Oct. 19, 1954 W. J. TIDWELL, JR 2,692,034

TEMPORARY FORM SUPPORT FOR BUILDING CONCRETE BRIDGES

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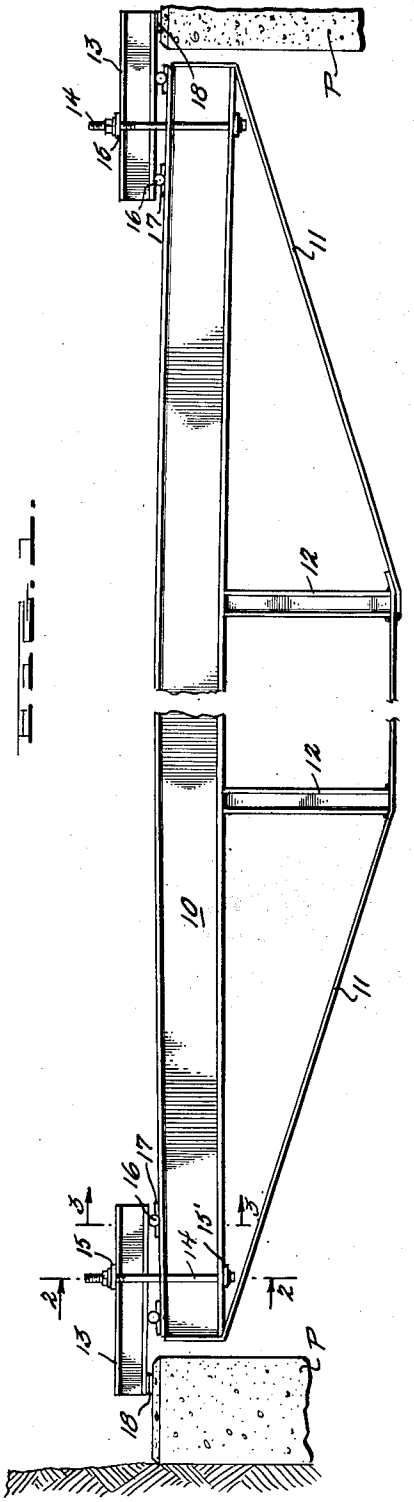


FIG. 1.

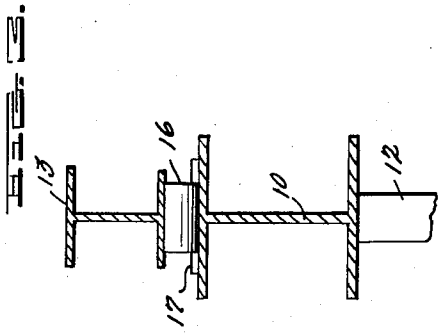


FIG. 3.

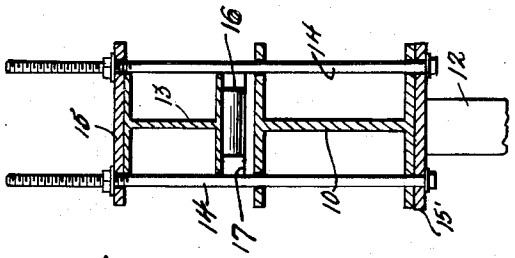


FIG. 2.

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FIG. 4.

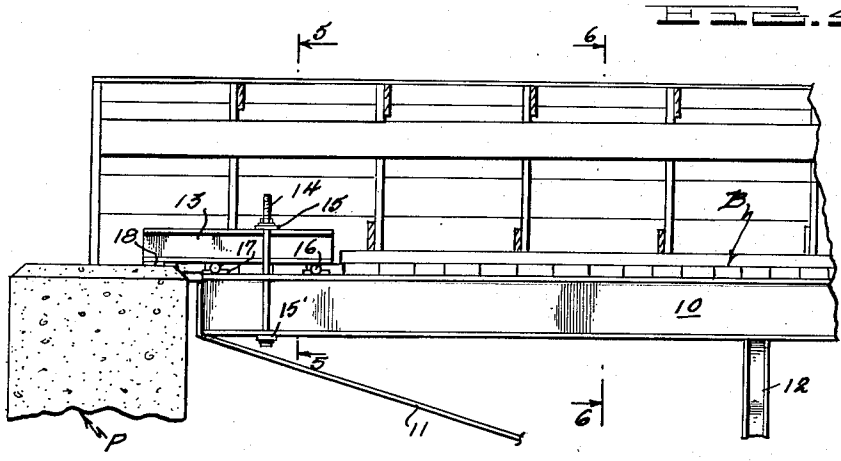


FIG. 5.

