May 20, 1969 H. R. FINK, JR., ETAL 3,444,664

RIBBED WEB GIRDER

Filed Jan. 16, 1967 Sheet 1 of 2

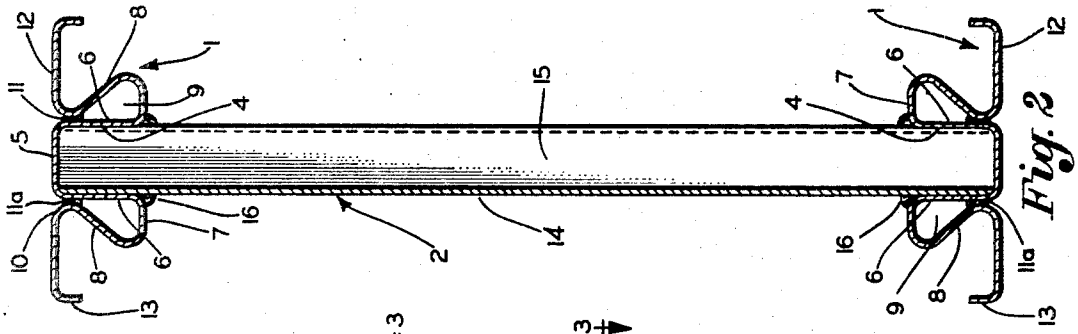


Fig. 2

