

May 27, 1930.

H. H. LAMPERT

1,759,908

JOIST CONNECTION

Filed May 16, 1928

2 Sheets-Sheet 1

Fig. 1.

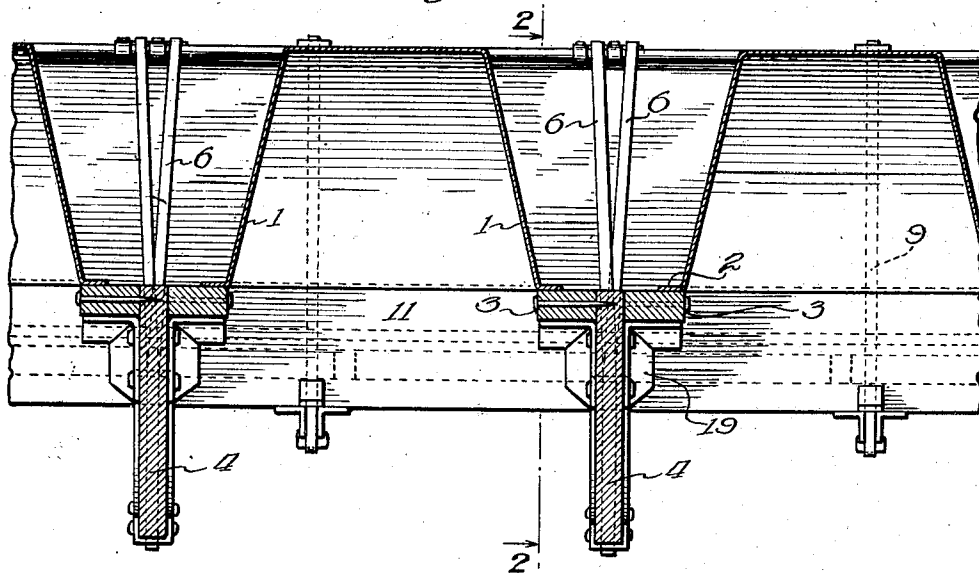
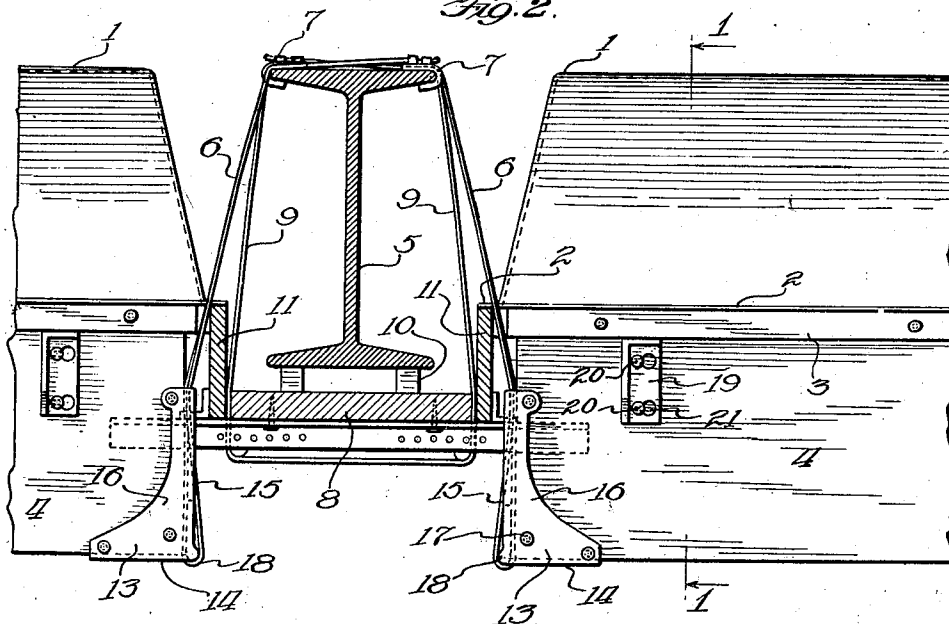


Fig. 2.



