United States Patent

Attkisson

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[54] PANEL SYSTEMS

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[21] Appl. No.: **2,306**

[52] **U.S. Cl.** .....**52/38,** 40/125 N, 52/483, 52/510

[51] **Int. Cl.** **E04b/282**

[58] **Field of Search** .....52/487, 488, 511, 52/510, 483, 478, 486, 506, 474, 38, 447, 243, 241, 239, 238; 40/125 N

[56] **References Cited**

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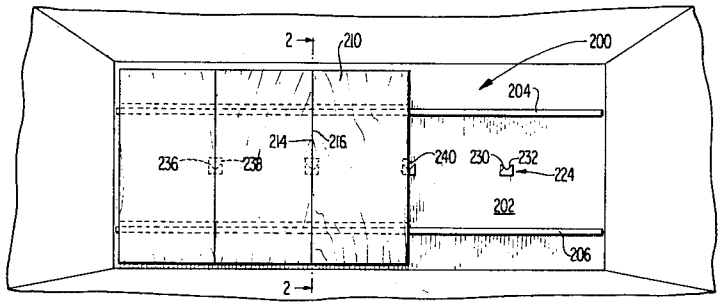
Primary Examiner—Price C. Faw, Jr.

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[57] **ABSTRACT**

A paneling system employs a plurality of panels having a series of shaped connecting members mounted thereon, and a series of complementary hanger means on an upright sustainer, such as a wall or stud system. The connecting members interengage with the hanger means to mount the panels in preselected orientation; and in a modification of the system, a separate upright sustainer supports one or more panels through the coactive relation of a series of interengaged stringers having frictional block means to retain a selected position while the block is in place. Removal of the block means permits disassembly of the sustainer and panels. Illustrated environments of use of this embodiment of the invention contemplate the incorporation of the system in temporary barricades, and in the erection of roadway markers of nonpermanent nature.

