Aug. 27, 1963 C. DVORE 3,101,929

FENCE OR CLOSURE STRUCTURE

Filed Oct. 31, 1960 2 Sheets-Sheet 1

Fig. 1

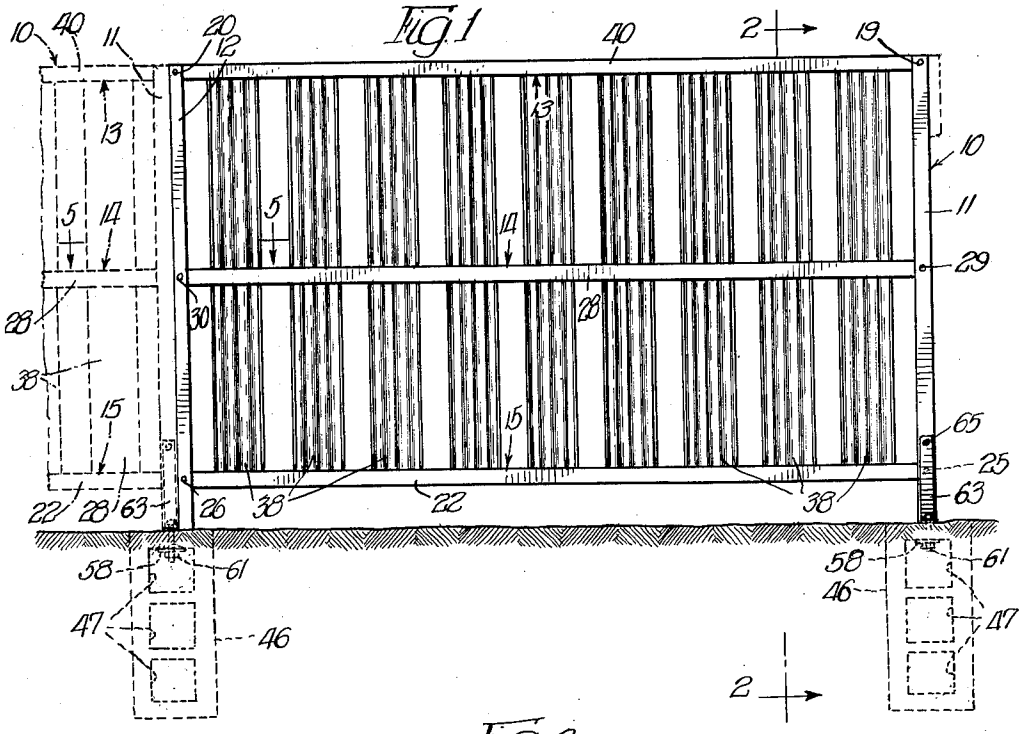


Fig. 3

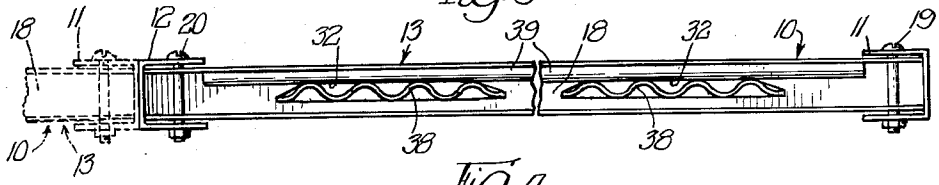


Fig. 4

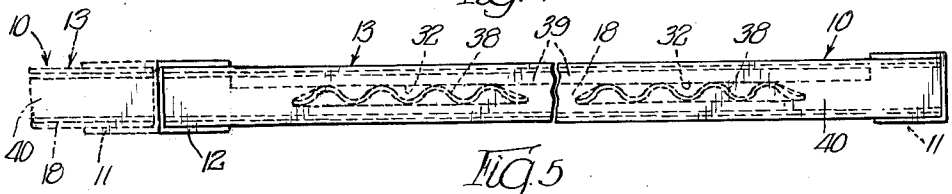
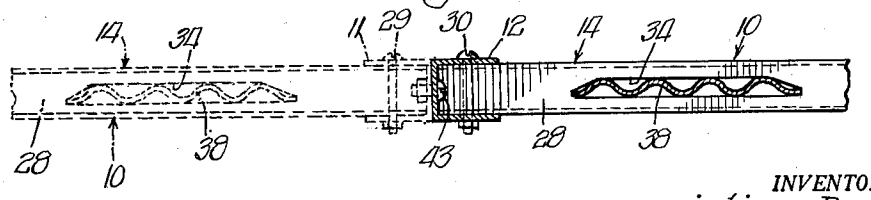


