Dec. 7, 1948. E. C. MEULENBERGH 2,455,904

METAL CROSS BRIDGING

Filed Sept. 25, 1945

Fig. 2

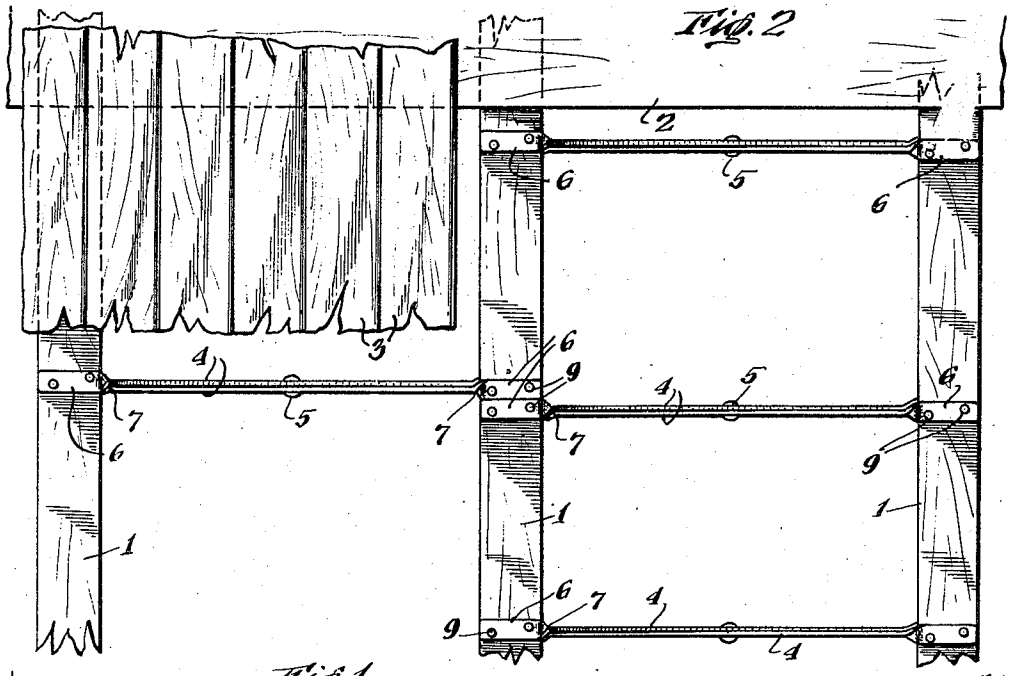
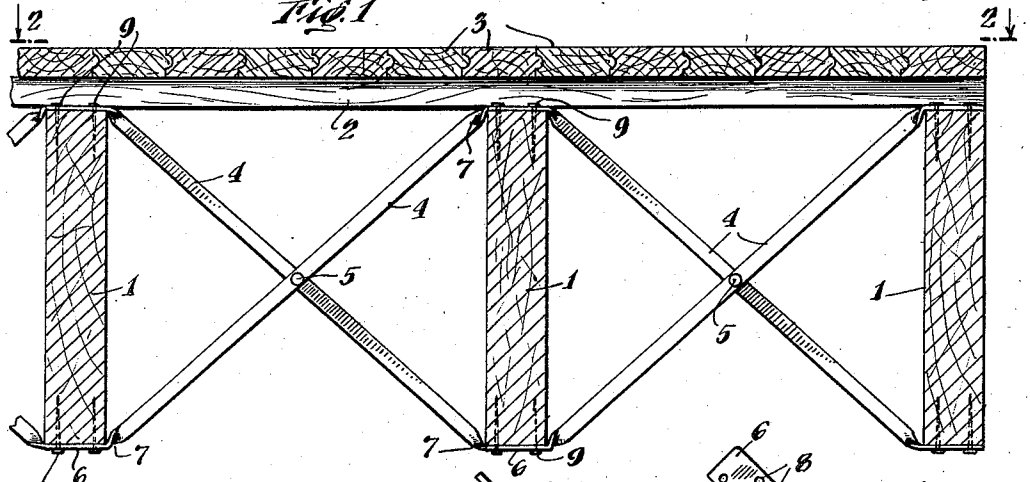