5 Claims, 13 Drawing Figures



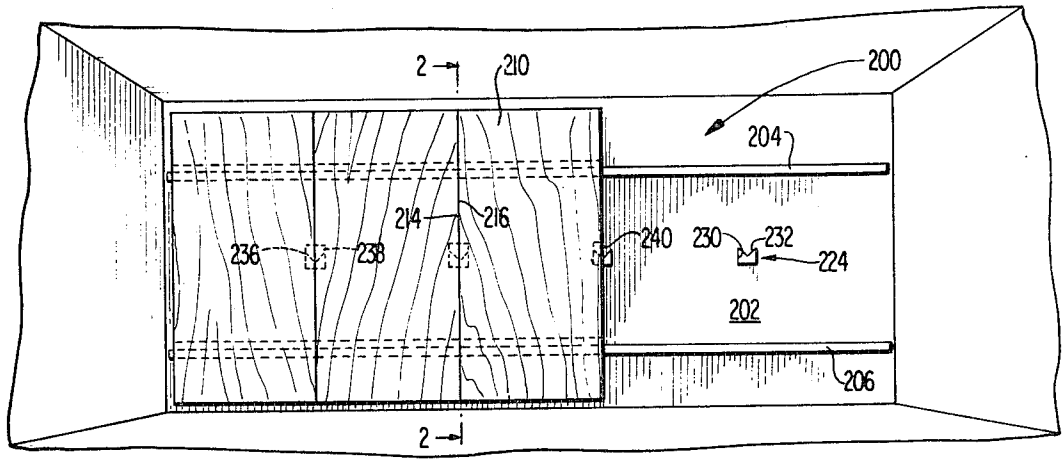


FIG. 1

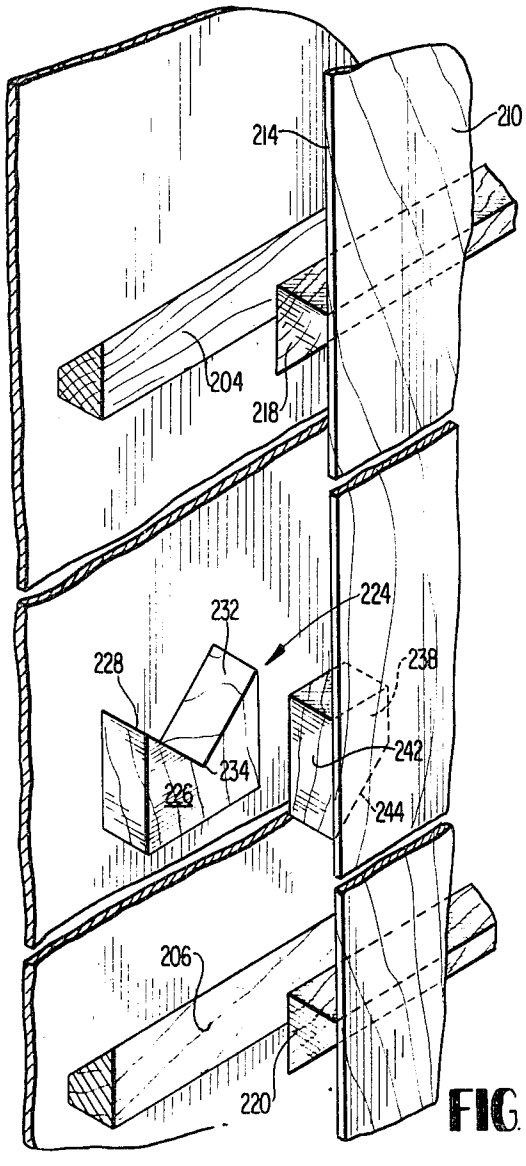


FIG. 3

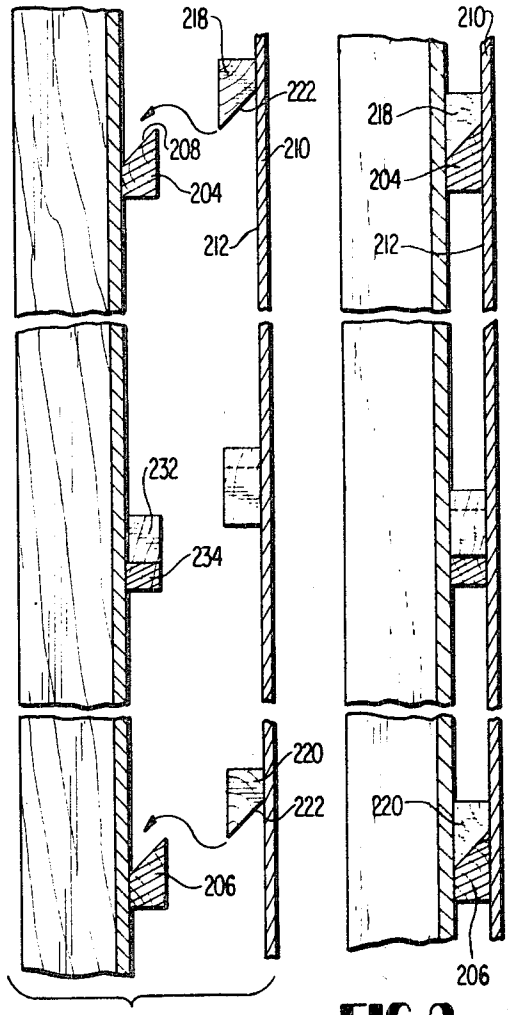


FIG. 4

FIG. 2

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FIG. 5

