W. DUNNING.

FORM FOR BRIDGE AND CULVERT CONSTRUCTION.

APPLICATION FILED OCT. 10, 1916.

1,246,404.

Patented Nov. 13, 1917.

3 SHEETS—SHEET 1.

Fig. 1.

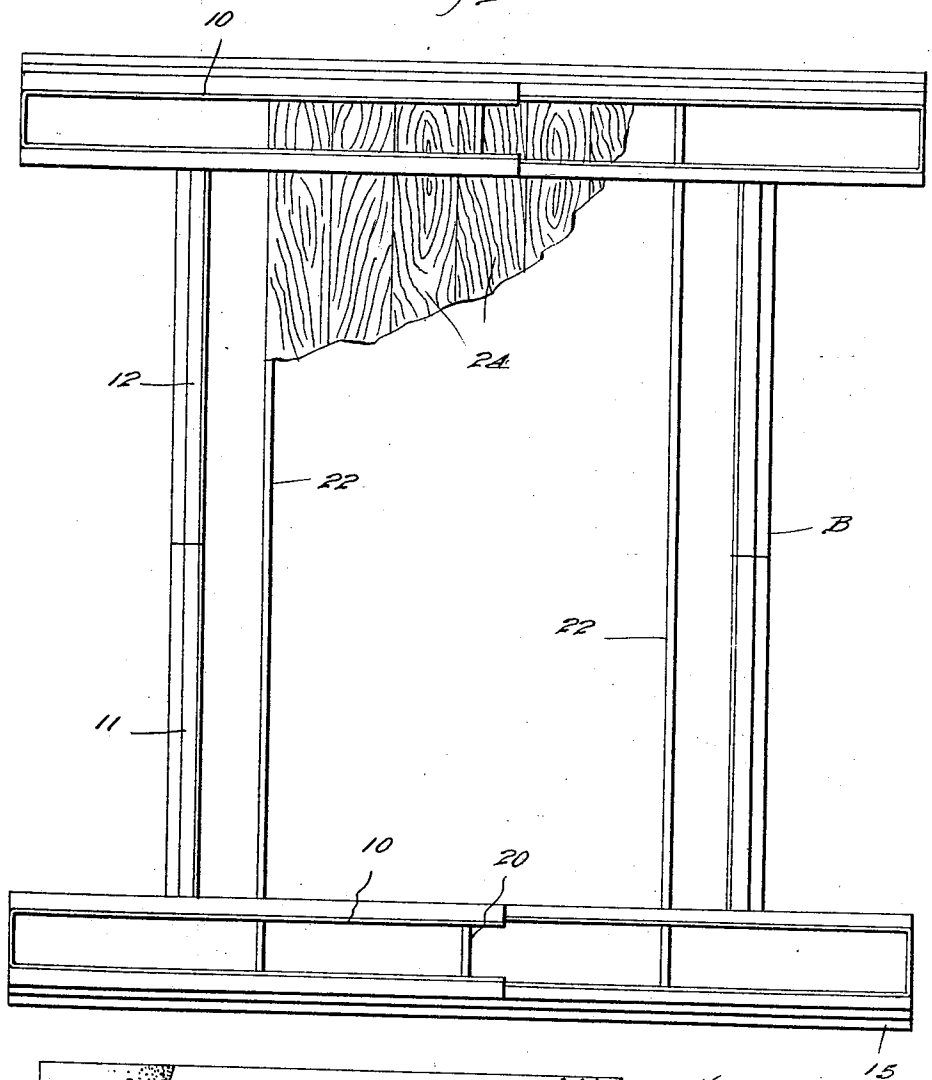
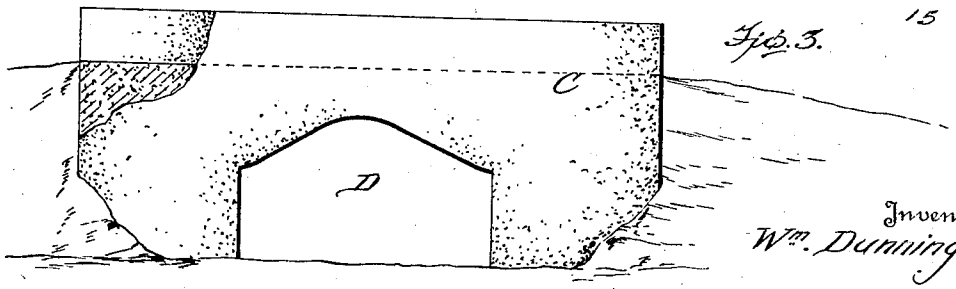


Fig. 3.



