United States Patent

[11] **3,584,825**

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[54] **DECK FORM SUPPORT**
2 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **249/23**
[51] **Int. Cl.** **E04g 17/18**
[50] **Field of Search** 249/23, 24, 25; 264/35

[56] **References Cited**

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ABSTRACT: A system for temporarily securing a deck form to an I-beam preparatory to pouring a concrete slab above the beam, the form being secured and adjusted to position preferably by the combined action of screw jacks supported on the lower flange of the beam, and a bolt traversing the form, at an incline, and connected to a terminal welded to a portion of the beam to be submerged in concrete.

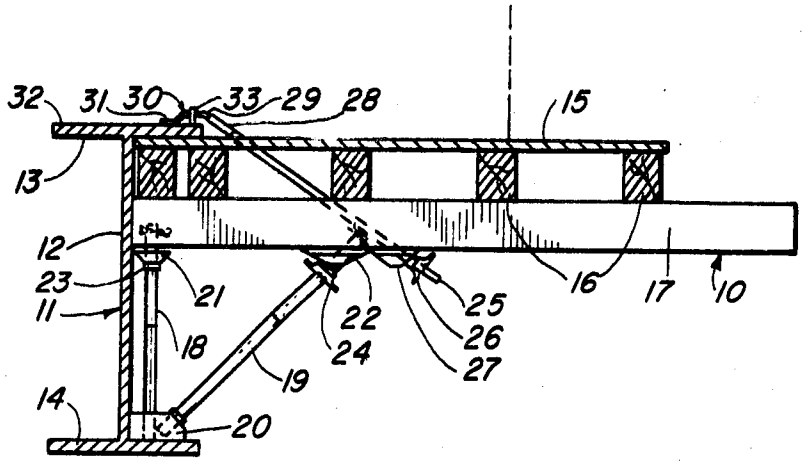


FIG - 1

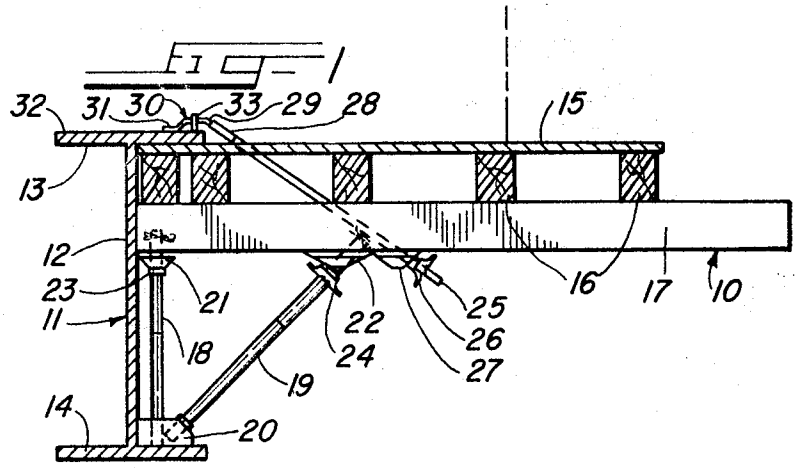


FIG - 2

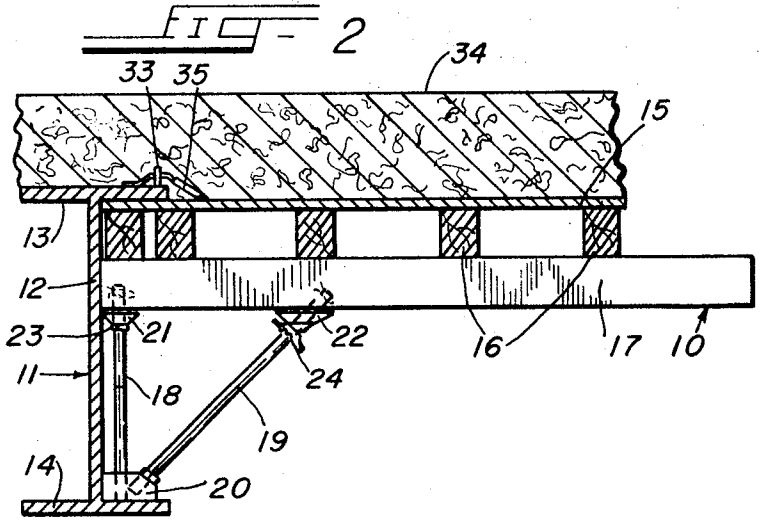
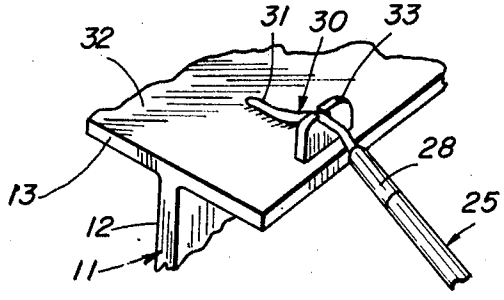


FIG - 3



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DECK FORM SUPPORT

BACKGROUND OF THE INVENTION

The construction of poured concrete floors and bridge decks normally includes a group of parallel I-beams interconnected by a concrete slab extending over the top of the beams. The pouring of this slab is usually accomplished through the use of forms temporarily secured to the beams, and extending laterally from a position on the beams somewhat below the top. The top of the beam then becomes subject to direct supporting contact with the concrete. In the usual configuration of an I-beam, it is the normal practice to engage the form structure with the underside of the top flange of the beam, the beam normally being installed with the central web in a vertical plane. The bottom flange of the beam becomes available as a shelf for supporting screw jacks or auxiliary structure engageable with the underside of the form to hold it tightly in place. It is common to use both vertical and diagonal screw jacks mounted on the lower flange, and thus obtain some degree of lateral adjustability of the form.

