Sept. 12, 1933. C. F. SCOTT 1,926,633

CONCRETE CULVERT FORM

Filed May 28, 1930 4 Sheets-Sheet 1

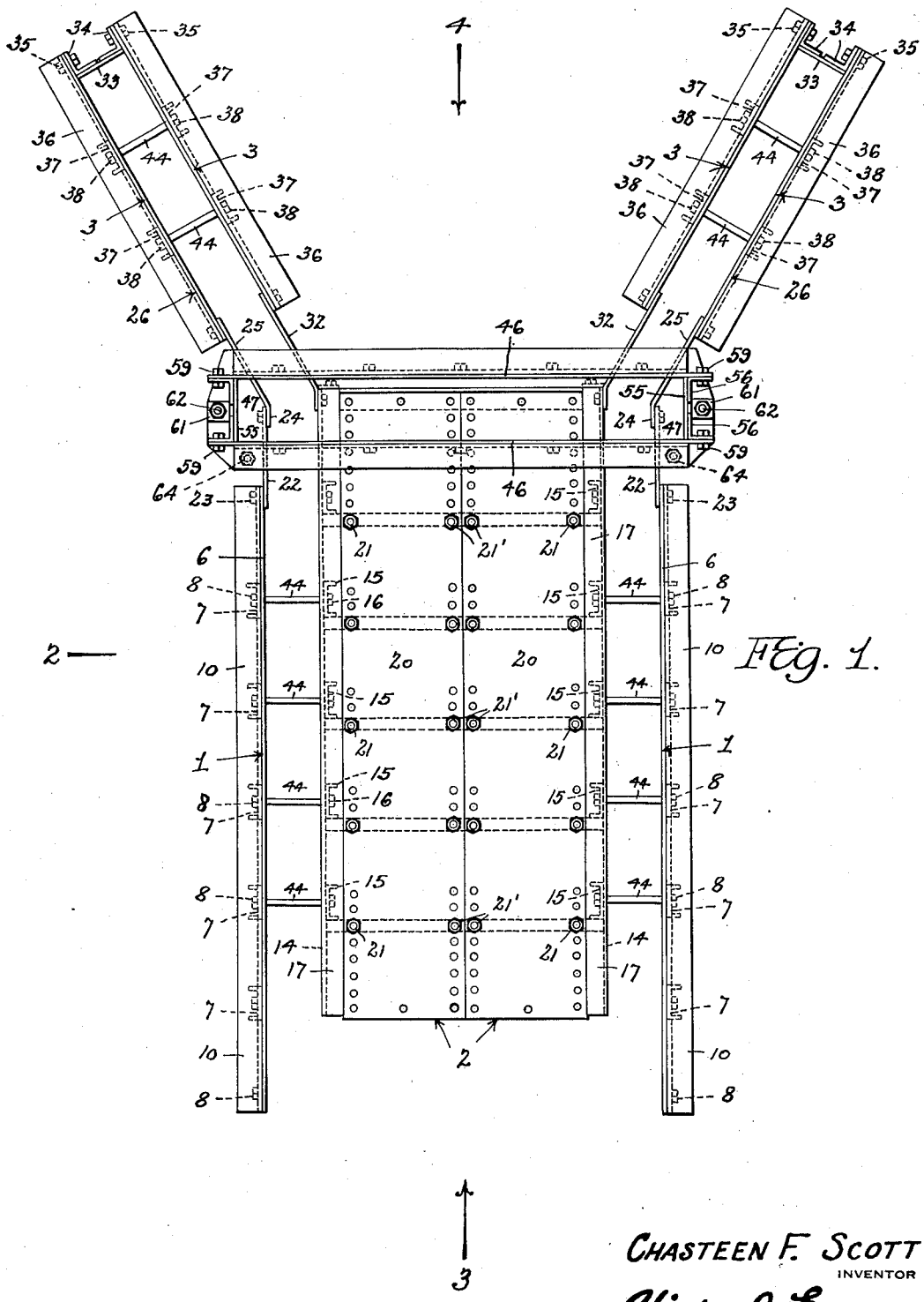


Fig. 1.

