Aug. 1, 1933. W. F. ZABRISKIE 1,920,831

TRANSVERSE BRACING FOR METALLIC FLOOR JOISTS

Filed Dec. 10, 1928

Fig. 1.

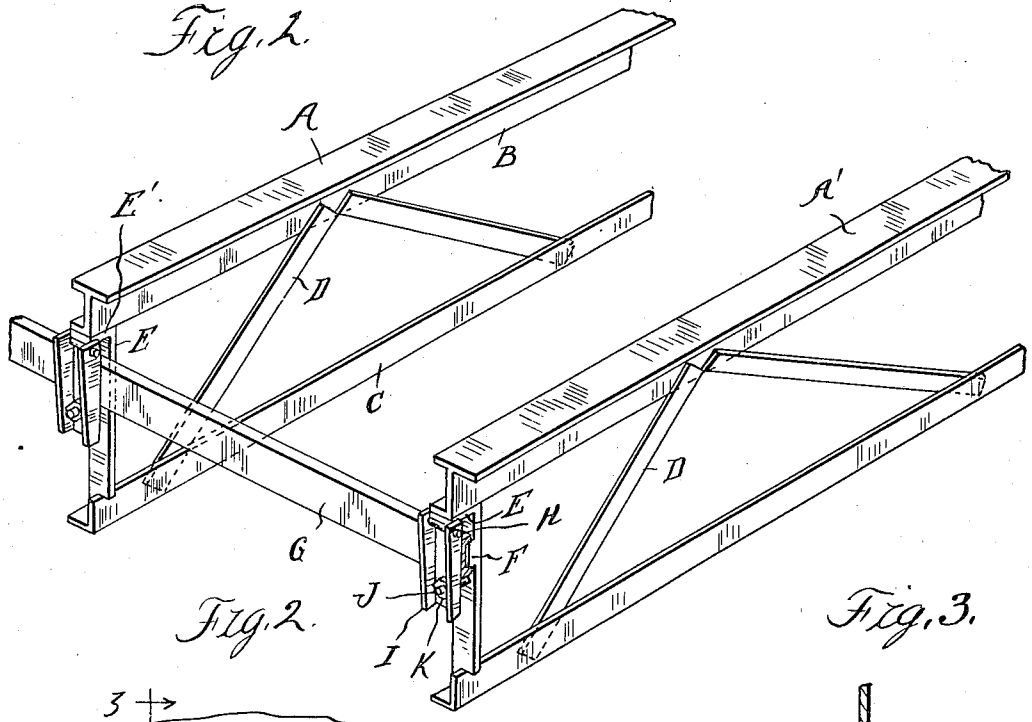


Fig. 2.

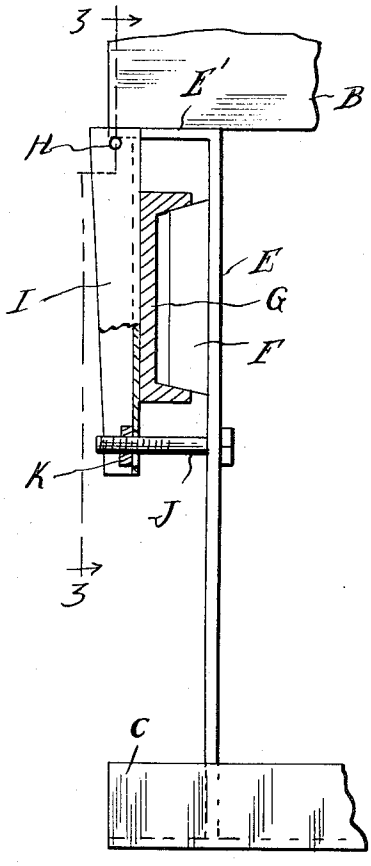
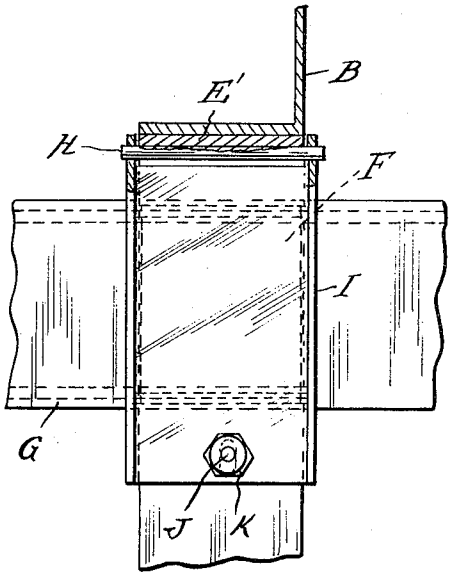


Fig. 3.



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TRANSVERSE BRACING FOR METALLIC FLOOR JOISTS

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4 Claims. (Cl. 189—36)

The invention relates to floor constructions employing metallic joists and has for its object a construction of transverse bracing which may be easily applied and which will impart to the structure a high degree of rigidity. In the present state of the art, one type of metallic joists extensively used is a construction comprising top and bottom cord members formed of bars of structural shape, and an intermediate webbing formed of a zigzag bar welded or otherwise secured to the top and bottom cord members. My improvement is applicable to this form of joist or to any other trussed form, and consists in the novel construction as hereinafter set forth.

