Sept. 4, 1934. J. E. A. MOORE 1,972,570

METAL BUILDING PANEL

Filed Jan. 29, 1931 2 Sheets-Sheet 1

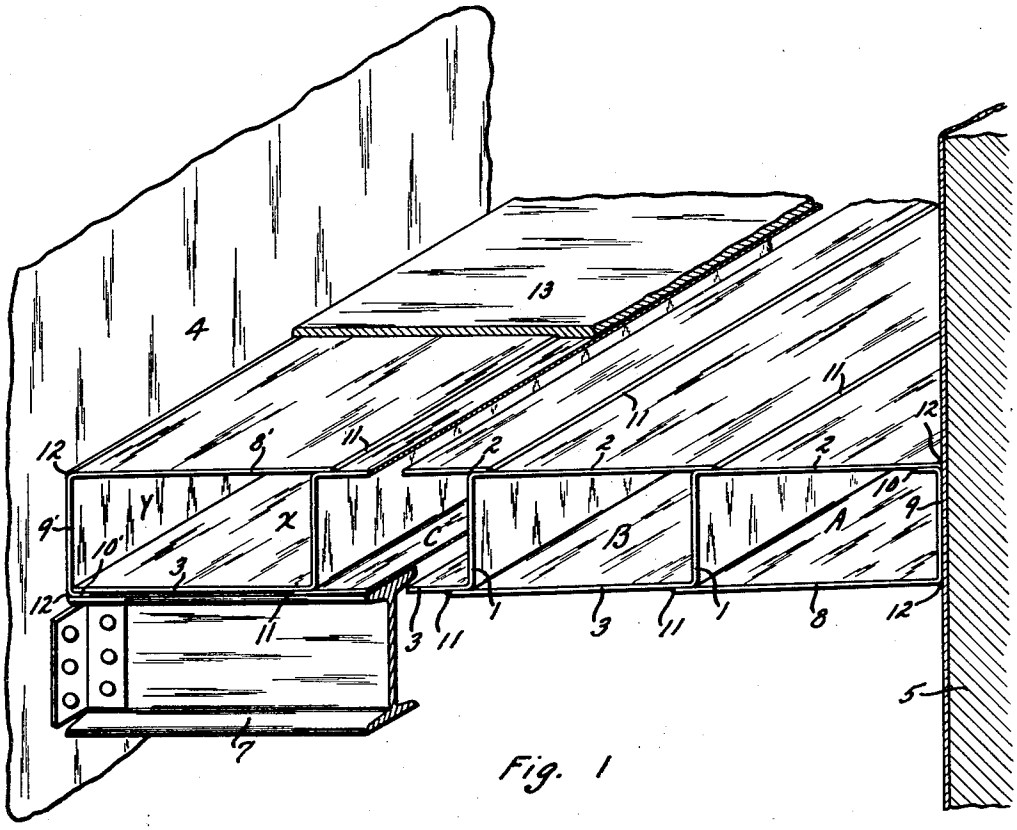


Fig. 1

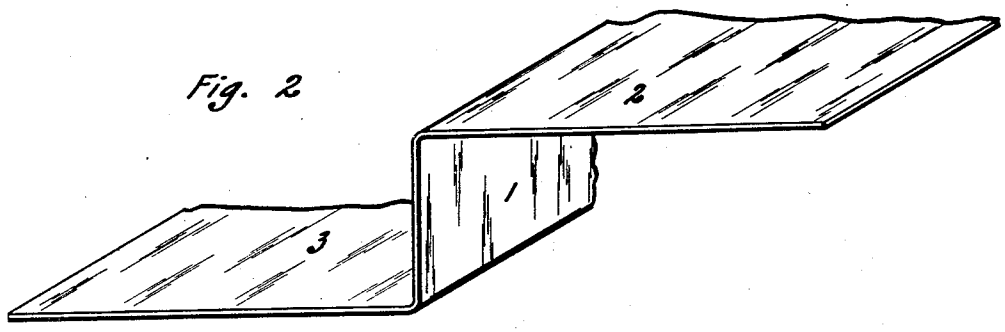


Fig. 2

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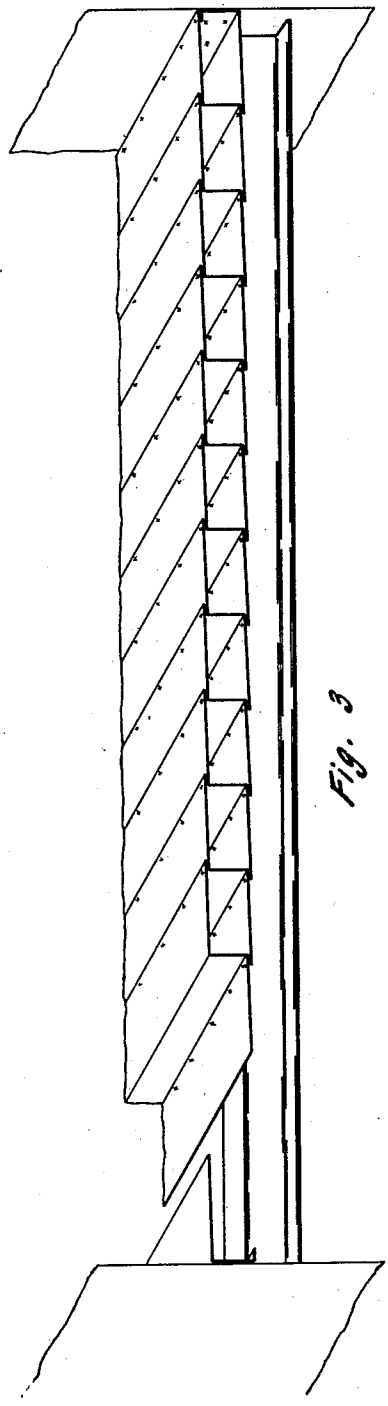


Fig. 3

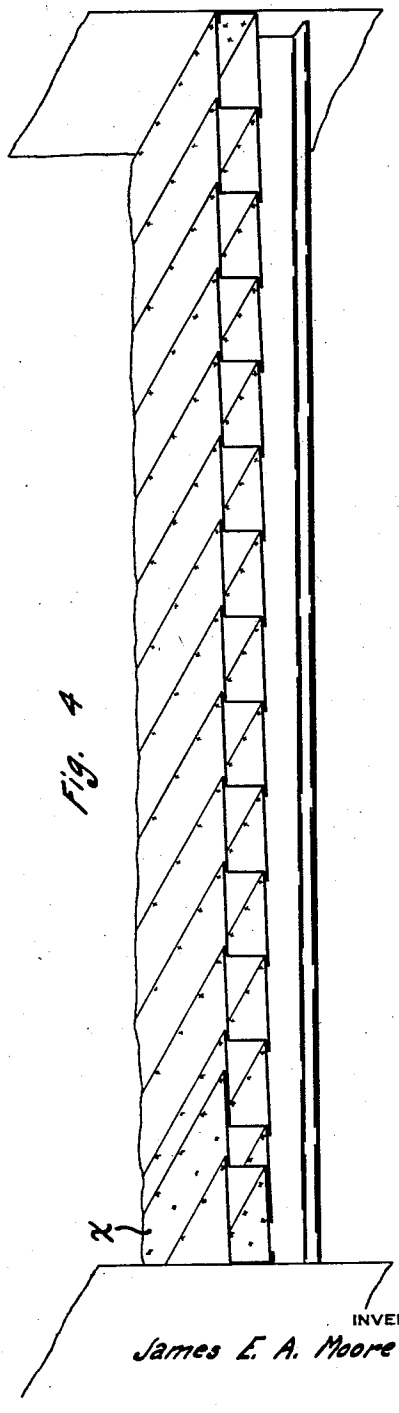


Fig. 4

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Patented Sept. 4, 1934 1,972,570

UNITED STATES PATENT OFFICE

1,972,570

METAL BUILDING PANEL

James E. A. Moore, Cleveland Heights, Ohio, assignor, by mesne assignments, to Insulated Steel Construction Company, trustee, Cleveland, Ohio, a corporation of Ohio

Application January 29, 1931, Serial No. 511,967

1 Claim. (Cl. 189—34)

This invention relates to metal building panels of box section characteristic, and the invention contemplates the provision of a novel form of unit of construction for such a panel.

More particularly the invention embraces a unit comprising a length of sheet metal bent along two longitudinal lines to form a Z-section. The unit is thus of the utmost simplicity, correspondingly inexpensive to produce, and easily handled as the form lends itself to nesting for shipment. These then represent the principal objects of the invention.

The exact nature of this invention, together with further objects and advantages thereof, will be apparent from the following description taken in connection with the accompanying drawings, in which Fig. 1 is a perspective view of a floor in which the principles of the invention are embodied, the view including a conventional showing of associated structure; Fig. 2 is a perspective view of one of the typical units employed; and Figs. 3 and 4 are conventionalized views in perspective, illustrating the manner of construction of the floor.