Inventor

Wm. Dunning

By John Louis Walker

Attorney

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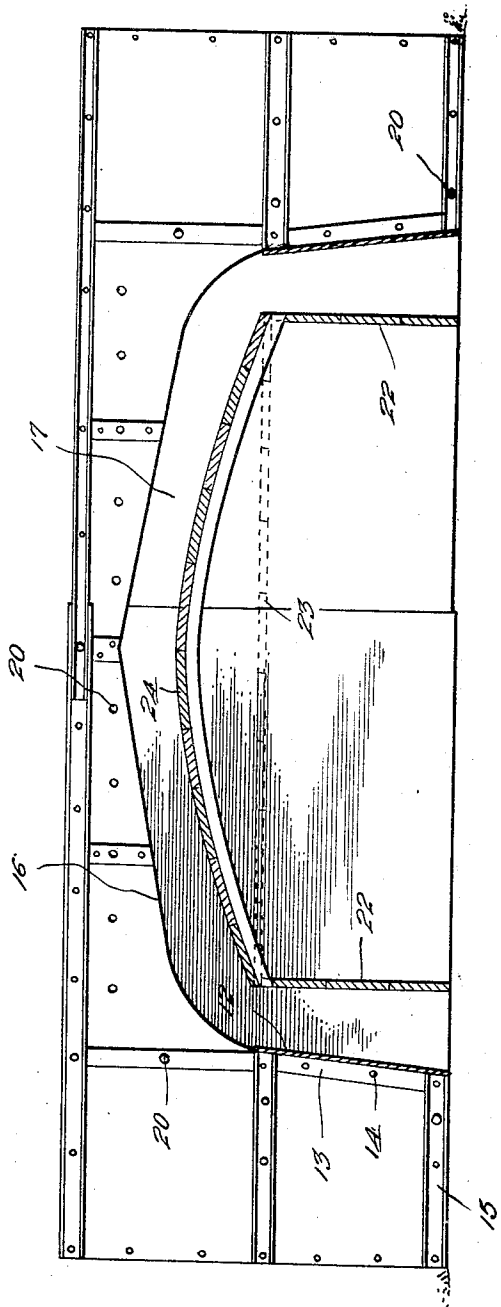
3 SHEETS—SHEET 2.

Fig. 2.



Inventor

Wm Dunning.

By John Louis Walters

Attorney

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3 SHEETS—SHEET 3.

Fig. 4.

