April 3, 1956 R. V. BAILEY 2,740,504

TELEVISION TOWER

Filed June 6, 1952 3 Sheets-Sheet 1

Fig. 1

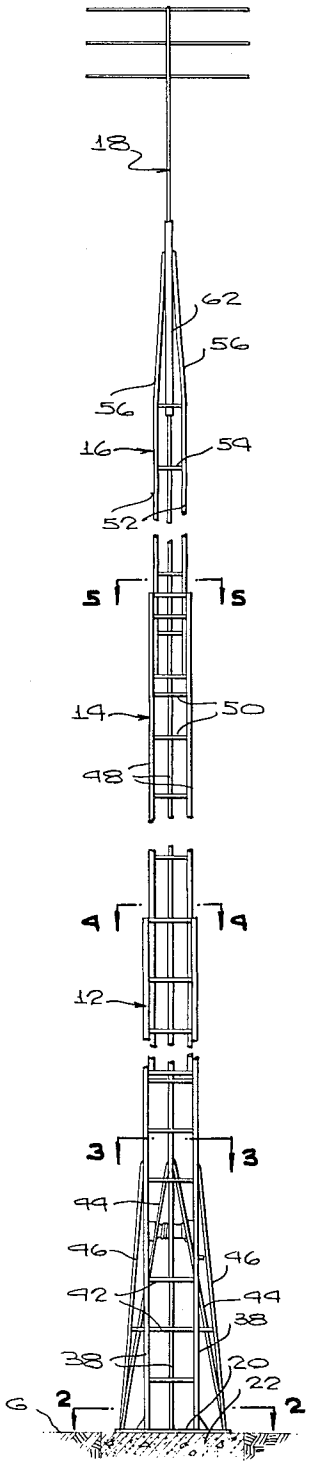


Fig. 2

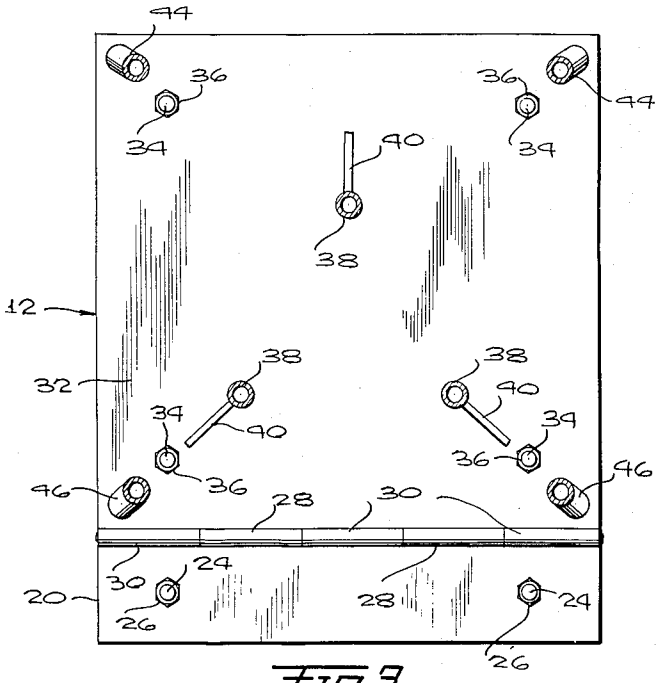
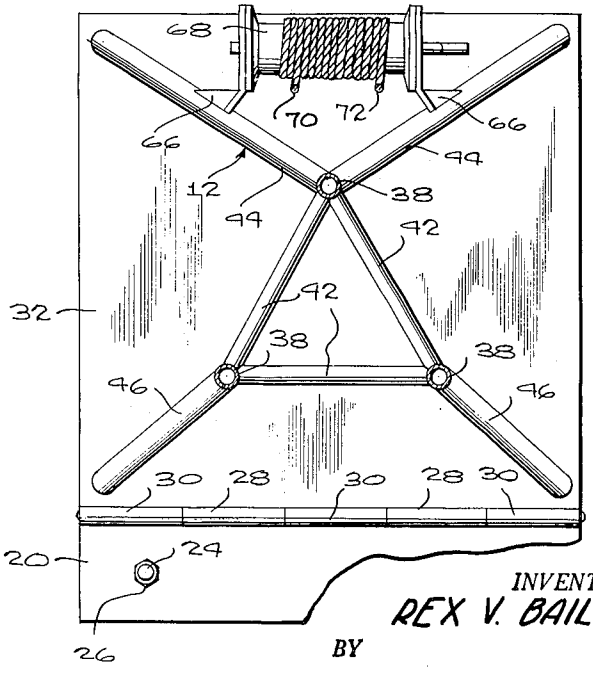


