Jan. 15, 1935. F. R. HIGLEY 1,988,314

METAL BUILDING PANEL

Filed Nov. 20, 1931

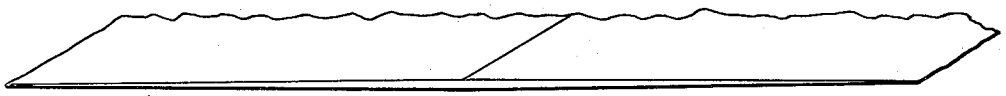


Fig. 1

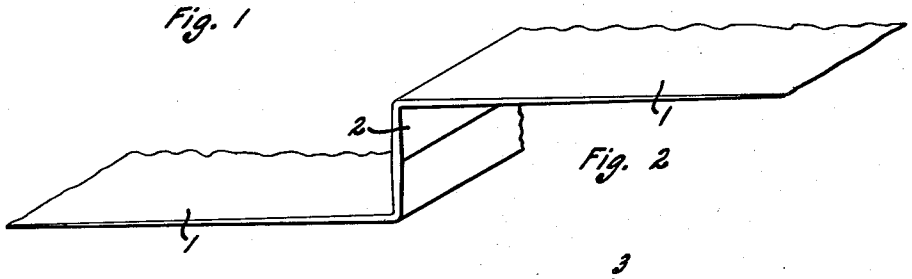


Fig. 2

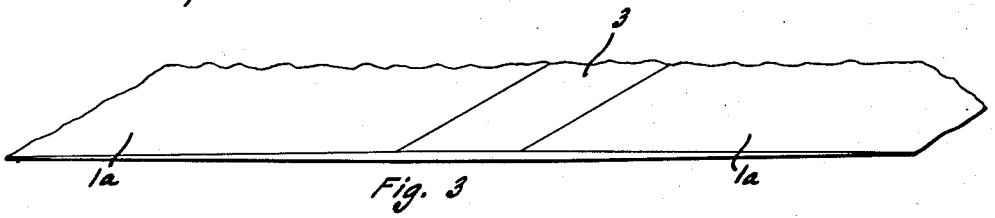


Fig. 3

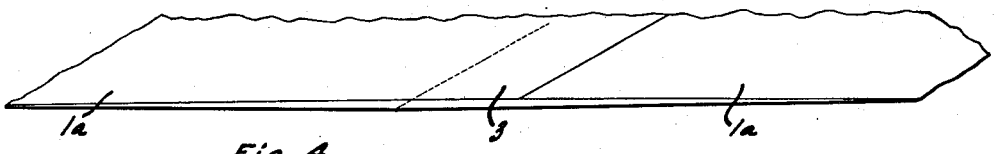


Fig. 4

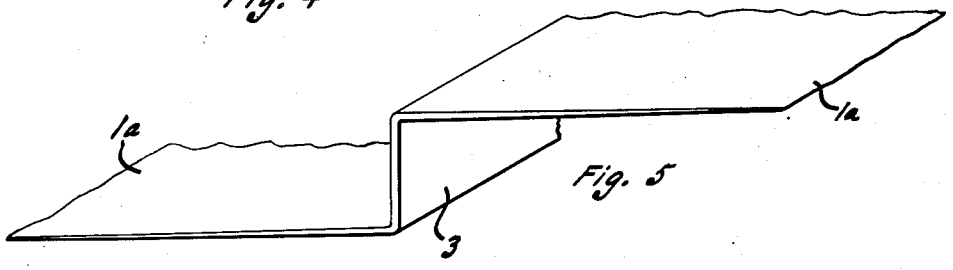


Fig. 5

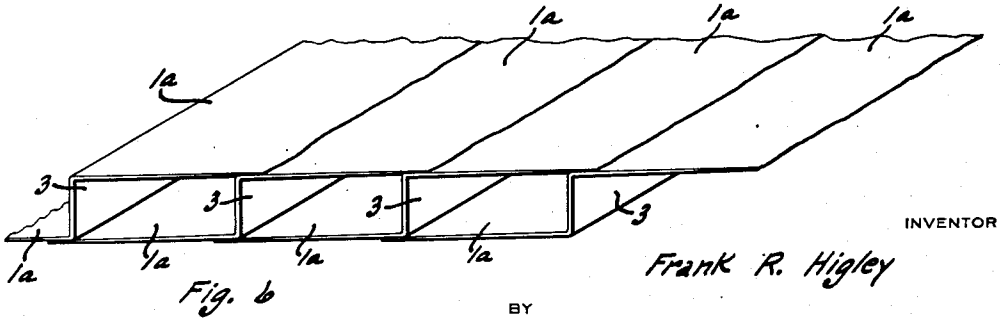


Fig. 6

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METAL BUILDING PANEL

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Application November 20, 1931, Serial No. 576,282

4 Claims. (Cl. 189—34)

This invention relates to metal units for building panels, and more particularly to such units of Z section adapted for assembly to form a panel of continuous repeated box section.

The copending application of James E. A. Moore, Serial No. 511,967, filed January 29, 1931, shows a unit for the purpose, of extreme simplicity, made by bending along two lines only a length of sheet metal of uniform thickness. The patent to Jones reissued January 12, 1926, No. 16,248, shows another form, rolled into an elaborate section; but superior in that the intermediate member has greater thickness than the two members which extend therefrom, so that the panel made up of such units may be thinner and have greater strength particularly if disposed horizontally as a floor.

Generally, the object of this invention is to provide a unit in which these principal advantages of both the Jones and Moore types are obtained.

