

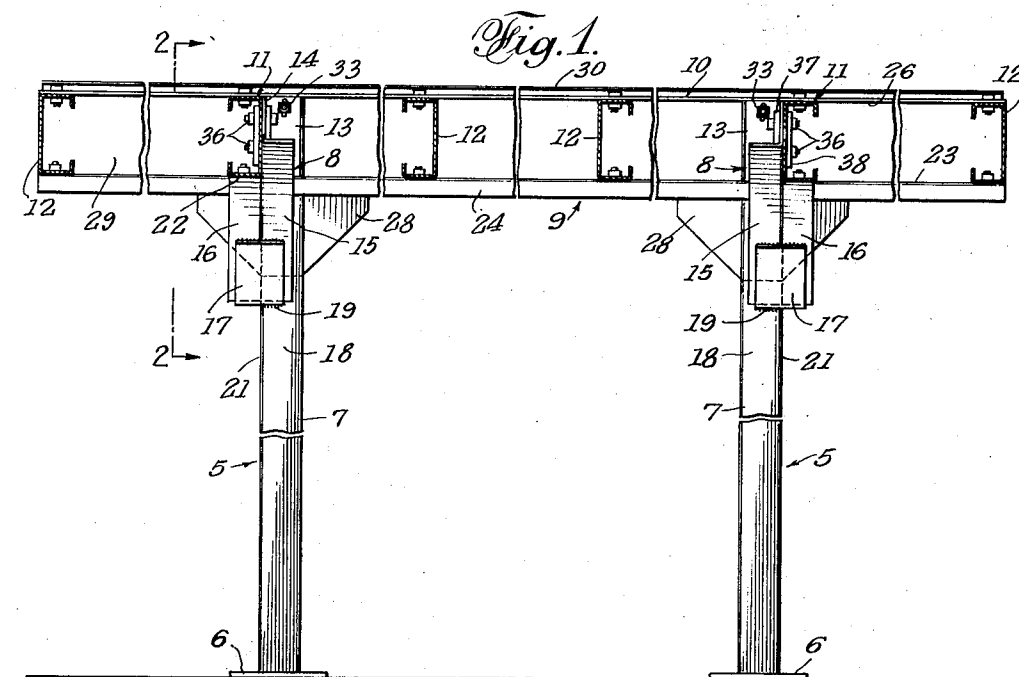
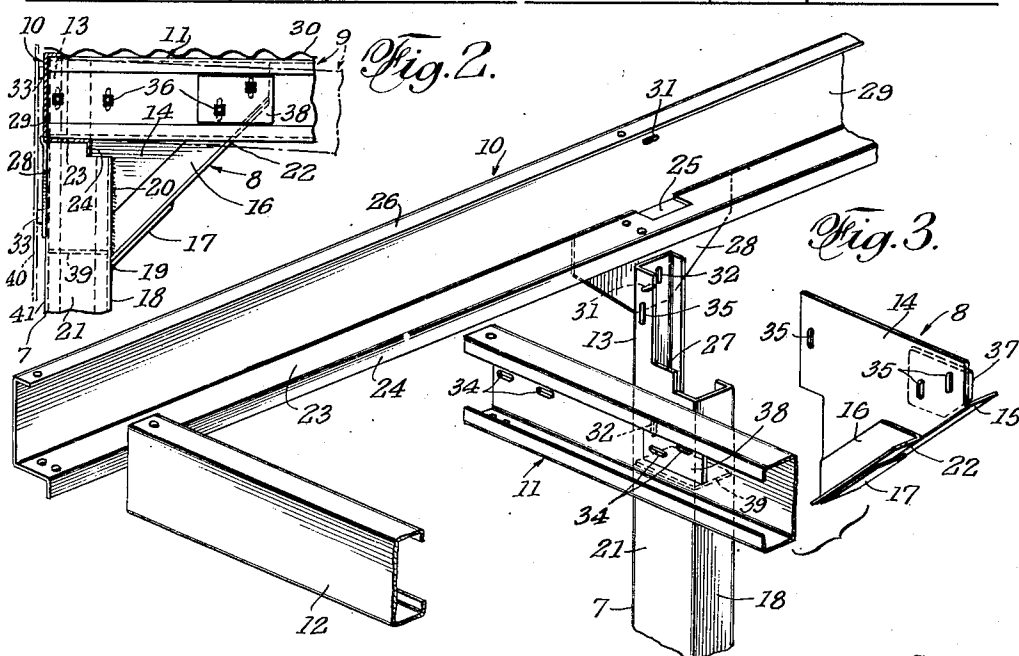
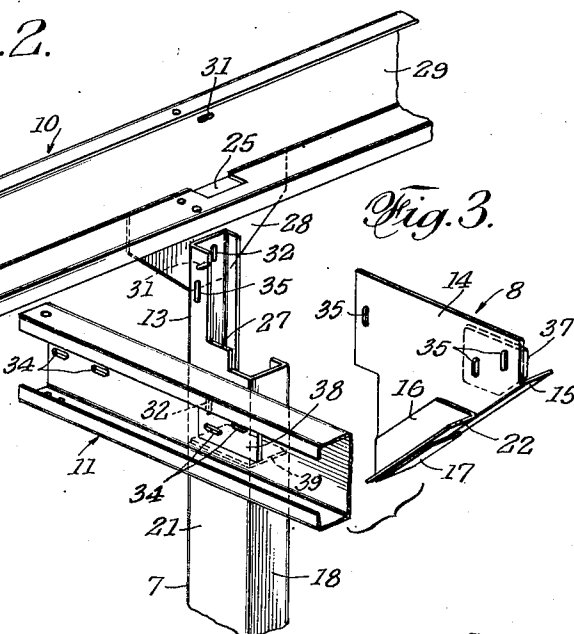
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CANOPY STRUCTURE

