July 24, 1934. H. E. WHITE 1,967,490

FORM FOR CAISSONS, PIERS, ETC

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Fig. 1.

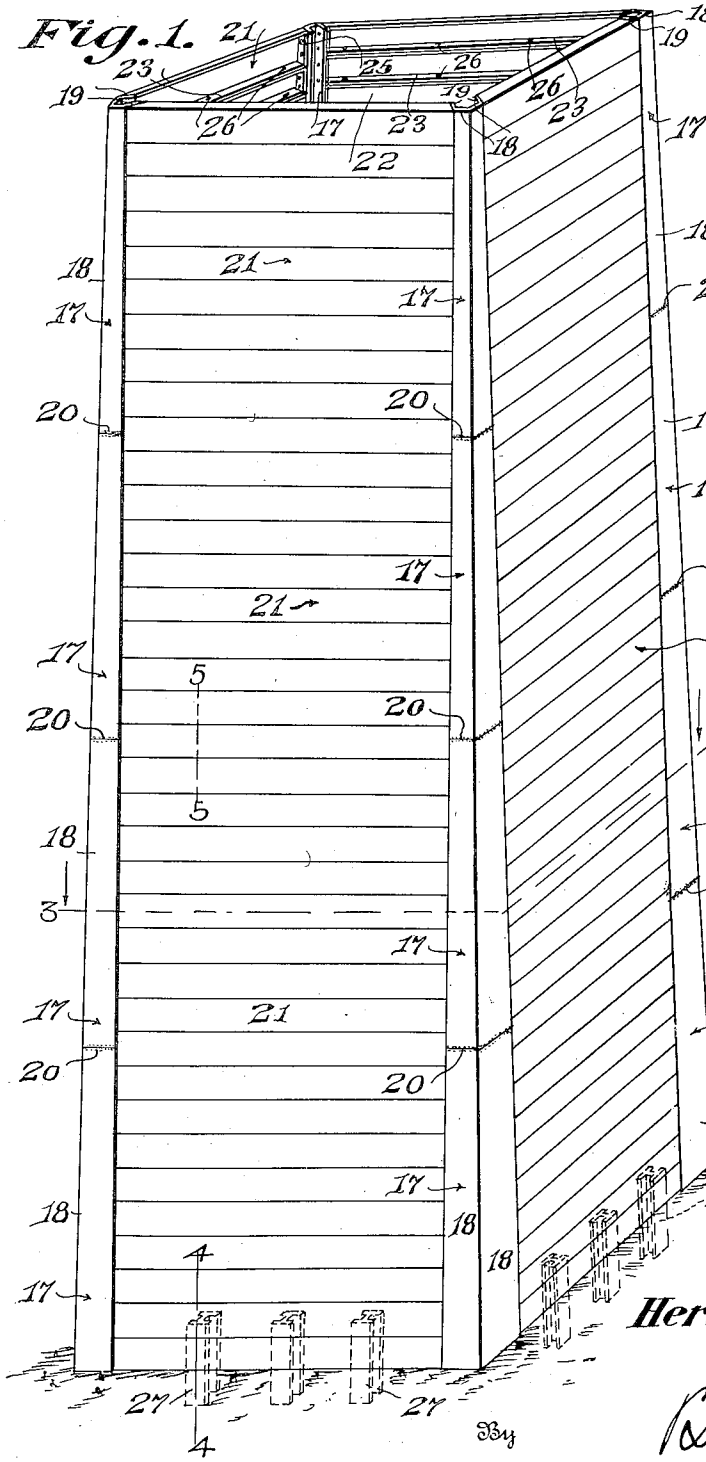
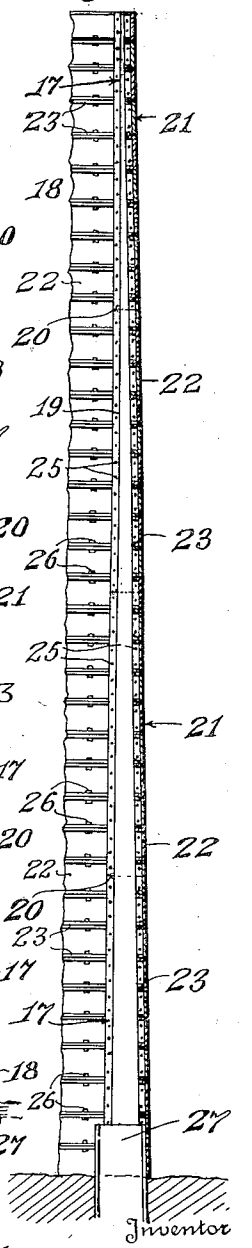


Fig. 2.



