ABSTRACT OF THE DISCLOSURE

A self-supporting, rigid sheet panel structure which may be used for awnings, roofs, etc. The structure is formed of a plurality of sheet panels having hook means along their sides securely interconnecting the panels. The ends of the panels are slidably secured into channel type peripheral edge members.

This invention relates to a structure formed from panels of sheet material and more particularly to a panel structure formed from interengageable sheet material that can be securely interconnected to each other so to provide a self-supporting substantially rigid structure.

Prior to this invention in order to provide a sheet structure comprised of a number of interchangeable panels suitable for use as a rigid structure, numerous fasteners and supporting members were required to hold the structure together in a predetermined fixed position. Often stringers were required to be attached between the various panels. Thus, in order to fabricate a structure from sheet panels a great amount of time was consumed in fastening the panels securely together. Additionally, the fasteners and supporting members for prior art panel structures detracted from the aesthetic appearance of the structure. Therefore, it is a primary object of this invention to provide a self-supporting sheet panel structure which is comprised of readily interengageable panels.

A further object of this invention is to provide a self-supporting sheet panel structure which is securely engageable with peripheral edge members.

Other objects and advantages will be apparent from the following illustrative description and the drawings.

In the drawings:

FIGURE 1 is a perspective view showing a plurality of interconnected panels engaged with a fragmented section of a peripheral edge member;

FIGURE 2 is a cross-sectional view of two interconnected panels in accordance with this invention;

FIGURE 3 is a sectional view taken through 3—3 in FIGURE 1 showing the engagement of a panel with a peripheral edge member;

FIGURE 4 is a fragmented perspective view of a peripheral edge member; and

FIGURE 5 is a fragmented perspective view of a panel.

With reference to the drawings a structure in accordance with this invention includes a plurality of identical readily interengageable sheet panels 10. Each panel 10 is comprised of a longitudinal central section 12 with adjoining longitudinal side sections 14a and 14b on each side thereof. Preferably, both of the side sections 14a and 14b are generally flat and disposed in the same plane. The central section 12 is also generally flat but disposed in a different plane which is parallel to the plane of the side sections 14a and 14b. Longitudinal junctures 16a and 16b between the longitudinal central section 12 and side sections 14a and 14b in panel 10 are curved, preferably in S and mirror S-shaped configurations, respectively (in the position shown in FIGURE 5) so as to provide a substantially rigid support between each of the sections of a panel 10. Junctures 16a and 16b are the same height and parallel to each other.

Extending along each of the longitudinal marginal edges 18a and 18b of side sections 14a and 14b respectively, are identical inwardly curving hook portions 20a and 20b respectively, which provide a means for direct frictional interlocking engagement of each panel to an adjacent panel. These hook portions 20a and 20b preferably are flattened so as to provide a tongue and slot type engagement when joined together so that adjacent panels can be interlocked together when alternately inverted as best shown in FIGURE 2. When so interlocked the panels 10 are held firmly in a predetermined position. Generally, it is desired that when panels 10 are interlocked together they form a roughly planar structure. Also, the height of marginal edges 18a and 18b is preferably about one-half the height of junctures 16a and 16b so that when panels 10 are joined together by hook portions 20a and 20b each of the central sections 12 are in the same plane, as can best be viewed in FIGURE 2.

The ratio of the width of the longitudinal sections 12, 14a and 14b, the curvatures of the junctures 16a and 16b between these sections, and the engagement between hook portions 20a and 20b of the panels are proportioned in accordance with the thickness of the sheet material so as to produce a substantially rigid, self-supporting structure.

Slidably engageable with the periphery of an interengaged plurality of sheet panels 10 are channel type peripheral edge members 13 which are designed to receive the ends of the outside panels 10 so as to form a suitable means by which a plurality of interengaged panels 10 can be supported thereby.

Each peripheral edge member 13 has a generally right-angled J-shaped configuration wherein an external upright section 22 is joined to an interior upright section 24 by means of a bottom horizontal web section 26. Along the top edge of interior upright section 24 is a longitudinal inwardly extending flat horizontal flange 28. A similar longitudinal inwardly extending flat horizontal flange 30 is on the top of exterior upright section 22.

A vertical longitudinally extending upper stop rib 32 protrudes downward from flange 30 a predetermined spaced distance from exterior upright section 22. A downwardly extending longitudinal finger projection 34 protrudes inwardly from the inside surface of exterior upright section 22 and terminates at a predetermined spaced distance from exterior upright section 22. This distance is substantially the same distance upper stop rib 32 is spaced from upright section 22.