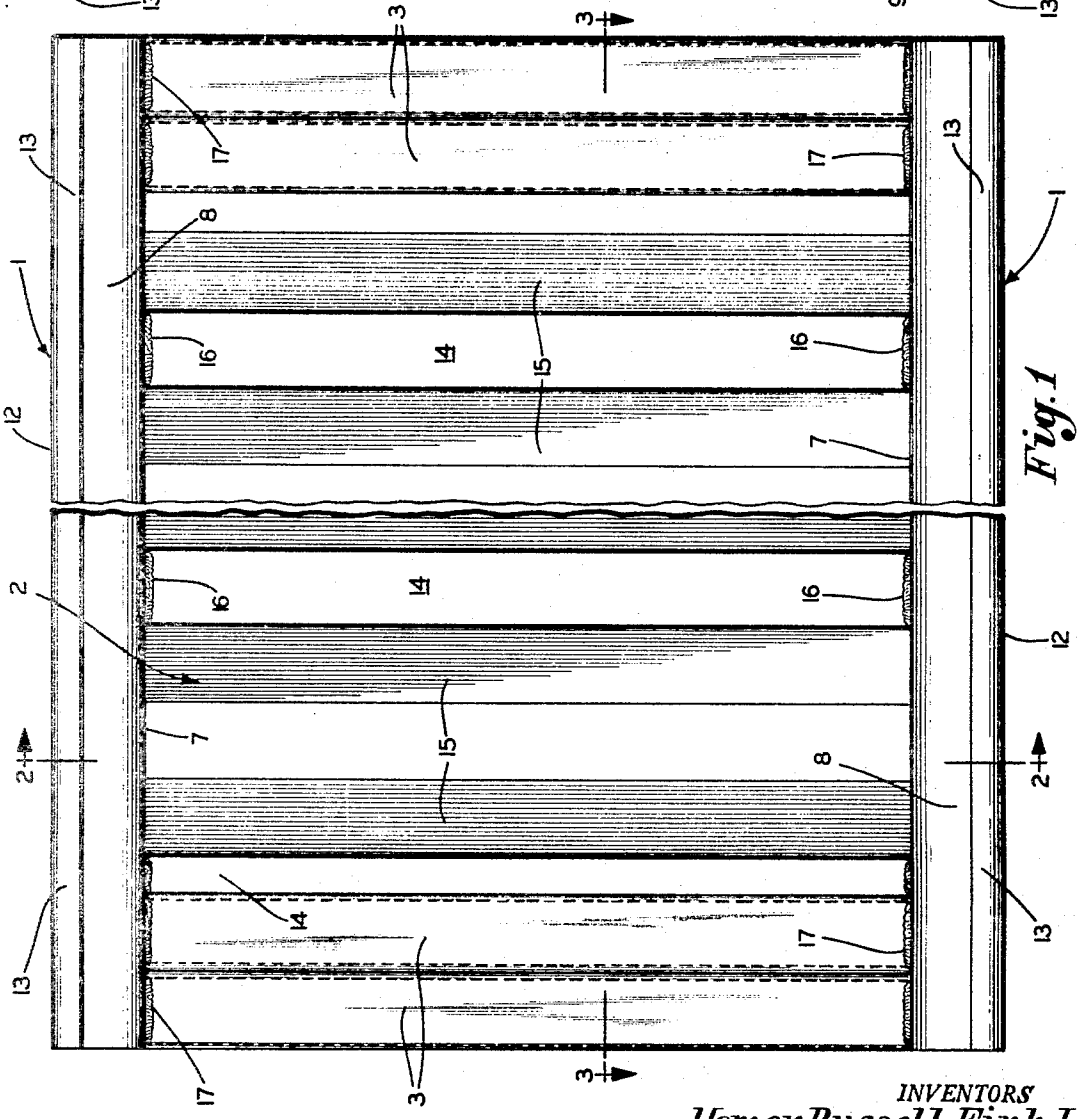


Fig. 1

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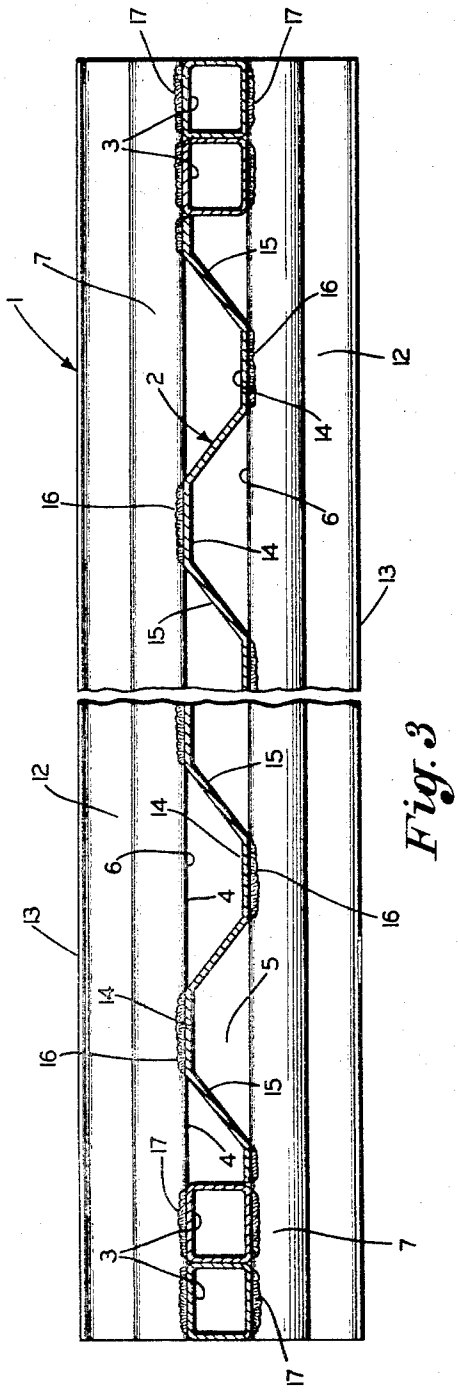