Fig. 3



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April 3, 1956 R. V. BAILEY 2,740,504

TELEVISION TOWER

Filed June 6, 1952 3 Sheets-Sheet 2

Fig. 4

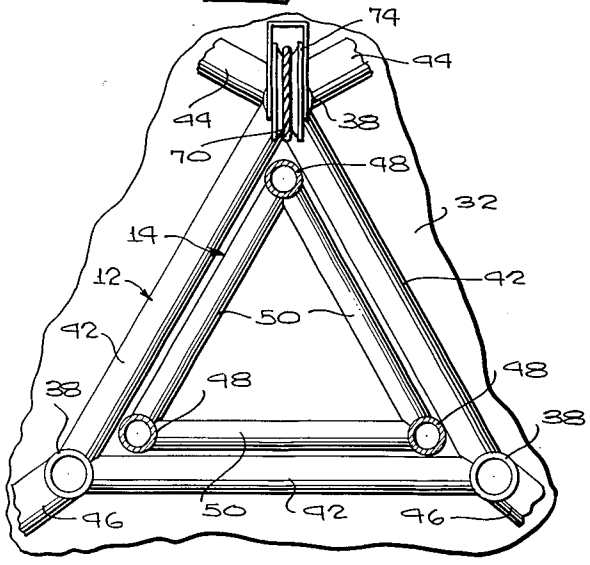


Fig. 5

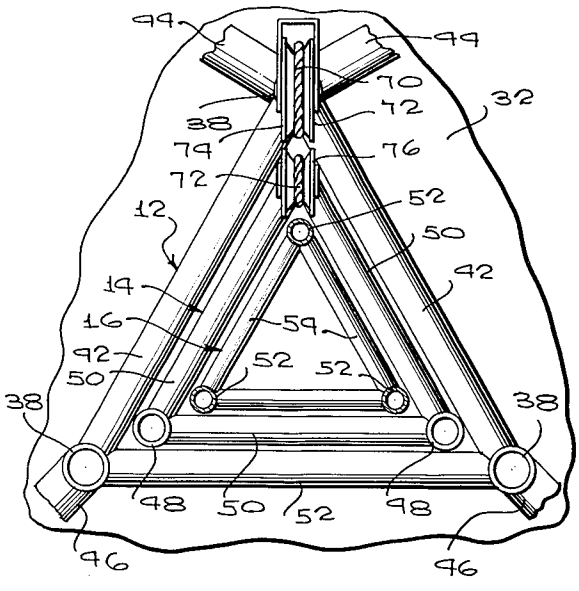
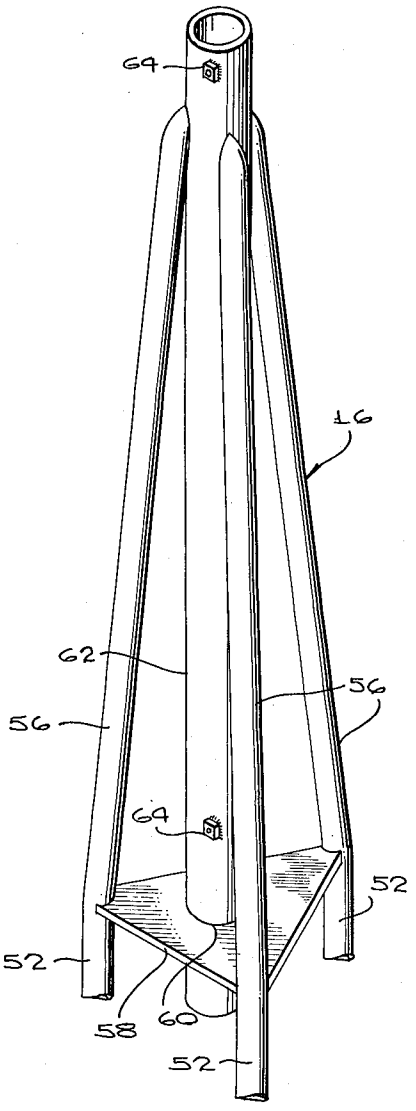