Fig. 1



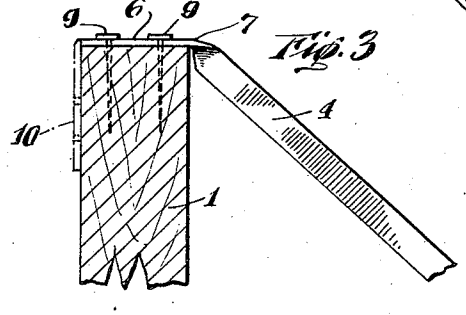


Fig. 3

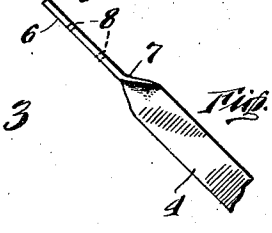


Fig. 4

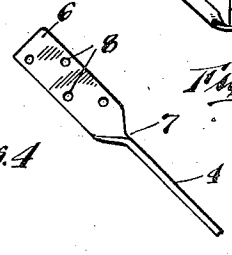


Fig. 5

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METAL CROSS BRIDGING

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2 Claims. (Cl. 20—9)

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This invention relates to improvements in metal cross braces or bridging for floor joists, wall studding and the like.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Objects of this invention are to provide an improved metal cross brace or bridging unit offering superior resistance to twisting under tension and stretching under load; to provide a bridging unit having a minimum of dust collecting surfaces thus reducing the first hazard normally incident to the use of such devices; to provide a bridging unit offering more space for pipes required to be passed therethrough; and, to provide a bridging unit which will afford a minimum of splitting of wood beams to which it may be attached and which is particularly adapted for use with joists or beams on different centers and of different depths.

Of the drawings:

Figure 1 is a transverse sectional view taken through adjacent floor joists, showing the novel application of the metal bridging units of this invention;

Figure 2 is a plan view of the improved metal bridging as applied to adjacent joists, the view being taken on the line 2–2 in Figure 1;

Figure 3 is an enlarged fragmentary view of one end of an arm of the bridging unit as applied to a floor joist; and,

Figures 4 and 5 are enlarged fragmentary views of the attaching ends of an arm of the bridging unit for application to a floor joist.

In general, there is provided in accordance with this invention a pair of thin flat metal arms which are pivotally connected at their centers in face-to-face relation. Each arm is axially twisted at each end through an arc of substantially ninety degrees to provide a relatively short flat anchoring, attaching or nailing portion at each end by which the bridging is adapted to be nailed or otherwise securely anchored to the

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top and bottom faces of adjacent beams. These attaching portions are apertured for the passage of nails, screws or other suitable fastening means into the beams, the apertures being preferably offset from each other so that splitting of the beams by in-line nails will be avoided. When installing the bridging to brace a pair of adjacent parallel beams, the pair of attaching portions at opposite ends of each arm are bent to opposite sides of the axis of the arm substantially at the start of the twist in the arm so as to parallel, or substantially parallel, each other at opposite sides of the arm's lengthwise axis. The corresponding ends of each pair of arms are then secured, as by nailing, to the top and bottom faces of the joist, stud or other beam disposed therebetween so that each twisted portion will be disposed substantially at the edge of the attaching face of the beam. Since the attaching portions of the arms terminate at their inner ends at the twists in the arms, each bridging unit may be dimensioned so as to be adapted for use with beams of selected different depths disposed on different centers. Thus, for example a bridging dimensioned for floor joists of a given depth on twelve inch centers may be used for floor joists on proportionally less depth, but greater width, disposed, for example, on sixteen inch centers. In both cases however, the twisted portion in the respective arms will lie at the edge of the beams and so will serve to position the beams accurately on centers with relation to each other.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now more particularly to the accompanying drawing, there is depicted bridging units in accordance with this invention as applied to the spacing and bracing of floor joists 1 disposed in the usual fashion in parallel relation to each other on the required centers. The joists 1, as shown form a part of a typical floor structure comprising the rough flooring or planking 2 capping the joists, and also comprising the finish flooring 3.