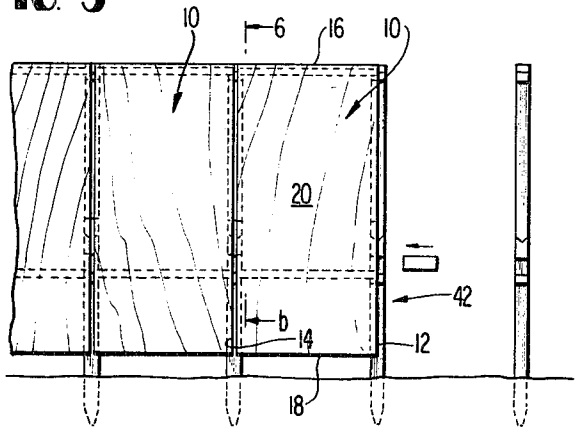


FIG. 8

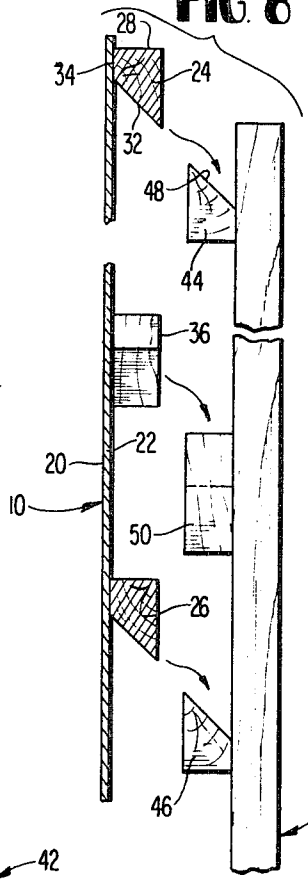


FIG. 6

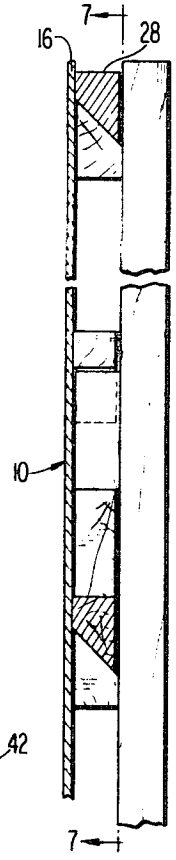


FIG. 9

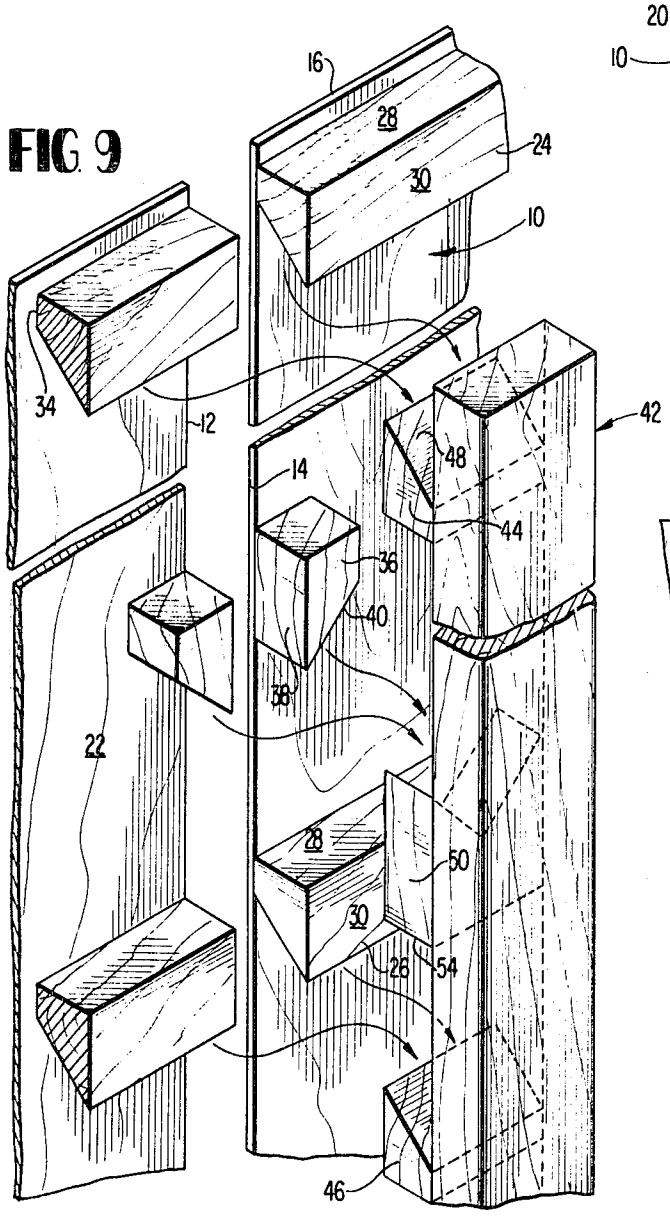


FIG. 7

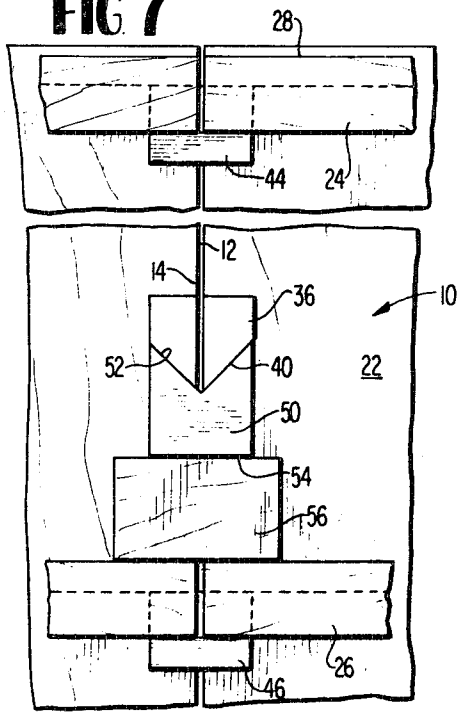


FIG. 12

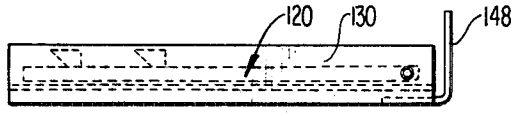