Fig. 6



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April 3, 1956 R. V. BAILEY 2,740,504

TELEVISION TOWER

Filed June 6, 1952 3 Sheets-Sheet 3

Fig. 7

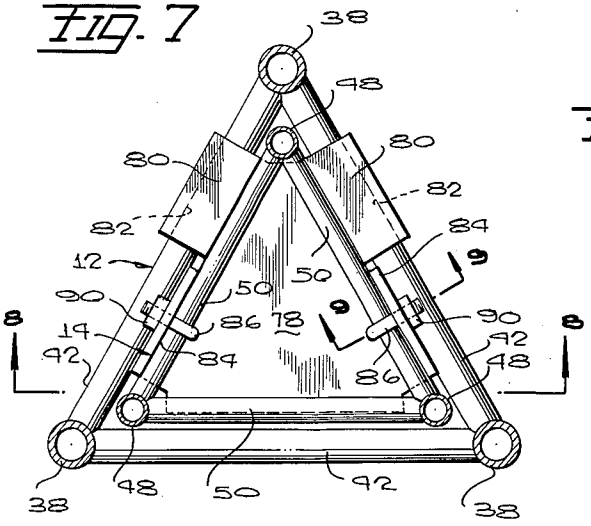


Fig 8

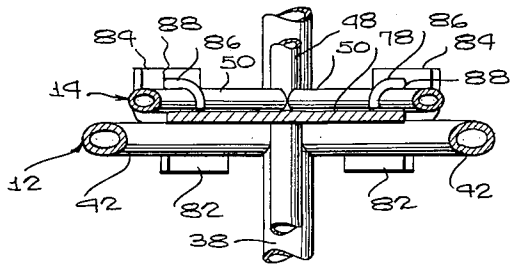


Fig 9

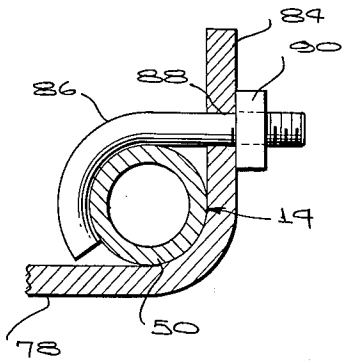
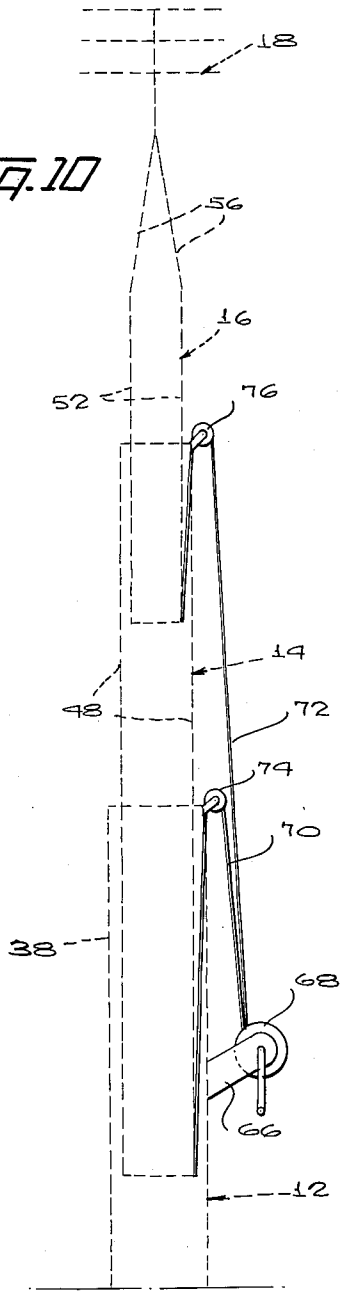


Fig. 10



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United States Patent Office 2,740,504 Patented Apr. 3, 1956

2,740,504

TELEVISION TOWER

Rex V. Bailey, Corsicana, Tex.

Application June 6, 1952, Serial No. 292,031

1 Claim. (Cl. 189—14)

This invention relates to a tower particularly adapted for supporting, at its upper end, a television antenna, and adapted, by reason of a telescopic, sectional construction thereof, to be extended to selected heights.

