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P. VOLTZ ET AL

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STEEL TIES

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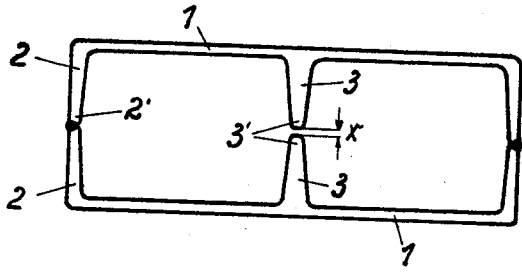


Fig. 1

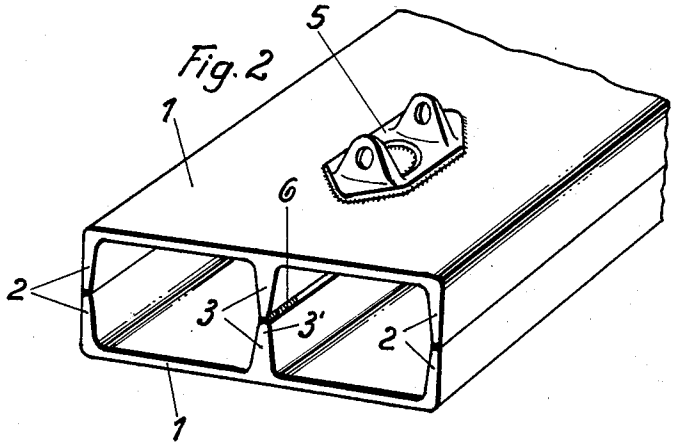


Fig. 2

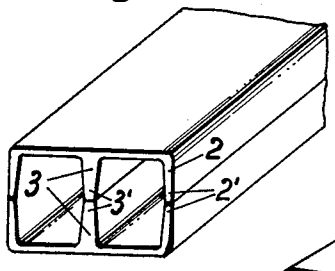


Fig. 4

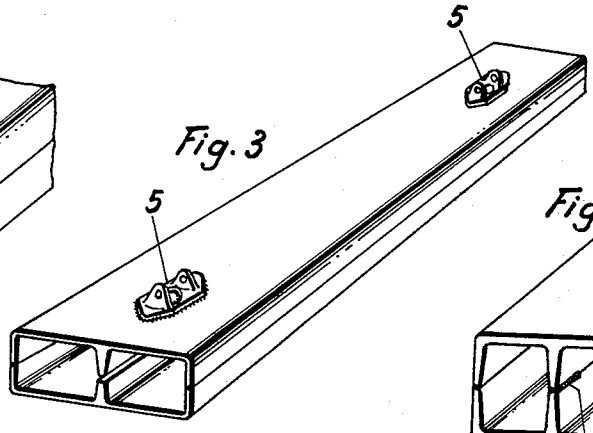


Fig. 3

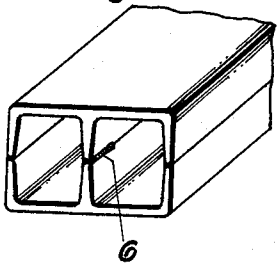


Fig. 5

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STEEL TIES

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5 Claims. (Cl. 238—72)

The present invention relates to structural elements consisting of steel beams, and more particularly to railroad steel ties.

It is known to use steel ties for railroad tracks. It is also known to provide steel ties with longitudinal extending reinforcing ribs in order to increase the moment of resistance of the tie and to prevent deformation of the same. Such steel ties may for instance consist of a tubular member in which an I-beam is provided. Other known steel ties consist of an I-beam with tubular segments laterally welded thereto. Further known constructions providing a reinforcing rib by forming the same of the sheet metal of the ties have the disadvantage that the small bending radii which are required considerably reduce the resistance of the tie against denting.

It is the object of the present invention to overcome the disadvantages of the known constructions of steel railroad ties, and to provide a structural element consisting of two oppositely arranged rolled E-beams, the middle ribs of such E-beams reinforcing the structural element.

The term E-beam as used in this application applies to a beam or channel produced by rolling and having a web from one side of which two outer flanges project in one direction, and a middle rib located on the same side and between the outer flanges so that the cross-section of the beam has the shape of an E.

It is another object of the present invention to arrange two E-beams with the free edges of the outer flanges of the same abutting against each other.

It is a further object to use in a railroad tie according to the present invention two identical E-beams having the same height so that the abutting edges are located in a zone which is free of tensile forces and pressure forces during bending of the railroad tie.