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Fig. 3.

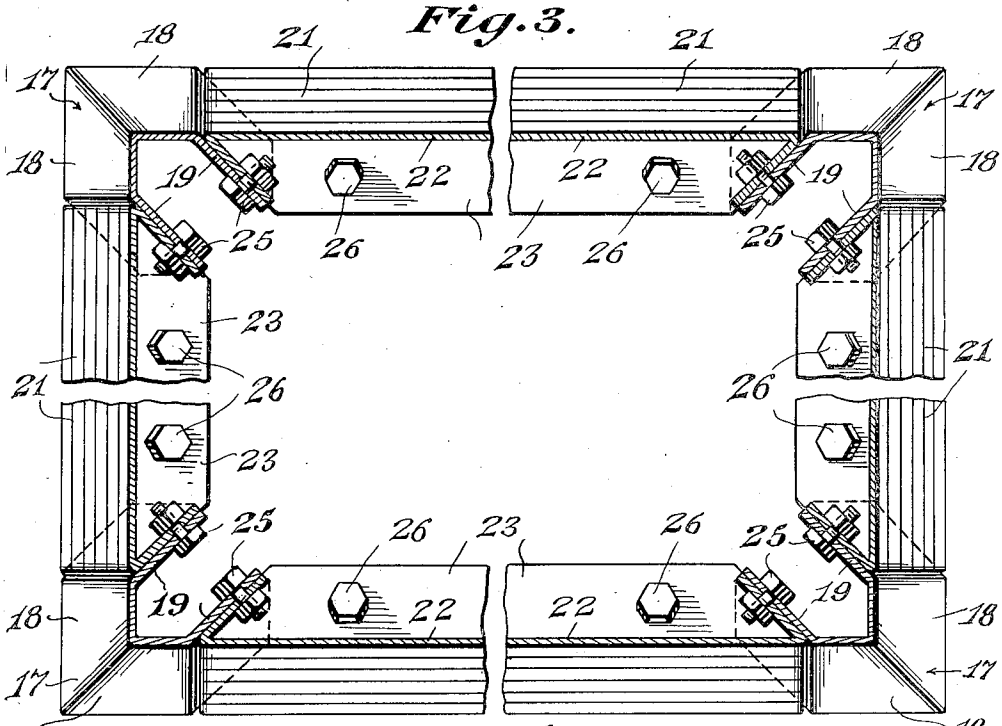
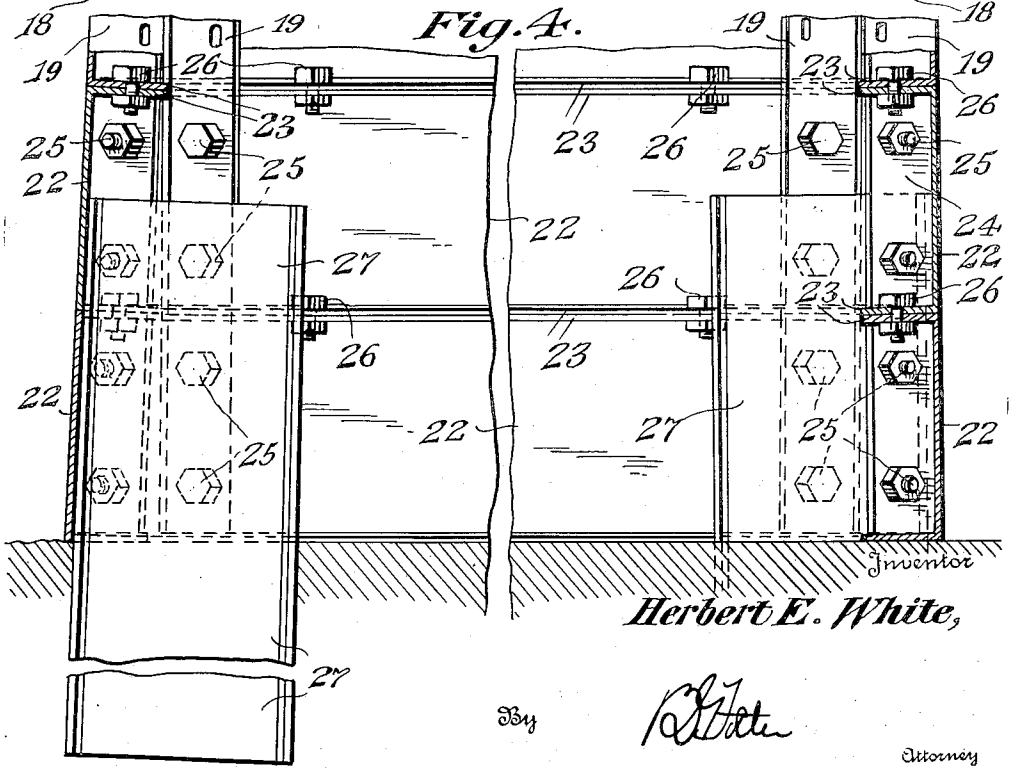