Another object is to provide a unit made from a section better adapted for modern rolling methods than have been any sections heretofore, and from which the unit section may be had simply by bending along two lines, without the usual trimming, the lateral extremities of the rolled strip remaining as left by the rolling process. The methods referred to are those wherein the directional control of the work as it travels between the rolls, is had by the shape of both rolls and work, rather than by guiding the work from its edges.

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 drawing, all of which are end views in perspective, and in which Figs. 1 and 2 show one form before and after bending; Figs. 3 and 4 show two alternate forms before bending; Fig. 5 shows the unit resulting from the bending of the forms of both Figs. 3 and 4; and Fig. 6 illustrates a floor panel made up of units such as those shown in Fig. 5.

With reference now to the drawing, in the form shown in Figs. 1 and 2 thereof, the strip as rolled is one having maximum thickness along its median portion, the thickness diminishing with departure therefrom. Thus in transverse section and end elevation, the strip may present the characteristic of a parallelogram of which the width of the strip is the long diagonal, all as illustrated in Fig. 1, or the characteristic may be that of an isosceles triangle whose altitude is very small compared with its base. It will be seen that in either event the maximum thickness of the strip is along the plane of its center line, and the strip in section is symmetrical with respect to this plane. This symmetry, while not essential, is preferable as more easily produced by rolling methods, and hence the parallelogram form of Fig. 1 is a rhombus.

Actually, of course, the rolling process does not produce knife edges at the extremities of the strip, so that the characteristic forms discussed are more or less theoretical, and practical rather than actual. By the rolling process, however, the strip at its lateral extremities is very thin as compared with its maximum thickness along its central portion. The edges produced by rolling are rough or raw, deviating somewhat from a straight line, and as will be seen, need not be trimmed as has heretofore been the practice.

After the strip has been rolled to the described section, it is bent along two parallel longitudinal lines, Fig. 2, to form three members disposed in separate planes, the outer members 1 being substantially parallel and having thickness decreasing with departure from the intermediate member 2; and the intermediate member 2 being substantially at right angles with the outer members and having a mean thickness greater than that of the outer members. In fact the minimum thickness of the intermediate member 2, at the ends of the latter, is substantially the same as the maximum thickness of the outer members 1.

With reference now to Figs. 3 to 5 inclusive, modifications are shown which will produce the same unit section shown in Fig. 2 except that the central member 2 will have uniform thickness. The rolled section of Fig. 3, therefore, has a central portion 3 of uniform thickness, and on either side thereof portions 1a of thickness decreasing with departure from the portion 3. This form may be either the hexagon shown, with opposite sides and opposite angles equal, or it may be a trapezoid, in which case one of the side faces of the strip is disposed entirely in a plane. Or, as illustrated in Fig. 4, the form may be that of a rhombus. In any event, when the two bends are made the resulting unit will have the form of Fig. 5, with its central member 3 of uniform thickness and its outer members 1a having such thickness where they join the intermediate member and being of decreasing thickness with departure therefrom.

Fig. 6 illustrates a panel as made up of a plurality of units such as shown in Fig. 5. After the

illustrated assembly of the parts, the members 1*a* of the several units may be welded each to the next. Thus, in the panel the units 1*a* are disposed substantially in two parallel planes and the members 3 form webs extending between these planes. The characteristic of the panel is that of a continuous repeated box section wherein the webs have greater mean thickness than those of the members 1*a* in the planes joined by the webs. The panel therefore, horizontally disposed as a floor, has greater strength for supporting its load than were the mean thickness of all of the units of the panel equal.

What I claim is:

1. A building panel unit comprising a strip of metal rolled to a section having substantially minimum practical rollable thickness at its lateral extremities, with substantially greater thickness in a longitudinally extending intermediate part, with thickness gradually decreasing from said part to said extremities, said strip being bent in opposite directions along two parallel lines to form three members disposed in separate planes, wherein the outer members have thickness decreasing substantially to said minimum with departure from the intermediate member.

2. A building panel unit comprising a strip of metal rolled to a section having maximum thickness medially of its ends, and thickness decreasing thence to a minimum at its end extremities, said strip being bent in opposite directions along two parallel longitudinal lines to form three members disposed in separate planes, wherein the outer members have thickness decreasing with departure from the intermediate member, and the intermediate member has maximum thickness intermediate the bends and is of decreasing thickness thence toward the bends.

3. A building panel unit comprising a strip of metal rolled to a section having a portion of maximum thickness intermediate its ends, and having thickness gradually decreasing from said portion to said ends with substantially minimum practical rollable thickness at said ends, the width of said thicker portion being small relative to the width of the portions on either side thereof, said strip being bent in opposite directions along the lines of joinder of said portions to form three members disposed in separate planes, the intermediate member being narrow and having uniform maximum thickness and the outer members being wider and having thickness decreasing toward their free edges to said minimum.

4. A metal building panel assembly of a plurality of units, each comprising a strip of metal rolled to a section having substantially minimum practical rollable thickness at its lateral extremities, having maximum thickness in an intermediate part, and having thickness decreasing from said part to said extremities, said strip being bent in opposite directions along two parallel longitudinal lines to form three members disposed in separate planes, wherein the outer members are parallel and have thickness decreasing to said minimum with departure from the intermediate member, the panel being of continuous repeated box section built up from said units, the thicker intermediate members of said units forming webs in the section, each unit having the thin free edge parts of its side members overlying the near bends of the next adjacent units, whereby the faces of the panel are substantially uninterrupted at the overlap of said units, and are joined in spaced relation by said webs, of greater mean thickness than that of the faces.

FRANK R. HIGLEY.