With reference now to the drawings, the typical unit comprises a single length of sheet metal bent rectangularly along two longitudinal lines to form the Z-section appearing in Fig. 2 wherein it will be seen that the unit includes a relatively narrow central member 1, and wider members 2 and 3 extending in opposite directions and for equal distances from the edge of the central member.

In addition to the typical Z-unit described I provide an end unit also comprising a single length of sheet metal bent along two lonigtudinal lines. The bends of this end unit, however, are in the same direction and their location such that the section formed is one of an L instead of Z. Thus in Fig. 1 this end unit comprises a long horizontal panel 8, an intermediate member 9 and a short flange or lip 10. The length of the intermediate panel 9 of the end unit is that of the central member 1 of the typical unit.

With reference now to Fig. 1, in constructing a floor according to my invention, as between opposite walls 4 and 5 of a building, the building including two or more parallel beams 7 extending between the walls 4 and 5, I first arrange an end unit A, along one of the walls as the wall 5, with its largest member 8 resting upon beams 7 so that the unit A bridges the same. The unit A is placed against the wall 5 with its intermediate member 9 overlying the same. The lip 10 will then extend from the wall as indicated.

Next, one of the typical Z-units B is added, placed as near to the wall 5 as possible, with the edge portion of its panel 2 overlying the lip 10, its intermediate member 1 vertically disposed over the edge portion of the member 8 of the end member A, and its lower member 3 outstanding therefrom and resting upon the beams 7.

A third unit C, which will be the second of the typical Z-units is next overlaid upon the unit B and the beams 7 in the same manner that the unit B was overlaid upon the unit A. This operation is repeated, using as many typical Z-units as is required by the span of the beams 7, each succeeding Z-unit being overlaid upon the one just laid.

When the wall 4 is reached another end or L-unit, Y, is employed. Here again the L-unit is arranged with its central member 9' against the wall but this time the member is arranged with its large member 8' on top and its short panel or lip 10' therebeneath and resting upon the beams 7. The next adjacent Z-unit X may be shifted to the right Fig. 1, and thereafter to the left, to get the edge of its lower horizontal member over the lip 10' of the end unit Y.

There are now overlaid upon the beams 7 the structural elements for a floor extending entirely between the walls 4 and 5. If the spacing between the walls be not exactly a multiple of the unit spacing of the vertical members 1 of the Z-units, one or more of these Z-units may be shifted, and the overlap of these units upon their next adjacent units correspondingly altered, to make the necessary adjustment, as indicated Fig. 4.

When such adjustment has been made if necessary, the floor parts are made integral by welding at the edges of the horizontal overlapping parts as at 11. The welding may extend uninterruptedly as indicated in Fig. 1, or may be only at intervals, or spot welding within the overlapping areas may be employed as indicated Figs. 3 and 4.

Or, in making up the panel the units may be welded each to the preceding one, as they are assembled, as indicated Fig. 3. A particular advantage from the use of this method is that the welding operations may be conducted from one side only of the panel; as from above if the panel be a floor, as indicated Fig. 3. This will be true including the last unit X, Fig. 4, except that the welding of the lower member of this unit will have to be accomplished from the opposite side of the panel, from below if a floor.

At any rate, once the welding be accomplished the resulting structure will be characterized by

a continuously repeated box section wherein the vertical members 1 form web elements between effectively continuous spaced top and bottom elements. The horizontal elements will then be stressed in bending as the floor is loaded and the vertical webs will prevent deflection thereof.

Preferably the end units A and Y are secured with their walls along their lengths. Thus welding is indicated at 12. Also, at the other two ends of the floor the units thereof may preferably be secured with their walls, instead of merely rested upon beams such as conventionally indicated by the I beams 7, to provide that the floor act on a catenary system in both directions should the webs fail.

That a perfectly smooth surface may be presented, and sound-proof qualities imparted to the floor, a mastic material as at 13 may be laid over the metal structure. Similarly, fire-proofing and sound-deadening material may be applied as by projection from a gun, upon the under surface of the structure; all as will be well understood by one familiar with the art.

What I claim is:

A building panel for the purpose described, comprising a plurality of similar units, each unit comprising a length of sheet metal of uniform thickness bent substantially rectangularly in opposite direction along two longitudinal lines only, to form three members each disposed in a separate plane, the outer members being parallel and the intermediate member being of substantially less width than either of the outer members, said units being assembled each with the free edge portions of its parallel members overlapping the next adjacent units at the bends of the latter and extending therebeyond, each pair of said overlapping portions being united by welding therealong.

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