Fig. 3

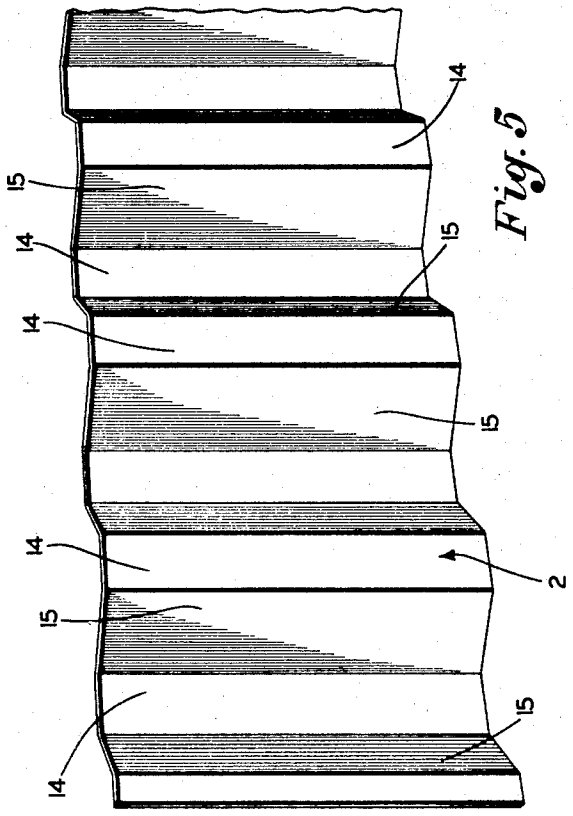


Fig. 5

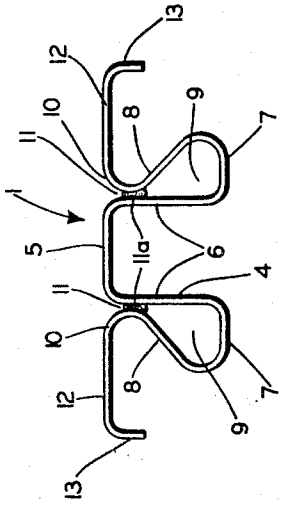


Fig. 4

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United States Patent Office 3,444,664 Patented May 20, 1969

3,444,664

RIBBED WEB GIRDER

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Filed Jan. 16, 1967, Ser. No. 609,568
Int. Cl. E04c 3/07; E04b 5/10
U.S. Cl. 52—732 3 Claims

ABSTRACT OF THE DISCLOSURE

A fabricated girder having a ribbed web formed of a continuous sheet or strip of transversely corrugated or ribbed sheet metal formed of a roof deck sheet or the like. Top and bottom chords of the girder comprise sheet metal structural members each having a longitudinal groove within which the adjacent edge of the ribbed web sheet is welded. Tubular sheet metal posts reinforce the ends of the girder.

BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to fabricated structural members and more particularly to a girder having similar top and bottom chords or flanges each comprising a sheet metal structural member having a central longitudinal groove therein and a web member formed of a ribbed or corrugated metal sheet, the upper and lower edges of which are received and welded within the grooves of the chord members.

Description of the prior art

In the prior art the only sheet metal structural elements known to applicants having a transversely ribbed or corrugated web sheet were provided with chord members comprising flat strips of sheet metal welded to the upper and lower edges of the web sheet or strip which was of substantially undulating or serpentine form.

The only known fabricated structural elements having top and bottom chord members comprising a strip of sheet metal having a longitudinal groove receiving the adjacent edge of the web member were provided with a web comprising a bar or rod bent to zig-zag form.

SUMMARY OF THE INVENTION

The invention may be briefly described in general terms as comprising a fabricated structural member such as a girder having top and bottom chords each of which is in the form of a structural member comprising a metal strip formed to provide spaced tubular cells having a longitudinal groove therebetween, the terminal edges of the metal strip forming oppositely disposed flat flanges with reinforcing terminal bends, as shown in Macomber Patent No. 2,630,890, issued Mar. 10, 1953.

The web member of the improved girder is in the form of a transversely corrugated or ribbed strip of sheet metal such as a roof deck or the like, the upper end lower edges of which are received within and welded to the longitudinal groove portions of the chord members. Tubular posts may be located at opposite ends of the girder, the opposite ends of the posts being received within and welded to the longitudinal groove portions of the chord members.

It is, therefore, an object of the invention to provide a ribbed web girder having top and bottom chord members each comprising a structural member formed from a metal strip having spaced tubular cells separated by a longitudinal groove and a transversely corrugated ribbed web strip having edge portions received within and welded to the groove portions of the chords.