In many areas, television reception is poor, when an antenna is mounted at its usual low elevation upon the roof of a house or similar structure. The inadequate reception, in this connection, usually derives from the fact that the receiving antenna is located at a substantial distance from the transmitting station.

Accordingly, the main object of the present invention is to provide a tower of a sectional, telescopic construction, that can be readily installed and extended to a desired height, for supporting a television antenna at a sufficient height above a ground surface to assure clear and sharp reception of television broadcasts.

A more particular object is to provide a tower of the character referred to which, though capable of extension to a substantial length, can yet be manufactured at comparatively low cost.

Another object of importance is to provide a tower as described which is so constructed as to permit its erection in minimum time and with maximum facility.

Yet another object of importance is to provide a tower of the type stated which can be completely telescoped when being shipped to a location at which it is to be erected, and which, further, is adapted for the attachment of a television antenna thereto before erection.

Still another object of importance is to provide a television tower which will not only be of a sectional, telescoping formation, but which will additionally be provided with a hinged base, one portion of which can be bolted to a concrete block or the like, with the tower being swingable upon said hinged portion for movement thereof to an upright position.

A still further object of importance is to provide a television tower construction which is so designed as to permit the several sections thereof to be raised to desired heights, by means of a winch mechanism associated with the respective sections and operable from the ground surface.

Still another object of importance is to provide a television tower construction wherein the several sections, after being elevated as desired, can be fixedly connected to one another, by means of novelly designed supporting plates readily adapted to be interposed between the raised sections and bolted thereto in a manner effective to provide a rigid, durable structure.

Other objects will appear from the following description, the claim appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is an elevation of a television tower formed in accordance with the present invention, portions of said tower being broken away;

Figure 2 is an enlarged transverse sectional view through the lower portion of the tower, taken on line 2—2 of Figure 1, and showing the base construction;

Figure 3 is a transverse sectional view, on an enlarged scale, taken through the lower section of the tower, on line 3—3 of Figure 1, a portion of the base being broken away;

Figure 4 is a transverse sectional view on line 4—4 of Figure 1, the scale being enlarged still further, portions of the base being broken away;

Figure 5 is a view similar to Figure 4, taken on line 5—5 of Figure 1;

Figure 6 is an enlarged, fragmentary, perspective view showing the upper end portion of the top tower section;

Figure 7 is an enlarged transverse sectional view, taken through the tower below the upper end of the lowermost section, and illustrating a support plate utilized to fixedly connect lapping sections of the tower after erection of the same;

Figure 8 is a sectional view on line 8—8 of Figure 7;

Figure 9 is a greatly enlarged, detail sectional view on line 9—9 of Figure 7, illustrating a clamp means for securing the support plate to one of the sections; and

Figure 10 is a diagrammatic view of the extended tower, illustrating the cable and winch arrangement embodied in the invention.

Referring to the drawings in detail, the tower formed in accordance with the present invention comprises a plurality of telescoping sections including a bottom section 12, one or more intermediate sections 14, and a top section 16. In the illustrated embodiment of the invention, one intermediate section 14 has been illustrated. However, it will be understood that this showing is provided purely by way of example, and more than one intermediate section could be utilized, if desired. Further, it is believed worthy of note at this time that the several sections can be of any selected lengths, this depending, of course, upon the particular area in which the towers would be used.

Considering first the construction of the bottom section 12, said section includes a base that comprises a fixed base plate and a hinged base plate. The fixed base plate has been designated by the reference numeral 20, and as will be noted from Figure 2, is of rectangular construction, said base plate 20 being adapted to be anchored immovably to a concrete block 22 embedded in the ground surface G.

For the purpose of providing means for anchoring the fixed base plate 20 to the block 22, I provide, in the block, spaced, upstanding, threaded studs 24, which, as will be understood, are embedded in the block at the time the block is poured. The studs 24 extend upwardly through stud-receiving openings formed in the respective end portions of the base plate 20, and after extension through said openings, are adapted to receive nuts 26, which are threaded downwardly against the upper surface of the base plate, for the purpose of immovably anchoring the base plate to the concrete block 22.

