

Oct. 14, 1958

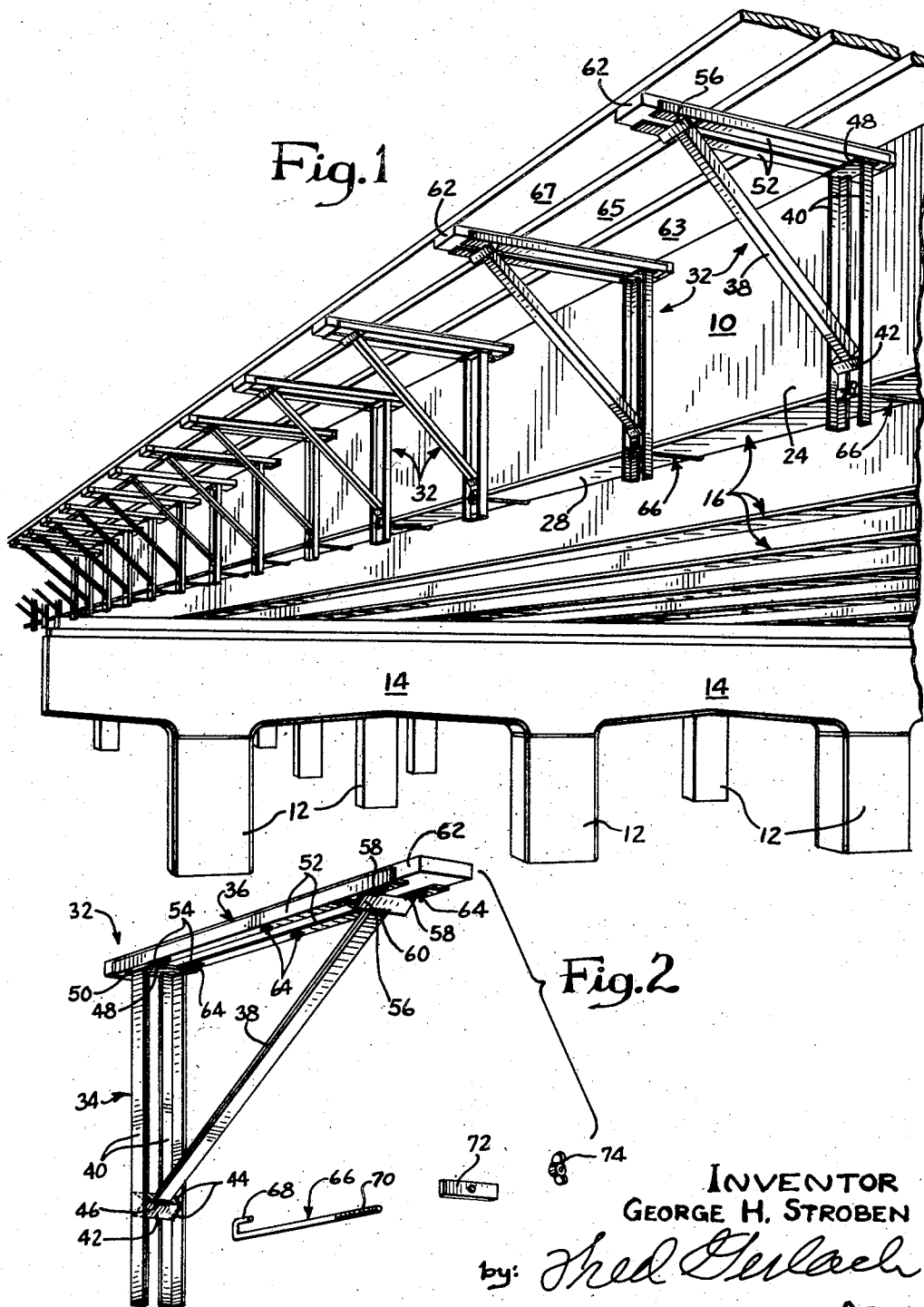
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CONCRETE FORM FOR BRIDGE FASCIA

