Dec. 9, 1941. C. F. SCOTT 2,265,871

BRIDGE AND CULVERT FORM

Filed Dec. 20, 1938 3 Sheets-Sheet 1

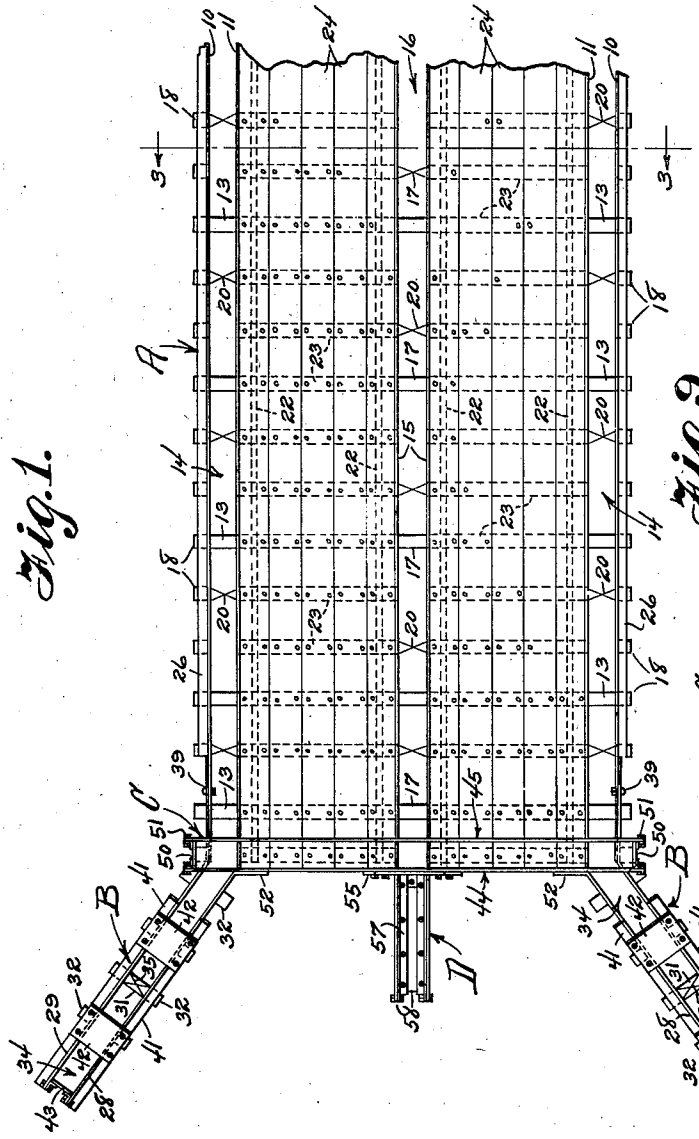


Fig. 1.



Fig. 2.