Fig. 4.



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Fig. 5.

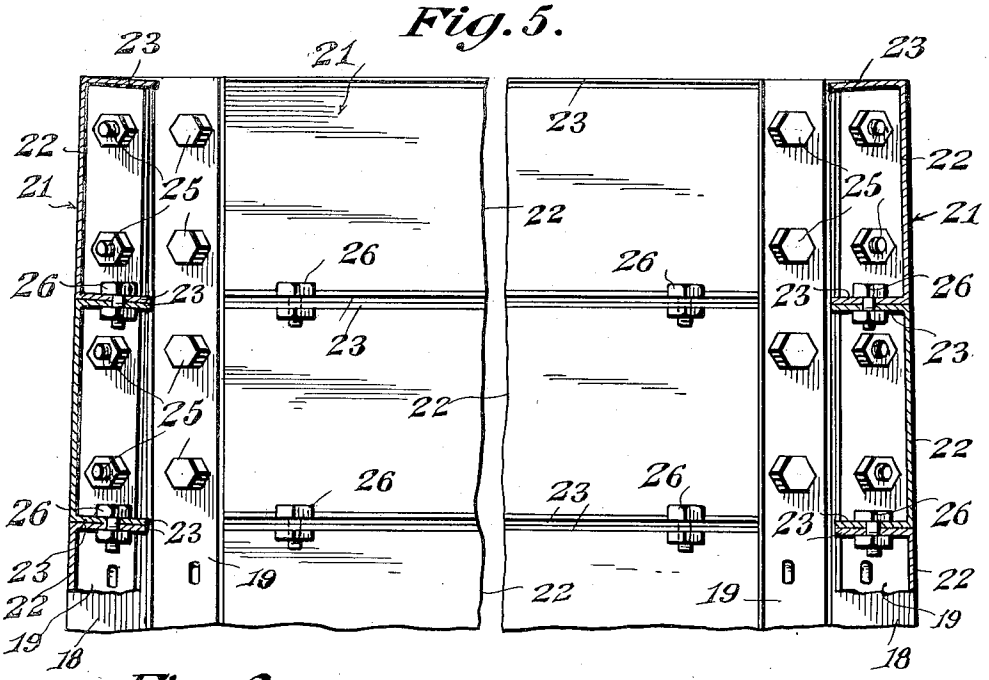


Fig. 6.

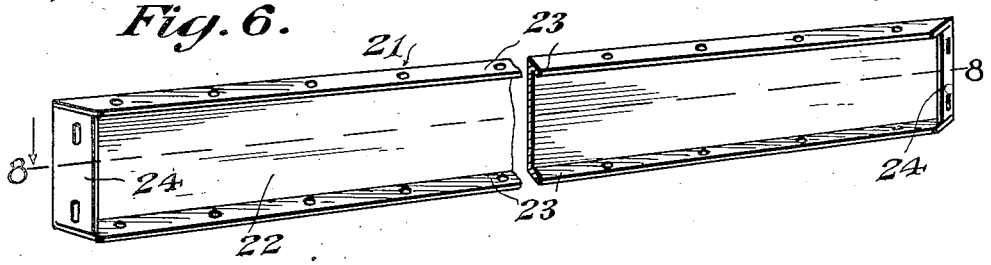


Fig. 7.