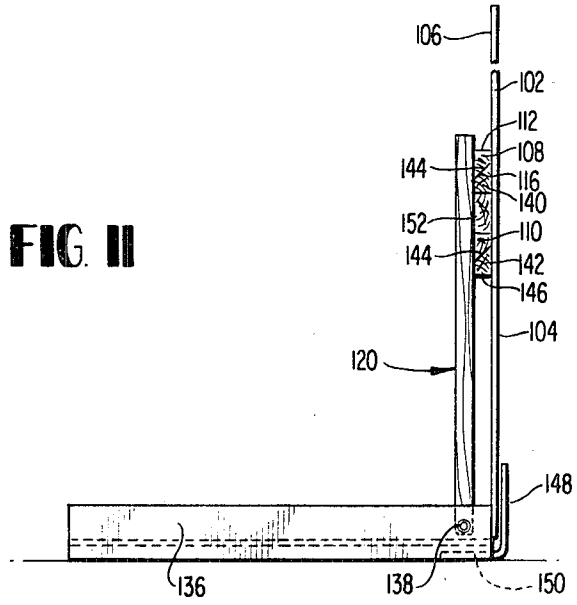


FIG. 10

FIG. 11



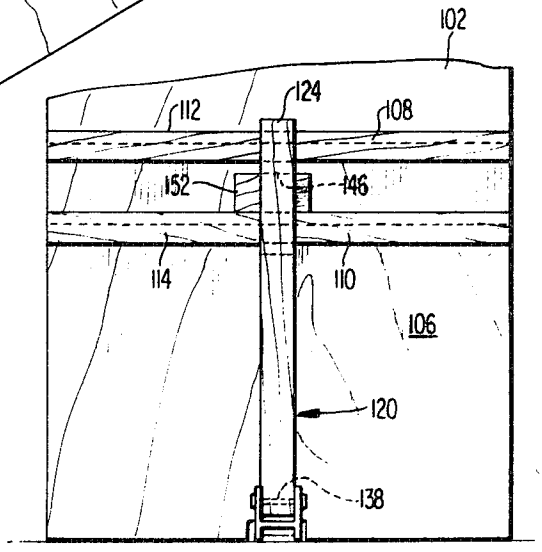


FIG. 13

PANEL SYSTEMS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to new and novel means for the mounting of panel sections in an aligned arrangement.