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2 Sheets-Sheet 1



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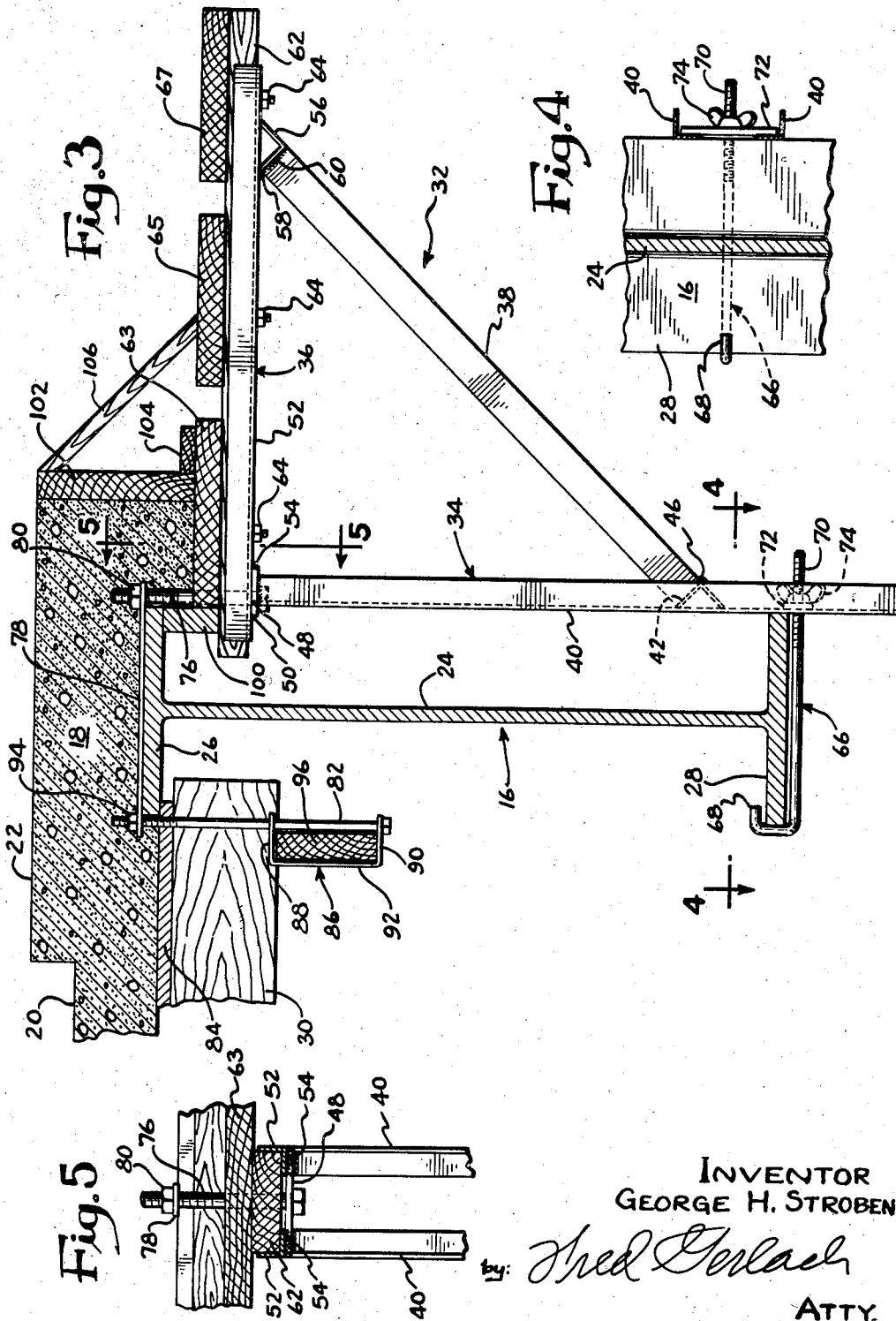
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CONCRETE FORM FOR BRIDGE FASCIA