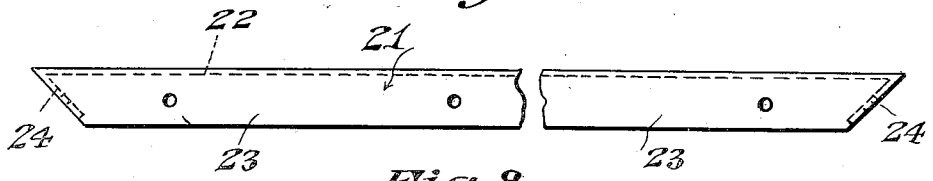
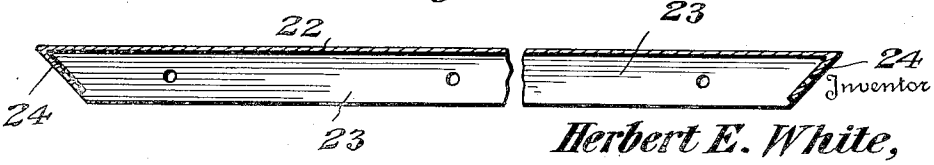


Fig. 8.



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Fig. 9.

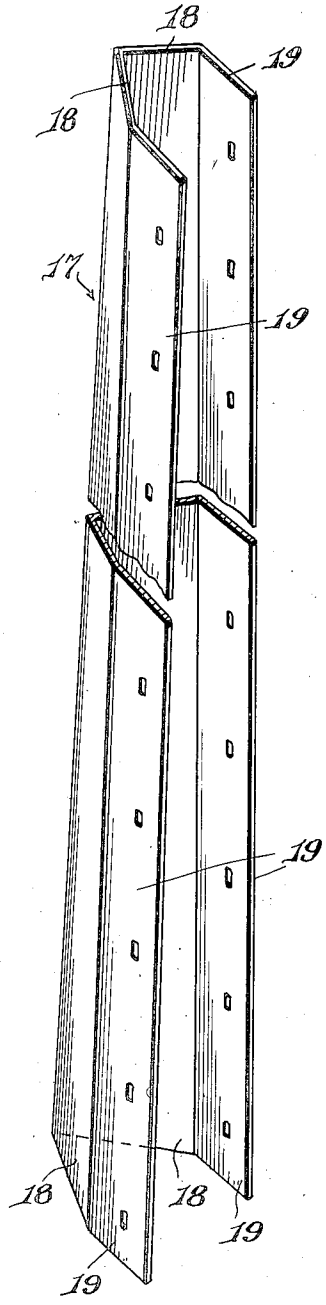


Fig. 12.

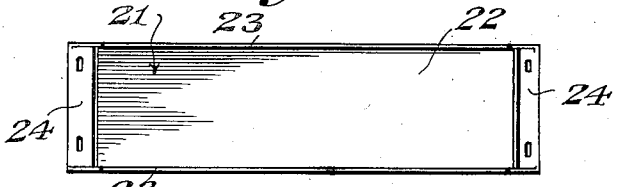


Fig. 13.

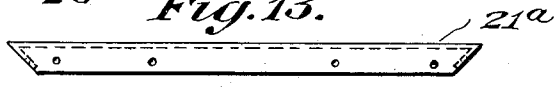


Fig. 10.

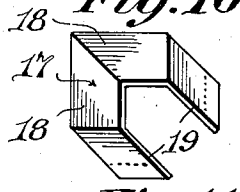


Fig. 14.

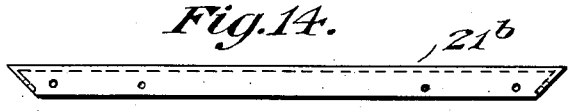


Fig. 11.

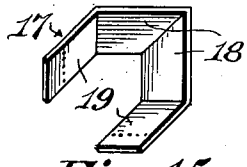


Fig. 15.

