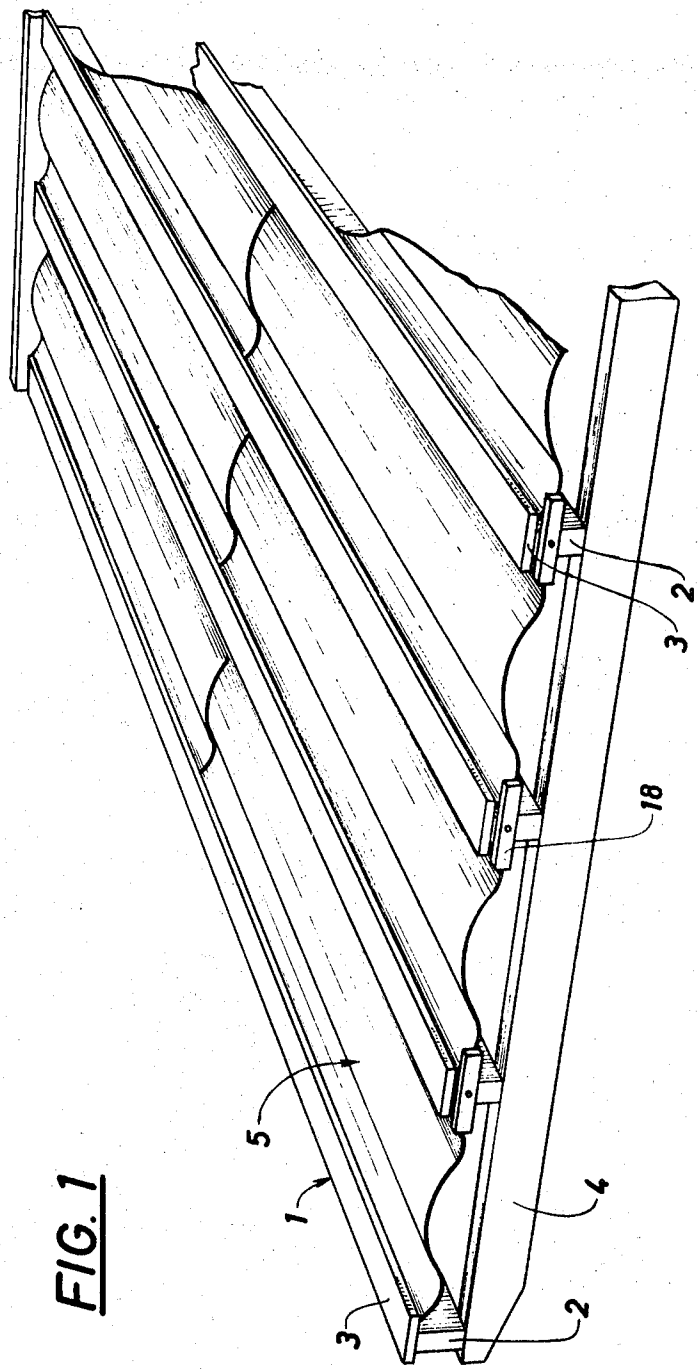


FIG. 1

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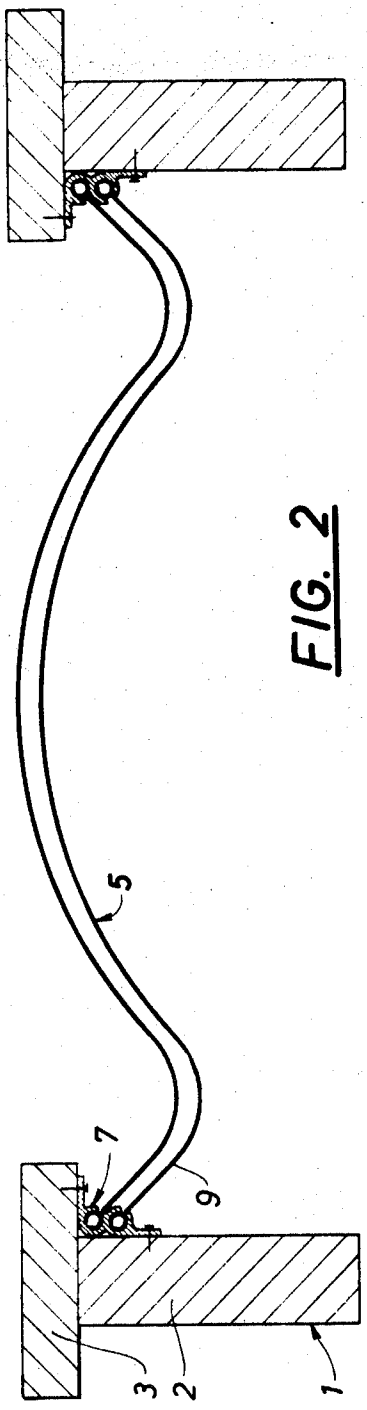