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3 Claims. (Cl. 25—131.5)

The present invention relates to bridge constructions and more particularly to structural supporting assemblies for maintaining concrete bridge forms in position during concrete pouring operations, as well as for providing suitable scaffolding for such forms. Still more specifically, the invention is concerned with a novel form of bracket construction and associated structure by means of which concrete bridge fascia, for example, the marginal roadway and deck or sidewalk portions of a concrete bridge, may be formed with greater facility than has heretofore been possible utilizing standard materials and procedure.

In the construction of concrete bridges, the formation of the bridge fascia or overhang has presented numerous difficulties, each installation presenting its own particular set of problems, usually differing from other installations, and requiring special materials, implements for installing them and special skills in their application. For any particular installation, large amounts of lumber have been employed which must be cut to size and much of the work must be performed at the scene of installation. Much of this lumber is not reuseable and, in the installation thereof, adjustments must be made both above and below the usual supporting beams employed in connection with such fascia work, thus involving high labor costs.

The present invention is designed to overcome the above noted limitations that are attendant upon the formation of bridge fascia of the curb and deck type and toward this end it contemplates the provision of a novel form of bracket assembly, together with novel means for hanging the same in a bridge fascia concrete form installation, the bracket serving when installed both as a support for certain portions of the concrete fascia form, as well as for the planking associated with the fascia scaffold. By the use of the fascia bracket of the present invention, the use of special joists, props, knee braces, ties and much of the lumber work ordinarily associated with fascia construction is eliminated while at the same time labor and transportation costs are reduced to a minimum.

The provision of a bracket construction and its associated concrete form structure as briefly outlined above being among the principal objects of the invention, it is a further object to provide a bracket assembly and installation means therefor which is capable of being easily set into place and adjusted to its final position from the top of the fascia supporting beam so that no under-beam adjustments or other work is required at any time during the fascia construction up to the time of final stripping.

A further object of the invention is to provide a bracket construction of this general character which is capable of use with no modification whatsoever in a wide variety of installations and which will accommodate both high and low beams utilizing the same type of concrete form hardware.

The provision of a rigid bracket construction or

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assembly which is extremely simple in its construction in that it is, in the main, formed of channel iron stock; one which is possessed of no relatively moving parts and which, therefore, is unlikely to get out of order; one which is rugged and durable and which, therefore, will withstand rough usage; one which may be initially assembled, shipped to the scene of installation, salvaged after use in its assembled form and reused indefinitely thereby making the same available on a rental basis; one which utilizes standard concrete form hardware for its installation much of which is likewise capable of being salvaged and reused; one which is of relatively light weight yet which will withstand heavy loads; one the use of which materially simplifies bridge fascia construction, and one which otherwise is well adapted to perform the services required of it, are further desirable features which have been borne in mind in the production and development of the present invention.

Numerous other objects and advantages of the present invention, not at this time enumerated, will become more readily apparent as the following description ensues.

In the accompanying two sheets of drawings forming a part of this specification, a preferred embodiment of the invention has been shown in a typical installation.

In these drawings:

Fig. 1 is a fragmentary perspective view of a bridge fascia concrete form and scaffold assembly embodying a number of the bracket constructions of the present invention;

Fig. 2 is an exploded perspective view of one of the bracket assemblies including an attachment device therefor by means of which the assembly may be applied to one of the fascia-supporting I-beams;

Fig. 3 is an enlarged fragmentary sectional view taken transversely through the bridge fascia after concrete pouring operations are complete and prior to removal or stripping of the concrete form, the view being taken in the vicinity of one of the present bracket constructions;

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 3; and

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 3.