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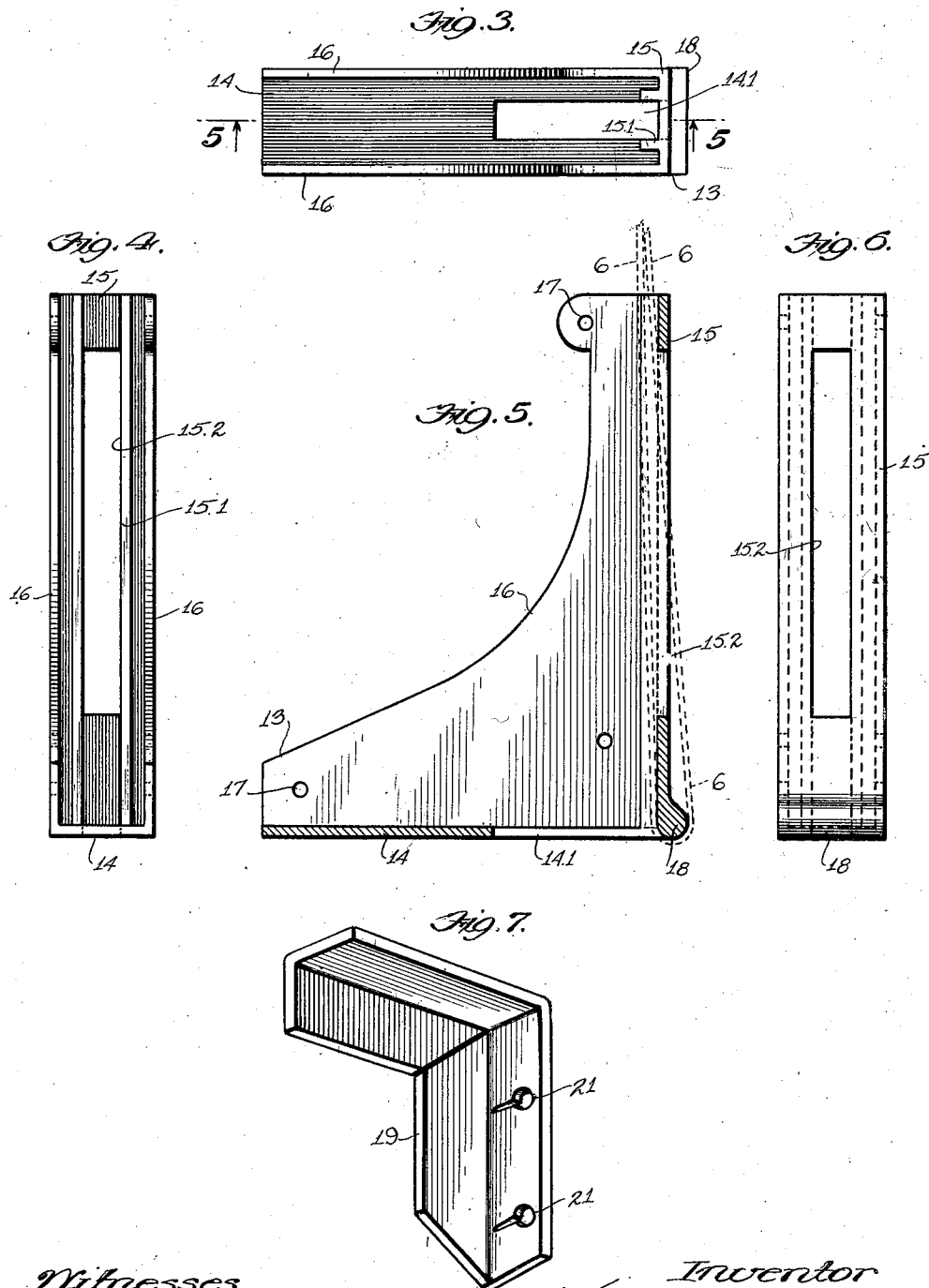
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2 Sheets-Sheet 2



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JOIST CONNECTION

Application filed May 16, 1928. Serial No. 278,243.

This invention relates to improved means for supporting and assembling concrete-floor mold constructions.

In building construction where concrete floors are to be erected, it is customary to build a mold for the lower surface of the floors and to support this mold either from the structural steel beams or upon suitable shoring erected from the floor below. It is, of course, preferable to support the mold as far as possible from the steel structural elements adjacent the level of the floor to be built. This usually involves the provision of a plurality of temporary joists resting on the lower flanges of steel I-beams forming part of the building structure and mounting the remainder of the mold form on such joists. Inasmuch as the usual concrete design involves the surrounding of the steel floor beams and girders with concrete, the various elements that make up the bottom of the mold must be shaped so as to house the steel beams in such manner that the concrete will flow around them. If, therefore, as has heretofore been the practice, the mold supporting joists are provided with extensions resting on the bottom flanges of the floor beams, these extensions necessarily extend into the mold and have to be withdrawn or cut off leaving unsightly holes to be filled.

The present invention is particularly directed to providing a form construction whereby the mold supporting joists may be suspended by tie elements so as to reduce to a minimum the amount of retouching that has to be done to the molded concrete and also to obviate the use of extensions on the mold supporting joists which leave large holes and consequently weaken the concrete structure.

The main objects of this invention are to provide an improved concrete form construction particularly adapted for use in the building of concrete floors between structural steel shapes; to provide an improved concrete floor form of the type involving the use of joists for supporting certain sections; to provide improved means for suspending the joists; to provide improved means of this kind which are adapted for attachment to the extremities of the joists

for supporting the joists between the structural shapes; and to provide an improved bracket adapted for attachment to the joists for supporting and bracing laterally extending head or shelf elements thereon.

An illustrative embodiment of this invention is shown in the accompanying drawings, wherein:—

Figure 1 is a fragmentary vertical section through a concrete-floor mold constructed according to this invention, said section being taken on the line 1—1 of Fig. 2.