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CANOPY STRUCTURE

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This invention relates to a canopy structure that has various uses, such as car ports, sheds, lean-tos, etc.

An object of the present invention is to provide a simplified structure of the nature indicated, the components of which are preformed and prefabricated members that are readily assembled to provide a durable yet knock-down structure.

Another object of the invention is to provide a structure, as indicated, that can be provided in knock-down kit form.

Another object of the invention is to provide connection means for a canopy structure whereby the roof thereof may be level or pitched, as desired.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a foreshortened longitudinal sectional view of a preferred embodiment of the present invention.

Fig. 2 is a fragmentary cross-sectional view as taken on line 2—2 of Fig. 1.

Fig. 3 is an expanded perspective view showing the various components of the structure.

The canopy structure that is illustrated comprises, generally, a set of support members 5, each member comprising a base 6, a column 7 and a column gusset 8; and a roof 9 comprising a pair of longitudinally arranged eave struts 10, a transverse purlin 11 extending between the eave struts and connected to each pair of opposed support members 5, and additional purlins 12 extending in a similar manner intermediate purlins 11 and at the ends of the roof, the number of purlins 12 varying according to the length of the structure.

As above mentioned, the support members 5 are arranged in pairs, one member on each side of the structure. For a free-standing structure, two pairs of members are the minimum, while

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more than two pairs may be used for substantially elongated structures.

The column 7 of each support member is formed of thin-gauge metal to have a C-shaped cross-section, the same thus being strong yet light in weight. A base 6 is welded to one end of each column to comprise a pedestal that is adapted to be secured, as by bolts, to a floor in the usual manner. The opposite upper end of each column is, in part, cut away to provide a generally angular tongue portion 13 over which the eave struts 10 are fitted.

Each column gusset 8 comprises a substantially triangular plate 14 having its angular edge laterally bent to provide a stiffening flange 15, an angle piece 16 butt-welded to said plate along its angular edge, the lateral leg of said angle piece extending opposite to flange 15, and a strip 17 welded to said leg and flange.

The gussets 8 are permanently affixed to the inner sides 18 of column 7 by butt-welding at 19 and continuously welding along the line 20 where plate 14 abuts face 18. In the present case, plate 14 is arranged in the plane of face 21 of the column so that the comparable face of said plate and that portion of face 21 that is part of tongue portion 13 may constitute a bearing face for one of the purlins 11. Also, the top edge 22 of angle piece 16 is so arranged that the same constitutes a support for said purlin. Fig. 1 clearly shows this arrangement.