Fig. 5



INVENTOR.
Christian Dvore,
BY
Cromwell, Greist & Warden
attys.

Aug. 27, 1963 C. DVORE 3,101,929

FENCE OR CLOSURE STRUCTURE

Filed Oct. 31, 1960 2 Sheets-Sheet 2

Fig. 2

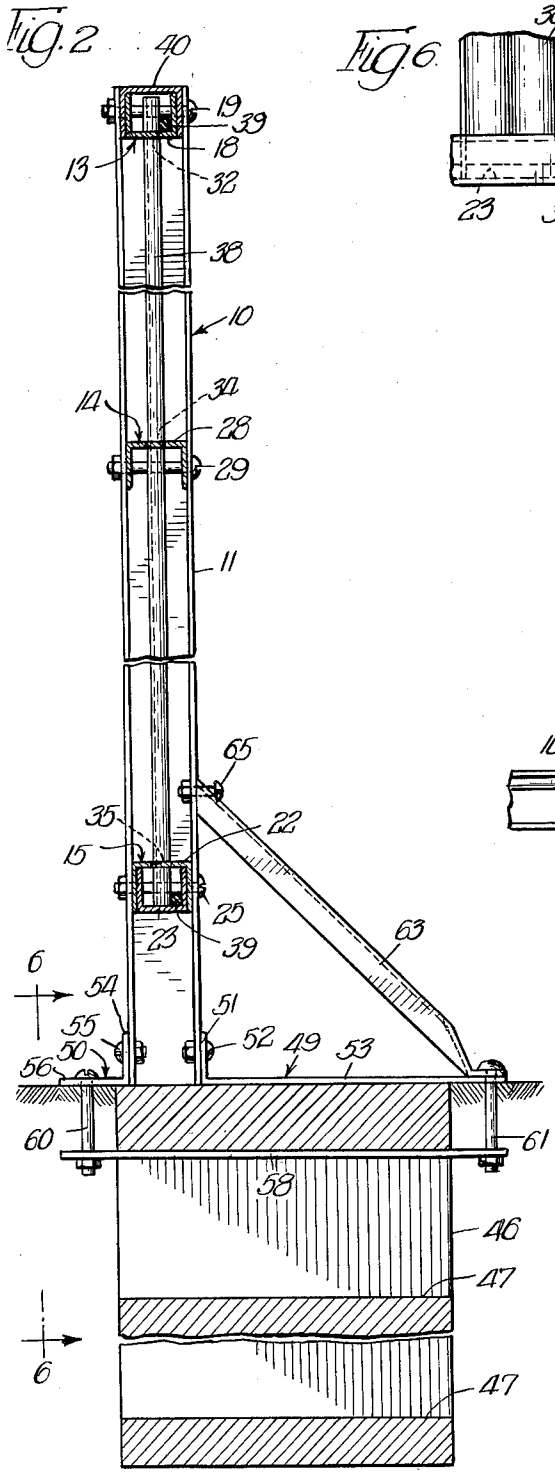


Fig. 6

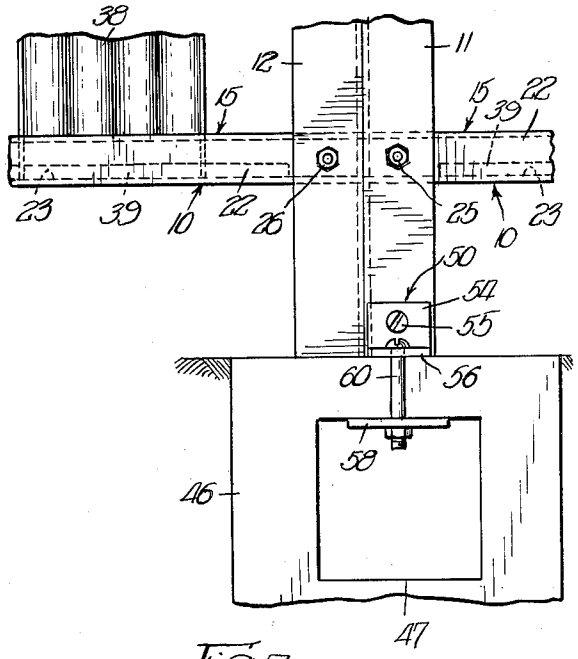
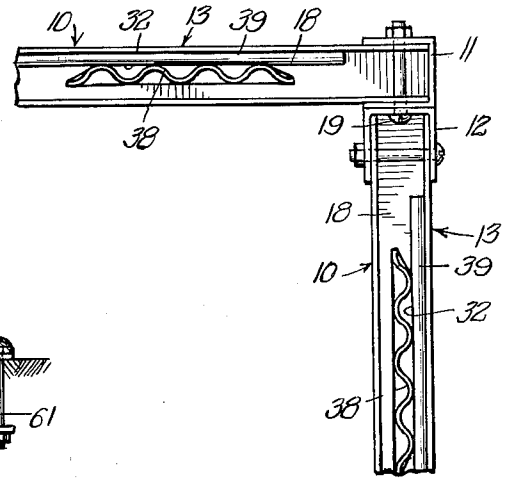


Fig. 7



INVENTOR.
Christian Dvore,
BY
Cromwell, Greist & Warden
Attys.

United States Patent Office 3,101,929 Patented Aug. 27, 1963

3,101,929

FENCE OR CLOSURE STRUCTURE

Christian Dvore, Box 104, McHenry, Ill.

Filed Oct. 31, 1960, Ser. No. 66,196
7 Claims. (Cl. 256—24)

The present invention relates to a fence or closure structure and, more particularly, to a unitary fence or closure section a plurality of which are readily interconnected to provide a fence or closure of a desired length and shape to enclose a particular area, for example.

It is the general object of the invention to provide a new and improved fence or closure structure, in the form of a plurality of interconnected unitary fence or closure sections, which fence or closure is easily assembled and installed and which provides a pleasing appearance.

An important object of the invention is to provide a new and improved unitary fence or closure section including a frame formed of a series of aluminum channel members and a series of vertically extending panels disposed in the frame and formed either of aluminum or of glass fiber of various colors.

A further object of the invention is to provide a new and improved fence or closure structure formed of a series of interconnected sections of the character described which requires no painting, which does not rust, and which is therefore maintenance free.