CHASTEEN F. SCOTT
INVENTOR

BY Victor J. Evans
ATTORNEY

WITNESS Lee Smith

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Filed May 28, 1930 4 Sheets-Sheet 2

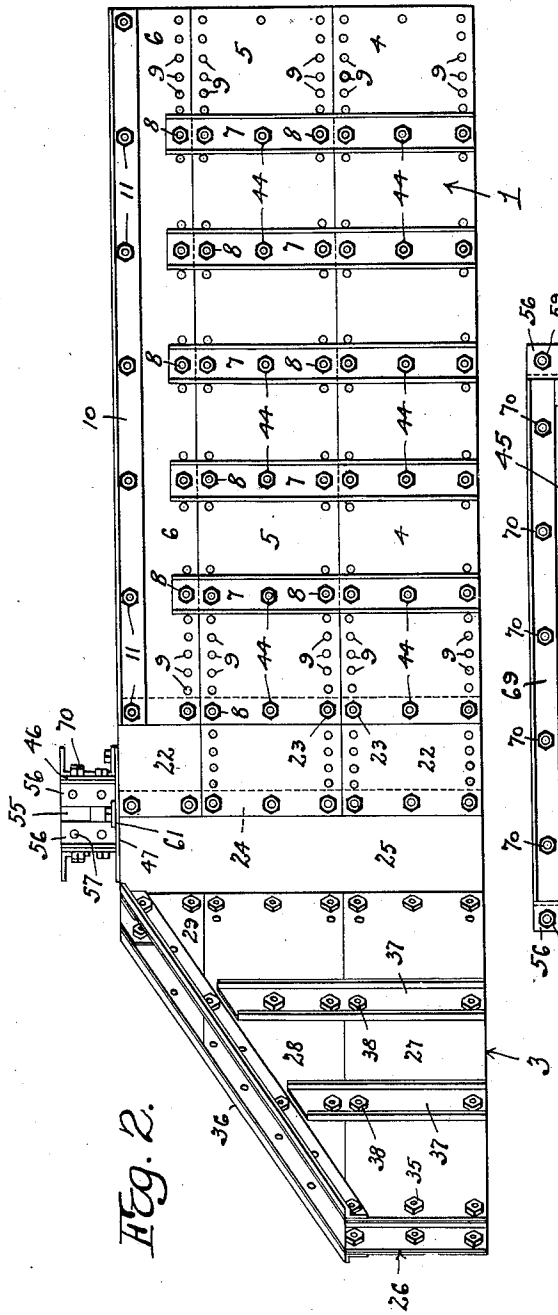


Fig. 2.

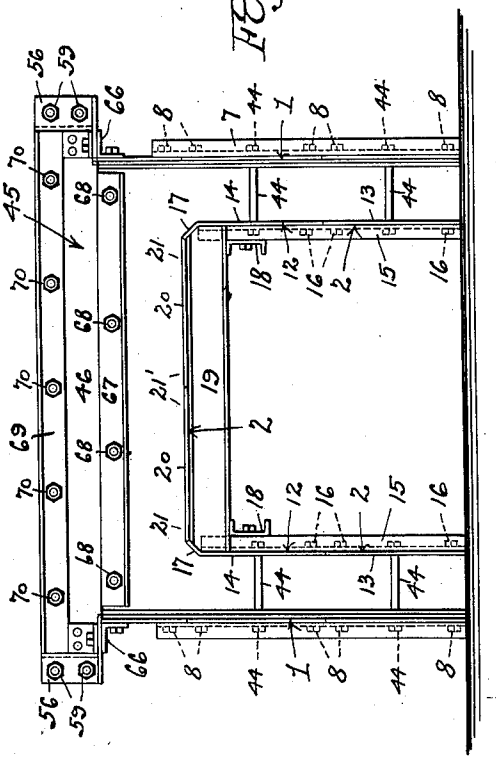


Fig. 3.

CHASTEEN F. SCOTT
INVENTOR

BY Victor J. Evans
ATTORNEY

WITNESS Lee Smith

Sept. 12, 1933. C. F. SCOTT 1,926,633

CONCRETE CULVERT FORM

Filed May 28, 1930 4 Sheets-Sheet 3

Fig. 4.