With these objects in view the present invention mainly consists of a structural element comprising two oppositely arranged E-beams, the E-beams being arranged with the free edges of the outer flanges of each E-beam abutting against the free edges of the outer flanges of the other E-beam, and means securing the abutting edges of the outer flanges of the E-beams to each other.

The outer flanges of the E-beams are preferably welded together along the entire length of the abutting edges thereof and the abutting edges are preferably shaped in such a manner as to permit the application of a suitable welding seam.

According to a preferred embodiment of the present invention the free edges of the middle ribs are spaced from each other in order to obtain a slight resiliency of a steel tie for the support of railroad tracks.

According to another embodiment of the present invention the two middle ribs abut against each other along the free edges of the same for obtaining a more rigid structure.

In both embodiments the end portions of the middle ribs are preferably welded together as far inside the box-shaped structural element as the welding apparatus can be inserted.

A structural element of the type described is preferably made by producing by rolling a long E-beam from which pieces having the length required for the element are severed. According to another preferred process E-beams having the length required for the structural element are directly produced by a rolling operation.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a side view of a structural element according to a preferred embodiment of the present invention;

Fig. 2 is a fragmentary isometric view of a steel tie according to the present invention;

Fig. 3 is a isometric view of a steel tie according to the present invention;

Fig. 4 is a side elevation of another embodiment of the present invention; and

Fig. 5 is a fragmentary isometric view of a further embodiment of the present invention.

Referring now to the drawing two E-beams 1 are arranged oppositely each other with the outer flanges 2 abutting against each other along the free edges 2' and secured to each other by a welded seam 4. According to the embodiment shown in Fig. 1, the free edges 3' of the middle ribs 3 are spaced from each other for a distance x.

According to the embodiment shown in Fig. 4 the free edges 3' of the middle ribs abut against each other.

As shown in Figs. 2 and 5, the end portions of the middle rib are preferably welded together at 6. Figs. 2 and 3 show elements 5 to which railroad tracks are secured, if the structural element is used as a railroad tie.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of a structural element consisting of two rolled beams differing from the types described above.

While the invention has been illustrated and described as embodied in a railroad tie comprising two E-beams abutting against each other along the free edges of the outer flanges thereof, and welded together, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A hollow railroad tie element for dredger tracks, comprising two identical oppositely arranged E-beams, each E-beam having a web, two outer flanges, and a middle rib, said E-beams being arranged with the free edges of said outer flanges of each E-beam abutting against the free edges of said outer flanges of the other of said E-beams, and being welded to the same.

2. A railroad tie element, comprising two oppositely arranged E-beams, each E-beam having a web, two outer flanges, and a middle rib, said E-beams being arranged with the free edges of said outer flanges of each E-beam abutting against the free edges of said outer flanges of the

other of said E-beams, and being welded to the same, the free edges of said middle ribs of said E-beams being spaced from each other.

3. A railroad tie element, comprising two oppositely arranged E-beams having the same height and width, each E-beam having a web, two outer flanges, and a middle rib, said E-beams being arranged with the free edges of said outer flanges of each E-beam abutting against the free edges of said outer flanges of the other of said E-beams, and being welded to the same, the free edges of said middle ribs of said E-beams being spaced from each other.

4. A railroad tie element, comprising two oppositely arranged E-beams, each E-beam having a web, two outer flanges, and a middle rib, said E-beams being arranged with the free edges of said outer flanges of each E-beam abutting against the free edges of said outer flanges of the other of said E-beams, and being welded to the same, the free edges of said middle ribs of said E-beams being spaced from each other, the end portions of said middle rib of each E-beam being welded to the corresponding adjacent end portions of said middle rib of the other of said E-beams.

5. A railroad tie element, comprising two oppositely arranged E-beams, each E-beam having a web, two outer flanges, and a middle rib, said E-beams being arranged with the free edges of said outer flanges of each E-beam abutting against the free edges of said outer flanges of the other of said E-beams, and being welded to the same, the free edges of said middle ribs of said E-beams being spaced from each other, the end portions of said middle rib of each E-beam being welded to the corresponding adjacent end portions of said middle rib of the other of said E-beams; and two longitudinally spaced attaching means for attaching railroad tracks to the outer face of the web of one of said E-beams, said attaching means being secured to the web of said one E-beam above the middle rib thereof.

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