Jan. 4, 1966 R. S. GREGOIRE 3,226,907

PREFABRICATED ROOF STRUCTURE

Filed Sept. 17, 1962

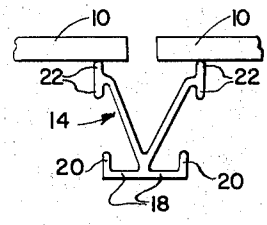


FIG. 2

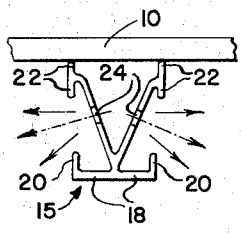


FIG. 3

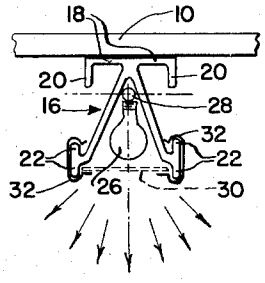


FIG. 4

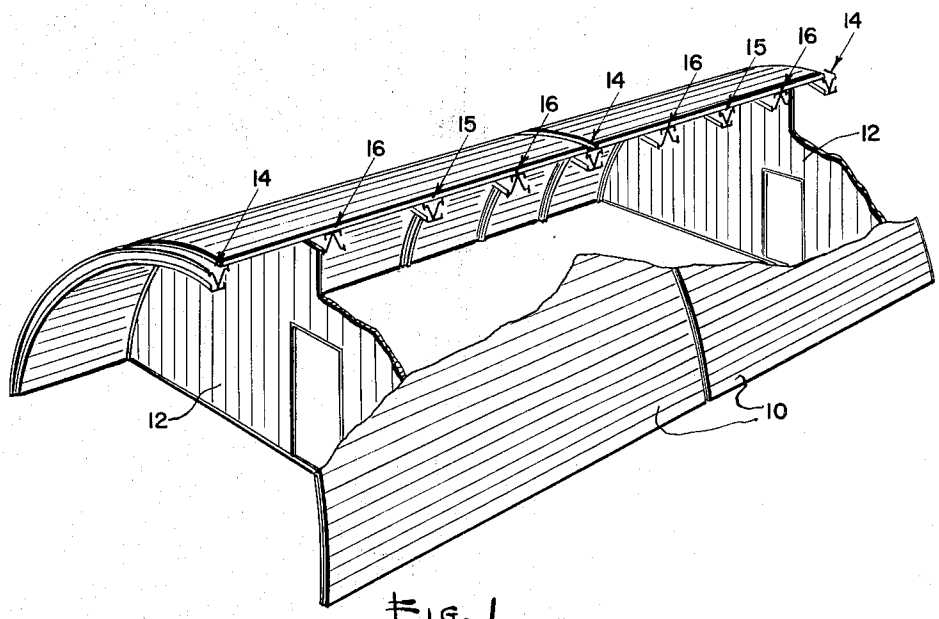


FIG. 1

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PREFABRICATED ROOF STRUCTURE

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The present invention relates to rigid prefabricated shelters or enclosures for industrial, commercial, agricultural or private uses, and more particularly to the novel roof support beams which are adaptable to serve also as rain gutters, air ducts or recessed lighting fixtures.

The object of this invention is to build prefabricated quonset type shelters or enclosures using a minimum of standard size parts for a variety of sizes of shelters or enclosures, which may be easily put together at the site, without requiring the usual tools and accessories.

A further object is to make arched roof support beams and formed sheet panel strips having complementary self locking and sealing edges for assembly over the beams, starting at the bottom of one side of the arched roof and going up over the top and down to the bottom of the other side.

A further object is to provide a beam structure which is adaptable to serve as a gutter or a duct as well as a roof support when arched in one direction, or as a recess for recessed lighting when arched in the opposite direction to the desired roof conformation.

A further object is to make an extrusion for support beams having a generally V-shaped cross section with base flanges extending horizontally in opposite directions from the bottom of the V and vertically in both directions from the end of each leg of the V.