The vertical distance between flange 28 and flange 30 is just slightly greater than the vertical height of a panel 10. Thus, as best viewed in FIGURE 3 a panel 10 can be slid into an edge member 13 so that it will engage and bear against the bottom surface of flange 30 and rest on the top surface of flange 28 and thus be firmy secured in place. Suitable fasteners (not shown) can be attached inconspicuously to hold the engaged structures in place.

Rib 32 and finger projection 34 prevent interengaged panels 10 from bearing against exterior upright section 22. Thus, a gap is provided which allows drainage of water from the top of an engaged panel structure into the bottom of peripheral edge member 13 from which it can be diverted as desired. The interlocking engagement of the hook portions 20a and 20b to adjacent panels 10 is designed so as to be substantially waterproof.

The convenience, flexibility and advantages of the subject panel structure renders it suitable for a multitude of uses. In use the desired number of panels 10 are interengaged by longitudinally sliding the end hook portions 20a and 20b of alternately inverted panels 10 together. Then the outside edges of the panel structure are inserted into peripheral edge members 13 of a suitable length. These can then be secured in position by any suitable means. Legs (not shown) or other extensions, well known
in the prior art, can be attached to a panel structure as herein described so as to utilize it in a variety of manners.

While the particular sheet panel structure herein shown and described in detail is fully capable of attaining the object and providing the advantages hereinafter mentioned, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

What is claimed is:

1. A self-supported panel structure comprising a plurality of interlocked sheet panels engaged with peripheral edge members, said panels each having three substantially identical longitudinal flat sections joined together by S and mirror S-shaped generally vertical, longitudinally parallel junctures so as to form a panel with side sections disposed in substantially the same plane and a central section disposed in a plane different from, but parallel to that of the side sections, each of said panels having longitudinally extending, inwardly converging, edge hoop means comprising a flattened tongue and slot disposed generally in a plane midway between the plane of the side sections and the plane of the central section of said panel, said hook means providing means for interlocking each of the panels together in a sheet structure by alternately inverting adjacent panels so that side sections are generally in the plane of the central sections of adjacent panels and tongues are engaged in slots of adjacent panels so as to be interlocked by sliding gripping engagement of abutting surfaces and wherein the peripheral edge members include a bottom web section interconnecting an internal and an external upright section, said upright sections each having on their top edges inwardly extending flanges vertically spaced apart relative to the height of the panel structure to which they are engaged sufficiently to provide a closely fitting support into which the periphery of the panel structure can be slidably engaged.

2. A panel structure comprised of a plurality of substantially identical sheet panels, each of said panels being comprised of a generally flat longitudinal central section and generally flat longitudinal side section on each side of center section, wherein said center section and adjoining side sections are joined together by generally vertical juncture portions having an S and mirror S-shaped configuration on each side of the center section, the side sections are both in the same plane and the center section is displaced therefrom in a plane parallel to the plane of the side sections, and integral hook means extend longitudinally along the side marginal edges of said side sections to provide a means for engaging each of the panels of the structure together, said hook means being detachably interconnectable to provide predetermined firm engagement between joined panels which are alternately inverted, so that all the side sections of the engaged panels are in the same plane and all the center sections are in the same plane, and wherein the width of the sections of the panels, the junctures between said sections and the engagements between the panels provide a substantially rigid, unitary, self-supported structure, and peripheral supporting member which can be engaged with peripheral edges of the engaged panels, said peripheral supporting members comprising a rigid generally J-shaped structure having a bottom web section disposed generally parallel to the lower plane of the panel structure when engaged thereto, an upright interior section extending generally perpendicular from said bottom web section, said exterior section having inwardly protruding stop means, an upright interior section extending perpendicularly from said bottom web section, and flange support means protruding from each of said interior and exterior sections for slidably engaging peripheral edges of said sheet panel structure.

References Cited

UNITED STATES PATENTS
2,440,763 5/1948 Todhunter 52—588
3,228,159 1/1966 Vecchiarelli 52—478
3,242,626 3/1966 Blok 52—478
3,253,375 5/1966 Takehara 52—478
3,286,404 11/1966 Harrison 52—75

FOREIGN PATENTS
239,834 1962 Australia.

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