R. ANDERSON.

FORM WORK FOR CONCRETE CONSTRUCTION.

APPLICATION FILED DEC. 4, 1909.

1,086,343. Patented Feb. 10, 1914.

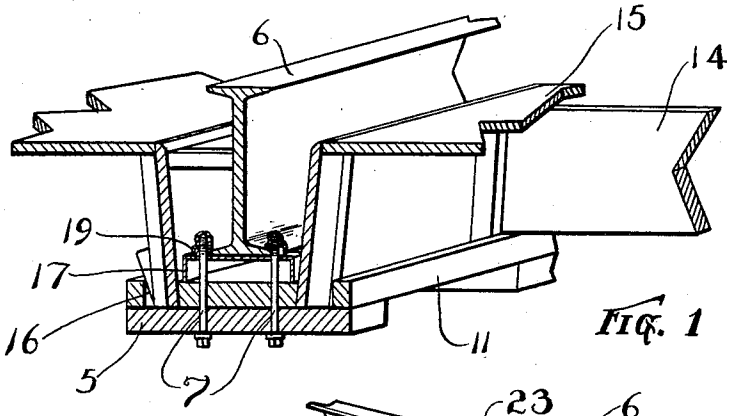


FIG. 1

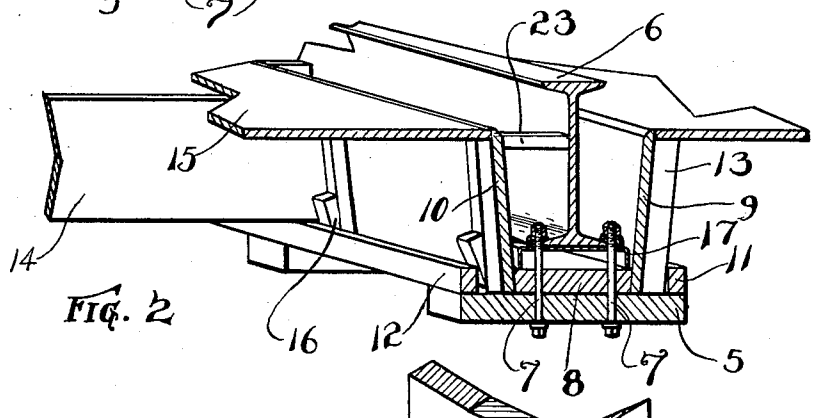


FIG. 2

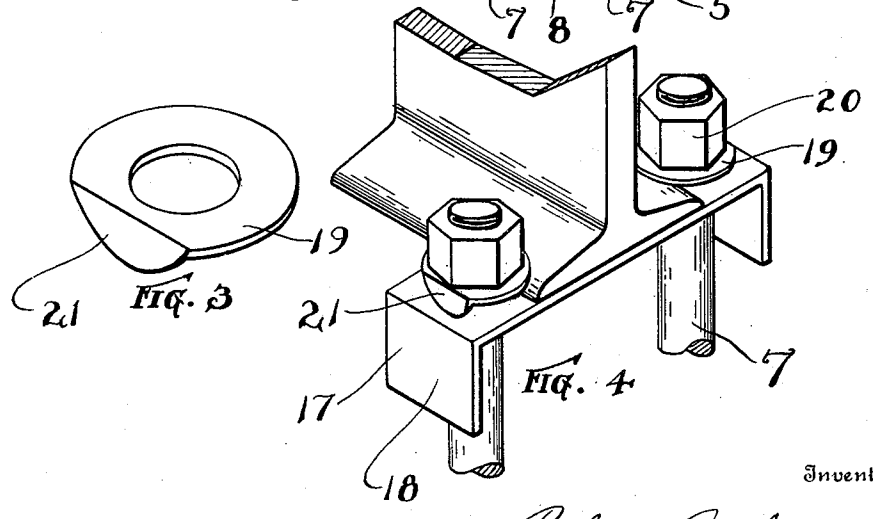


FIG. 3

FIG. 4

Witnesses

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FORM WORK FOR CONCRETE CONSTRUCTION.

1,086,343. Specification of Letters Patent. Patented Feb. 10, 1914.

Application filed December 4, 1909. Serial No. 531,445.

To all whom it may concern:

Be it known that I, ROBERT ANDERSON, a citizen of the United States of America, and resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Form Work for Concrete Construction, of which the following is a specification.

This invention relates to concrete structures, and more particularly to means for erecting such structures.

An object of this invention is to produce improved means for erecting a concrete structure on a structural steel frame.

A further object is to produce a temporary frame, mold or form for concrete structures, which is adapted to be suspended from a structural steel frame.

A further object is to produce a form for constructing concrete floor beams and panels capable of being supported by a structural steel frame and so constructed that the concrete beams inclose the supporting members of a structural steel frame.

A further object is to produce a form for concrete floor beams and panels, capable of being suspended from an I-beam of a structural steel frame, and which is so constructed that the supporting I-beam is embedded in the concrete of the finished structure.