A further object of the invention is to provide a new and improved fence or closure structure of the character described wherein each section is provided with novel means for mounting one end thereof on a conventional concrete block embedded in the ground.

While the foregoing statements are indicative in a general way of the nature of the invention, other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction, arrangement and function of the several parts which have been combined to form the new and improved fence or closure structure.

A preferred embodiment of the invention is presented herein, but it will, of course, be appreciated that the invention is susceptible of incorporation in other forms coming equally within the scope of the appended claims.

In the accompanying drawings:

FIG. 1 is a front elevational view of a fence section embodying the invention with an adjacent interconnected section being partially shown in broken line;

FIG. 2 is an enlarged vertical section taken generally on the line 2—2 of FIG. 1;

FIG. 3 is an enlarged, broken top plan view of the fence section of FIG. 1 with the cover member for the upper rail removed;

FIG. 4 is an enlarged, broken top plan view of the fence section of FIG. 1 with the cover for the upper rail in assembled position;

FIG. 5 is an enlarged horizontal section taken generally on the line 5—5 of FIG. 1;

FIG. 6 is a fragmentary rear elevational view taken generally on the line 6—6 of FIG. 2; and

FIG. 7 is a top plan view similar to FIG. 3 showing two of the fence sections interconnected at right angles to each other whereby to provide a corner.