2. Background of the Prior Art

Various panel erection systems have heretofore been proposed in which wedge elements, interlocking flanges, and the like, have been employed. These prior systems usually require complex and costly modification of the panels per se, and usually also involve the addition of components of nonstandard form, all thereby substantially increasing the cost of manufacture and assembly. Prior patents illustrative of the interconnection of paneling with wedge means are listed as follows:

Patent No.	Patentee	Issued
775,666	Shute et al.	11/22/04
1,120,569	Van Horn	12/ 8/14
1,300,435	McKay	4/15/19
1,458,230	Kane	6/12/23
2,230,248	Henning	2/ 4/41

Construction methods heretofore employed in the erection of wall surfaces, of either a permanent or temporary nature, are well known. Such methods normally involve the affixation of the paneling to its supporting substructure (either a stud and stringer system or to furring strips) by nailing or adhesively. These prior methods require skilled carpentry for effective installation, and moreover prohibit subsequent disassembly of the paneling absent effective destruction of the components.

In the erection of temporary barricades or fencing enclosures surrounding construction sites, it is also conventional practice to nail plywood paneling through a series of sustainers. The necessary disassembly of such enclosures after completion of construction usually involves damage to the paneling to an extent effectively precluding reuse thereof.

SUMMARY OF THE INVENTION

In the present invention, a series of panels are connected with a support system by a series of interengaged hanger and connection elements. These support components include oppositely inclined blocks, and interengaging connectors, whereby the panels are sequentially installed in a linear series without the use of nails, staples, mastics, or the like.

The present invention further comprehends means for the temporary connection of panel elements, or a plurality of such elements, with a separate upright sustainer, by a system characterized by a series of interengaged members maintained in place by removable engagement means. While the capability of the connection system of this form of the invention to temporarily join a panel and a sustainer is comprehensive of all situations requiring such relationships, the invention is of particular adaptability to use in the erection of temporary fencelike enclosures, and to the erection of portable, temporary highway markers. These examples are offered by way of illustration only of the uses of the invention.

A central objective of this invention concerns the provision of a connection system in which a sustainer, either in the form of a general support or a separable component, and panel means are securely joined to one another, but may be disassembled without damage to either the sustainer or the panel.

In the construction of temporary enclosures, substantial material cost is countered, particularly where large areas must be enclosed. In prior practice, as noted above, the enclosures are often built by conventional carpentry methods, e.g., by nailing sheets of plywood to a wooden fence superstructure. This results in not only initial carpentry costs for construction of the enclosure, but in the destruction of the material as well. The present invention provides a system for erection of such enclosures in a rapid manner requiring little or no carpentry.

More significantly, the materials are not damaged in either erection or disassembly of the enclosure and are thus fully reusable.

In a further illustrative embodiment of use of the invention, a temporary highway marker which is easily erected is provided. Such markers, carrying standard indicia are portable, and the structure of the invention permits noncomplex temporary anchorage. As in the case of the barricade system, the marker includes a panel and a sustainer, and both the panel and the sustainer carry interengaged members held in interengagement by removable wedge block means.