A further object is to provide new and improved means for suspending the form for concrete construction from a structural steel member.

These and other objects I attain by means of an apparatus embodying the features herein described, and illustrated in the drawings accompanying this application and forming a part thereof.

Figure 1 is a fragmental perspective view of a form or mold embodying my invention, and shown in connection with a portion of a supporting I-beam. Fig. 2 is a perspective view of the apparatus shown in Fig. 1, and illustrates a detail of the construction. Fig. 3 is a perspective view of a washer, which forms a detail of my invention. Fig. 4 is a perspective view of a portion of an I-beam, shown in connection with a spacer, supporting bolts and washers, all of which are details of my invention.

The mold or form, illustrated as embodying my invention, consists of a trough portion, for forming concrete floor beams, and portions adjacent thereto and located between adjacent troughs for forming concrete panels or floor slabs. The form is capable of being swung from the bottom flanges of I-beams, and is so arranged that each supporting I-beam will be completely embedded within a concrete floor beam, after the floor beams and slabs are formed.

The form or mold includes transverse wooden battens 5, which are considerably wider than the bottom flange of a supporting I-beam 6, and are secured thereto by means of bolts 7. The piece 5 supports a bottom board 8 and side boards 9 and 10, which form a trough for molding a concrete floor beam. The board 8 is wider than the bottom flange of the I-beam, extends parallel to the beam, and may be nailed or otherwise permanently secured to the base piece 5. Cleats 11 and 12 are permanently secured to the upper face of the piece 5, at its edges. The side board 9 is permanently secured to the piece 5 and is held in place by battens 13 located between it and the cleat 11, which lock the lower edge of the side board against the bottom board 8. Joists 14 are supported by the cleat 11 and they in turn support the bottom boards 15 of the forms for molding the concrete panels or floor slabs.

The side boards 10 are not permanently secured to the piece 5, but are locked in place by wedges 16, which, by being driven home between the cleat 12 and the side board, force its lower edge against the bottom board 8. Joists 14 are also supported by the cleat 12 and they support bottom boards 15.

The supporting bolts 7, are spaced at intervals along the piece 5 and extend upwardly through the pieces 5 and 8 and through spacing pieces 17, which are located between the bottom face of the I-beam 6 and the board 8. These spacing pieces consist of narrow metal strips, turned down at their ends to form flanges 18, which engage the upper face of the board 8 and maintain it and the form at a determined distance from the lower face of the I-beam.

A washer 19 is provided for each bolt 7 and is located between the flange of the I-beam and a nut 20, which is threaded onto the bolt 7. Each washer is turned down at one side to form a lip 21, as shown in Fig. 3. The lip is adapted to engage the spacer 17, and is of sufficient height to maintain the washer in a horizontal position

when its diametrically opposite edge is in place on the flange of the I-beam. With this arrangement the washers and the spacer form clamps, which grip the flanges of the I-beam and which secure the bolts to the beam. In addition to this, the bolts draw the board 8, and consequently the form, up firmly against the flanges 18 of the spacers 17. This clamps the spacers rigidly against the lower flange of the supporting beam, and the form against the spacers, so that the beam, the spacers and the form are rigidly clamped together. This arrangement overcomes the tendency of the supporting beam to tilt, which is encountered with some methods of supporting form work.

The spacers 17 hold the bottom of the trough a determined distance below the lower flange of the beam, so that concrete can be introduced below the beam and between it and the bottom board 8. The spacers are so formed that concrete may be tamped on all sides of them, so that they are completely covered with the exception of their lower edges. With this construction, the bottom face of the beam is completely covered with concrete and no recesses are formed on the lower face of the concrete beam, which must be retouched after the form has been removed.

If it is found necessary, a brace 23 may be introduced between the upper edge of the side boards and the I-beam, to hold the boards in place.

After the concrete has set and hardened, the form may be taken down by removing the wedges 16, and then unscrewing and withdrawing the bolts 7. This leaves the nuts, washers and spacers embedded in the concrete. After the bolts 7 are removed, the form is then removed in sections. It is understood that the separate sections of this form coöperate to form adjacent troughs and panel forms.

All the carpentry work on the form can be completed and the form suspended from the I-beams, prior to securing the side board 10 in place, since the separate parts of the form are suspended independently of the form. With this arrangement, dirt can be washed out of the form before the side beam is in place, and before the concrete is put into the form.

What I claim is:—

1. In combination with a supporting beam which has a bottom flange, a spacer for holding the bottom of a beam-forming mold away from said flange, supporting bolts for said mold extending through said spacer on each side of said flange, means resting upon the flange and engaging the bolts to support them thereon and the mold.

2. In combination with a form for concrete structures and a supporting member from which said form is suspended, a spacer comprising an inverted U-shaped member located between said bottom face of said supporting member and said form.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."