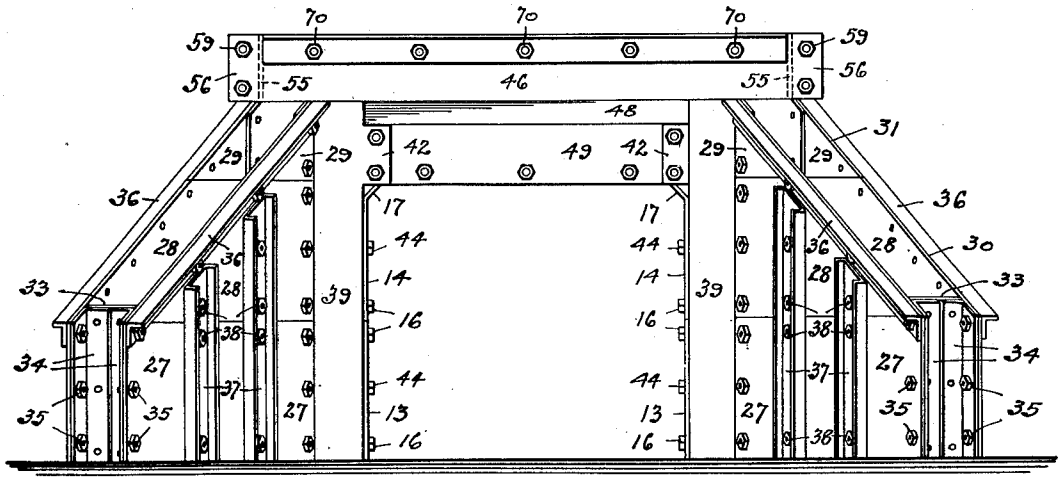
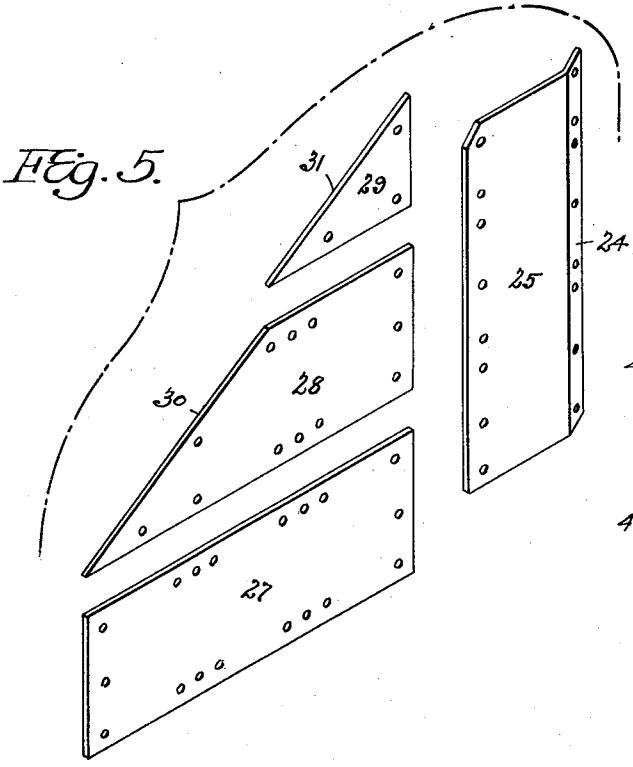


Fig. 5.



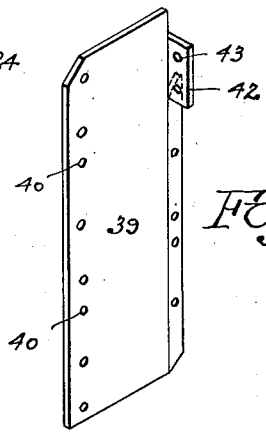


Fig. 6.

