

July 21, 1925.

1,546,586

I. JOHNSEN

STEEL RIB FOR CONCRETE CONSTRUCTIONS

Filed March 2, 1925

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Fig. 1.

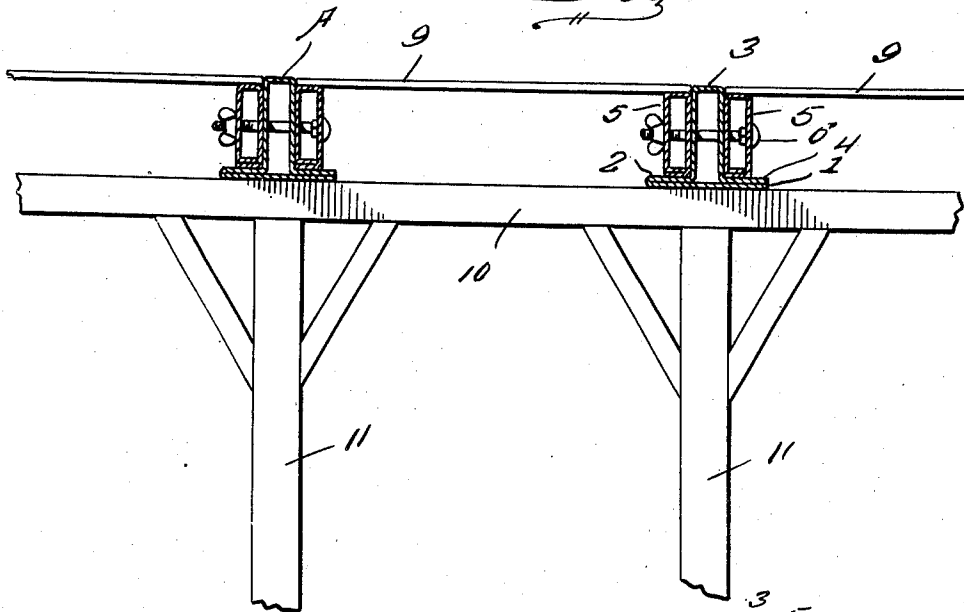
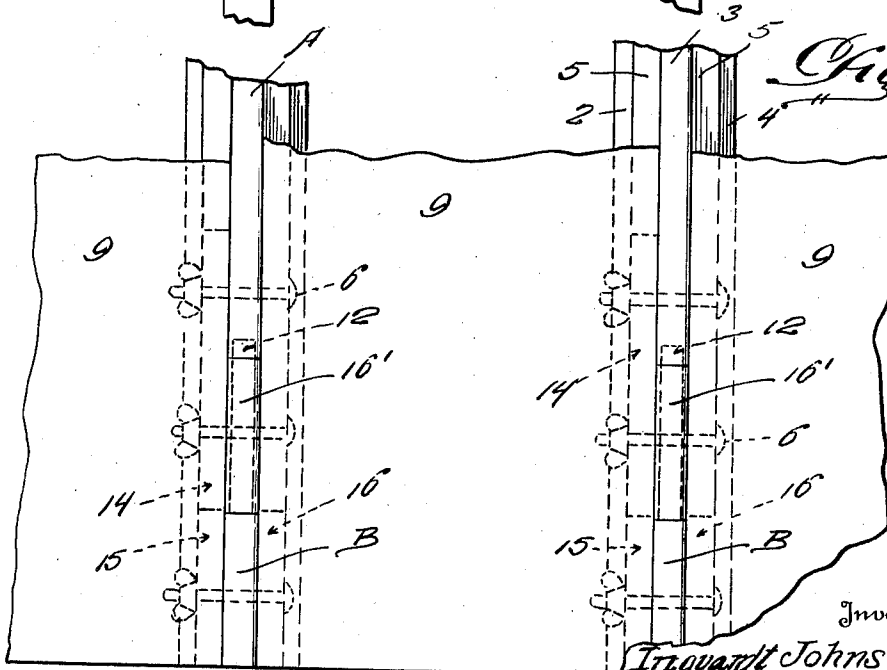


Fig. 2.