Each eave strut 10 is also formed of thin-gauge sheet metal and has a channel cross-section in which one of the legs 23 is wider than the other and in which a flange 24 is bent from the edge of leg 23. Thus, each eave strut is strong to resist bending at two spaced points, if the structure has four support members 5, or at three or more spaced points, if commensurately more support members are used. Openings 25 are provided in the leg 23 of each eave strut. Each opening has the general form of tongue 13 and is adapted to receive the same from beneath. Accordingly, when assembled, leg 26 of the eave strut bears against the end of tongue 13 and leg 23 rests on edge 27 that is formed on the column when parts thereof are cut away to form said tongue. Each eave strut, in alignment with each of the openings 25, is provided with a gusset plate 28 that is welded in place so as to be a lower extension of the web 29, the mentioned extension tongue 13 and the adjacent upper portion of the column bearing laterally against the face thus provided by gusset plate 28 and strut web 29.

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Each purlin 11 and 12, also thin-gauge sheet metal, has a C-shaped cross-section of a depth to fit between the legs 23 and 26 of the eave struts and a length to span therebetween. The roof 9 that is comprised of said struts and purlins may be suitably covered as by a corrugated aluminum sheet or sheets 30.

In practice, the pair of support members 5 on one side are made slightly shorter than the pair on the other side to, thereby, impart a slight slope to the roof that facilitates moisture drainage. In order that the eave struts be not unduly strained to accommodate such roof slope, each eave strut is provided with horizontal elongated holes or slots 31, and the columns 7 with vertical slots 32 for securing bolts 33 that fasten the eave struts and columns together. A slope of approximately two inches can be given the roof and still be within the range of adjustment of slots 31 and 32.

In some cases it may be desired to pitch the roof from side to side, as suggested by the dot-dash lines in Fig. 2. To this end purlins 11, at each end thereof, are each provided with a suitable number of horizontal slots 34, and the column and gusset thereof with a like number of vertical slots 35, for bolts 36 that connect said purlins to the columns. To better take such stresses as there may be on the bolts that extend through gusset 8, the same is provided with a filler plate 37 and the purlins 12 with a similar plate 38, that are welded in place substantially as shown.

Gusset plates 28 strongly brace the structure against longitudinal sway, while gussets 8 serve the same purpose for transverse sway. In the latter case, gussets 8, in supporting the roof, exert considerable force against faces 18 of the columns. Accordingly, the latter are reinforced at these points of pressure by transverse filler plates 39 fitted and welded into the insides of the columns.

The knock-down structure above described, therefore, comprises the following complement of elements: a set of support members 5, two eave struts 10, a purlin 11 for each pair of support members, a set of intermediate purlins 12, nuts and bolts to fasten the parts, and a roof covering 30. For canopy structures, side trim members 40 may be applied to the outer faces of the eave struts and the end purlins 12. It is evident also, that the sides and ends of the structure may be enclosed, as desired, by sheathing or the like.

Multiples of the described structure may be erected with only slight modification, such as welding another gusset, similar to gusset 8, on the opposite face 41 of the columns on one side and utilizing said gussets to support the ends of purlins that are arranged as extensions of purlins 11 and 12. When used as a lean-to, the columns on one side are omitted, since the purlins may be anchored to the structure against which it is erected.

While the invention that has been illustrated

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and described is now regarded as the preferred embodiment, the construction is, of course, subject to modifications without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. In a canopy structure, a column having oppositely disposed sides and a face connecting said sides, a tongue extending from the upper end of said column and being of smaller cross-section than the column to define a support edge adjacent the base of the tongue, a generally horizontal longitudinal channel member having a web and flanges at the sides thereof disposed on the column with its flanges vertically spaced, to provide upper and lower flanges, said lower flange having an opening therein, said tongue extending through said opening and having abutting engagement with said upper flange, the mentioned support edge having abutting engagement with said lower flange adjacent the opening therein, a gusset secured to a side of the column in alignment with the face of the column and having a face portion extending above the support edge, said gusset having an outer edge extending angularly from the column, a laterally directed flange on said latter edge terminating at its upper end in substantially horizontal alignment with the support edge of the column and below the upper edge of the gusset plate, an elongated substantially horizontal member having one end supported by the lower flange of the channel member and by said upper end of the gusset flange and disposed against the mentioned column face and gusset, and means to adjustably fasten the tongue of the column to the channel member and the elongated member to said tongue and gusset, and means to fasten the elongated member to the channel member.

2. In a canopy structure according to claim 1: the cross-sectional form of said tongue of the column being generally angular, and the opening into which said tongue extends being shaped according to the cross-sectional shape of the tongue.

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