CHASTEEN F. SCOTT
INVENTOR

BY Victor J. Evans
ATTORNEY

WITNESS Lee Smith

Sept. 12, 1933. C. F. SCOTT 1,926,633

CONCRETE CULVERT FORM

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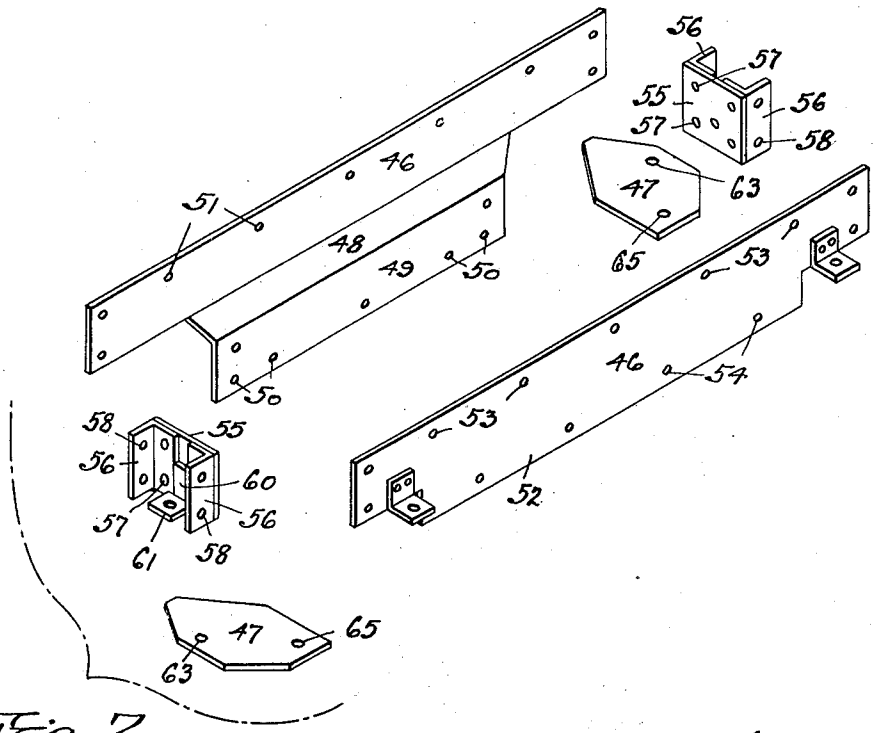


Fig. 7.

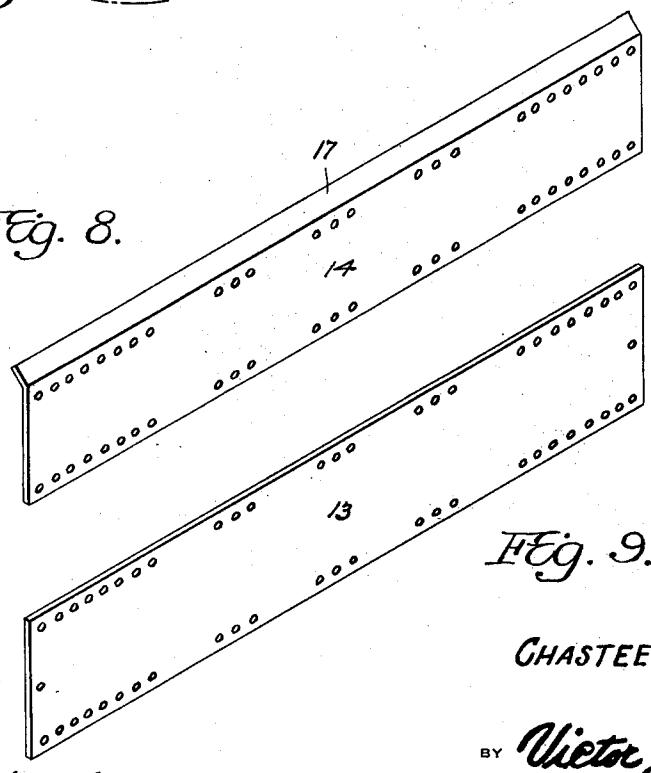


Fig. 8.

Fig. 9.