Other and further objects and advantages of this invention will become apparent to those skilled in the art from a consideration of the following specification when read in conjunction with the annexed drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a room or the like wherein a paneling system according to the present invention is partially installed;

FIG. 2 is an enlarged, foreshortened sectional view line 2—2 of FIG. 1, looking in the direction of the arrows;

FIG. 3 is an enlarged, disassembled perspective view showing details of the connector means;

FIG. 4 is a view similar to FIG. 2, showing assembly steps;

FIG. 5 is an elevational view showing a second form of the system within the scope of this invention as embodied in a temporary enclosure;

FIG. 6 is an enlarged, foreshortened sectional view taken substantially on the line 6—6 of FIG. 5, looking in the direction of the arrows;

FIG. 7 is a view illustrating the inner face of the panel of the system, and the connection means, taken on line 7—7 of FIG. 6, looking in the direction of the arrows;

FIG. 8 is a sectional view similar to FIG. 6, showing the elements disassembled;

FIG. 9 is an enlarged, disassembled perspective view of the components;

FIG. 10 is a perspective view, partially broken away for disclosure of details, of the third embodiment of the invention;

FIG. 11 is a side elevational view of the third form of the invention;

FIG. 12 is an elevational view of a base portion of the assembly, showing the sustainer in a storage position; and

FIG. 13 is a rear elevation.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A basic and noncomplex form of this invention is illustrated in FIGS. 1–5 inclusive wherein the overall assembly of the system is shown. The particular environment here chosen for illustration comprises a room **200** or the like in a stage of partial completion of paneling of the sidewalls.

In this initial form of the invention, the wall subsurface **202** forms the sustainer or support for the paneling. It will, of course, be understood by those skilled in the art, that the subsurface may comprise a masonry surface, or other existing wall, or simply a studding system. In any event, a pair of elongated stringers **204** and **206** of special form, are fixedly secured to the subsurface **202**, and extend substantially the full width thereof. Each of these stringers has an angular or upwardly inclined upper surface **208**, and thereby defines a slot between the same and the wall surface **202**.

The panels **210** employed in the system are of conventional dimension, such as the 4-by-8-foot size often employed in contemporary building, and each has an inner surface **212** and side edges **214**, **216**. Affixed to the inner surfaces **212** of each of the panels are pairs of wedge blocks **218** and **220**. The wedge blocks are similar to the support stringers, but are oppositely mounted, that is, each is mounted to present an angular or upwardly inclined lower surface **222** defining a slot with the panel inner surface. As is shown its best advantage in FIGS. 2 and 4 of the drawing, the stringer and wedge blocks

are positioned such that interengagement thereof, with the lower surfaces of the wedge blocks seated on the upper surfaces of the stringers, result in a hanging of the panels in position on the substructure 202.

For more precise and secure engagement of the panels on the substructure, the hanger means of the substructure is provided with a series of spaced-apart connecting elements 224. The elements 224 each comprise a block 226 having a V-shaped notch 228 with sides 230, 232 converging at 234. The points 234 of convergence of the sidewalls are calculated during installation to coincide in position with the respective edges 214, 216 of the panels. Each panel has, as a portion of this connector means, a pair of oppositely arranged blocks 236, 238. The blocks have vertical side edges 240, 242 which are aligned transversely with the respective side edges 214 and 216 of the panels. The blocks are secured to the panel inner surfaces, at heights which permit engagement of the blocks with the connecting elements 224. Each of the blocks has an angular side 244, whereby when the panels are abutted together, the adjacent blocks effectively form a module having a lower portion of inverted V-form. These V-form modules are disposed in the V-notches of the connecting elements. Thus, the panels are arranged on the wall in a linear arrangement of the type shown in FIG. 1, with the edges 214, 216 abutting one another. It will be observed that no nailing or other connecting means are required in order to affix the panels to the subsurface.