Chasteen F. Scott
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

Dec. 9, 1941. C. F. SCOTT 2,265,871

BRIDGE AND CULVERT FORM

Filed Dec. 20, 1938 3 Sheets-Sheet 2

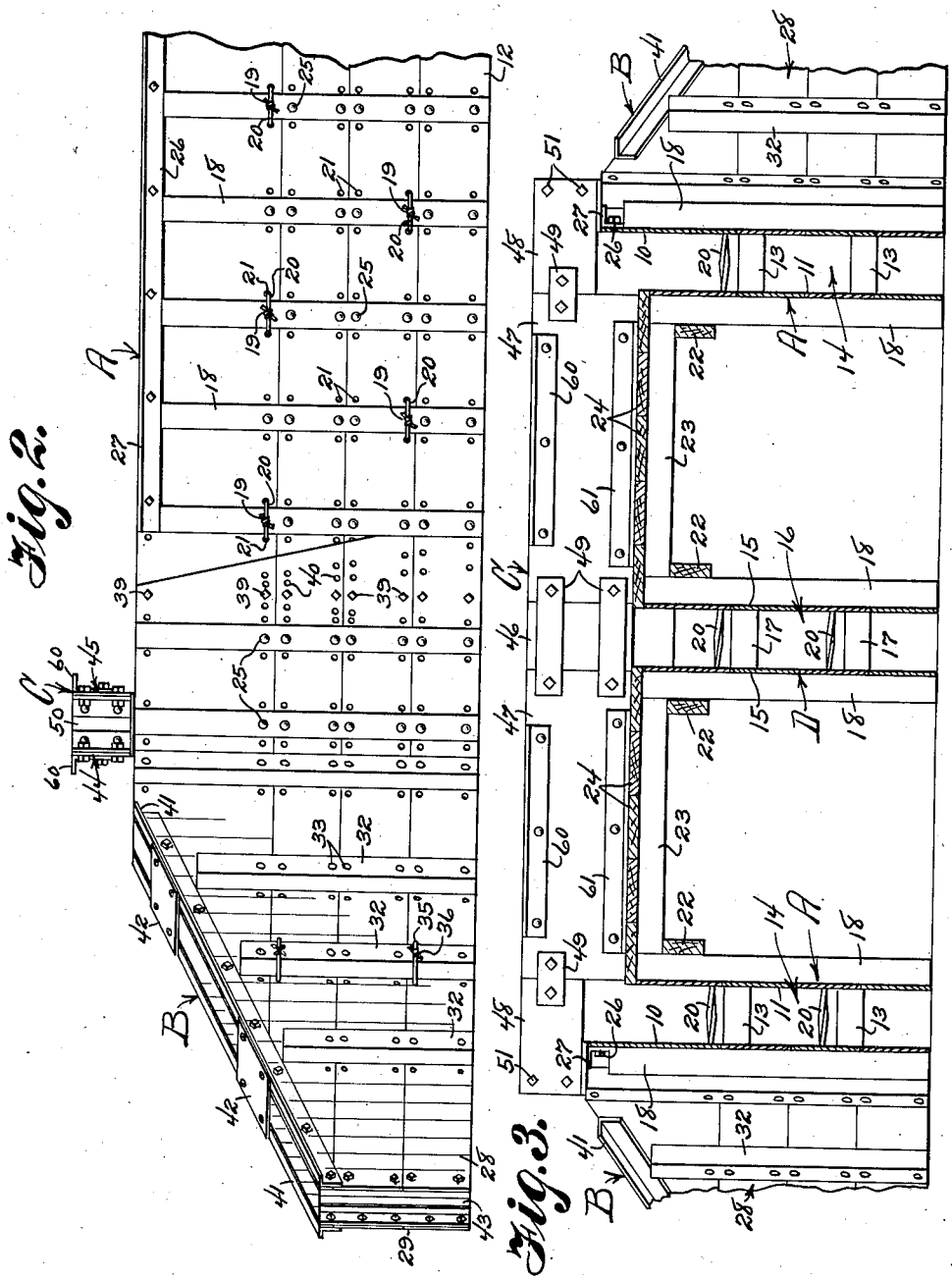


Fig. 2.

Fig. 3.

Chasteen F. Scott
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

Dec. 9, 1941. C. F. SCOTT 2,265,871

BRIDGE AND CULVERT FORM

Filed Dec. 20, 1938 3 Sheets-Sheet 3

Fig. 4.

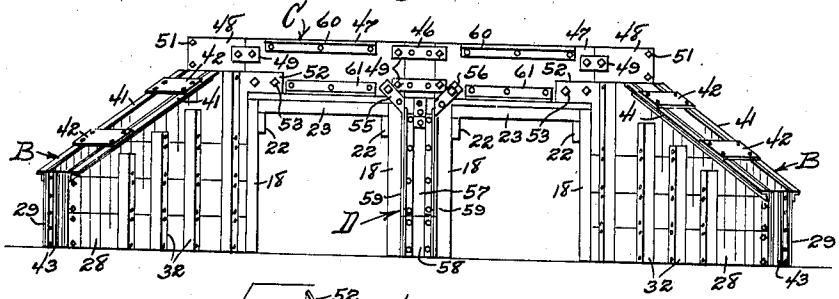


Fig. 5.

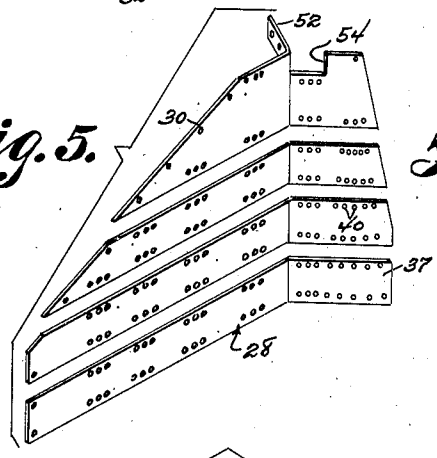


Fig. 6.