As illustrated in the drawings, each fence section embodying the invention includes a frame 10 which is formed by a plurality of readily assemblable structural channel members which are preferably formed of extruded anodized aluminum. In the preferred embodiment of the invention illustrated in the drawings, each fence section is five feet long and three feet high although these dimensions may be varied within the scope of the invention.

The frame 10 of each fence or closure section includes a pair of spaced apart, vertically extending U-shaped channel members or supporting posts 11 and 12 which are positioned with the open sides thereof facing each other. The vertically extending channel members or supporting posts 11 and 12 are interconnected by a series of three vertically spaced horizontally extending rail members 13, 14 and 15.

The upper rail member 13 is in the form of an upwardly opening U-shaped channel member 18 which extends horizontally between the channel members 11 and 12 adjacent the upper ends thereof. The ends of the channel member 18 are inserted between the spaced flanges of the vertical channel members 11 and 12 and are secured therein by conventional bolt and nut fasteners 19 and 20, respectively. The lower rail member 15 is in the form of a downwardly opening U-shaped channel member 22 which extends horizontally between the vertical channel members 11 and 12 adjacent the lower ends there of. The lower open side of the channel member 22 is closed by an upwardly opening channel member 23 which is telescopically fitted between the spaced flanges of the channel member 22 for a purpose which will be evident hereinafter. The ends of the hollow lower rail member 15, which is generally square or rectangular in vertical cross section, are inserted between the spaced flanges of the vertical channel members 11 and 12 and are secured therein by conventional bolt and nut fasteners 25 and 26, respectively. The middle rail member 14, which extends horizontally between the vertical channel members 11 and 12 midway between the upper and lower rail members 13 and 15, is in the form of a downwardly opening channel member 28, the ends of which are inserted between the spaced flanges of the vertical channel members 11 and 12 and are secured therein by conventional bolt and nut fasteners 29 and 30, respectively.

The cross web of the upper rail channel member 18 is provided with a series of longitudinally spaced and longitudinally elongated openings 32. Likewise, the cross web of the middle rail channel member 28 and the cross web of the lower rail channel member 22 are provided with a series of longitudinally spaced identically shaped openings 34 and 35, respectively. Each of the openings 34 and 35 is vertically aligned with one of the openings 32. After the frame 10 of each fence section has been assembled, a panel member 38 is inserted from the top through each set of vertically aligned openings 32, 34 and 35 whereby to provide a series of vertically extending panels for each fence section. In the particular fence section illustrated in the drawings, each five foot section is provided with nine panel members 38. The lower ends of the panel members 38 are supported on the cross web of the lower rail channel member 23, which cross web is not provided with openings similar to openings 32, 34 and 35, as is best shown in FIG. 2. The panel members 38 may be formed of extruded anodized aluminum or of glass fiber of various colorations and with a series of undulations whereby to provide a fence section which is very attractive in appearance. The openings 32, 34 and 35 are preferably narrowed at their ends to receive the vertical edges of the panel members 38. To permit ready insertion of the panel members 38 through the openings 32, 34 and 35, the width of these openings will be slightly greater than the corresponding dimension of the panel members. Provision is therefore made for preventing rattling of the panel members in the frames 10, as when there is a strong wind, in the form of a pair of elongated cushion elements 39 formed of rubber or rubber-like material. One of the cushion elements 39 is disposed in the upper rail member 13 and the other is disposed in the lower rail member 15. The

upper cushion element 39 is supported on the cross web of the upper rail channel member 18 along one side of the upper ends of the panel members 38 and the lower cushion element 39 is supported on the cross web of the lower rail channel member 23 along the same side of the lower ends of the panel members 39. The diameter or thickness of the elongated cushion elements 39 is such that they serve to resiliently retain the panel members 38 against the far sides of the openings 32, 34 and 35 whereby to prevent undesirable rattling of the panel members 38.