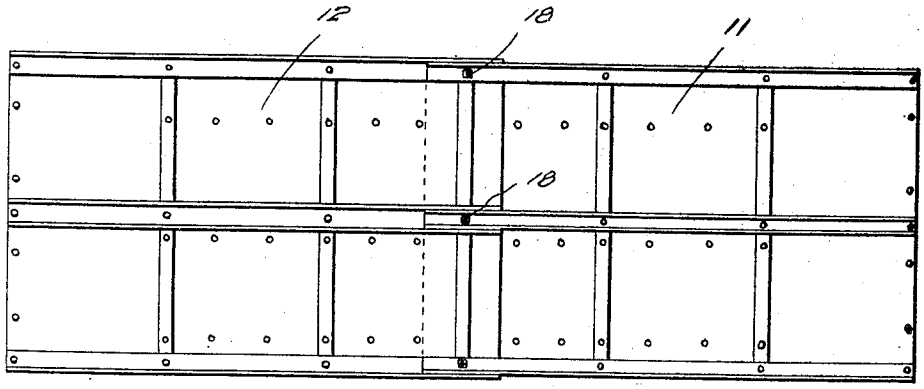
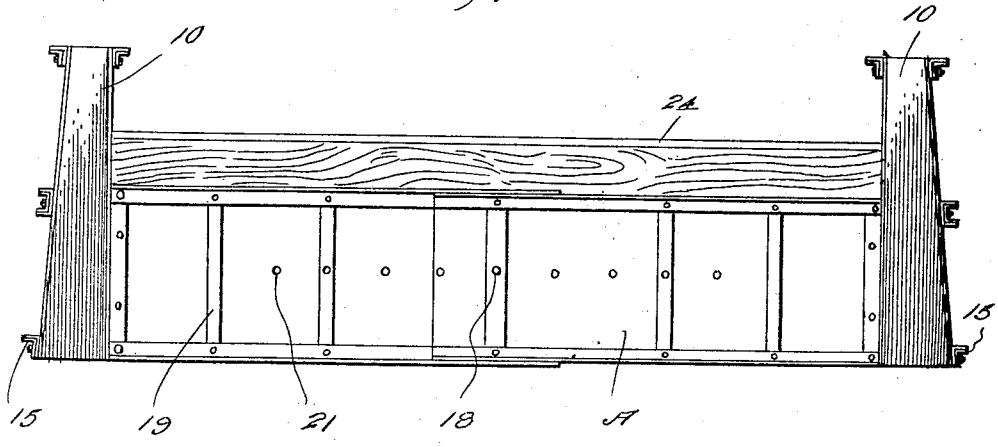


Fig. 5.



Inventor

Wm. Dunning.

By John Louis Wales

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM DUNNING, OF TEGARDEN, OKLAHOMA.

FORM FOR BRIDGE AND CULVERT CONSTRUCTION.

1,246,404. Specification of Letters Patent. Patented Nov. 13, 1917.

Application filed October 10, 1916. Serial No. 124,867.

To all whom it may concern:

Be it known that I, WILLIAM DUNNING, a citizen of the United States, residing at Tegarden, in the county of Woods and State of Oklahoma, have invented certain useful Improvements in Forms for Bridge and Culvert Construction, of which the following is a specification, reference being had therein to the accompanying drawing.

The invention relates to forms for concrete construction and more particularly to the class of false work for bridge and culvert construction.

The primary object of the invention is the provision of a form or false work wherein a bridge and culvert can be made from cementitious materials such as concrete and on the completion thereof the form or false work can be readily removed without disturbing or damaging the structure made thereby.

Another object of the invention is the provision of a form or false work of this character wherein the use of a single form or false work will enable the building from concrete any number of bridges and culverts irrespective of the sizes thereof, the form or false work being readily adjustable according to the size of the bridge and culvert and will enable the expeditious construction thereof with minimum labor.

A still further object of the invention is the provision of a form or false work of this character wherein either a straight or curved crown can be formed for the culvert in the constructing of the bridge, the form of false work being of novel form to assure the successful erecting of the bridge and culvert from cementitious or concrete materials.

A still further object of the invention is the provision of a form or false work which is simple in construction, readily and easily assembled for use in the erecting of a cementitious concrete bridge and culvert and knocked down with despatch on the completion of said bridge and culvert without damage or disturbance thereto, thoroughly reliable and efficient in its purpose and inexpensive in manufacture.

Other objects will be in part obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, and arrangement of elements, which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a top plan view of a form or false work constructed in accordance with the invention with the crown boards for the culvert partly broken away.

Fig. 2 is a vertical longitudinal sectional view thereof, showing by full lines the arch crown boards and by dotted lines the straight crown boards for the culvert.

Fig. 3 is a side elevation of the bridge and culvert made by the form or false work one side wall of the bridge being partly broken away.

Fig. 4 is a side elevation of the form or false work.

Fig. 5 is an elevation of the form or false work.

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

Referring to the drawings in detail the form or false work comprises complementary sections A and B respectively each of which includes side molding frames 10 which are made from sheet metal bent into substantially U-shape, and a cross connecting plate formed in two parts 11 and 12 respectively which is also made from sheet metal having the outermost ends bent at right-angles to provide flanges 13 which are riveted or otherwise fastened as at 14 to the inner walls of the frames 12 while the said frames on the inner and outer spaced parallel walls thereof have mounted thereon angled reinforcing bars 15 which strengthen the said walls of the frames to render the same rigid for avoiding the buckling or bending thereof when the form or false work is in use for constructing a bridge and culvert.