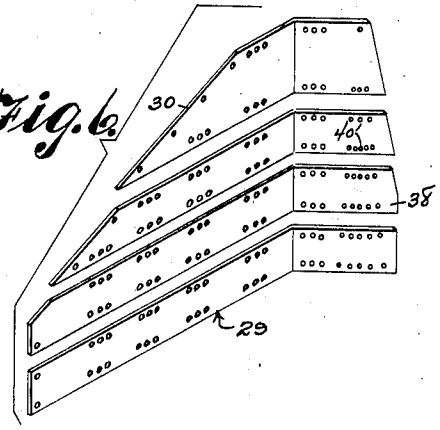


Fig. 7.

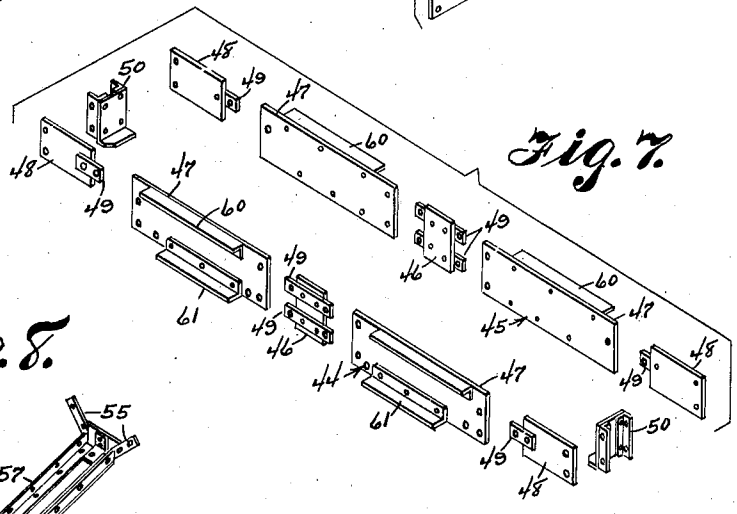


Fig. 8.

Chasteen F. Scott
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

Patented Dec. 9, 1941 2,265,871

UNITED STATES PATENT OFFICE

2,265,871

BRIDGE AND CULVERT FORM

Chasteen F. Scott, Oklahoma City, Okla.

Application December 20, 1938, Serial No. 246,890

1 Claim. (Cl. 25—131.5)

The invention relates to a culvert falsework or form and more especially to a knockdown or collapsible falsework or form for erecting culverts, arches or the like for waterways or drains.

The primary object of the invention is the provision of a falsework or form of this character, wherein the inlet and outlet wing formers for the culvert or arch are of a novel construction and are susceptible of adjustment in conformity with the slope or lay at the base of the culvert or arch as well as the incline of such culvert or arch, these formers being swingable vertically and are fastened securely in their adjusted positions.

Another object of the invention is the provision of a falsework or form of this character, wherein the head formers are of novel construction so that the same can be extended or contracted according to the width of the culvert or arch constituting the waterway or drain across a roadway or other point of erection of such culvert or arch.

A further object of the invention is the provision of a falsework or form of this character, wherein the component parts thereof are made from metal so that these can be used repeatedly without deterioration or distortion when set up with the result that the culvert or arch when built will be accurate in its proportions, dimensions and a finished product or edifice, the component parts being adjustable so that the culvert or arch having any desired height, length and width for meeting different requirements may be molded by the use of the falsework or form.

A further object of the invention is the provision of a falsework or form of this character, wherein the setting up and the knocking down thereof can be carried forth without skilled labor and in the setting up of the falsework or form no additional part will be required for meeting the demand in the proper erection of the culvert or arch.

A still further object of the invention is the provision of a falsework or form of this character, wherein the parts in the setting up operation can be readily detachably joined with each other so that such parts will be held in their fixed relation to each other without supplementing such parts with braces or the like, being no waste in the use of the falsework or form and the erection of the culvert or arch can be had with certainty and completeness.

A still further object of the invention is the provision of a falsework or form of this character, wherein the same embraces refinements over the subject matter of Letters Patent No. 1,926,633, issued September 12, 1933, relating to a concrete culvert form.

A still further object of the invention is the provision of a falsework or form of this character, which is simple in its construction, thoroughly reliable and effective in operation, readily set up, knocked down, adjusted to meet requirements for the proper erection of a culvert or arch, when knocked down can be conveniently stored in the least possible space for further service or use, strong, possessed of maximum longevity, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claim hereunto appended.

In the accompanying drawings:

Figure 1 is a fragmentary top plan view of the falsework or form constructed in accordance with the invention.

Figure 2 is a fragmentary enlarged side elevation thereof.

Figure 3 is an enlarged transverse sectional view taken on the line 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is an end elevation of the falsework or form.