In the drawing:

Figure 1 is a perspective view showing portions of adjacent metallic floor joists with my improved transverse bracing applied thereto;

Figure 2 is a cross section through the transverse bracing;

Figure 3 is a cross section on line 3—3 of Figure 2.

As shown, the metallic joists A and A', etc. each consists of a top cord member B of structural shape and specifically a T bar having a laterally extending angle flange at the bottom of the T to form a channel section on one side. The bottom cord member C is formed of an angle bar arranged parallel to the bar B and the webbing D is also formed of an angle bar bent into a zigzag form and welded at its top and bottom angular bends respectively to the cord members B and C.

To provide further attachment of transverse bracing to such a construction of joists, I add at one or more points in the length of the span strut members E which extend vertically and are attached at their upper and lower ends to the cord members B and C. These struts are preferably formed of flat bars having angle bends E' at their ends for attachment to the cord members and also provided intermediate said ends with a lug F having bevelled or tapering top and bottom edges. This lug may be welded to the bar D so as to be rigidly attached thereto and extends in a plane which is perpendicular to the plane of the joists. G is a channel bar having tapering flanges adapted to fit over the tapering upper and lower edge portions of the lugs F. This bar G is of a length to extend transversely of a series of joists forming a span and fitting over the lugs of the successive joists. Thus by clamping this bar to each of the struts E it will be wedged against the lugs F and will thus form a rigid connection therewith.

To facilitate such clamping engagement I preferably provide a permanently attached clamp for each joist which is ready for application when the bracing is placed in position. These clamps, as shown, are formed by welding or otherwise securing to the flange E' of the strut member E a pintle H which pivotally engages a clamping arm I preferably formed of sheet metal of U-shape cross section. The lower end of this clamping arm is apertured to engage a bolt J which is secured to the strut E and projects laterally therefrom. A clamping nut K engages the threaded portion of the bolt and the arrangement is such that whenever it is desired to clamp the bar G the arm I is swung downward over said bar to engage with the bolt J and then drawn inward by the nut K. This will force the tapering flanges of the bar G into wedging engagement with the tapering faces of the lug F, forming a joint that will hold the bar G substantially perpendicular to and rigid with the strut E.

One advantage of this construction is that it does not necessitate any exact alignment of the struts E in the successive joists. This is because there is sufficient flexibility in the bar G to permit of drawing each portion thereof adjacent to a strut in clamping contact therewith. At the same time the bar has a high degree of rigidity in a vertical transverse plane and therefore effectively braces the whole series of joists.

Another important advantage is that the load concentrated on one beam will be distributed laterally to adjacent beams, thereby increasing the strength and the stiffness of the floor.

What I claim as my invention is:

1. In a floor construction, the combination with a series of metallic joists, each provided with top and bottom cord members, of vertical struts extending between said top and bottom cord members and provided at intermediate points with laterally projecting lugs, and a channel bar extending transversely to the series of joists adjacent to said struts and with the channel portions thereof embracing said lugs and means for clamping said bar to each of said struts to form a rigid connection thereto.

2. In a floor construction, the combination of a series of metallic joists, each comprising top and bottom cord members, of struts extending between said top and bottom cord members and rigidly attached thereto, said struts being formed of flat bars arranged in a plane transverse to the

plane of the joists, lugs projecting from said struts at a point intermediate the ends thereof, a channel bar extending transversely of the series of joists adjacent to the respective struts, and having its channel embracing each of said lugs, the flanges of said channel and the edges of said lugs being tapered to form a wedge engagement, and means for clamping said channel to the lug of each strut.

3. In a floor construction, the combination of a series of metallic joists, each comprising top and bottom cord members, of struts extending between said top and bottom cord members and rigidly attached thereto, said struts being formed of flat bars arranged in a plane transverse to the plane of the joists, lugs projecting from said struts at a point intermediate the ends thereof, a channel bar extending transversely of the series of joists adjacent to the respective struts, and having its channel embracing each of said lugs, the flanges of said channel and the edges of said lugs being tapered to form a wedge engagement, and means permanently attached to said strut for clamping said channel bar to said lug.

4. In a floor construction, the combination of a series of metallic joists each having top and bottom cord members, struts extending between said top and bottom cord members and rigidly attached thereto, said struts being formed of flat bars arranged in a plane transverse to the plane of the joists, lugs having tapering top and bottom edges projecting laterally from said struts at a point intermediate the ends thereof, a clamping arm pivotally attached to said strut, a channel bar extending in a plane transverse to the series of joists adjacent to the respective struts, the flanges of said channel embracing the tapering edges of said lugs, and a screw clamp for drawing the ends of said pivoted clamping arm to said strut and thereby clamping said channel bar in rigid engagement with said lugs.

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