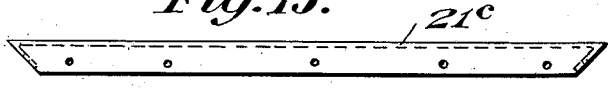
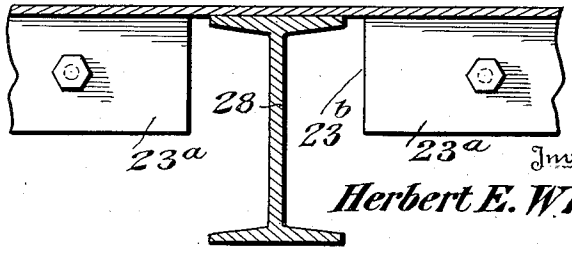


Fig. 16.



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Patented July 24, 1934 1,967,490

UNITED STATES PATENT OFFICE

1,967,490

FORMS FOR CAISSONS, PIERS, ETC.

Herbert E. White, Cleveland, Ohio, assignor to Truscon Steel Company, Youngstown, Ohio, a corporation of Michigan

Application February 23, 1932, Serial No. 594,670

12 Claims. (Cl. 61—63)

In that type of hollow structure used for caissons, piers, and the like where the same are tapered or "battered" it has usually been the custom to build the same of wood, or in great part of wood, owing to the complications incident to constructing a tapered form in metal.

The object of the present invention is to provide a structure of the above character that makes it entirely feasible to employ metal parts, preferably deformed plate metal, in that the elements or members making up the side walls can be of a standard length while the tapering formation of the structure as a whole is obtained.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of a tubular form.

Figure 2 is a vertical sectional view therethrough.

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 1.

Figure 4 is a detail vertical sectional view on the line 4—4 of Figure 1.

Figure 5 is a vertical sectional view on the line 5—5 of Figure 1.

Figure 6 is a detail perspective view of one of the side wall plates.

Figure 7 is a top plan view of the same.

Figure 8 is a longitudinal sectional view on the line 8—8 of Figure 6.

Figure 9 is a perspective view of one of the corner posts.

Figure 10 is a top plan view of the same.

Figure 11 is a bottom plan view.

Figure 12 is a rear elevation of one of the wall plates.

Figures 13, 14 and 15 are plan views of plates of different lengths which may be standardized for erecting forms of different cross sectional area.

Figure 16 is a detail view illustrating the employment of intermediate reinforcing means for the side walls.

While the form obviously can take any desired cross sectional configuration, in the embodiment disclosed it is square, and four corner posts designated 17 are provided, these posts corresponding in structure and form.

Each post consists of outer right angularly disposed side walls 18 that are longitudinally tapered and are joined together to produce a corner. Extending rearwardly from the outer edges of the walls 18 are longitudinally disposed flanges 19 preferably, though not necessarily, of the same width throughout their lengths, these flanges 19 thus converging toward the upper end of the corner posts. The corner posts as indicated in Figure 1 may be made of sections secured together, as by welded joints 20.

When the posts are set up, it will be evident by reference to Figure 3 that the flanges of one post are in opposition to the flanges of the other post, and while they are transversely convergent, they are parallel in a longitudinal direction. In other words the width of the space between the opposing flanges of adjacent posts remains the same throughout the length of the structure.

This space is filled by wall plates or members 21. Each member, as will be clear by reference to Figures 6, 7 and 8, is of channeled formation, comprising a facing wall 22 and longitudinal rearwardly turned side flanges 23. The ends of the plates have rearwardly turned end flanges 24 which have their ends preferably electrically welded to the ends of the flanges 23. The end flanges 24 are set at an acute angle to the facing wall 22 and are disposed at the same convergent angles as the side flanges 19 of the corner posts (see Figure 3), against which they abut. The flanges 19 and 24 are secured together by any suitable means, as bolts 25, and the side flanges 23 of one plate are likewise secured to the flanges of the upper and lower adjoining plates by bolts or other fasteners 26.

By means of this structure, it will be noted that the wall plates 21 are of the same length throughout the height of the structure, thus making it possible to provide a plate of standard length instead of plates successively shorter. It will be understood, however, that these wall plates may be made up in different lengths so that instead of a square structure, an oblong or other form may be provided. Thus in Figures 13, 14 and 15 there are shown such wall plates 21*a*, 21*b* and 21*c*, any set of which of equal length may be employed merely by spacing the corner posts farther apart or closer together, as the case may be. Thus a longer set of plates may be used for two of the sides than for the other two sides. And as will be obvious it is not necessary that the structure should be rectangular for by providing the necessary number of posts, a pentagonal, hexagonal or octagonal structure may be produced.