Figure 5 is an exploded perspective view of the component parts of one side of the wing wall-forming unit.

Figure 6 is a view similar to Figure 5 showing the parts of the other side of such wing wall-forming unit.

Figure 7 is an exploded perspective view of the component parts of one of the head block formers or units of the falsework or form.

Figure 8 is a perspective view of associate parts of said head block former.

Figure 9 is a diagrammatic side elevation of the falsework or form erected for conforming to the slopes at the base of a culvert or arch, being illustrative of the results of the adjustment of the wing wall-forming units of the falsework or form.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the complete falsework or form comprises a main water-

way or drain body- or barrel-forming unit for erection of a culvert or arch, a portion of the unit being indicated at A, inlet and outlet wing wall formers or units B and a head block former or unit, one indicated at C, respectively, which latter is supplemented by an intermediate wing wall former or unit, one being designated at D. The main waterway or drain body- or barrel-forming unit comprises sectional outside pairs of outer and inner spaced walling plates 10 and 11, respectively, these being perpendicularly arranged with the sections 12 thereof disposed edge to edge at their meeting longer side edges while by decreasing or increasing the sections 12 the height of the culvert or arch can be varied as should be obvious. The sections 12 of the plates 10 and 11 are made from sheet metal to avoid warping or otherwise distortion thereof in the continued use of the unit A. Arranged between the plates 10 and 11 are spacer blocks 13 which are located at selected points in the space 14 created between these plates, which space accommodates cementitious or concrete substances for wall molding thereof.

Medially in a longitudinal direction with respect to the pairs of walls 10 and 11 are the sectional spaced perpendicular and parallel partitioning wall-forming plates 15 having in the space 16 therebetween spacer blocks 17, these being selectively located, and said plates 15 in their spaced relation receive cementitious or concrete substance for the molding of a divisional or partition wall in the culvert or arch for rendering it a multiple waterway or drain.

Arranged vertically at spaced intervals and at the outer faces of the outer and inner walls 10 and 11 and the walls 15 are wood studdings or bars 18, these being engaged by the tied ends 19 of tie wires 20 which are trained through suitable openings or holes 21 in the sections of the said plates 10, 11 and 15, respectively, these tie wires 20 crossing each other within and bridging the spaces 14 and 16 between the said plates and fasten or lock the said plates in their spaced relation to each other conforming to the spacer blocks 13 and 17 accommodated within said spaces 14 and 16.

Suitably fastened by nailing or otherwise to selected studdings or bars 18 at the plates 11 and 15 are horizontally disposed rest rails 22 for circumferentially disposed supporting beams 23 upon which are superimposed and fastened crowning boards 24 arranged in a horizontal plane in the setup of the falsework or form at the body unit A thereof.

The studdings or bars 18 are fixed to the plates 10, 11 and 15 by rivets 25 or otherwise and these studdings or bars maintain the sections of the said plates in straight aligned relation to each other as well as reinforcing the said plates at the outermost faces thereof.

Carried by each of the plates 10 at the uppermost edge of the uppermost section of the same is an outwardly extending inverted substantially L-shaped rail 26, the outwardly directed flange 27 of which constitutes a rest for a superimposed template (not shown) for creating the top covering for the culvert or arch. The plates 11 and 15 in their height with relation to the plates 10 in association with the crowning boards 24 and the head block units C regulate the depth of coverage crowning for the culvert or arch, the head block units C being hereinafter fully described.

The wing wall formers or units B each comprises spaced parallel sectional inner and outer plates 28 and 29, respectively, certain of the upper sections thereof being cut or beveled at 30 for the sloping of the wing walls of the culvert or arch. These plates 28 and 29 are spaced from each other by spacer blocks 31 and have fixed thereto at their outermost faces the vertical studding or bars 32 which are riveted, as at 33, or otherwise to said plates, while bridging the space 34 between these plates are cross tie wires 35 which are at their tied ends 36 disposed about the bars 32 and in this way such plates are fastened in their related position with respect to each other while cementitious or concrete substance is poured into the space 34 for the molding of the wing walls of the culvert or arch. These plates 28 and 29 at their inner ends 37 and 38, respectively, are similarly bent angularly with relation to the outer ends thereof and these ends 37 and 38 through the use of nut-carrying bolts 39 selectively engage in openings or holes 40 in the said plates 37 and 38 and suitable holes (not shown) in the plates 10 and 11 of the unit A can be angularly adjusted to the horizontal in a vertical direction so that the completed erected form or falsework will accommodate itself to slopes or irregularities of lay of the base soil or foundation at the point of erection of the culvert or arch, this being diagrammatically shown in Figure 9 of the drawings.