Other and more specific objects will appear in the following description of a preferred form of the invention, as illustrated in the accompanying drawing wherein:

FIG. 1 is a perspective view of a quonset type hut partly broken away to show the arrangement of the roof support beams,

FIG. 2 illustrates the use of the beam as a rain gutter while supporting the adjacent edges of two roof sections,

FIG. 3 illustrates the use of the beam as an air duct besides supporting the roof, and

FIG. 4 illustrates its use in inverted position to provide a recess for recessed lighting fixtures.

In order to quickly set up a shelter or hut, it has been customary to use poles or other framework and stretch a sheet of canvas or other flexible material over it. For large structures, it becomes quite a problem to build a reasonably strong and windproof structure.

The present invention provides a panel structure for the roof **10** and walls **12** that may be easily assembled over a simple framework comprising a plurality of suitably arched beams **14**, **15** and **16**, formed from light metal extrusions and suitably arranged along the length of the structure to provide rain gutters, lighting fixture recesses and air ducts, if desired.

The panel structure may be of the type defined in my pending applications S.N. 194,339 filed May 14, 1962, for Panel and Joint, which comprises panel strips having interlocking edges that form sealed joints when joined edge to edge in assembling the panel structure over the arched beams **14**, **15** and **16** to form the roof **10** and

across the ends to form end walls **12**. The panel strips for the roof are pre-cut to a standard length corresponding to the distance at which the rain gutter beams **14** are spaced, in order to support the ends of the roof panel section between them by their inner flanges with respect to said panel section.

The panel strips for the end walls are pre-cut to the form of the corresponding parts of the end walls, so that no fitting or cutting is necessary at the site of the assembly.

Thus, the assembly is easy and quick, requiring no accessory parts or tools, and may be carried out by inexperienced hands with the aid of a few simple instructions on how to interlock the complementary edges of the panel strips, and how to space the beams **14**, **15** and **16**, and how to fasten the panel sections by interlocking with the support beams.

The air duct beams **15** may be spaced half-way between the beams **14**, and the recess beams **16** may be spaced half-way between the beam **15** and each of the adjacent beams **14** as shown in FIG. 1.

Several different sizes and shapes of arched beams **14**, **15** and **16** may be prefabricated and several different sizes and types of panel strips may be made and pre-cut to suit different requirements.

The roof structure shown comprises two sections in length, but it may be extended whenever desired, by adding as many sections as may be required at either or both ends of this structure.

The support beams have a common V section webbing with a double flange **18** extending in opposite directions from the apex of the V. The edges of flanges **18** may be provided with reenforcing upwardly turned ridges **20**. Similarly opposed flanges **22** extend normally to the base flange **18** from the upper end of each of the legs of the V.

The upper edges of flanges **22** in the gutter beams and air duct beams form the support bearings for the roof panel section, but in the recess beams **16** the base flanges provide this support bearing.

The beams **15** has distribution openings **24** in the sides of the duct for ventilation or heating or cooling or conditioning, depending on the service and purpose of the air supply.

The recess beam **16** may have a light bulb **26** and fixture **28** mounted in the V and a diffusing lens or grid **30** mounted over the recess by spring clips **32** or by any other means.

Many obvious modifications in the form and details of the essential parts of this structure may be made without departing from the spirit and scope of the present invention, as defined in the appended claims.

What is claimed is:

1. A support beam of constant V-shaped cross-sectional form having great strength and adaptability to provide other functions besides that of a support structure,

said cross-section having straight sides with base flanges extending from the point of the V to both sides thereof, and

the outer ends of the sides of the V being turned outwardly, and

a pair of parallel flanges extending in both directions from said outer ends of the sides of the V normally with respect to said base flanges.

2. A beam as defined in claim **1**, said base flanges extending to both sides of said V having upwardly extending ridges at their outer edges.

3. A beam as defined in claim 2, said parallel flanges being spaced apart at least as much as said upwardly extending ridges.

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