Nov. 1, 1932. H. F. YOUNG 1,885,883

JOIST CONSTRUCTION

Filed Sept. 22, 1930

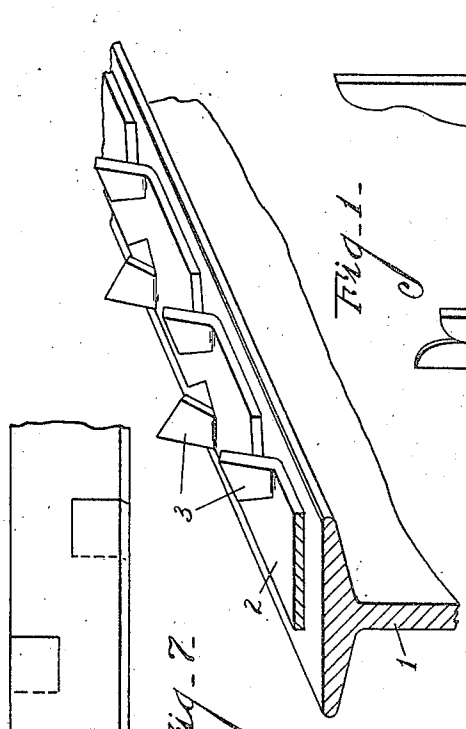


Fig. 1.

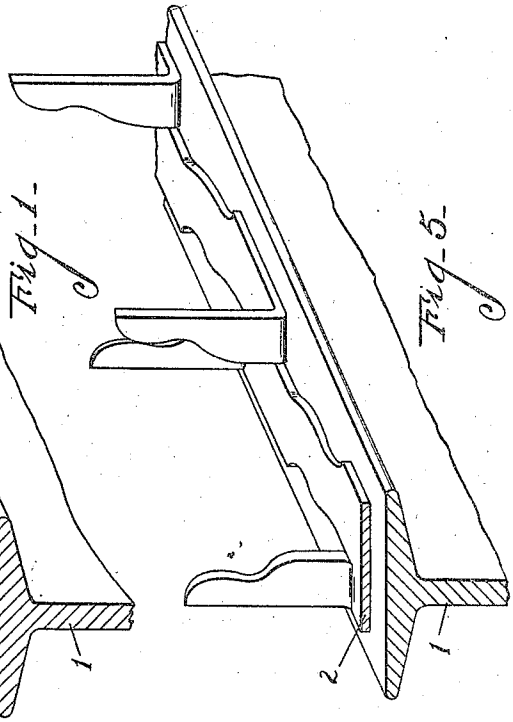


Fig. 5.

Fig. 7.

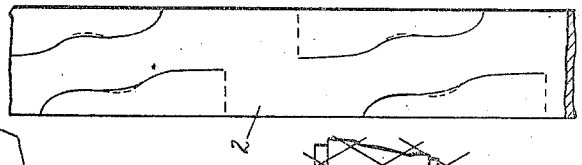


Fig. 6.

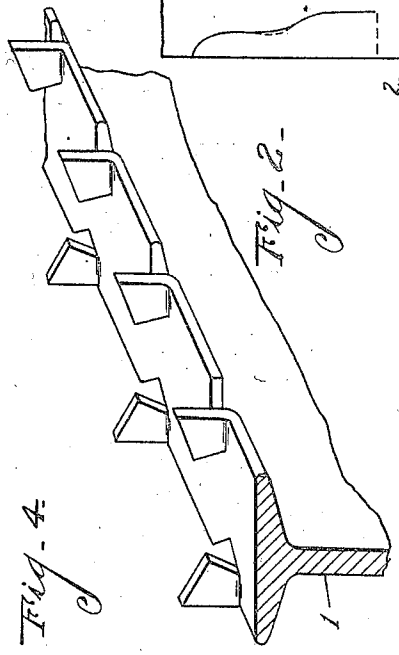


Fig. 2.

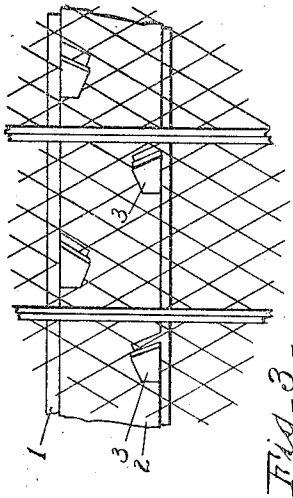


Fig. 3.

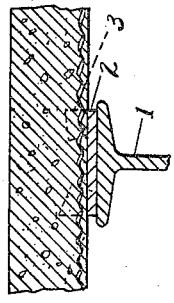


Fig. 4.

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UNITED STATES PATENT OFFICE

HOWARD F. YOUNG, OF KALAMAZOO, MICHIGAN, ASSIGNOR OF ONE-HALF TO LEONIE S. YOUNG, OF KALAMAZOO, MICHIGAN

JOIST CONSTRUCTION

Application filed September 22, 1930. Serial No. 483,439.