The above objects together with others which will be apparent from the drawings and following description, or which may be later referred to, may be attained by constructing the improved ribbed web girder in the manner hereinafter described in detail and illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of a girder embodying the invention;

FIG. 2 is a vertical transverse section through the girder taken on the line 2—2, FIG. 1;

FIG. 3 is a longitudinal, or horizontal, sectional view through the girder taken on the line 3—3, FIG. 1;

FIG. 4 is an enlarged end elevation of one of the chord members; and

FIG. 5 is a fragmentary perspective view of a portion of the ribbed web member.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the embodiment of the invention illustrated, the improved girder to which the invention pertains is built up of fabricated sheet metal elements comprising generally the top and bottom chords 1—1, the ribbed web sheet 2 and the reinforcing tubular posts 3.

Each of the chord members, indicated generally at 1, is in the form of a structural member formed of a metal sheet as shown in FIGS. 8 and 10 of Macomber Patent No. 2,630,890, dated Mar. 10, 1953. Each of these chord members is formed of a strip of sheet metal of suitable gauge and length and comprises the central longitudinal groove portion 4 having the flat top wall 5 and the straight vertical side walls 6 which merge into the rounded bends 7, from which the side walls 8 converge forming spaced triangular cells 9 on opposite sides of the central groove portion 4.

At their ends the walls 8 merge into the rounded bends 10 forming the longitudinally spaced, parallel nailing grooves 11, after which the chord member terminates in the oppositely disposed horizontal flanges 12, in the plane of the outer wall 5, with angular terminal flanges 13.

In order that the grooves 11 be held to a definite spacing, as well as for further stiffening and reinforcing the chord member, these grooves may be welded or otherwise attached at intervals as indicated at 11*a*.

The web member 2 is a strip of corrugated sheet metal, such as a roof deck sheet, having alternate flat portions 14 located in two spaced parallel planes and connected by oppositely angled diagonal portions 15. The upper and lower edge portions of the ribbed web sheet 2 are inserted into the grooves 4 of the top and bottom chords and welded thereto as indicated at 16.

For the purpose of reinforcing and strengthing the ends of the girder, one or more tubular sheet metal posts 3 are located at each end thereof, the upper and lower ends of the posts being received in the groove portions 4 of the chord members and welding thereto as indicated at 17.

From the above it will be apparent that an economical, strong and efficient girder may be formed entirely of sheet metal, the chords and web member of the girder comprising easily obtainable fabricated sheet metal elements.

In the foregoing description certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiments of the improved construction illustrated and described herein are by way of example, and the scope of the present invention is not limited to the exact details of construction.

Having now described the invention or discovery, the construction, the operation, and use of preferred embodiments thereof, and the advantageous new and useful results obtained thereby; the new and useful construction, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

We claim:

1. A ribbed web grider including a top chord comprising a structural member formed of a single strip of sheet metal longitudinally bent so that the longitudinal central portion of the strip forms the top wall of the structural member, the strip at each edge of said top wall extending downward parallel to each other forming a longitudinal groove, the opposite edge portions of the strip extending then outward and then upward and inward and welded to the adjacent edges of said top wall, and then outward forming outwardly disposed flanges in the plane of said top wall, a similar bottom chord inverted and spaced below and parallel to the top chord, and a web member comprising a transversely corrugated strip of sheet metal, the corrugations in the web member having flat portions alternately located in two spaced parallel planes and connected by oppositely angled diagonal portions, the upper and lower edges of said web member being located in and welded to the grooves of the chord members.

2. A ribbed web girder as defined in claim 1, in which at least one tubular sheet metal post is located in each end portion of the girder, adjacent to each end of the corrugated sheet metal web member, the upper and lower ends of the posts being located in and welded to the grooves of the chord members.

3. A ribbed web girder as defined in claim 2, in which the tubular posts are rectangular in cross section.

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U.S. Cl. X.R.

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