CHASTEEN F. SCOTT
INVENTOR

BY Victor J. Evans
ATTORNEY

WITNESS Lee Smith

Patented Sept. 12, 1933 1,926,633

UNITED STATES PATENT OFFICE

1,926,633

CONCRETE CULVERT FORM

Chasteen F. Scott, Oklahoma City, Okla.

Application May 28, 1930. Serial No. 456,696

2 Claims. (Cl. 25—131.5)

This invention relates to improvements in forms for molding concrete culverts. In molding culverts of small sizes, it has been heretofore customary to construct the molding forms of wood but this method of molding has been found to be entirely unsatisfactory for several reasons. In the first place, the cost of labor expended in the construction of such forms is high, and because of the nature of the material employed, namely wood, the forms after molding of the culvert constitute practically a total waste. Furthermore, due to the wet nature of the concrete, when introduced into a wooden form, the form is liable to become distorted and there is liable to be a leakage of the concrete so that the completed culvert is not of the proper or uniform shape and is defective in one or more respects. Therefore, the present invention has as its primary object to provide a form which may be readily set up for use and by the use of which a culvert of definite form and dimensions may be readily produced, the form, embodying the invention, being adapted to be employed a great number of times without requiring any replacement or repair of its parts.

Another object of the invention is to provide a form for molding concrete culverts so constructed that its component parts may be adjusted so that a culvert having any desired height, length and width, to meet different requirements, may be molded by the use of the form, it being possible, by the use of the form, to mold culverts of from two to twelve feet in width.

Another object of the invention is to provide a molding form for molding culverts, which form may be, as stated above, employed, by a simple adjustment of its parts, to mold culverts of different dimensions and without the necessity of using any additional parts or any surplus braces or the like.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a top plan view of a mold form for concrete culverts constructed in accordance with the present invention, the view illustrating the form in a partly set up condition and in such condition as will enable a like assemblage to be connected therewith to complete the culvert.

Figure 2 is a view in side elevation illustrating the form.

Figure 3 is a view in end elevation of the culvert, looking at the intermediate end of the structure shown in Figure 1.

Figure 4 is a similar view looking at the other end of the structure and illustrating the arrangement of the units of the form which are employed in molding the wing walls of the culvert.

Figure 5 is a group perspective view illustrating the component parts of one section of one of the wing wall extensions of the mold form.

Figure 6 is a perspective view illustrating another section of one of the wing walls.

Figure 7 is a group perspective view illustrating the component parts of a combined extension and bracing head constituting a part of one end of the structure.

Figure 8 is a perspective view of one of the side wall sections of the core of the molding structure.

Figure 9 is a similar view of another section of the side wall core.

The mold form embodying the invention comprises side walls which are indicated by the numeral 1 and a core which is indicated in general by the numeral 2, and which is arranged between the side walls so as to provide for the molding of the side and top walls of the culvert, the structure further including the wing walls indicated in general by the numeral 3 by which the wing walls of the culvert are molded. Each of the side walls comprises a lower plate section 4 preferably of sheet iron, an intermediate section 5 of like material, and an upper section 6 of the same material, and these sections are arranged one above another in the order referred to, and uprights 7 which are of channel iron are disposed against the outer sides of the assembled sections 4, 5 and 6 and secured thereto by bolts 8 and, in order that the bracing uprights 7 may be arranged in any desired relation and spaced with respect to one another, it is preferable that the plates 4, 5 and 6 be formed, in the instance of the plate 4, along a line near the upper and lower edges thereof, with bolt openings 9 through which the bolts 8 are secured, the sections 5 being formed with similar groups or series of such openings 9, and the upper section 6 being formed with similar openings 9, located near the lower edge thereof.

In order that the structure may be reenforced,

an angle iron 10 is secured by bolts 11 to the outer side of the upper wall section 6, and extends along the upper edge thereof. At the right hand end of Figure 2 it will be observed that a number of the openings 9 are arranged in rows along the lower edges of the sections 4 and 6, and the meeting edges of the sections 4, 5 and 6, so that the length of the side walls may be increased by the connection to these sections of other corresponding sections comprising an extension of the side wall structure, or if desired, a pair of the wing wall units 3 may be connected with this end structure, as well as at the left hand end as shown in Figure 2.