Referring further to the drawings and specifically to FIGS. 5–9 thereof, a first modification of the system of this invention, embodying means for the temporary connection of panels and sustainers, is therein shown in the environment of a fencelike system as is used to enclose a construction area, or the like. The system includes a series of panels 10 of rectangular form, illustratively sheets of plywood of standard 4-foot-by-8-foot dimension. For purposes of description and orientation herein, each panel 10 has vertical side edges 12 and 14, and top and bottom edges 16, 18. The panels, as shown, further have outer faces 20 and opposite inner faces 22. Each of the panels is provided with a pair of elongated stringers, including an upper stringer 24, and lower stringer 26. The stringers extend longitudinally substantially the full width of the associated panel, and each has a top wall 28, a front wall 30, and a bottom wall 32 inclined inwardly from the front wall. A backwall 34 of each stringer is fixedly secured to the inner face 22 of the panel. Ideally in this environment of use, the stringer is comprised of several sections of 2-inch-by-4-inch lumber, cut in such manner that two stringers are obtained from each length of the material,

Intermediate the upper and lower stringers each of the panels is provided with a pair of blocks 36 fixed to its inner face adjacent the side edges 12 and 14. The blocks have vertical sides 38 substantially coincident with said side edges, and an inclined bottom side 40. When the panels are in position to be joined, the sides 38 of the blocks of adjacent panels are coaligned and adjacent one another, forming a module having a V-shaped lower portion—best illustrated in FIG. 7 of the drawing.

The sustainers employed in this invention are identified in the drawing by reference character 42, and are formed in the illustration given of blocks of standard 2-inch-by-4-inch dimension, of a length sufficient to be embedded partially in the earth as shown in FIG. 5, thereby providing support means for the sustainers, and to accommodate paneling of the size mentioned above. Each of the sustainers 42 is provided with a pair of wedge blocks 44 and 46. The wedge blocks are identical to one another, and each includes a top wall 48 which is oppositely inclined with respect to the bottom walls of the stringers. The wedge blocks are spaced from one another on the stringers such that they are adapted to coengage with the end portions of the stringers, with the bottom walls of the stringers bearing against the top walls of the wedge blocks, as shown in FIG. 7.

To accommodate the V-shaped lower portion of the module formed by the pairs of blocks 36, each stringer has a connecting element 50. The connecting elements have an upwardly opening V-notch 52 formed therein, in which the blocks are seated. The connecting element is closely spaced from the lower wedge block 46, in the illustration shown, and has a flat lower side 54. In a completed assembly, a wedge member 56, here in the form of a rectangular block, is frictionally engaged between the lower side 54, and the top wall 28 of the lower stringer, thereby securing the components in an assembled status until removed.

The manner of the assembly of the form of the system is believed to be inherent in the description of its components. It will be understood that the stringers are prepositioned in a desired linear arrangement, and spaced a correct distance from one another. The panels are then placed, is sequence, on the sustainers, with the stringers seated in the wedge blocks, and the blocks engaged in the connecting elements. As adjacent panels are thus positioned, the wedge members 56 are inserted.

In the third disclosed environment of use of this system, shown in FIGS. 10–13 inclusive of the drawings, the sustainer and interengaged stringer means are employed in connection with a temporary highway marker 100, or the like. In this form of the invention a panel 102 has an outer face 104 which carries roadway indicia, such as caution warnings, and has an opposite inner face 106. Fixedly secured to the inner face are a pair of elongated stringers 108, 110. Each stringer has a top wall 112, a front wall 114, and a bottom wall 116 inclined inwardly from the front wall, and is secured to the panel at its backwall 118.

The sustainer 120 is elongated, and has a lower portion 122 and an upper portion 124. It is supported in a channel form support member 126 having a heavy base 128 and upstanding sidewalls 130, 132. The support member has a forward portion 134 and a trailing portion 136, and the sustainer is pivotally mounted between the sidewalls at the forward portion on a transverse pin 138 extending through a suitable bore in its lower portion 122. The upper portion 124 has a pair of wedge blocks 140 and 142 thereon, each having a slant wall 144 inclined oppositely relative to the bottom walls 116 of the stringers, and having flat bottom sides 146.

It is to be noted that the stringers 108 and 110 extend the full width of the panel, thereby permitting the employment of plural sustainers and supports therefor when inventions or conditions of use so dictate. The space between the walls 130 and 132 may be employed for the placement of ballast, if desired.