In the embodiment shown, each bridging unit comprises a pair of arms 4 of equal length assembled in face-to-face relation and pivotally connected midway of their ends by a rivet or other suitable pivot pin 5. Each of the arms 4 is preferably formed from a flat strip of metal which is relatively narrow in relation to its length and is correspondingly thin. As embodied, each arm

4 terminates at each end in a flat attaching portion 6 whose plane is disposed at substantially a right angle to the plane of the arm, each attaching portion being joined to the central web or body portion of the arm by an intermediate twisted portion 7. The arms 4 may be fabricated in a simple and convenient fashion by clamping a flat metal strip firmly at a short distance from one end and twisting the projecting end portion on the longitudinal axis of the strip, the twist being through an angle of substantially ninety degrees. Preferably, the twist imparted adjacent each end of each strip is in the same direction, either clockwise or counterclockwise, as viewed axially of the strip from either end. By this formation, the arms may be assembled so that the bridging unit in its closed position will have its arms in substantially wholly overlying relation with the twisted portions of each pair of corresponding ends in substantially nesting relation to each other. The closed unit thus will occupy a minimum of space and packaging of many units together for storage and shipment, will be greatly facilitated. Alternatively, however, the opposite ends of each arm may be twisted in opposite directions in a single operation to simplify the fabrication of the arms.

Each attaching portion 6 in the unit, as fabricated, will have its plane at right angles to the plane of the central web or body portion of the arm, as is best shown in Figure 4. Openings 8 are formed in each attaching portion 6 for the passage of nails or the like into the beam to which the unit is to be secured. The openings 8 are preferably disposed in more or less staggered relation to each other, thereby to avoid, as much as possible, the positioning of the nails in rows which would tend to split the beam along the grain of the wood.

In its application for two beam bridging as in Figures 1 and 2, each bridging unit is placed between the beams 1 with the twisted portions 7 at, or substantially at, the edges of the beams 1 as is best seen in Figure 3, and with the attaching portions 6 bent over onto the top or bottom of the beam, as the case may be. The unit may then be nailed securely to the beams, as by nails 9 passing through the openings 8, and the extra length 10, if any, of the attaching portion 6, bent down against the vertical face of the beam so as not to collect dust and create a fire hazard.

As will be seen in Figure 2, the bridging units may be disposed in rows between the beams or they may be installed in any other suitable fashion as required. By reason of the thinness of the metal strips of which the arms 4 are formed, they provide a minimum of dust collecting surface thereby reducing the fire hazard incident to the use of the broad surface wooden bridging members conventionally employed. Moreover, this same thinness characterising the attaching portions 6, ensures that there will be no appreciable interference with the leveling of an overlying surface such as the flooring 2. Of even more importance, however, it will be readily apparent that by having the twisted portions of the arms disposed at the inner terminus of the flat attaching portions 6, the tendency for these twisted portions to untwist under tensile stress is

measurably reduced and the unit also is able to serve as an accurate spacing tool for beams of a given height requiring a related spacing on centers. It will be obvious that where low, wide beams on wide centers are to be used, the attaching portion 6 will need to be of greater length than where higher, narrower beams are used on narrower centers. The attaching portion 6 is therefore made of a length adequate to permit use of the bridging unit with beams of different thickness and the unneeded length may be bent over when used on narrower beams as shown in Figure 3.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantage.

What I claim is:

1. An adjustable bridging for building structures comprising a pair of brace arms pivotally connected to each other, said brace arms respectively comprising a pair of substantially flat apertured attaching portions for engaging the top and bottom surfaces of a pair of spaced beams, a substantially flat web portion disposed between said attaching portions at substantially right angles to each, and a pair of connecting twist portions separately connecting said attaching portions to the adjacent ends of said web portion, each said twist portion being located substantially at the inner terminus of the attaching portion to which it is connected so as to be located substantially at an edge of the beam in the installed position of the bridging.

2. The combination with a pair of spaced beams of bridging units comprising a pair of brace arms pivotally connected midway of their ends, each said brace arm comprising an elongated sheet metal blank twisted on its lengthwise axis through an angle of approximately ninety degrees at substantially equal distances from each end, and having a flat web portion between the twist portions, and having a flat apertured attaching portion at each end extending angularly outwardly of the longitudinal axis of said blank from a line extending transversely of said blank substantially at the twist portion, each pair of attaching portions at the corresponding ends of said brace arms engaging a pair of opposite faces of the respective beams from and outwardly of said transverse lines toward the ends of said attaching portions; and, securing means passing through the apertures in said attaching portions into holding engagement with said beams.

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