The frame 10 of the sections A and B in the inner walls thereof is cut away as at 16 so that when the frames 10 of both sections are united together the inner wall thereof will present openings 17 for accommodating the culvert form or false work hereinafter fully described.

The parts 11 and 12 of the plates between the frames 10 of the sections A and B are slightly angularly disposed and are adapted to overlap each other when the form or false work is set up for use, the parts being formed with suitable openings for the reception of stay bolts 18 which are passed

therethrough for detachably connecting the parts 11 and 12 together. These parts 11 and 12 of the plates each carries on its outermost face vertically and longitudinally disposed angled reinforcing bars 19 which strengthen the plates to render the same rigid to prevent bending thereof when the form or false work is used.

The inner and outer walls of the frames 10 are adapted to overlap each other for the joining of said frames of the respective sections A and B and passed through the overlapped portions of said frames are removable stay bolts 20 which fasten the frames together, the walls of the frames 10 being provided at intervals with holes 21 for receiving the stay bolts 20 and in this manner the length of the false work or form including the sections A and B can be varied according to the work to be executed.

Likewise by the adjustment of the bolts 20 connecting the parts 10 and 11 of the plates the width of the sections A and B can be varied so that a bridge and culvert of different sizes can be erected.

The culvert form or false work can be of any usual knock-down construction although in this instance there is shown the vertical wall boards 22 which are fastened together so that the same can be knocked down after the setting of the wall of the culvert while spanning the space between the wall boards 22 is a knock-down construction which can be either the straight crown boards 23 or the arch crown boards 24 according to the conformation of the crown of the culvert. The boards 22 are positioned or spaced from the plates including the parts 11 and 12 of the sections A and B and thereafter either the straight crown boards 23 or the arch crown boards 24 are placed so that the same occupies at the ends thereof the openings 17 in the inner walls of the frames 10 while the outer walls of said frames abut the ends of the wall boards 22 and the ends of the crown boards 23 or 24 thereby closing the culvert false work as will be apparent.

In the formation of the bridge and culvert cementitious or concrete material is poured into the space between the walls of the frames 10 and also the space between the parts 11 and 12 and the wall boards 22 until such spaces are filled whereupon the crown to the culvert is formed by the pouring of concrete on either the crown boards 23 or the boards 24 which are covered by the cementitious material or concrete and in this manner the wall of the culvert is formed. The concrete poured into the frames 10 of the sections A and B will form the sides of the bridge over the culvert. The bridge form or false work and the culvert form or false work remains in place until the cementitious or concrete materials become hardened to permit the same to set and thereafter on the drying of the cementitious material or concrete the false work or forms can be readily removed from the bridge construction C and within the culvert D. Finally the road bed is built up by the use of dirt, gravel and other materials ordinarily employed in the constructing of a road bed between the walls of the bridge C and about the wall of the culvert D as is clearly shown in Fig. 3 of the drawings.

It will be apparent that the sections A and B of the form or false work for the constructing of the bridge and the culvert when used and the culvert form or false work can be readily adjusted and conveniently set up according to the size of the bridge and culvert to be erected. When the bridge and culvert have been completed the form or false work can be readily knocked down and removed for further use. It is obvious that any number of bridges and culverts can be erected from cementitious or concrete material by the use of a single form or false work hereinbefore described.

From the foregoing it is thought that the construction and manner of use of the bridge and culvert constructions will be clearly understood and therefore a more extended explanation has been omitted.

What is claimed is:

In a device of the class described, in combination, a pair of longitudinal extending molding frames arranged in parallel relation, said frames being adjustable, cross connecting plates of a lesser height than the said frames secured at opposite ends to the latter, and a knock-down frame extending between said molding frames and secured in spaced relation from said cross connecting plates.

In testimony whereof I affix my signature.

WILLIAM DUNNING.