In the disclosure shown in Figure 1, a complete form is illustrated and this may be held at its bottom by vertical anchoring beams 27 embedded in the foundation for the form and extending upwardly inside and against the different lower side plates.

Where the outside pressure is great or the

length of the side plates is extended, in order to prevent buckling, the plates may be backed by vertical reenforcing bars as illustrated in detail in Figure 16. In this case the side flanges designated 23*a* are cut away at intervals and vertical reenforcing beams 28 are placed transversely of the plates and against the outer walls thereof. In such a structure it will be understood that recesses 23*b* provided are alined in the different plates, either to the full height of the structure or to such a point as may be found desirable.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim, is:

1. A form structure of the character set forth, including corner posts each of longitudinally tapered formation, said posts being located with portions thereof disposed in parallel relation and side wall members connecting and secured to the parallel portions of the corner posts and with the same providing a generally tapered form wall.

2. A form structure of the character set forth, including tapered corner posts and transverse side wall members of substantially equal length secured to the corner posts and with the same providing a generally tapered form wall.

3. A form structure of the character set forth, including tapered metal corner posts, and cross wall plates of substantially equal length located side by side and secured at their ends to the corner posts and with the latter providing a side wall that is generally tapered.

4. A form structure of the character set forth, including metal corner posts each of longitudinally tapered formation, said posts being located with portions thereof disposed in parallel relation and cross wall plates of channeled formation connecting and secured at their ends to the parallel portions of the corner posts and with the latter providing a side wall that is generally tapered.

5. A form structure of the character set forth including corner posts of generally tapered formation, adjacent posts having portions that are substantially parallel in a longitudinal direction one to the other, and cross wall plates of substantially equal length provided with portions secured to the parallel portions of the corner posts and providing a wall that is generally tapered.

6. A form structure of the character set forth, including corner posts having side walls that are generally tapered in a longitudinal direction and provided with offset flanges, a flange of one post being disposed substantially parallel in a longitudinal direction to that of another post, and cross plates interposed between the said parallel flanges and having offset ends secured thereto.

7. A form structure of the character set forth, including corner posts having side walls that are generally tapered in a longitudinal direction and provided with offset flanges that are transversely convergent, a flange of one post being longitudinally parallel to that of another post, and cross plates interposed between the said parallel flanges and having acutely offset ends secured thereto.

8. A form structure of the character set forth, including corner posts having side walls that are generally tapered in a longitudinal direction and provided with offset flanges, channeled wall plates located side by side and having offset end flanges secured to the flanges of the corner posts, and means securing together the side flanges of adjacent wall plates.

9. A form structure of the character set forth, comprising a plurality of tapered corner posts, adjacent posts having opposing side portions that are substantially parallel in a longitudinal direction, and a set of cross plates of substantially equal length located between and secured to each of the sets of opposing side portions and producing with the corner posts tapering convergent sides.

10. A form structure of the character set forth, comprising a plurality of tapered corner posts of channel formation comprising angularly disposed longitudinally tapered side walls having inset side flanges along their outer edges, the said side flanges of one post being disposed in opposition and substantially parallel in a longitudinal direction to the flanges of adjacent posts, and transversely disposed wall plates bridging the space between the opposing flanges and having inset end flanges secured thereto.

11. A form structure of the character set forth, comprising a plurality of tapered corner posts of channel formation comprising angularly disposed longitudinally tapered side walls having inset side flanges along their outer edges, the said side flanges of one post being disposed in opposition and substantially parallel in a longitudinal direction to the flanges of adjacent posts, and transversely disposed wall plates of channeled form located side by side and bridging the space between the opposing flanges, said wall plates having inset end flanges secured to the flanges of the posts and having their side flanges secured together.

12. A form structure of the character set forth comprising a plurality of corner posts having angularly disposed longitudinally tapered walls, and side wall members interposed between and connecting the corner posts, said side wall members being located between the tapered walls of the corner posts and with said walls forming the side of the structure.

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