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BOUNDARY FRAME MEMBERS FOR MOULDING PANELS

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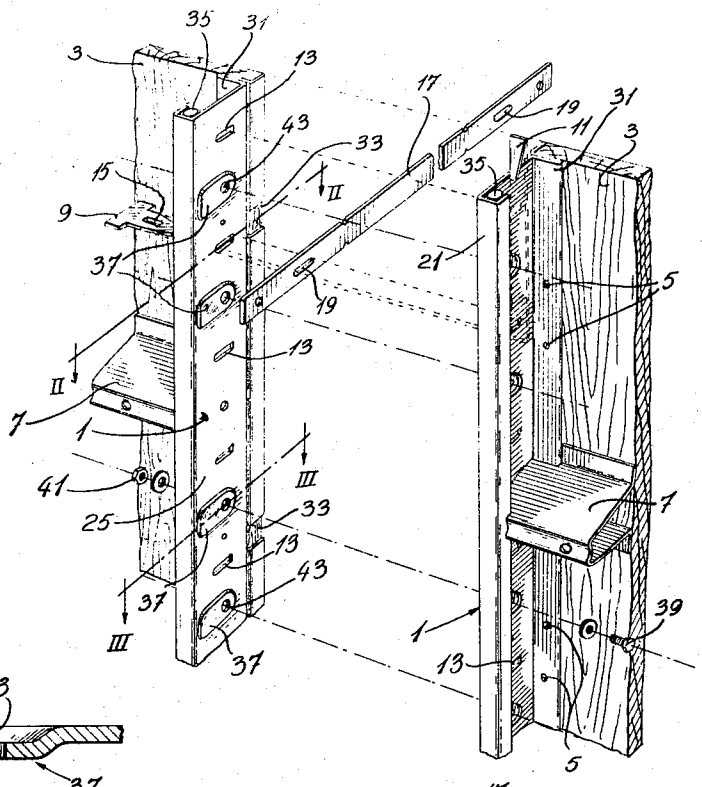


Fig. 1

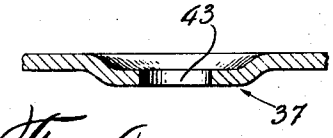


Fig. 4

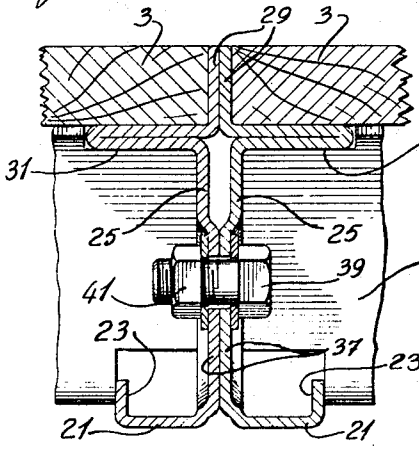


Fig. 3

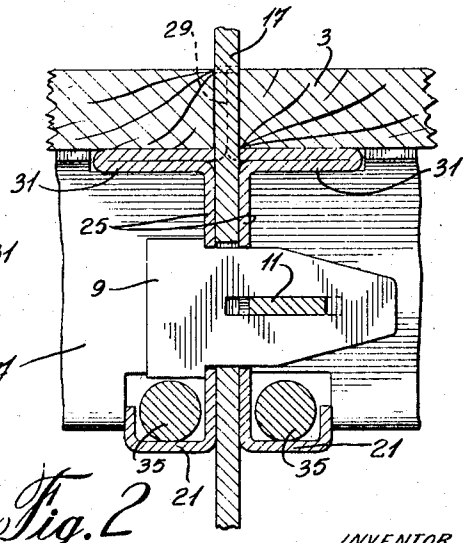


Fig. 2

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BOUNDARY FRAME MEMBERS FOR MOULDING PANELS

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ABSTRACT OF THE DISCLOSURE

A boundary frame member comprising an elongated metal strip having, in cross-section, a flat edge extending in to a double ply rib projecting at right angles thereto, a web portion extending from the rib parallel to the flat edge and recessed therefrom in the direction of the rib. The web portion defining at the end away from the flat edge a hook-shaped reinforcing flange projecting in the direction of the rib. The web portion having along the center line thereof a series of bulges defining flat protruding surfaces along its length flush with the edge and the flat edge being punched out at intervals in between the bulges to provide clearance openings for tie bars.

The present invention relates to a boundary frame member for interconnecting concrete moulding panels used in concrete forming equipment for pouring concrete, cement and the like in the manufacture of foundations and building structures.

The present invention is particularly an improvement over the applicant's prior invention issued as Canadian Patent No. 588,509 on Dec. 8, 1959.

The present invention relates in particular to the boundary member of the frame structure of a form panel. The boundary frame member is formed from a single sheet of metal, bent over its entire length with a cross-section having a high bending resistance and providing a bearing rib to support the pouring face panel.

It is an object of the present invention to provide a boundary frame panel having an improved bending resistance over the known boundary frame members.

It is another object of the present invention to obtain a more economical frame member.

It is a further object of the invention to obtain an improved boundary frame member having an increased resistance for an equal weight of material.

Still another object of the invention consists in reducing the number of operations in the manufacture of the frame member.