A plate 148 has a perpendicular foot member 150 fixedly secured to the base 128 and projects upwardly forward of the walls 130, 132 forming a slot therebetween.

Assembly of the third form of the invention entails pivoting of the sustainer 120 from its storage position between the walls 130, 132 to an upright position. The panel is then placed within the slot between the plate 148 and the walls, the stringer walls 116 engaging against the sustainer wedge block walls 144. A rectangular wedge block 152 is then frictionally engaged between the bottom side 146 of the upper wedge block 140 and the top wall 112 of the lower string 110.

What is claimed is:

1. A panel system comprising:

a plurality of substantially rectangular panels, each having vertical side edges and opposite inner and outer faces;

the panels being disposed in edge-to-edge contact and having a series of vertical side edges disposed in abutting relation to one another;

each panel having a pair of elongated stringers on the inner face thereof, the stringers being vertically spaced from one another, and each stringer having an inclined bottom wall;

blocks fixedly secured to the inner face of each panel, the blocks having vertical edges aligned with the side edges of the panels, and having upwardly inclined bottom edges;

the stringers and the blocks of the respective panels of the system being longitudinally aligned respectively, in the system, and the blocks of adjacent panel edges having their vertical edges closely spaced with the inclined bottom edges forming together a module having a V-shaped lower portion;

an elongated vertical sustainer at each of said series of abutting vertical side edges;

the sustainers each having a pair of wedgelike blocks, each having a top wall operably inclined with respect to the bottom walls of the stringers, and bearing against the bottom walls in complementary relation thereto, respectively;

the connecting element on the sustainers, having an upwardly opening V-notch receiving the V-shaped lower portions of the modules made up of the blocks, and having a longitudinal wall; and

a wedge member frictionally engaged between the longitudinal lower walls of the connecting elements and the top walls of the lower stringers.

2. The invention of claim 1, wherein:

the panel system comprises at least one wall of an enclosure; and

the sustainers and panels are aligned to define the wall.

3. A panel system comprising:

a substantially rectangular panel having inner and outer faces;

a panel having a pair of elongated stringers fixedly secured on the inner face thereof, the stringers being vertically spaced from one another, and each stringer having an inclined bottom wall;

an elongated sustainer having a lower portion;

support means for the sustainer, said support means comprising an elongated channel form element having upstanding walls and having a forward end portion;

the lower portion of the sustainer being pivotally mounted adjacent the forward end portion of the support means;

a plate having a first member, the first member being secured to the support means to position the plate vertically and outwardly of the forward end portion;

the sustainer having a pair of wedge blocks thereon, each having a top wall inclined oppositely with respect to the bottom walls of the stringers;

the bottom walls of the stringers bearing against the top walls of the wedge blocks in complementary relation thereto;

a wedge member frictionally engaged between the upper wedge block and the lower stringer; and

the panel being disposed between the plate and the sidewalls of the support means.

4. The invention of claim 3 wherein:

the panel carried indicia in the form of roadway sign markings on its outer face.

5. A panel system comprising:

sustaining means for supporting a plurality of panels;

at least two panels each having an inner surface and abutting side edges;

complementary interengaging means on said sustaining means and the inner surfaces of said panels;

said interengaging means including a pair of elongated stringers on the inner surface of each panel, stringers of the respective panels being longitudinally aligned;

said stringers each having an inclined lower surface;

said interengaging means on said sustaining means having a wedge block for each stringer and having a surface inclined in complementary relation to the inclined surface of said stringers;

each of said panels having a block adjacent the abutting side edges thereof, the blocks together forming a module with a V-shaped lower portion;

a connecting element on said sustaining means having a V-notch to receive the V-shaped lower portion; and

means for fractionally engaging said interengaging means to releasably lock said panels to said sustaining means including a wedge member frictionally engaged between one of said stringers and said connecting element.

* * * * *