Integral or otherwise made rigid with one longitudinal edge of the base plate 20 are spaced hinge leaves 28, said leaves alternating with and being aligned coaxially with hinge leaves 30 formed upon one edge of an approximately square, swingable base plate 32. A hinge pin extends through the hinge leaves 28, 30, and thus the base plate 32 is swingable about a horizontal axis during the erection of the television tower.

As will be appreciated, during the initial steps of erecting the tower, the base plate 32 can be swung upwardly to a vertical position, and since the body of the tower is supported upon the base plate 32, the several sections of the tower will, at this stage of the operation, extend horizontally along the ground surface. Thereafter, the workmen assigned to the task of erecting the tower, only

two of whom are required, need simply swing the tower to an upright position, the hinged base plate 32 now swinging into a position against the block 22, in a plane common to that of the base plate 20.

A plurality of upstanding, threaded studs 34 are embedded in the block 22, said studs being extendable through corner openings provided in the base plate 32, and receiving nuts 36 whereby the base plate 32 can be fixedly anchored to the concrete block after being swung to said horizontal position thereof.

Welded or otherwise rigidly connected to the center portion of the base plate 32 is a plurality of upstanding, triangularly spaced standards 38, said standards being readily formed from tubular stock cut to a selected length. The standards 38 comprise the standards of the bottom section 12, and the fixed connection of the lower ends of the standards to the base plate 32 is reinforced by gussets 40 or the like.

At intervals spaced longitudinally of the standards 38, I provide horizontally disposed cross braces 42, each cross brace being welded or otherwise fixedly connected at its opposite ends to a pair of adjacent standards 38, and being disposed in a triangular arrangement when viewed in top plan (Figure 3).

To further rigidify the connection of the standards 38 to the base plate 32, I provide a pair of inclined brace members 44, rigid at their lower ends with the base plate 32, and rigidly secured at their upper ends to the intermediate portion of one of the standards 38. Other inclined brace members 46 are also rigidly secured to the brace plate 32, and are fixedly connected, at their upper ends, to the intermediate portions of the other standards 38.

The intermediate section 14 telescopes for the full length thereof within the bottom section 12, and comprises triangularly spaced, parallel standards 48 extending into the inner space of the bottom section 12 defined by the cross braces 42 of said bottom section. The standards 48 of the intermediate tower section 14 are rigidly connected, at locations spaced longitudinally thereof, by tubular cross braces 50 (Figure 4).

The top section 16 telescopes within the intermediate section 14, being formed to a cross sectional area smaller than that of the intermediate section, said top section including triangularly spaced, tubular, parallel standards 52 rigidly braced in spaced relation by a series of cross braces 54, spaced longitudinally of said standards 52.

At their upper ends, the parallel standards 52 are integral with elongated, converging, upper end portions 56. Reference should now be had to Figure 6, wherein there is shown to its best advantage a triangular brace plate 58, having corner recesses adapted to receive the upper ends of the standards 52, at that location upon the standards 52 where said standards merge into the upwardly converging portions 56. The brace plate 58 is fixedly secured, at its several corners, to the standards 52, and is provided with a center opening 60 in which is fixedly mounted the lower end portion of a tubular socket 62. The upper end portion of the socket 62 is made rigid with the convergent ends of the portions 56, so as to brace the socket 62 in a vertical position.

The socket 62 is formed open at its upper end, to receive the television antenna 18. For the purpose of anchoring the antenna within the socket, the socket can be provided with longitudinally spaced openings, and nuts 64 can be welded or otherwise made rigid with the socket, where said openings are located, to receive bolts or the like, not shown, that will bind the base of the antenna 18 within the socket. The antenna, it should be noted, can be installed in its associated socket 62 before the television tower is swung to an upright position.

I provide means for adjusting the several sections of the television tower to selected, extended positions, relative to the sections in which they are respectively telescoped. To this end, winch support plates 66 are rigidly fastened to the intermediate portions of the inclined brace members 44 of the bottom section 12, and journaled between the plates 66 is a winch 68, which can be either hand or power operated, the drum of said winch having coiled thereupon cables 70, 72, respectively.

Referring to Figure 10, the cable 70 is extended upwardly along the bottom section 12, and is trained about a pulley 74 mounted upon the upper end of said bottom section 12. Thereafter, the cable 70 is extended downwardly to the lower end of the intermediate section 14, and is secured to said lower end of the intermediate section.