The core unit 2 comprises side walls which are indicated in general by the numeral 12 and each of these side walls comprises a lower section 13 in the form of a sheet iron plate, and an upper section 14 likewise in the form of a sheet iron plate, the sections being assembled edge to edge and channel irons 15 being bolted, as indicated by the numeral 16, to the inner sides of the sections 13 and 14 to relatively brace and connect the same. The upper edges of the wall sections 14 are provided with inwardly and upwardly inclined flanges 17 and angle bars 18 are disposed horizontally against the inner sides of the angle bars 15 at the upper ends of the said bars, and likewise serve to reenforce the wall structure as well as to support channel iron bars 19 which extend transversely between the upper portions of the wall sections 14 and rest, near their ends, upon the channel iron bars 18, a top plate 20 of sheet iron and of oblong rectangular form being disposed upon the upper edges of the flanges 17 upon the wall sections 14, and preferably this top plate will be formed in two sections, so as to effect economy in the manufacture of the combined parts of the side walls, and the said top plate 20, the sections of the top plate 20 at their outer edges are secured by bolts 21 to the angle bars 19, and at their meeting edges by bolts 21' which are likewise secured through the said bars 19.

A plate 22 is bolted at one vertical edge to each side wall 1 as indicated by the numeral 23 and bolted to the other edge of the plate 22 is the flanged edge 24 of a vertically disposed plate 25 which constitutes a part of a respective one of the wing wall extensions of the form. The side walls of each wing form are indicated by the numeral 26 and by reference to Figures 2, 4 and 5 of the drawings, it will be seen that each side wall comprises, in addition to the plate 25, other plates 27, 28 and 29, the plate 27 being of oblong rectangular form and the plates 28 and 29 having inclined edges indicated by the numerals 30 and 31 respectively, which are brought into alinement when the plates are assembled and secured at their inner vertical margins to the forward vertical margins of the respective plate 25. Both of the side walls of each wing unit are of the same construction, and in the instance of the inner side wall of each wing a plate 32, corresponding to the plate 25, is secured at one vertical margin to the side walls of the core 2, at the adjacent end of said core, and at its other vertical margin, to the plates 27, 28 and 29 comprising the said inner side wall of the respective wing unit.

The wing units, as will be evident by reference to Figure 1, extend in diverging relation to each other, at any desired angle, and the side walls thereof are braced at their outer ends by spacing means which comprise a plate 33 of a width equal to the spacing of the adjacent side of the walls of the wing, and angle bars 34 which are secured to the said plate 33 and to the outer ends of the lower side wall section 27 by means of bolts 35. Angle irons 36 are secured to the upper edges 30 and 31 of each of the sections 28 and 29 and serve to relatively brace these sections, and channel bars 37 are bolted as at 38 to the outer sides of the sections 27 and 28 of the side walls of each wing unit, and relatively brace the said sections, and at that end of each side section of the mold form with which the respective wing unit is connected, there is provided a section 39 which is in the form of a sheet iron plate of substantially oblong rectangular form and one vertical edge of which is provided with bolt openings 40 whereby the said edge portion may be secured to the angular flange 24 of the section 25, and this section 39 occupies the same plane as the corresponding side wall of the mold frame and the section is secured at its opposite vertical margin by bolts 41 which are passed through the openings 40 and the corresponding openings in the flange 24, and this section 39 is provided at its upper and inner corner with an outstanding flange 42 provided with bolt openings 43.

The mold form 1 and the core 2 are connected, with the core 2 preferably centered with respect to the form, by means of bolts 44 which are secured through the side walls of the form 1 and through the side walls 13 of the core 2, these bolts being passed through the channel iron bars at every intersection of the said bars and plates, and between the bolts 8 that hold the plates of the channel irons.