Provision is made for covering the upper ends of the panel members 38, which upper ends terminate below the upper edges of the spaced flanges of the upper rail channel member 18, in the form of a downwardly opening channel member 40 which is telescopically fitted over the spaced flanges of the upper rail channel member 18. The opposite ends of the channel member 40, which are fitted within the spaced flanges of the vertically extending channel members 11 and 12, are provided with downwardly opening slots (not shown) for accomodating the fasteners 19 and 20.

The fence or closure sections illustrated in the drawings are readily interconnected in end-to-end relationship by conventional fastening means. When two of the sections are to be interconnected in longitudinal alignment, as in FIGS. 1, 3, 4 and 5, the cross web of the vertically extending U-shaped channel member 12 of one section is disposed against the cross web of the vertically extending U-shaped channel member 11 of the adjacent section with these two cross webs being secured together in abutting relationship by a series of conventional bolt and nut fasteners 43 (FIG. 5). To form a right angle corner for the fence or closure, as illustrated in FIG. 7, the cross web of the vertically extending U-shaped channel member 12 of one fence section is secured in abutting engagement with one of the spaced flanges of the vertically extending U-shaped channel member 11 of the adjacent fence section by suitable conventional fasteners, such as the bolt and nut fastener 19 in FIG. 7.

Although not illustrated in the drawings, walk-in and drive-in gates for the fence or closure structure disclosed herein will be similar in structure to the fence or closure section shown and described. The gate sections may, of course, be somewhat shorter or longer than the described five foot fence sections and the vertically extending channel members or end posts 11 and 12 will terminate with their lower ends flush with the lower surface of the bottom rail 15. One end post of each gate section will be provided with a conventional hinge structure for attachment to the adjacent fence section or other support and the opposite end post will be provided with a conventional latch mechanism and a suitable handle.

Inasmuch as a fence or closure structure formed by interconnecting the fence or closure sections described herein is constructed entirely of anodized aluminum and glass fiber, it will neither rust nor require painting thus eliminating the usual maintenance requirements of more conventional fences. This fence or closure structure will be automatically cleaned regularly by the usual rain showers or it may be sprinkled occasionally with a garden hose to wash off any dust that might collect thereon. It is noted that the cross web of the lower rail channel member 23 may be provided with suitable drainage openings to prevent the accumulation of water therein.

The novel fence or closure structure disclosed herein is adapted to be installed or supported in an upright position in an unique manner which will now be described. Briefly, each fence or closure section is adapted to have one end anchored to and supported on a conventional concrete building block 46 which is embedded in the ground. The concrete building blocks 46 illustrated in the drawings are rectangular with the dimensions thereof being 8" x 8" x 16" and have a series of three spaced openings 47 extending therethrough. These concrete blocks 46 are to be embedded in the ground at five foot intervals in an upright position with the upper ends thereof being substantially flushed with the ground level. It is noted that the sixteen inch hole required for each block 46 is substantially shallower than the usual hole required for installing conventional fence posts, thereby substantially reducing the time and labor required in installing the novel fence or closure structure disclosed herein.