Referring now to the drawings in detail and in particular to Fig. 1, a fragmentary portion of a bridge construction is designated in its entirety at 10 and includes a series of supporting pillars 12 which are arranged in transversely extending rows and on which there are supported arch members 14 which, in turn, support a series of longitudinally extending structural steel I-beams 16. As shown in Fig. 3, the outermost beam 16 on each side of the bridge structure 10 is intimately associated with the concrete fascia portion of the bridge, this portion being designated at 18 and including a marginal portion of a roadway 20 and a raised deck or sidewalk portion 22. The beam 16 includes a central vertical web portion 24 and upper and lower flange portions 26 and 28, respectively. Suspended from the upper flange portion 26 of the beam 16 by means which will be described in detail presently are the outer ends of a series of centering joists 30 which may be in the form of wooden boards of the 2" x 6" variety. The inner ends of the joists 30 may be supported by conventional coil beam saddles (not shown) or other supporting means having no connection with the present invention and associated with the upper flange portion of the next adjacent I-beam. Operatively supported on the outside of the I-beam 16 by means which likewise will be described in detail presently are a series of longitudinally spaced concrete form and scaffold supporting bracket assemblies which have been designated in their entirety at 32, the various bracket assemblies performing the dual function of maintaining the bridge fascia concrete form assembly in position.

and of supporting the scaffold planking for the bridge fascia in position on the outside of the bridge structure.

As best seen in Figs. 2 and 3, each bracket assembly 32 is in the form of a generally triangular structure including vertical and horizontal leg assemblies 34 and 36, respectively, and an inclined strut or brace member 38. The vertical leg 34 is comprised of two angle pieces 40 arranged in spaced parallel relation with one pair of angle flanges disposed in coplanar relation and with the other pair of angle flanges extending in parallelity so that the open sides of the angle pieces face each other and define therebetween a channel. At a medial region along the angle pieces 40 and preferably in the lower regions thereof a crosspiece in the form of a short angle section 42 is welded as at 44 in position between the parallel angle flanges and with its open side facing the coplanar angle flanges. The angle section 42 serves as a brace structure for the lower end of the inclined strut 38 which is welded thereto as at 46. The upper end of the leg 34 is connected to the leg 36 through the medium of a flat plate 48 which bridges the distance between the upper ends of the angle pieces 40 and is welded as at 50 thereto, as well as being welded to the leg 36.

The horizontal leg 36 is likewise comprised of two angle pieces 52 arranged in spaced parallel relation with one pair of angle flanges disposed in coplanar relation and with the other pair of angle flanges extending in parallelity so that the open sides of the angle pieces face each other and define therebetween a channel. The inner end regions of the coplanar angle flanges are welded as at 54 the plate 48 to establish a rigid connection between the two legs 34 and 36. At a region near the outer end of the leg 36, a short angle section 56 is welded as at 58 in a position to bridge the distance between the two angle pieces 52 and with its open side facing the coplanar flanges of these latter members. The angle section 56 serves as a brace structure for the upper end of the inclined strut 38 and is welded thereto as at 60.

The bracket assembly 32, per se, is completed by the provision of a nailing plank 62 which may be of the 2" x 6" variety and which is itself bolted as at 64 in position between the two parallel flanges of the angle pieces 52. With the nailing plank 62 thus bolted to the horizontal leg 36 of the triangular bracket assembly 32, the plank 62 may be regarded as a permanent and constituent part of the bracket assembly, intended to be furnished with the assembly as such. The nailing plank 62 is of somewhat greater extent than the extent of the angle pieces 52 and the actual extent of the plank is such that it will conveniently support thereon three planks of the 2" x 6" variety when the bracket assembly 32 is in position on the outside I-beam 16. Three such planks 63, 65 and 67 have been shown in Fig. 3, the innermost plank 63 constituting a base concrete form plank for the underneath side of the outer regions of the concrete fascia 18 and the planks 65 and 67 constituting scaffold planks. These planks may be secured to the nailing plank 62 by conventional nailing procedure as indicated at 69.