FIG. 2

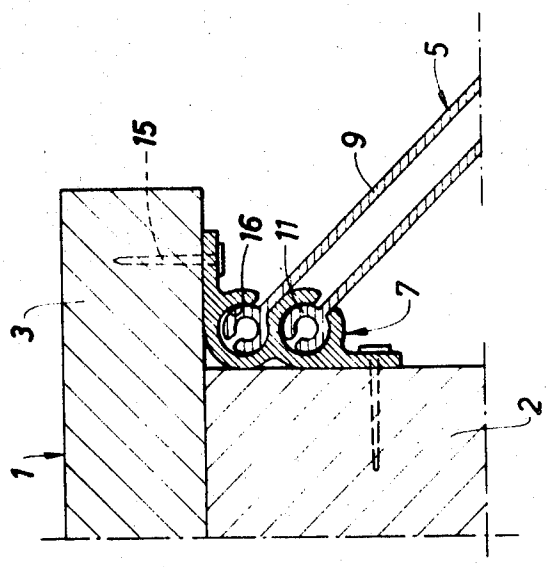


FIG. 3

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WEATHER PROTECTING AND VIEW OBSTRUCTING SCREEN

A WEATHER PROTECTING AND VIEW OBSTRUCTING SCREEN

The present invention relates to a weather protecting and view obstructing screen or shield,particularly in the form of a roof,and comprising a number of parallel beams forming a supporting frame and a number of cover elements bridging the gaps between the beams which are provided with longitudinally extending guides for displaceably supporting a plurality of cover elements providing one above the other in the space between the beams. The screen is intended to be used to protect balconies and other outdoor spaces or areas from sun, wind and rain and also to prevent observation of such space or area.

A previously known roof structure of this general type is disclosed in the Swiss Pat. specification No. 420,562. However, the cover elements are not made with depending portions as is the case with the cover elements according to the present invention. Instead, the cover elements according to the Swiss patent are arch-shaped with their displaceably carried side edges extending upwardly. This form results substantially in compressive forces in the material which must therefore have a considerable stiffness. Plastics is a suitable material for the cover elements in screens of the general type to which the invention relates. However, the use of plastic material for the cover elements according to the Swiss patent will involve the risk that the middle portion of the cover elements will sink down whereby the greater part of the load sustaining capacity will become lost. Furthermore, rain water on the cover elements will flow out towards their supporting edges and penetrate in to the guides, and even if some form of drainage is provided in the guides, the through-flow of rain water will successively cause an agglomeration of dirt which may obstruct the displaceability of the cover elements. The structure may also be damaged by freezing in cold weather. In order to reduce such effects it will be necessary to provide sealing elements between the cover elements and their guides, as is also disclosed in the Swiss patent specification.

The present invention has for its object to provide a weather protecting and view obstructing screen wherein the material of the cover elements will be subjected substantially only to tensile stresses which gives a very free choice of material. Thus, apart from plastics it will be possible for instance to use very thin sheet metal. This feature of the present invention is specially important when a plastics material is to be chosen since plastics is a suitable and desirable material for such applications.

A further object of the invention is to obtain such a cross sectional form of the cover elements that water will flow away from their edge portions located in the guides so that the risk for inflow of rain water in the guides will be substantially eliminated.

These objects of the invention have been attained by giving the cover elements a cross-sectional form comprising a first portion extending substantially downwardly from each supporting edge of the element, said first portions being inclined towards one another to provide space for receiving a second cover element of identical form on top of the element, each element further having a middle portion joining said first portions at their lower edges.

One embodiment of the invention will be described herebelow with reference to the accompanying drawings in which

FIG. 1 is a perspective view of a roof made in accordance with the invention,

FIG. 2 is a cross section to a larger scale through one section of the roof and

FIG. 3 is a cross section to a still larger scale of a portion of FIG. 2.

As will appear from FIGS. 1 and 2 the roof comprises a number of T-shaped supporting beams 1. In the present embodiment each beam is made of two interconnected wooden beams 2 and 3 forming the web and flange portions, respectively, of the T-beam. The beams 1 in turn are supported at their ends by beams 4 which are secured in manner not shown in the drawings to the walls of a house or to pillars or the like. The screen or shield proper is formed by a number of cover elements 5 extending between the beams 1. The cover elements 5 are supported in guides 7 secured to the underside of the beam flanges 3. The length of the beams is preferably divided between several cover elements 5 partly overlapping one another. In the example illustrated in FIG. 1 there are two cover elements between each pair of beams 1. The cross section of FIG. 2 is taken in the portion where the two cover elements overlap.

As will appear from FIGS. 2 and 3 each cover element 5 has a first downwardly directed portion 9 at each longitudinal side, said portion 9 being terminated at the edge with a profiled portion which, in the example illustrated in FIGS. 2 and 3, is in the form of a longitudinally split tube 11.