As best illustrated in FIGS. 2 and 6, the lower end of the vertically extending U-shaped channel member 11 of each fence section is provided on its front surface with an angled member 49 and on its rear surface with an angled member 50. The angled member 49 includes a vertical leg portion 51 which is secured to the front flange of the channel member 11 by a bolt and nut fastener 52 and a relatively long horizontally extending portion 53 which extends forwardly away from the channel member 11 and is adapted to be supported on the upper end of the embedded concrete block 46. The angled member 50 includes a vertical leg portion 54 which is secured to the rear flange of the channel member 11 by a bolt and nut fastener 55 and a relatively short horizontally extending portion 56 which projects rearwardly away from the channel member 11 and is adapted to be partially supported on the upper end of the embedded block 46. The outer ends of the horizontal portions 53 and 56 of the angled members 49 and 50, respectively, project slightly beyond the edges of the concrete block 46. The ends of a rigid anchor bar 58, which extends horizontally through the uppermost opening 47 in the concrete block 46, also project slightly beyond the edges of the block 46. A bolt and nut fastener 60 extends between the projecting end of the horizontal portion 56 of the angled member 50 and one projecting end of the anchor bar 58 and a bolt and nut fastener 61 extends between the projecting end of the horizontal portion 53 of the angled member 49 and the opposite projecting end of the anchor bar 58. When the fasteners 60 and 61 are tightened or drawn up, one end of each fence section is rigidly clamped or anchored to the upper end of the embedded concrete block 46. For additional support, an inclined brace member 63 in the form of an extruded, anodized aluminum, downwardly opening channel member may be secured between the outer end of the horizontal portion 53 of the angled member 49 and the front flange of the vertically extending channel member 11. The lower end of the brace member 63 is secured to the horizontal portion 53 of the angled member 49 by the bolt and nut fastener 61 and the upper end of the brace member 63 is secured to the front flange of the vertically extending channel member 11 by a bolt and nut fastener 65.

With the horizontal portion 56 of the rear angled member 50 being substantially shorter than the horizontal portion 53 of the front angled member 49, the fence structure may be installed as close as possible to the property line of the area to be enclosed. It is noted that the concrete blocks 46 will become more solidly embedded in the ground as the openings 47 therein become filled with earth whereby to further stabilize the fence structure.

The closure structure disclosed herein is well adapted for uses other than for fences with such other uses including, for example, porch and stair railings. When used as a porch railing, the upper rail channel member 18 may be secured to the undersurface of a conventional wooden porch top rail with the lower rail member 15 being secured directly to the porch floor. As porch railings are generally shorter in height than fences, the middle rail member 14 may, if desirable, be eliminated with the upper and lower ends of the panel members 38 being received, respectively, in the openings 32 and 34 in the upper and lower rail channel members 18 and 22. When used as a stair railing the upper and lower ends of the panel members 38 will be cut on a bias corresponding to the slope of the stairs whereby the panel members 38 will be disposed vertically.

I claim:

1. A unitary fence or closure section comprising, a pair of spaced apart, vertically extending U-shaped aluminum channel members opening toward each other, a lower aluminum rail member extending horizontally between said channel members adjacent the lower ends thereof and having its ends secured between the spaced flanges of said channel members, an upper aluminum rail member extending horizontally between said vertically extending channel members adjacent the upper ends thereof and having its ends secured between the spaced flanges thereof, an intermediate aluminum rail member extending horizontally between said vertically extending channel members intermediate said upper and lower rail members and having its ends secured between the spaced flanges of said vertically extending channel members, a plurality of longitudinally spaced and vertically extending elongated openings formed in said three rail members, with each series of openings being vertically aligned, a glass fiber panel member extending through each series of openings, and upper and lower horizontally disposed elongated wedge members associated with said upper and lower rail members, respectively, and engageable with the same sides of the upper ends and the lower ends of said panel members, respectively for laterally wedging same against portions of said upper and lower rail members to prevent rattling of said panel members.

2. A unitary fence or closure section comprising, a pair of spaced apart, vertically extending U-shaped channel members opening toward each other, a hollow lower rail member generally rectangular in cross section extending horizontally between said channel members adjacent the lower ends thereof and having its ends secured between the spaced flanges of said channel members, an upper rail member in the form of an upwardly opening channel member extending horizontally between said vertically extending channel members adjacent the upper ends thereof and having its ends secured between the spaced flanges thereof, at least one intermediate rail member in the form of a downwardly opening channel member extending horizontally between said vertically extending channel members intermediate said upper and lower rail members and having its ends secured between the spaced flanges of said vertically extending channel members, a plurality of longitudinally spaced and longitudinally elongated openings formed in the cross webs of said upper and intermediate rail members and in the upper wall of said lower rail member, with each series of openings being vertically aligned, a panel member positioned in each series of openings, with the bottom end of each panel member supported on the bottom wall of said lower rail member, a pair of elongated horizontally extending wedge members disposed one in said upper channel-shaped rail member and one in said hollow lower rail member in a manner adapted for laterally wedging the upper and lower ends of the said panel members against portions of said upper and lower rail members, respectively, a cover member for said upper rail member in the form of a downwardly opening channel member disposed in telescopic association with said upper rail member, and means on the lower end of one of said vertically extending channel members for mounting one end of the fence or closure section on a suitable base.