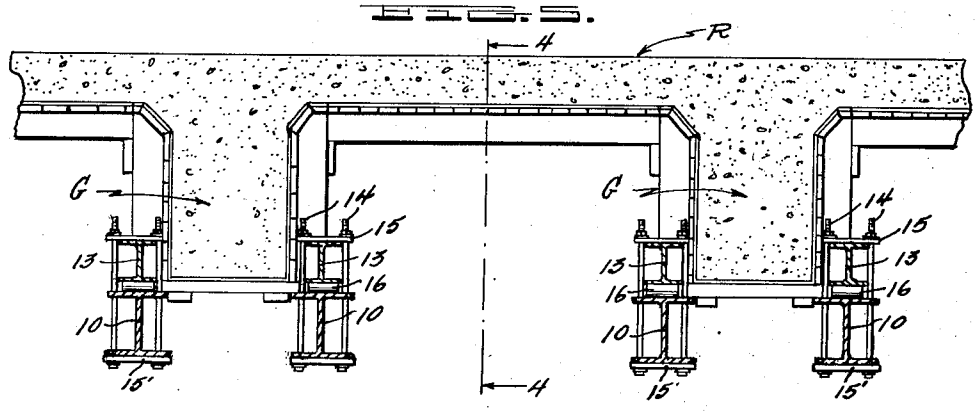
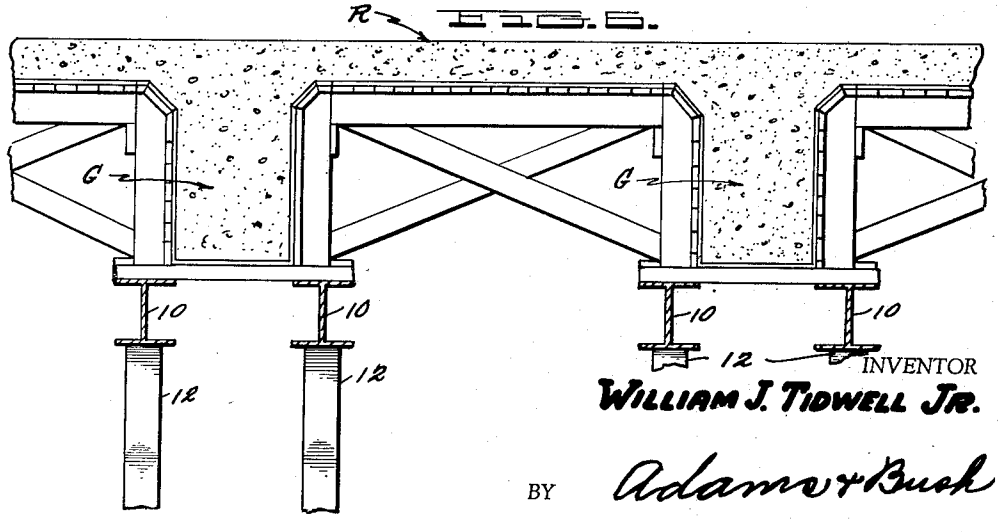


FIG. 6.



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TEMPORARY FORM SUPPORT FOR BUILDING CONCRETE BRIDGES

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Application March 30, 1951, Serial No. 218,465

2 Claims. (Cl. 189—37)

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This invention relates to concrete bridges and has particular reference to temporary form supports employed in the erection of such bridges.

The main object of the present invention is to provide an improved temporary form supporting assemblage, especially designed for use in building concrete bridges with the usual integral concrete girders and having special provision for adjustably supporting spanning beam members between the bridge piers at the desired grade or level without requiring expensive temporary piling or the like.

A more specific object of the invention is to provide a temporary form support comprising a spanning beam member having short beam extensions secured to each end in spaced relation to the upper side of the beam member to rest upon the bridge piers and support the beam member in its adjusted position while the bridge is being built.

Another object of the invention is to provide special supporting beam elements removably secured to the opposite ends of a spanning beam member by means of clamping bolts wtih shims or spacer elements interposed therebetween to provide for raising or lowering the spanning beam to the proper grade or level.

A further object of the invention is to provide an improved spanning beam assemblage in the form of a truss adapted to be assembled on the job with the desired camber to make allowance for deflection due to the weight of the green concrete to be poured.

Other objects and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation of a form supporting member embodying the invention, showing it resting upon bridge piers;

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 5;

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 4; and

Fig. 6 is a fragmentary sectional view taken on the line 6—6 of Fig. 4.

In the erection of concrete bridges it has been customary to support temporary spanning beams between the piers at the proper grade or level by means of temporary piling or the like. Then, the formwork is erected in sections on such beams

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and shored up by shims or the like toward the middle of the spans to compensate for deflection due to the weight of the green concrete to be poured or cast thereon. The present invention provides a pre-fabricated supporting assemblage for such formwork having provision for carrying the beams as clear spans between piers without the use of expensive piling and the like. The idea is to provide temporary form supporting members which can be set in place by derricks or the like and having means for making necessary vertical adjustments of the spanning beam members to provide for the desired grade or level. Also the invention provides simplified beam assemblies which can be removed very easily and re-used for erecting sections of a roadway between successive pairs of piers. Furthermore, the idea is to provide a beam member in the form of a truss adapted to be assembled on the job with the necessary camber in the truss beam to allow for deflection due to the weight of the green concrete to be poured.