Fig. 2 is a vertical section of the same taken on the line 2—2 of Fig. 1.

Fig. 3 is a top plan of one of the improved shoes for attachment to the ends of a joist.

Fig. 4 is an end elevation of the same, taken from the left of Fig. 3.

Fig. 5 is a section, taken on the line 5—5 of Fig. 3.

Fig. 6 is an end elevation of the shoe taken from the right of Fig. 3.

Fig. 7 is a perspective of one of the brackets.

In the form shown in the drawings, the apparatus is arranged for casting a concrete floor made up of main beams in which the structural steel beams of the building are embedded with minor beams, usually called ceiling beams, extending between the main beams and projecting to a less extent below the bottom of the floor slab.

In such a construction the bottom of the floor slab and the sides of the concrete beams are formed by means of mold elements in the form of inverted pans 1, having a marginal or rim flange 2, and these are supported by means of soffit elements 3 carried by mold joists 4 which, instead of resting on the lower flanges of the main steel floor beams 5, are suspended by ties 6 made of band steel fastened by means of tie clamps 7 on the upper flanges of the I-beams 5.

The soffit board 8 is suspended below the I-beam 5 by means of ties 9 and is spaced from the bottom of the I-beam by spacer blocks 10. Mounted at the sides of the soffit boards 8 are mold boards 11 which extend up to the level of the top surface of the soffit

boards 3 and afford support for the flanges 2 at the ends of the floor pans.

In order to avoid any fabrication of the mold joists 4 other than merely cutting them to length, I have provided an improved form of hanger 13 in the form of a cap or shoe having a bottom wall 14 upon which the end of the joist rests, a back wall 15 bearing against the end of the joist, and side flanges or cheek plates 16 rigidly bracing the bottom and back walls and forming a socket in which the lower bottom corner of the joist may rest. The cheek plates 16 are provided with nail or bolt holes 17 for attaching the shoe to the joist. The inner face of the wall 15 is vertically ribbed or grooved as shown at 15.1 to form a seat for the tie 6. The shoe is also provided with a bead 18 at the junction of the bottom wall 14 and the back wall 15 and the bottom wall and back wall are slotted as shown at 14.1 and 15.2 to permit the tie to be laced through the shoe around the bead 18 in the manner illustrated in Fig. 2.

In order to permit of convenient dismantling of the mold, the soffit boards for the ceiling beams are made in the form of wings 3 secured to the sides of and adjacent to the top edges of the mold joists 4. Preferably the mold structure involves the use of a mold joist for each ceiling beam. Each of these joists 4 has a pair of soffit wings 3 secured at opposite sides of its upper edge as illustrated in Fig. 1, by nailing or otherwise, and these wings are braced by brackets 19 secured by nails 20 passing through key-hole slots 21 in the bracket.

The operation of erecting the mold is as follows:

The soffit board 8 and the side boards 11 are suspended from the I-beam 5 by ties 9 in suitable manner as for instance, by the means described in my co-pending application, Serial No. 272,108, filed April 23, 1928. The joists 4 are cut to suitable length to extend from the soffit board 8 of one floor beam to that of the next adjacent parallel floor beam and each joist 4 has a shoe 13 with a bight of the tie band 6 laced around its bead 18 in the manner illustrated in Fig. 2. The soffit wings are then lightly nailed to opposite sides of the upper edge of the joist 4 and braced by means of a suitable number of the brackets 19. The tie slings 6 are then fastened by means of the tie clamp 7 to the top flange of the I-beam 5 and drawn taut until the soffit 3 are flush with the tops of the boards 11.

The inverted pans 1 are then set in place with their flanges 2 resting upon, and their inner rim coinciding with the edges of the soffit boards 3 and the boards 11. The mold is now ready for pouring and the concrete is poured over the top completely filling the space around the I-beams 5 and between the pans 2 and extending the desired depth for the floor slab above the tops of the pans.

After the form is set, the form is disassembled by knocking the brackets 19 to one side to allow the nail heads to pass through the enlarged portions of the key-hole slots 21. Then the soffit wings 3 are pried apart from the joists 4, permitting the pans 2 to be dropped. The ties 6 are then cut off flush with the surface of the concrete, thus permitting the joists 4 to be dropped.

The structure and method of operating the apparatus which makes up the mold and soffit supporting structure around the main beams 5 are not herein described, since they are not a feature of the present invention.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

In a device of the class described, a shoe comprising a pair of transversely disposed integral bearing members adapted to embrace a corner of a joist, said bearing members having a pair of slots formed therein for receiving a tie element, a cross bar located between said slots and disposed in the plane of one of said bearing members for attachment to the tie element, and a pair of guide-rails located on the inner face of one of said members on respectively opposite sides of one of said slots for securing said shoe and tie element against relative lateral shifting, said guide-rails being spaced inwardly from the side edges of said one member.

Signed at Chicago this 14th day of May, 1928.

HENRY H. LAMPERT. 105

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