3. A unitary fence or closure section comprising, a pair of spaced apart, vertically extending U-shaped channel members opening toward each other, a hollow lower rail member generally rectangular in cross section extending horizontally between said channel members adjacent the lower ends thereof and having its ends inserted between the spaced flanges of said channel members and secured therein by suitable fastening means, an upper rail member in the form of an upwardly opening channel member extending horizontally between said vertically extending channel members adjacent the upper ends thereof and having its ends inserted between the spaced flanges thereof and secured therein by suitable fastening means, a middle rail member in the form of a downwardly opening channel member extending horizontally between said vertically extending channel members midway between said upper and lower rail members and having its ends inserted between the spaced flanges of said vertically extending channel members and secured therein by suitable fastening means, a plurality of longitudinally spaced and longitudinally elongated openings formed in the cross webs of said upper and middle rail members and in the upper wall of said lower rail member, with each series of openings being vertically aligned, a panel member insertable from the top through each series of openings, with the bottom end of each panel member adapted to be supported on the bottom wall of said lower rail member, a cover member for enclosing the upper ends of said panel members in the form of a downwardly opening channel member adapted to be telescopically fitted over the spaced flanges of said upper rail member, a pair of angled members secured one each to the spaced flanges of one of said vertically extending U-shaped channel members at the lower end thereof with each angled member including a horizontal portion extending away from said channel member, said horizontal portions being supported on the upper end of a conventional concrete block embedded in the ground with the upper end thereof being disposed substantially flush with the ground level, an anchor bar extending horizontally through a transverse opening formed in the block below the ground level, and fastening means tightly connecting the outer ends of said horizontal portions of said angled members one to each of the ends of said anchor bar whereby the fence or closure section is anchored in the embedded concrete block.

4. A fence or closure structure comprising, a plurality of interconnected unitary fence or closure sections, each of which sections comprises, a pair of spaced apart, vertically extending U-shaped aluminum channel members opening toward each other, a lower aluminum rail member in the form of a downwardly opening channel member extending horizontally between said vertical channel members adjacent the lower ends thereof and having its ends secured between the spaced flanges of said vertical channel members, an upper aluminum rail member in the form of an upwardly opening channel member extending horizontally between said vertically extending channel members adjacent the upper ends thereof and having its ends secured between the spaced flanges thereof, an intermediate aluminum rail member in the form of a downwardly opening channel member extending horizontally between said vertically extending channel members intermediate said upper and lower rail members and having its ends secured between the spaced flanges of said vertically extending channel members, a plurality of longitudinally spaced and longitudinally elongated openings formed in the cross webs of said upper, lower and intermediate rail members, with each series of openings being vertically aligned, a glass fiber panel member positioned in each series of openings, a pair of horizontally disposed elongated wedge members associated one each with said upper and lower rail members for laterally wedging the upper and lower ends of said panel members against portions of said upper and lower rail members, and fastening means securing the sections in end-to-end relationship with the cross webs of adjacent vertically extending U-shaped channel members being disposed against each other when the sections are disposed in longitudinal alignment and with the cross web of one vertically disposed channel member being disposed against one of the spaced flanges of the adjacent vertical channel member when the sections are disposed at right angles to each other, as at a corner.