Referring particularly to the drawings, the preferred embodiment of a single form support is shown as being mounted upon successive piers P. In this example, the main supporting beam member is shown as being in the form of a truss comprising an H-beam 10 having a lower tension chord 11 made of two pieces of strap metal and a pair of struts 12. The strap metal chord members are shown as being welded or otherwise secured to the ends of the H-beam and overlapped and welded at the lower end of one of the struts 12. The construction is such that the chord elements may be heated to expand them and then welded together at their overlapped ends to provide for the desired camber of the beam member 10 upon cooling, and thereby allow for deflection of the beam member, due to the weight of the green concrete to be poured.

In accordance with this invention, the truss is shown as being suspended and positioned between the top portions of the piers, with the upper flange of the H-beam 10 below the level of the piers to allow for the thickness of the floor boards or flooring of the formwork to be supported thereon. It is necessary to adjust the vertical height of the beam 10 to suit the grade or level of the roadway to be poured. In many instances, the piers are slightly above or below the desired grade, requiring such adjustments.

In accordance with this invention, the truss assemblage is suspended as a clear span by means of short and small beam extensions 13 at the opposite ends of the beam 10 and, conveniently,

in the form of small H-beams. These beam extensions are shown as being secured to the end portions of the spanning beam 10 by means of pairs of bolts 14 extending through openings in the upper and lower flanges of the beam 10 and through openings in cross plate 15 and 15', as shown in Fig. 2. Shims or spacer elements 16 are interposed between the opposed flanges of the beams 10 and 13, as shown in Fig. 1. The spacer elements are preferably in the form of short pieces of pipe filled with cement or concrete and held in place between spaced stop members 17 welded on the upper flange of the spanning beam 10. In order to provide for vertical adjustment of the spanning beam, shims or spacer elements 16 of different diameters or thicknesses are provided, so that the beam member 10 may be raised or lowered with respect to the upper ends of the piers P to provide for the proper grade or level. Also, the outer ends of the supporting beam extensions 13 are shown as resting on flat shims 18, which are employed to make minor adjustments in the grade or level of the beam 10 at its ends.

The clamping bolts 14 are shown as having long, screw-threaded upper ends extending well above the cross plates 15 to permit the use of shims or spacer elements of widely different diameters, and also to provide for lowering the beam member 10 and thereby permit the removal of the formwork supported thereon, as well as the entire truss, to be re-used.

Figs. 4, 5 and 6 illustrate the manner of employing a plurality of the improved form supports for erecting a bridge with a concrete roadway R having a plurality of integral concrete girders G. The formwork for such bridges is usually made in sections which can be installed and removed independently of each other. In this example, the flooring for the girder forms is shown as comprising boards B which are preferably assembled in several separate sections and laid across the upper flanges of the pairs of H-beams 10. Then, the sectional formwork is erected upon the floor boards in a manner well known in the art, so that the formwork can be removed after the concrete has set. Incidentally, the floor boards B are shorter at the ends of the beams 10 where they span the pairs of beams between the beam extensions 13, and the short floor sections can be inserted and removed, like the other floor board sections or units on the beams 10.

While the spanning beam members are illustrated as being in the form of a truss, it will be understood that ordinary I-beams or H-beams may be employed, if desired. However, the cambered trusses are preferred, because they can easily be assembled on the job and cambered to make proper allowance for their deflection, thus avoiding the necessity of using shims of various thicknesses between the upper flanges of the spanning beams and the floor boards of the formwork.

Obviously, the invention is not restricted to the particular embodiment thereof herein shown and described, but is capable of various modifications and changes within the scope of the appended claims.

What is claimed is:

1. A beam assembly for use in supporting forms in building concrete bridges of the type having integral, depending concrete girders in the span between piers, wherein the form for each girder is supported on a pair of beam assemblies, said beam assembly comprising a main member in the form of a flanged webbed structural beam adapted to be suspended horizontally between a pair of piers, said main member having an upper flange providing a form supporting surface; a pair of short extension members mounted on said main member, one at each end and extending beyond the ends thereof, adapted to rest upon the bridge piers, each of said extension members being in the form of a flanged webbed structural beam having a lower flange narrower than said upper flange of said main member to provide marginal form supporting ledges on the end portions of the upper flange of the main beam member; vertically extending clamping bolts vertically adjustably securing the inner ends of the extension members to the end portions of the main member; and spacing shims positioned between the upper flange of said main member and the lower flanges of said extension members to provide for adjusting the level of the main member to the proper grade, the construction and arrangement being such that when said clamping bolts are loosened said main member is adapted to be lowered from said extension members to a position below a cast concrete girder, whereby the support form and the beam assembly may be removed and reused.

2. A beam assembly as set forth in claim 1, wherein said main beam member is in the form of an H-beam and each of said extension members is in the form of an H-beam having flanges narrower than said main beam member and wherein said vertically extending clamping bolts for vertically adjustably securing the extension members to the main member extend through openings in the upper and lower flanges of the main H-beam member and have elongated threaded end portions projecting beyond the two members and wherein cross plates are provided to connect the projecting end portions of each pair of said bolts, whereby nuts on said bolts may be loosened to lower the main H-beam member at its opposite sides.

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