Between the depending portions 9 the element 5 extends in a double arc, those arc portions connecting to the portions 9 and having their convex sides directed downwards having a smaller radius than the middle arc having its convex side facing upwards. A number of ridges 14 are formed in the material along the outer side of the elements.

As will appear from FIGS. 2 and 3 the guides 7 are secured to the beams 1 by means of nails 15, the guide grooves 16 in the guides 7 are made with a form corresponding to the form of the edge portions 11. The guide grooves 16 are provided one above the other which makes it possible to use cover elements 5 of identical shape for both the upper and the lower cover elements which is of advantage from a manufacturing point of view. The guide grooves 16 may be provided with longitudinally extending recesses for receiving a lubricant to facilitate displacement of the elements.

The roof is also preferably provided with end stops, for instance of the type indicated at 18 in FIG. 1. The end stops 18 may be rotatable or removable so that the elements 5 may be pulled out completely.

For mounting the displaceable elements on the supporting structure formed by the beams 1 and 4 the necessary number of guides 7 are first mounted. Thereafter the cover elements 5 need only be inserted into their guide grooves 16 and the end stops 18, if used, are then turned to their stopping position. The cover elements may be easily adapted according to wish. For instance, in order to obtain maximum inlet of sunshine, the elements between each pair of beams are displaced so that one element is exactly above the other with the ele-

ments disposed either at the upper edge or at the lower edge of the roof. If complete protection against sun or rain is desired the elements are displaced to the position illustrated in FIG. 1 together extending the whole length of the beams. To obtain the smallest possible wind surface in the case of a storm the elements are pushed together, and if the roof is connected to a wall it will be preferable to leave an opening between the cover elements and the wall for limiting the air pressure on the underside of the elements.

The form of the cover elements illustrated in FIG. 1 and in full lines in FIG. 2 is of advantage in so far as the strength against snowloads will be very great and at the same time a large portion of the snowload will be supported directly by the beams due to the arch form between the beams.

Another advantage of the form of elements illustrated in FIG. 1 is that when translucent material is used, the light effects seen from below the roof will be very pleasing, since some portion of the elements will be illuminated even when the sun is low.

The cover element according to the broken lines in FIG. 2 is not equally suitable with regard to snowloads, and when the sun is low the cover elements will be shadowed by the beams 1. On the other hand this form of element has the advantage that there will be substantially only downwardly directed forces at the guides 7. The ridges 14 are intended to serve as runners in case the elements should touch oneanother due to the load or due to unfavourable mounting of the elements.

The guides 7 may be formed by extrusion of thermoplastic material. Also the elements 5 may preferably be extruded of a translucent plastic material, provided the width of the element is not too large. Other methods of manufacture may be employed for instance vacuum forming of panes and fastening of the edge portions 11 by means of thermo plastic welding. The cover elements may of course also be made in clear transparent material or in completely opaque material, and different types may be mixed in one and the same roof. In the latter case the guides may be provided with so many guide grooves that the roof may be composed by several layers of cover elements which may be displaced to form for instance a partly light transmitting roof, a completely or partly shadowing roof or a partly open roof.

When the supporting beams are of such a length that more than two cover elements are necessary for covering the length of the beams the guides must also be provided with more than two guide grooves if complete "collapsibility" of the roof is desired. In a roof of smaller span a single element between each pair of beams may suffice and if such element is of the same length as the beams the element will not be displaceable after mounting, so that in this case the possibility of displacing the elements is utilized only when the roof is assembled and disassembled.

The beams 1 may of course be made in any suitable material, for instance light metal in which case the guides may be made integral with the beams.

As already mentioned the screen according to the invention may be used also as a wall. In this case the beams 1 which may be more slender than when used in a roof are placed either vertically or horisontally one above the other. In the case of vertical mounting provisions must be made for preventing the cover elements to slide down by their own weight. Such sliding of the cover elements may be prevented by means of suitable friction in the guides or by means of locking devices.

I claim:

1. A roofing structure comprising a plurality of parallel spaced apart beams forming a supporting frame, a plurality of cover elements bridging the gaps between said beams, grooved guides mounted on and extending longitudinally of said beams, said cover elements each having edge portions longitudinally slideable in said guide grooves, each cover element having a portion extending substantially downwardly from each longitudinal edge of the element and a middle portion connecting the lower edges of said first mentioned portions, said first mentioned portions at the longitudinal edges of the element being inclined towards one another, said guides having a number of said grooves placed in at least two superposed levels extending between said pair of beams at such distance from each other that two of said elements are carried in said two levels by means of said guide grooves and are slideable into an overlapping closely spaced relationship with the inclined portions of the one element placed between the inclined portions of the other element.

2. A screen as claimed in claim 1, characterized in that said middle portion comprises an upwardly arching portion connected in a smooth curve to each of said downwardly extending edge portions.

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