The cable 72 is trained about a pulley 76 mounted upon the upper end of the intermediate section, and is secured, at its end, to the bottom end of the top section 16.

By reason of this arrangement, when the winch 68 is operated, the intermediate and top sections will be extended from their normally telescoped position, and it will be understood that they can be extended to any extent desired, depending upon the overall height to which the tower is to be erected. The extension of the several sections is accomplished, in this regard, after the television tower has been swung to an upright position.

Reference should now be had to Figures 7 through 9, wherein I have illustrated the means which I employ for bolting the extended sections together, at the completion of the installation operation. Considering, for example, the manner in which the intermediate section 14 is bolted to the bottom section 12, in a selected position to which said intermediate section is raised relative to the bottom section, a support plate of generally triangular outer configuration is utilized. The support plate 78, along at least two of its sides, has integrally formed thereupon laterally extended flanges 80 adapted to overlie selected cross braces 42 of the bottom section, said flanges 80 having, along their outer edges, depending lips 82 extending downwardly over the outer surfaces of the cross braces.

Adjacent the flanges 80, I provide upwardly extending flanges 84 on the support plate 78, the flanges 84 extending upwardly over the outer surfaces of the selected cross braces 50 of the intermediate section, with said selected cross braces being supported upon the plate 78.

It will be seen that on relating the support plate 78 to the bottom and intermediate sections in this manner, the intermediate section will be supported by the bottom section in a selected position of extensible adjustment, and to securely retain the support plate 78 in its proper position, I utilize J-bolts 86, embracing the cross braces 50 of the intermediate section, and extending through openings 88 of the upstanding flanges 84. Nuts 90 are threadable upon the shank portions of the bolts 86, against the outer surfaces of the flanges 84, to rigidify the connection.

It will be appreciated that a television tower formed as illustrated and described can be readily installed, in a minimum of time, since the antenna can be mounted upon the tower before the tower is swung to its upright position. In this connection, it is even possible to extend the several sections while the tower is disposed horizontally, and bolt the several support plates in place, thus to eliminate the necessity of ladders being placed against the erected tower, or the necessity of having a workman climb the tower. In any event, whether the sections are extended before or after movement of the tower to an upright position, the entire operation can be carried out with ease, as will be obvious from the description which has been hereinbefore provided.

Should repairs be needed after erection of the tower, or should it be desired to exchange or adjust the antenna, it is merely necessary that the nuts 36 be backed-off the studs 34, after which the entire tower can be swung to a horizontal position so that said repairs or antenna substitution can be effected. This is considered to be an important characteristic of the invention, since it per-

mits the changes or repairs to be made with little expense and in a minimum of time.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claim.

What is claimed is:

A vertically extensible television antenna tower comprising at least one pair of nested, telescopically related sections each formed as a rigid framework including a plurality of vertical members and groups of horizontal brace members interconnecting the vertical members, the groups of each section being spaced longitudinally of the vertical members of the same section, the brace members of each group lying in a common horizontal plane with each brace member of a group extending angularly to each of the other brace members of the same group; and means to hold the sections against telescoping from their relatively extended positions, including a plate lying in a horizontal plane and having its edges related angularly to one another correspondingly to the relative angulation of the brace members of each group, one group of one

section, in the extended positions of the sections, lying in a horizontal plane above that of an adjacent group of the other section, the horizontal plane of said plate occurring between the planes of said one group and said adjacent group, depending lips on a plurality of the edges of said plate related angularly to one another correspondingly to the relative angulation of the plate edges on which they are formed, said lips engaging the adjacent brace members of said adjacent group, upwardly extending flanges on a plurality of the edges of said plate related angularly to one another correspondingly to the angulation of the plate edges on which they are formed, and engaging the adjacent brace members of said one group, said flanges having openings formed therein, J-shaped bolts extending through said openings and having depending, arcuate portions at one end engaging the brace members of said one group, and nuts threaded upon said bolts against said upwardly extending flanges for binding said portions tightly against the brace members engaged thereby.

References Cited in the file of this patent

UNITED STATES PATENTS

1,342,828	Seymour	June 8, 1920
1,656,900	Bowen	Jan. 24, 1928
2,293,489	Causey	Aug. 18, 1942
2,339,327	Fox	Jan. 18, 1944
2,611,456	Bader	Sept. 23, 1952
2,612,242	Munsinger	Sept. 30, 1952