This invention relates to detailed improvements of the structure appearing in my patent application Serial No. 472,828, filed August 4, 1930.

The objects of this invention are:

First, to provide improvements in details of construction of the top cord of the joist, particularly as to the details of the steel member.

Second, to provide such a steel member with improved construction of shear-resisting and fabric-engaging prongs.

Third, to provide such a structure which is composite in that the prongs are formed on an added bonding strip welded or otherwise secured to the head of the joist.

Fourth, to provide an improved floor construction containing these features.

Further objects, and objects pertaining to details and economies will definitely appear from the description to follow.

Preferred embodiments of my invention are illustrated in the accompanying drawing, in which:

Fig. 1 shows the head of a joist with the preferred form of my improved prong structure.

Fig. 2 is a modified form in which the prongs are struck up from the flanges at each side of the head of a metal joist.

Fig. 3 is a plan view showing the disposition and arrangement of rib lath in connection with the joist.

Fig. 4 is a detail cross section through the head of a joist and the superposed floor slab.

Fig. 5 is a detail of my improvement with a modified form of prong.

Fig. 6 is a plan view of the blank strip showing the method of forming the prongs as appears in Fig. 5.

Fig. 7 is a detail plan view similar to Fig. 6 where square prongs are formed on the added strip.

The parts will be identified by their numerals of reference which are the same in all views.

1 is a metal floor joist, the head only of which is shown. 2 is the supplementary bonding strip on which are formed the prongs 3. The bonding strip is preferably spot-welded on to the head of the joist 1 as seen in Fig. 1. It may be secured in any way. The prongs are dove-tailed in form, being struck up from the margins of the bonding strip, or in the alternative structure as seen in Fig. 2, from the margins of the projecting flange of the head of the metal joist. These are formed by an angular cut in from the margin and a second cut connecting therewith to form a dove-tail construction when the prongs are bent out at substantially right angles.

The prongs of this shape readily penetrate mesh lath between the ribs or the body of Steeltex which is a lath having paper back with metal reinforce. In fact, any lath structure containing metal can be utilized with the structure and will be retained by the peculiar shape of the prongs. The prongs project through the mesh to interlock with the concrete slab to afford resistance to horizontal shear or slippage between the slab and the joist, incorporating the two as a composite concrete and steel T beam so as to utilize the concrete slab itself for compression stresses in the structure.

The preferred form of the prongs is seen in Fig. 1 where they are shown in the preferred construction. In Fig. 2 they are shown in the alternative, formed from the flanges forming the head of the metal joist.

In Fig. 5 a modified form is shown with comparatively long fingers which are capable of insertion through the mesh and of being bent down. In Fig. 7 I illustrate the prongs as rectangular in contour where they would have straight sharp edges which would assist in shearing the mesh or web of lath when placing the same.

Any form of prong could be made use of in connection with the supplementary bonding strip. The flanges might also be variously cut to make prongs. The joists, instead of being simple T joists, may be made up of plates and angle flanges of other form to which the supplementary bonding strip may be secured, or on which prongs may be formed. The supplementary bonding strip might be secured to a straight beam or bar. The usual lath attaching clips may be used.

The invention is especially well adapted to a joist construction, but is also available for girders or beams of any description where a concrete slab or structure is bonded to the head of the beam.

I desire to claim my invention broadly and also in the specific forms illustrated.

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

1. The combination with a metal joist having a T head, a supplementary bonding strip having dove-tail shaped angular prongs struck up therefrom welded to the said joist head, a rib lath disposed across the said joists with its mesh engaging the said prongs, and a concrete slab incorporating the said lath, prongs and head into a unitary bonded structure, utilizing the slab as a compression member.

2. The combination with a metal joist having a T head, a supplementary bonding strip having dove-tail shaped angular prongs struck up therefrom welded to the said joist head, a lath disposed across the said joists with its mesh engaging the said prongs, and a concrete slab incorporating the said lath, prongs and head into a unitary bonded structure utilizing the slab as a compression member.

3. The combination with a metal joist having a T head having dove-tail shaped angular prongs struck up therefrom, a lath disposed across the said joists with its mesh engaging the said prongs, and a concrete slab incorporating the said lath, prongs and head into a unitary bonded structure utilizing the slab as a compression member.

4. The combination with a metal joist having a T head having dove-tail shaped angular prongs struck up therefrom, and a concrete slab incorporating the said prongs and head into a unitary bonded structure utilizing the slab as a compression member.

5. The combination with a metal joist having a T head, and a supplementary bonding strip having dove-tail shaped angular prongs struck up therefrom welded to the said joist head.

In witness whereof I have hereunto set my hand.

HOWARD F. YOUNG.