In order that the walls of the mold form 1 may be braced and preferably spaced with respect to each other at the end thereof from which the wing sections 3 extend, bracing units, indicated in general by the numeral 45 are provided and each of these units comprises a pair of oblong rectangular plates 46 which are mounted at their ends upon polygonal plates 47 which are shown in detail in Figure 7 of the drawings, and one of the plates 46 is provided along its lower edge with an angularly extending flange 48 which is of less length than the plate and which is provided with a downwardly, right angularly turned extension 49 formed with bolt openings 50. The plate 46 is likewise formed near its upper edge with a series of bolt openings 51 and the other plate 46, which, instead of the flange 48 and its extension 49 is provided with a depending portion 52 occupying a common plane therewith, is provided with a series of bolt openings 53 near its upper edge and the series of bolt openings 54 near the lower edge of its extension 52, the extension 52 being of less length than the plate of which it comprises a part.

Plates 55 are arranged in upright position between the projecting ends of the plates 46 and angle plates 56 are disposed against the outer side of each plate 55 and secured at their wings which contact the plate 55 by rivets 57 to the said plate, their other wings being formed with bolt openings 58 through which the bolts 59 are secured to anchor the angle plates 56 to the ends of the plates 46. Near the edges of the riveted wings of each member 56 there is arranged a bracket member 60 having an outstanding lower end 61 through which a bolt 62 is secured, the bolt fitting also through an opening 63 formed in the respective one of the polygonal plates 47. Each plate 47 is likewise secured by a bolt 64, fit-

ted through an opening 65 therein and through a horizontal flange of a bracket member 66 which is riveted to the plate 46 which is provided with the portion 52. An angle iron bar 67 is secured by bolts 68 which fit therethrough and through the openings 54 in the portion 52 of the plate 46, and this angle iron bar serves to reenforce the said plate, angle iron bars 69 being secured by bolts 70 to the outer sides of the plates 46 to further reenforce the plates.

From the foregoing description of the invention it will be evident that the side walls of the mold frame may be spaced apart any desired distance by the employment of the connecting and bracing units 46 of different lengths, as previously stated and the side walls of the mold form may be made of different lengths by suitably proportioning the plate sections 4, 5 and 6 thereof as regards their length or, adding to these sections, shorter sections which may be secured in place by bolts passing through the openings 9.

It will be understood of course that instead of channel irons such as those indicated by the numerals 7, 15 and 37, wood pieces, substantially four inches square in cross section, may be employed, and this will permit of the use either of the bolts 44 or tie wires, wherever desired, and in such a construction, the plates which are braced and connected by the channel iron may be secured in place to the wood pieces by the roofing nails, so that when the form is to be dismantled, the plates will constitute means for pulling the nails by the use of a wrecking bar behind the wood pieces.

What I claim is:—

1. In a concrete culvert mold form, side walls arranged in spaced parallel relation, a core arranged between the walls, plates projecting from corresponding ends of the side walls and coextensive in height therewith, angular shaped plates projecting from the aforementioned plates, wing walls connected with the angle plates and arranged in divergent relation, base plates horizontally supported on the upper edges of the first mentioned plates, spaced transversely disposed reinforcing plates reposing edgewise on the base plates, angle shaped brackets arranged between and connecting the adjacent ends of the transverse reinforcing plates, and depending portions carried by said transverse plates and of a length to fit between the first mentioned plates secured to the side walls.

2. In a concrete culvert mold form, side walls arranged in spaced parallel relation, a core arranged between said walls, plates projecting from corresponding ends of the side walls and coextensive in height therewith, angular shaped plates projecting from the aforementioned plates, wing walls connected with the angle plates and arranged in divergent relation, base plates horizontally supported on the upper edges of the first mentioned plates, spaced transversely disposed reinforcing plates reposing edgewise upon the base plates, angle shaped brackets arranged between and connecting the adjacent ends of the transverse reinforcing plates together and to said base plate, a substantially inverted L-shaped extension depending from the lower edge of one of the transverse plates and of a length to fit between the first mentioned plates, a depending portion carried by the other of said transverse plates and of a length to abut the inner faces of the first mentioned plates, and reinforcing angle bars secured to said extension and depending portion of the respective transverse plates.

CHASTEEN F. SCOTT.