5. A fence or closure structure comprising, a plurality of interconnected unitary fence or closure sections, each of which sections comprises, a pair of spaced apart, vertically extending U-shaped channel members opening toward each other, a hollow lower rail member generally

rectangular in cross section extending horizontally between said channel members adjacent the lower ends thereof and having its ends inserted between the spaced flanges of said channel members and secured therein by suitable fastening means, an upper rail member in the form of an upwardly opening channel member extending horizontally between said vertically extending channel members adjacent the upper ends thereof and having its ends inserted between the spaced flanges thereof and secured therein by suitable fastening means, at least one intermediate rail member in the form of a downwardly opening channel member extending horizontally between said vertically extending channel members intermediate said upper and lower rail members and having its ends inserted between the spaced flanges of said vertically extending channel members and secured therein by suitable fastening means, a plurality of longitudinally spaced and longitudinally elongated openings formed in the cross webs of said upper and intermediate rail members and in the upper wall of said lower rail member, with each series of openings being vertically aligned, a panel member positioned in each series of openings, with the bottom end of each panel member supported on the bottom wall of said lower rail member, means for laterally wedging the upper and lower ends of said panel members against portions of said upper and lower rail members, respectively, a cover member enclosing the upper ends of said panel members in the form of a downwardly opening channel member telescopically fitted over the spaced flanges of said upper rail member, fastening means securing the fence or closure sections in end-to-end relationship with the cross web of one of the vertically extending U-shaped channel members of one section being disposed against the cross web of one of the vertically extending U-shaped channel members of the adjacent section when the fence or closure sections are disposed in longitudinal alignment and with the cross web of one of the vertical channel members of one section being disposed against one of the spaced flanges of one of the vertical channel members of the adjacent section when the latter two fence or closure sections are disposed at right angles to each other, as at a corner, and means on the lower end of one of the vertically extending U-shaped channel members of each of the plurality of fence or closure sections for mounting one end of each section on a suitable base.

6. A unitary fence or closure section comprising, a pair of spaced apart vertically extending U-shaped channel post members opening toward each other, a downwardly opening U-shaped channel rail member extending horizontally between said vertical post members adjacent the upper ends thereof and having its ends secured between the spaced flanges of said vertical channel-shaped post members, an upwardly opening U-shaped channel rail member extending horizontally between said vertical post members adjacent the lower ends thereof and having its ends secured between the spaced flanges of said vertical channel-shaped post members, said two horizontally extending rail members serving to retain said pair of vertically extending post members in their spaced apart relationship, a plurality of vertically disposed panel members arranged in horizontally spaced apart relationship between said two horizontally disposed rail members with the upper ends thereof being received in said downwardly opening channel-shaped rail member and with the lower ends thereof being received in said upwardly opening channel-shaped rail member, and upper and lower means for laterally wedging all of the upper ends and all of the lower ends of said panel members against portions of said upper and lower rail members, respectively.

7. A unitary fence or closure section comprising, a pair of spaced apart vertically extending U-shaped aluminum post members opening toward each other, a downwardly opening U-shaped aluminum upper rail member extending horizontally between said vertical post members adjacent the upper ends thereof and having its ends secured between the spaced flanges of said U-shaped post members, an upwardly opening U-shaped aluminum lower rail member extending horizontally between said vertical post members adjacent the lower ends thereof and having its ends secured between the spaced flanges of said U-shaped post members, said upper and lower rail members serving to retain said pair of post members in their spaced apart relationship, a plurality of glass fiber panel members disposed vertically in horizontally spaced apart relationship between said upper and lower rail members with the upper ends thereof being received in said downwardly opening U-shaped upper rail member and with the lower ends thereof being received in said upwardly opening U-shaped lower rail member, a first elongated horizontally extending wedge member disposed in said downwardly opening U-shaped upper rail member alongside the upper ends of said panel members for laterally wedging same against side portions of said upper rail member, and a second elongated horizontally extending wedge member disposed in said upwardly opening U-shaped lower rail member alongside the lower ends of said panel members for laterally wedging same against side portions of said lower rail member, said first and second elongated wedge members being disposed on the same side of said panel members at both the upper and lower ends thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

682,259	Lanz	Sept. 10, 1901
861,924	Weatherly	July 30, 1907
1,914,913	Ferris	June 20, 1933
2,066,426	Skilnik	Jan. 5, 1937