An additional object of the invention consists in providing flat protruding surfaces along the length of the frame member so that two frame members may be solidly connected together to facilitate their transportation.

A boundary frame member according to the present invention comprises an elongated strip having in cross-section a flat edge extending into a double ply rib projecting outwardly at right angle to the said flat edge, a main flat portion extending from the rib and being parallel to the flat edge and inwardly recessed from the projection of the said edge, the said main portion extending outwardly into a hook-shaped flange.

One form of embodiment of the invention will now be described by way of an example with reference to the accompanying drawing in which:

FIGURE 1 is an explosive view of two boundary frame members with form panels;

FIGURE 2 is a detailed view of FIGURE 1 taken along section line II—II;

FIGURE 3 is a detailed view of FIGURE 1 taken along section line III—III;

FIGURE 4 is a vertical cross-section view of a flat protruding surface on the frame member.

FIGURE 1 shows a combination of two boundary frame members **1** usually made of metal fixed to two form panels **3** by means of rivets **5** and reinforcing crossbars **7**.

The two boundary frame metal members **1** are adapted to be connected together by a lock plate **9** and a wedge **11**, wherein the lock plate **9** passes through slotted apertures **13** punched out of the frame member **1**. The wedge **11** is introduced into the slot **15** located in the lock plate **9**.

In order to fix apart two sets of form panels, tie bars **17** are fixed between the frame members **1** and are retained between them by lock plate **9** passing through the slot **19** in the T bar **17**.

One improvement of the present invention consists in reinforcing the frame member with hook-shaped flanges **21** extending at 90° from the main portion or web of the boundary frame member **1**. The edges **23** of the hook **21** are bent in a parallel to the web **25** of the frame member **1**. The hook-shaped flanges **21** increase the bending resistance of the frame member known in the prior art.

The bending resistance of the frame member **1** has also been improved by reducing the number of cut-away portions which are required for supporting the tie bars **17**. Accordingly, a flat edge **29** extends into a double-ply rib **31**, the said rib **31** extending into the web portion **25**, the said web portion extending itself into the hook-shaped flanges **21**. The web portion **25** is parallel to the flat edge **29** but is inwardly recessed in relation to the said flat edge **29**. The recessed distance between the flat edge **29** and the web portion **25** is equal to half the thickness of the tie bar **17**. As it may be seen from FIGURES 1 and 2, when the two flat edges **29** of two adjacent frame members **1** come in contact with each other, the web portions **25** of the said adjacent frame members define a space equal to the thickness of the tie bar **17**. To allow passage of the tie bars **17**, cut-away spaces **33** are punched out of the flat edge **29**. It should be noticed that cut-away spaces **33** are required only in the flat edge **29**. This is an improvement over the frame member according to Canadian Patent No. 588,509 previously mentioned wherein cut-away spaces are required at both edges of the frame member. By dividing by **2** the number of cut-away spaces, it may easily be realized that the bending strength of the frame member is increased.

In order to strengthen the frame members **1**, stiffening rods **35** may be secured inside the hook-shaped flanges **21**. The rods **35** are usually welded to the flanges **21**.

When the boundary frame members **1** are assembled on the location where the concrete is to be poured, the tie bars **17** are sufficient to hold the frame members together. If the said members are assembled at the factory, bulges **37** having a flat outer surface are provided on the web portion **25**. As it may particularly be seen in FIGURE 3, the flat surface of bulges **37** of two adjacent frame members abut one another when assembled. A hole **43** is punched through each of the bulges **37**. The two adjacent bulges **37** are connected together by means of a bolt **39** and a nut **41**. It may be seen that the two frame members connected by a plurality of such bulges are capable of withstanding substantial stresses, during the transportation of the assembled frame members.

The improved boundary frame metal members **1** are strengthened by means of a hook-shaped flange **21**, by reduction of the number of cut-away spaces **33** and by the optional addition of stiffening rods **35**. The new and improved boundary frame members present a structure which also permits their transportation while the frame members are connected to each other.

Although a specific embodiment of the invention has just been described, it will be understood that various

modifications may be made thereto without departing from the invention, the scope of which is only to be construed from the appended claims.

I claim:

1. A boundary frame member for interconnecting concrete moulding panels, said member to be connected to a like oppositely facing member by means of tie bars, said frame member comprising an elongated strip having, in cross-section, a flat edge extending into a double ply rib projecting at right angles thereto and defining therewith an angular recess for the reception of the edge of one of said panels, a web portion extending from said rib parallel to said flat edge and recessed therefrom in the direction of said rib a distance about equal to half the thickness of said tie bars, said web portion defining at the end away from said flat edge a hook-shaped reinforcing flange projecting in the direction of said rib, said web portion having along the central line thereof a series of bulges defining flat protruding surfaces along its length flush with said edge to abut like surfaces on an adjacent frame member to serve to connect said frame members together and said flat edge punched out at intervals in between said bulges to provide clearance openings for said tie bars.

2. A boundary frame member as recited in claim 1 wherein the hook-shaped flange projects outwardly at 90° from said web portion, the edge of the said flange being parallel to said web portion.

3. A boundary frame member as recited in claim 1 wherein the hook-shaped flange is reinforced with a rod secured inside the hook.

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