Fitted to the plates 28 and 29 at the beveled edges 30 thereof are the outwardly directed inverted substantially L-shaped rails 41 to which are separably fastened top plates 42 while at the outer ends of the said plates 28 and 29 are the component parts of vertical outer end closers 43 for the units B.

Each head block unit C, which is arranged superimposed upon the plates 10, 11 and 15 above the ends 37 and 38 of the units B, comprises sectional vertically disposed spaced parallel cross plates 44 and 45, respectively, and involves medial sections 46, outer sections 47 and extensions 48 therefor, respectively. These sections of the respective plates 44 and 45 are joined with each other by connecting straps 49, bolted, riveted or otherwise fastened thereto, while located between the extensions 48 next to the outer end edges thereof are component parts of end closers 50, these being bolted or otherwise fastened at 51 to said extensions 48 and said closers 50, through the component parts thereof, can be varied in size to increase or decrease the spacing relation of the plates 44 and 45 with respect to each other. By varying the length of the sections 46 and 47 and the extensions 48, the longitudinal extent of the said unit C can be regulated. The plates 28 at the ends 37 thereof have cut and bent therefrom inwardly directed tongues or ears 52 accommodating fasteners 53 which are engaged with the sections 47 of the plate 44 for the fastening of the unit C in place while the extensions 48, which are of less width than the sections 47 in their vertical disposition are accommodated in notches 54 created by the cuting of the tongues or ears 52 from the ends 37 of the plates 28 so that an interfitting of the units B and C is obtained.

The sections 47 of the plate 44 through straps 55 and fasteners 56, respectively, have connection with the wing wall unit D for the partition or dividing wall former plates 15 and this unit D comprises component parts of an outwardly inclined top closer 57 in association with the component parts of the outer end closer 58 and

the side plates 59, respectively, for the molding by said unit D of the wing wall for the partition or divisional wall of the culvert or arch for multiple waterway or drainage.

The plates 44 and 45 at the uppermost edges of the sections 47 thereof carry the outwardly directed inverted substantially L-shaped rails 60 which constitute rests for a template or for falsework superimposing disposition thereon (not shown).

On the sections 47 of the plate 44 are angled abutments 61 which engage with and rest upon the crowning boards 24 in the assembly of the form or falsework. The units of the form or falsework are readily separable after assembly thereof from each other, the tie wires hereinbefore set forth being embedded in the molded culvert, arch or the like and this may be true with respect to the spacer blocks when such molded work is completed by the form or falsework. The tied ends of the tie wires are broken or severed when it is desired to knock down the falsework or form when the concrete culvert, arch or the like has become set and completed.

The falsework or form hereinbefore described enables the wing units as well as the side wall and partition former units and head block units to be easily assembled and knocked down as well as assuring uniformity, economy and complete construction in the erection of a culvert, arch or the like of high order, the component parts of all of the units of the falsework or form, by reason of easy disassembling, enables convenient transportation from one job to another as well as facilitating the work in handling and effecting a great saving in labor. The form will forever eliminate the enormous cost of lumber which will deteriorate and is wasted as well as save a large part of the labor expense in erecting the same and dismantling it. The units of the form of falsework in all of the component parts thereof are made from metal excepting the spacer blocks 13, studs 18 and 32 and the rails 22, bars 23 and crowning boards 24, respectively, which are preferably made from wood although the same may be made from any other suitable material.

The salient feature of the invention resides in the extensible head block formers or units C as well as in the vertically adjustable wing wall formers or units B and D, respectively, and their component parts in the assembly of the same, being understood, of course, that the unit D is susceptible of grade disposition corresponding to grade disposition of the units B with respect to the unit A as illustrated in Figure 9 of the drawings.

The units B are outwardly angled to the sides of the unit A while the unit D is aligned with relation to the walls 15 so that the wing walls will be flared laterally at each end of the culvert, arch or the like, this being common with respect to erection of the same.

What is claimed is:

In a form of the kind described, comprising spaced parallel metal inner walls, an outer wall for each inner wall and spaced therefrom forming two spaced forms, cross plates connecting the upper ends of the forms, wing wall plates formed of a series of horizontally disposed adjustable plates, each plate having an integral portion extending from the inner ends thereof at an angle and secured to the inner and outer walls of the two forms respectively, and angular integral extensions carried by the inner upper plate of each wing section and secured to the cross plates.

CHASTEEN F. SCOTT.