In hanging the bracket assembly 32 on the I-beam 16, the lower regions of the vertical bracket leg 34 is clamped to the lower I-beam flange while the inner end region of the horizontal bracket leg 36 is suspended from the upper flange 26 of the I-beam 16. Accordingly, a clamping bolt 66 (Figs. 2, 3 and 4) passes through the space existing between the two angle pieces 40 and has an end hooked as at 68 around the inner edge of the I-beam flange 28. The other end of the bolt 66 is formed with threads 70 of relatively long pitch. The threaded portion of the bolt 66 receives thereover a clamping bar 72 which is tightened against the coplanar flanges of the two angle pieces 40 by means of a suitable wing nut 74. Tightening of the wing nut 74 serves to draw the inner faces of the coplanar flanges of the angle pieces 40 firmly against the outer edge of the lower flange 28 of the

I-beam as clearly shown in Fig. 3. At the upper end of the bracket assembly 32, a suspension bolt 76 (Figs. 3 and 5) extends upwardly through the plate 48, the nailing plank 62, the concrete form plank 63 and one end of a supporting plate in the form of a saddle strap 78 which extends transversely across the upper face of the beam flange 26. The bolt 76 projects a slight distance above the level of the saddle strap 78 and threadedly receives thereon a clamping nut 80. The other end of the saddle strap 78 receives therethrough a bolt 82, the bolt also passing through the edge region of a plywood sheet 84 or other deck lumber and carrying at its lower end a hanger bracket 86 having parallel side flanges 88 and 90 and a connecting web portion 92. The bolt 82 passes through the outer end regions of the side flanges 88 and 90 and the bolt head underlies the flange 90 and supports the same. A clamping or adjusting nut 94 is threadedly received on the upper end of the bolt 82 and serves to adjust the elevation of the hanger bracket 86. In making the deck installation the various bolts 82 may be suspended from their respective saddle straps 78 with the hanger brackets 86 at a fairly low elevation and a plank 96 which may be of the 2" x 4" variety is inserted or pushed through the hanger brackets 86 so that one face thereof opposes the bolts 82 and the other face opposed the web portions 92 of the brackets. The plank 96 is thus supported in adjacent hanger brackets 86 and serves, in turn, to support thereon the previously mentioned transversely extending wooden joists 30 which also may be of the 2" x 4" type and on which joists the plywood sheet 84 or other deck lumber rests.

As best seen in Fig. 3, the concrete form for the fascia 18 includes, in addition to the deck panel 84 and I-beam flange 26, a longitudinally extending wooden strip 100 which is set on edge between the nailing plank 62 and the underneath face of the beam flange 26 and is clamped between these two surfaces by the clamping bolt and nut assembly 82, 94. The strip 100 abuts against the inner edge of the form plank 63 and, in combination with the beam flange 26, defines the inside and underneath corner of the concrete fascia overhang. The remainder of the concrete form comprises a vertical form side or plank 102 consisting of a wooden member set on edge above the form plank 63 and held in position thereon by a nailed strip 104 positioned on the plank 63 outside of the member 102, and reinforcing means for the vertical form plank including a series of diagonal brace members 106 in the form of wooden members and the scaffold plank 65, said brace members 106 extending between the scaffold plank 65 and the upper edge region of the form member 102.

The formation of the roadway and deck surfaces 20 and 22 bears no relation to the present invention which consists of the bracket assembly 32 and the parts associated therewith whereby it is supported in position beneath and outside of the space where the concrete fascia is formed. It will be understood, however, that conventional strickle devices will be employed in the formation of these surfaces and that the upper longitudinal edge of the wooden member 102 may be used as a strickle guide in conjunction with such devices.

From the above description it will be seen that by adjusting the nuts 80 and 94 after the various parts have been set into position, the depth of the fascia overhang may be brought to any desired predetermined depth. Thereafter, the clamping device including the bolt 66, clamping bar 72 and wing nut 74 may be tightened to anchor the bracket assembly 32 at the desired elevation relative to the I-beam 16. The bracket 32 is thus adjustable for different vertical widths of the strip 100. Inasmuch as the clamping bolt 66 may be placed in position at any desired elevation along the leg 34 of the generally triangular bracket assembly 32, I-beams of different height may be accommodated without requiring

modification of the bracket assembly or of its auxiliary attachment or mounting equipment.