Since a screw jack will generate primarily a pushing action, the net result of relying exclusively on screw jacks carried by the bottom flange of the beam is to establish a tendency to push the form laterally away from the beam. In some instances, this represents a serious inconvenience in the installation and adjustment of the form preparatory to pouring the concrete.

SUMMARY OF THE INVENTION

The present invention provides a system for securing a deck form to a beam, which may either be used as the exclusive support of the form, or used in conjunction with the conventional jack systems normally mounted on a lower flange of the beam. A bolt is installed to intersect the form at an incline, and emerge from it at a point adjacent the top of the beam. A terminal in the form of a rod having a threaded end engageable with interior threading at the end of the bolt is secured, preferably by welding to the top of the beam. In the preferred form of the invention, the threaded end of the rod is also elevated somewhat from the top of the beam, and supported by an auxiliary member. This arrangement results in the deposition of the bolt and the terminal at a point where it is adequately surrounded by the poured concrete so as to avoid inducing voids as the concrete is poured. The end of the bolt is tapered, in a manner well known in conjunction with the securing of so-called "face" forms and wall forms, so that the bolt is easily unscrewed from the terminal after the concrete has set, permitting the removal of the form structure. The resulting conical recess exposing the threaded end of the terminal may be filled later, if desired. When the diagonal bolt is used in conjunction with the conventional vertical and diagonal screw jacks underneath the form, the result is a combination of vertical and oppositely inclined forces that can be adjusted to move the form to any desired position, and hold it securely in place.

DESCRIPTION OF THE DRAWING

The several features of the invention will be analyzed in detail through a discussion of the particular embodiment illustrated in the accompanying drawing. In the drawing:

FIG. 1 is a sectional elevation showing a fully installed deck form secured to one side of an I-beam, preparatory to pouring concrete.

FIG. 2 is a sectional elevation showing the concrete poured in place, and the diagonal traversing bolt removed.

FIG. 3 is a perspective view on an enlarged scale showing the details of the bolt terminal secured to the top of the I-beam.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 of the drawing show the deck form structure generally indicated at 10 mounted on the I-beam 11. The I-beam is installed with the central web 12 in a generally vertical position, with the flanges 13 and 14 of the beam thus being disposed one above the other. The form structure 10 is conventional in detail, and includes a plywood panel 15 and a series of studs 16 bridged by pairs of walers 17. The weight of the poured concrete deposited on the top of the panel 15 is transferred over to the I-beam by the securing system which includes the conventional lower vertical and inclined screw jacks 18 and 19 connected to a common bracket 20 supported on the lower flange 14 of the I-beam. Bearing plates indicated at 21 and 22 bridge across the pair of walers 17, and transfer stress to the associated bolts via the standard nut 23 and the wing nut 24, respectively. The screw jack 18 is primarily responsible for shoving the form structure 10 solidly up against the underside of the flange 13, and the jack 19 is capable of shoving the form structure somewhat to one side for accurate lateral placement in a direction to the right, as viewed in FIG. 1. Normally, the bearing plate 22 will be temporarily nailed to the walers 17 to prevent slippage.

In order to establish a positive system for securing the form structure with respect to the I-beam, the inclined bolt 25 is installed in a position intersecting the form structure (including the panel 15), and emerging at a point spaced to the right of the flange 13. The bolt 25 is threaded at its lower end to receive the wing nut 26, which bears against the bracket 27 bridging across the walers 17 in the same manner as the bearing bracket 22. The upper extremity of the bolt 25 is tapered, as indicated at 28, and the end of this bolt is interiorly threaded to receive the threaded end of the rod 30, the opposite end 31 being welded to the top surface 32 of the I-beam 11. A support 33 has the function of elevating the threaded end 29 above the top surface 32, so that the point of emergence of the bolt 25 from the concrete will be sufficiently spaced from the edge of the beam to eliminate a tendency to produce voids in the concrete. An adjustment of the nuts 24 and 26 will produce counteracting lateral forces urging the form either to the right or left, as may be desired. This action, together with the vertical force provided by the jack 18, establishes a complete system of forces for positioning and securing the form structure. Under some conditions, it may be practical to support the entire loading of the form by the inclined bolts 25, but it is normally desirable to rely on these primarily for lateral adjustment.

When the concrete 34 is poured on top of the panel 15, and has set sufficiently to be self-supporting, the removal of the forms can begin with the removal of the nut 26, followed by unscrewing the bolt 25 from the terminal end 29. This produces a recess 35 conforming to the conical end 28 of the bolt 25. The terminal assembly, which includes the rod 30 and the support 33, remains embedded in the concrete 34. The jacks 18 and 19 may be removed in the usual manner, followed by the removal of the form structure 10.

The particular embodiments of the present invention which have been illustrated and discussed herein are for illustrative purposes only and are not to be considered as a limitation upon the scope of the appended claims. In these claims, it is my intent to claim the entire invention disclosed herein, except as I am limited by the prior art.

I claim:

1. In combination with a steel beam having upper and lower flanges and a deck form extending laterally from a position below the top of said beam, a system for temporarily securing and positioning said form with respect to said beam comprising:

a bolt traversing said form at an incline;

a terminal rod secured to a portion of said beam above said form, and normally engaging said bolt, said rod having one end fixed to the top of said beam, and the opposite end in threaded engagement with said bolt;

bearing means engaging said form and the lower portion of said bolt for load transfer from said form to said bolt; and

screw jack means supported on said beam and engaging the underside of said form.

2. A system as defined in claim 1, wherein said screw jack means includes a screw jack inclined oppositely to the said bolt.