April 9, 1929. H. A. MUGLER 1,708,394

SHEET METAL STRUCTURE

Filed Dec. 17, 1927

Fig. 1

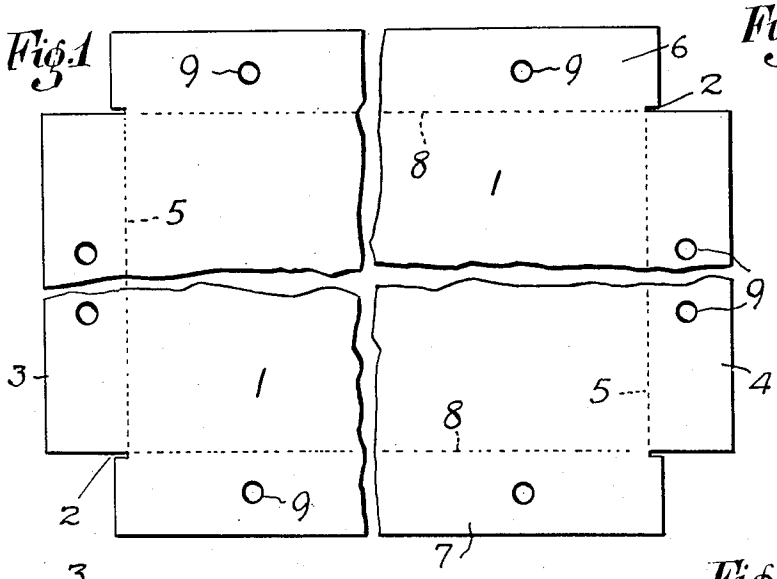


Fig. 2

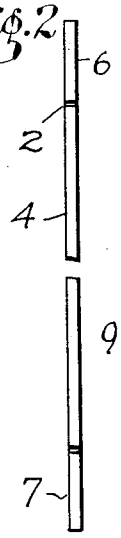


Fig. 3

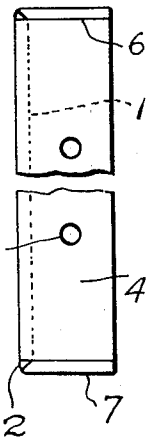


Fig. 4

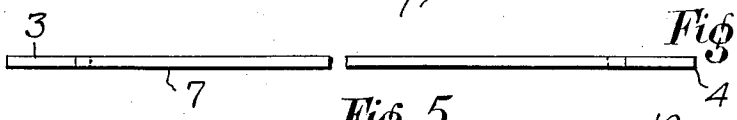


Fig. 5

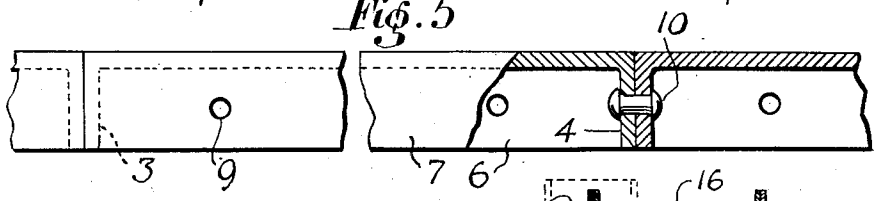


Fig. 6

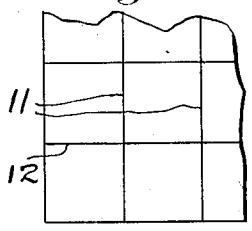


Fig. 7

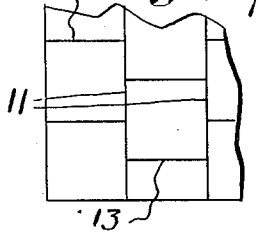


Fig. 9

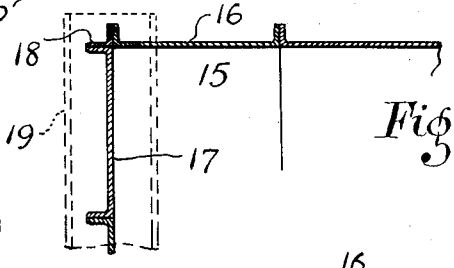


Fig. 10

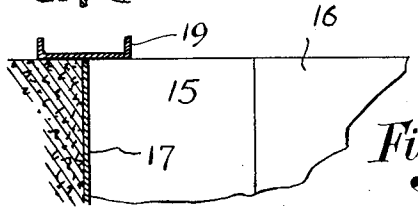


Fig. 11

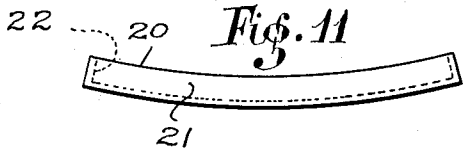


Fig. 12

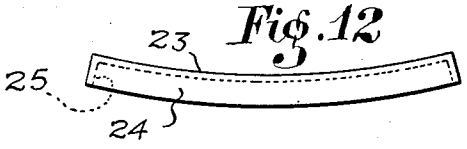
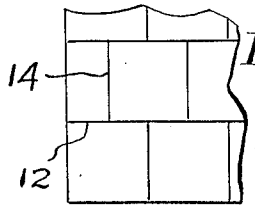


Fig. 8



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UNITED STATES PATENT OFFICE.