It is to be observed that all necessary adjustments may be made from a position above the beam 16 and that it is not necessary for any under-beam work to be performed at any time during setting up operations. Only during stripping operations will there be any need for under-beam work.

The invention is not to be limited to the specific disclosure made since various changes in the details of construction may be resorted to without departing from the spirit of the invention. For example, for illustrative purposes, the clamping bolt 66 has been shown as being capable of being secured in its clamping position by a conventional wing nut 74. Obviously, if desired, a fast thread coil bolt assembly may be substituted for the assembly shown and described herein. Only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a concrete form for bridge fascia presenting an overhang on the outside of a marginal longitudinally extending I-beam having upper and lower beam flanges connected by a vertical beam web and in which the overhang projects downwardly below the upper beam flange, a supporting plate extending transversely of said upper beam flange and supported thereon with the outer end thereof projecting a short distance beyond the outer edge of said upper beam flange, a generally triangular concrete form and scaffold supporting bracket formed of structural steel members, positioned on the outside of said I-beam and extending in a transverse vertical plane, said bracket having a vertical leg, a horizontal leg and a diagonal brace connecting the outer end region of the horizontal leg and the lower end region of said vertical leg, means adjustably clamping the lower region of said vertical leg to the outside edge of said lower beam flange, a suspension bolt projecting upwardly through said outer end of said supporting plate and having a threaded end passing through the plate and a bolt head below the level of said upper beam flange, said suspension bolt passing through the inner region of said horizontal leg of the triangular bracket, a nailing plank overlying and supported on said horizontal leg and forming a part of the latter, a wooden strip supported on said nailing plank and underlying said upper beam flange, a nut threadedly received on the upper end of said suspension bolt for drawing the latter bolt and triangular bracket upwardly to clamp said wooden strip between said nailing plank and said upper beam flange, a horizontal form plank supported on said nailing plank and extending longitudinally with its inner edge engaging said wooden strip, an outside vertical form plank supported edgewise on said form plank, and reinforcing means extending between said hori-

zontal leg of the triangular bracket and vertical form plank for maintaining the latter in position on the horizontal form plank.

2. In a concrete form for bridge fascia, the combination set forth in claim 1 wherein said reinforcing means comprises a scaffold plank supported on said nailing plank and located exteriorly of the horizontal form plank, and a diagonal brace member extending between said scaffold plank and the upper region of the vertical form plank.

3. In a concrete form for bridge fascia presenting an overhang on the outside of a marginal longitudinally extending I-beam having upper and lower beam flanges connected by a vertical beam web and in which the overhang projects downwardly below the upper beam flange, a supporting plate extending transversely of said upper beam flange and supported thereon with the outer end thereof projecting a short distance beyond the outer edge of said upper beam flange, a concrete form and scaffold supporting bracket positioned on the outside of said I-beam and extending in a transverse vertical plane, said bracket including a vertical leg, a horizontal leg and a diagonal brace connecting the remote end portions of said legs, a suspension bolt projecting upwardly through said outer end of said supporting plate and having a threaded end passing through the plate and a bolt head below the level of said upper beam flange, said suspension bolt passing through the inner region of said horizontal leg of the bracket, a wooden strip supported on said horizontal leg and underlying said upper beam flange, a nut threadedly received on the upper end of said suspension bolt for drawing the latter and said bracket upwardly to clamp said wooden strip between said horizontal leg and said upper beam flange, a horizontal form plank supported on said horizontal leg and extending longitudinally with its inner edge engaging said wooden strip, an outside vertical form plank supported edgewise on said horizontal form plank, and reinforcing means extending between said horizontal leg and vertical form plank for maintaining the latter in position on the horizontal form plank.

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