HERMAN A. MUGLER, OF LYNBROOK, NEW YORK.

SHEET-METAL STRUCTURE.

Application filed December 17, 1927. Serial No. 240,663.

This invention relates to steel and other sheet metal structures in which a series of plates or sheets are assembled together to form a wall or partition or the like and, although the present invention is particularly applicable to the retaining walls or sides of automobile inspection pits and other similar structures or excavations, it may be applied to walls or structures for various purposes.

One obje t of my invention is to provide an improved wall structure comprising flanged sections and flange-connecting means whereby adjacent sections are secured together with a smooth unbroken surface at one side and with improved strengthening and bracing means at the opposite side.

Another object of this invention is to provide a flanged sheet metal section so formed that the vertical flanges serve as supports for the horizontal flanges and for the load carried thereby.

My invention consists in the novel construction and arrangement of the parts as hereinafter described by way of illustration or example with reference to the accompanying drawing whereon:—

Fig. 1 is a face view of a blank before the flanges have been bent up; Fig. 2 is a side edge view of the same; Fig. 3 is a side edge view after the vertical and horizontal flanges have been bent up; Fig. 4 is a lower edge view of Fig. 1; Fig. 5 is a lower edge view after the vertical and horizontal flanges have been bent up, and showing parts of adjacent sections secured thereto and one of the connections being shown in section; Figs. 6, 7 and 8 are front views showing portions of three different forms of a wall structure; Figs. 9 and 10 are respectively a sectional plan and a sectional elevation of a portion of an automobile inspection pit constructed in accordance with this invention; Fig. 11 is an upper edge view of a curved section; and Fig. 12 is a view similar to Fig. 11 but showing a modified form of the curved plate.

Referring to Figs. 1 to 5 inclusive a blank 1 of sheet steel or other suitable metal is cut away at its four corners and is also cut or slotted at 2. The vertical flanges 3, 4 are formed by bending along the dotted lines 5, Fig. 1, and the top and bottom horizontal flanges 6, 7 are formed by bending along the dotted lines 8, Fig. 1. The flanges 3, 4, 6, 7 are all bent up at right angles to the blank 1 and the distance between the opposed faces of the vertical flanges 3, 4 plus the thickness of these two flanges is approximately equal to the length of the horizontal flange 6 or 7 so that the ends of the flange 6 are supported upon the upper edges of the vertical flanges 3, 4 throughout the depth of the latter flanges, and the lower edges of the flanges 3, 4 similarly engage the upper faces of the flange 7 at the ends thereof.

The flanges are punched or perforated with rivet or bolt holes 9 and when the sections are assembled together to form the wall or other structure adjacent flanges are secured together by rivets 10 or the like.

In the wall structure shown at Fig. 6 sections are employed of equal dimensions throughout, and continuous vertical joints 11 and continuous horizontal joints 12 are provided. In Fig. 7 the vertical joints 11 are continuous while the horizontal joints 13 are staggered and in Fig. 8 the horizontal joints 12 are continuous while the vertical joints 14 are staggered. In the forms shown at Figs. 6 and 7 the vertical flanges are in line with each other and form columns for the support of the intervening horizontal flanges and of the load carried thereon, while in the arrangement shown at Fig. 8, the columns formed by the vertical flanges are interrupted and staggered but still serve as supports for the horizontal flanges.

Referring to Figs. 9 and 10, the automobile inspection pit 15 has retaining walls 16, 17 assembled in accordance with the present invention and has vertical angle bars 18 at the corners and channel bars or bent plates 19 to serve as runways. The internal faces of the pit walls 16, 17 present smooth surfaces without projections of any kind.

Although the sections have been hereinbefore described as applied to the construction of flat walls it will be understood that the invention is equally applicable to the construction and assembly of curved plates for the erection of silos, tanks and other upright cylindrical structures; and Fig. 11 shows a curved section 20 made in accordance with this invention and having horizontal flanges 21 and vertical flanges 22 bent up at the concave side of the section. Fig. 12 shows a curved section 23 having horizontal flanges 24 and vertical flanges 25 cut and bent in accordance with the present invention and located at the convex side of the section.

As will be clearly understood from the foregoing description the construction and arrangement of my novel sections entirely eliminates the use of separate supporting columns, braces and the like thus saving the time, labor and material consequent to the manufacture and installation of such columns, braces and the like.

Instead of using rivets, or bolts for the attachment of the flanges in the erection of the structure, the flanges may be connected by welding and the perforating of the flanges may thus be omitted.

What I claim is:

A sheet metal structural unit comprising a main flat rectangular portion and four flanges folded therefrom at right angles, one pair of opposed flanges having a length greater than the corresponding length of the rectangular flat portion by twice the thickness of the plate material, and the other opposed flanges having a length equal to the corresponding dimension of said flat rectangular portion, a cross-section of the outside surfaces of said flanges forming a rectangle.

In testimony whereof I have signed my name to this specification.

HERMAN A. MUGLER.