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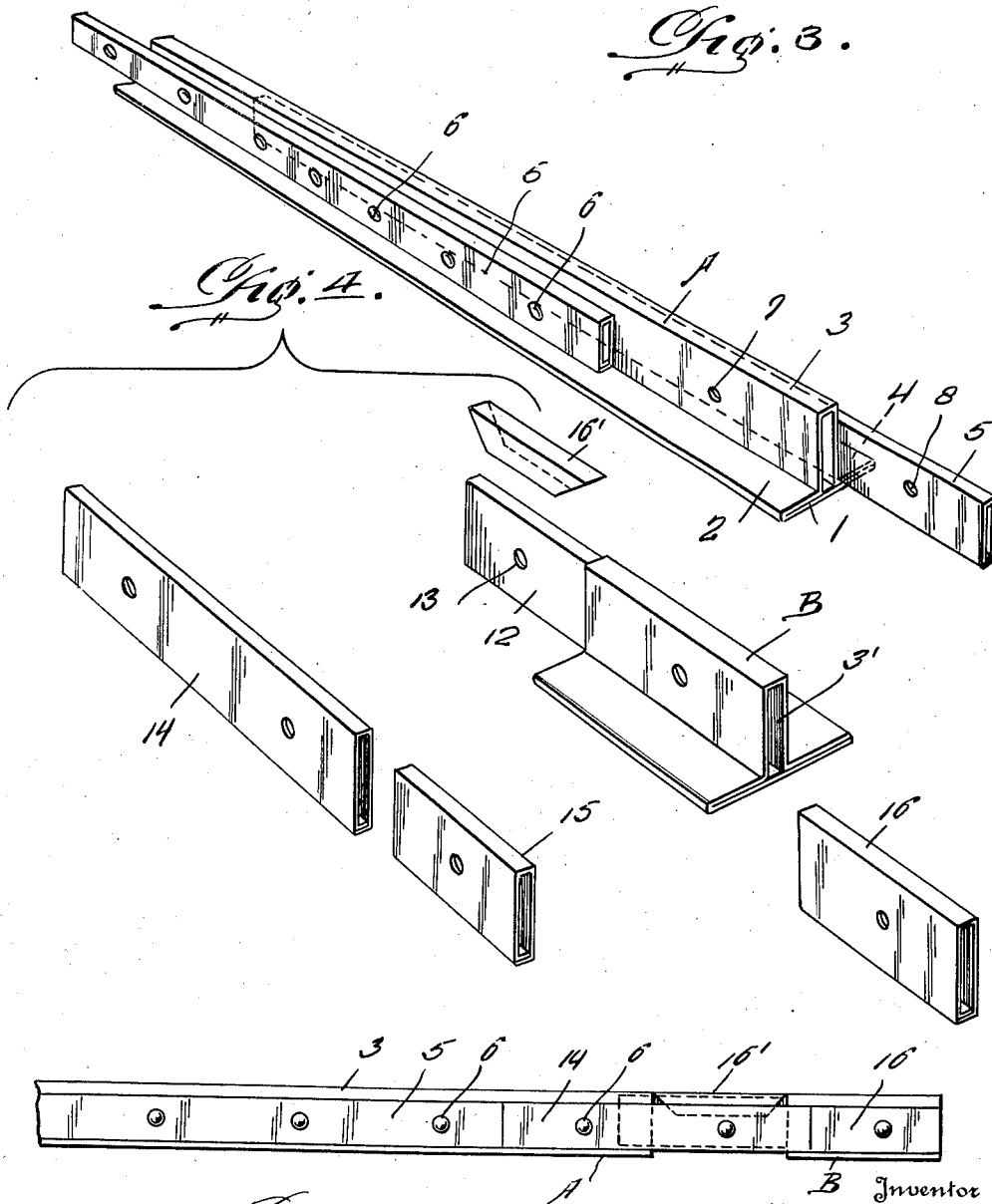


Fig. 5.

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1,546,586

UNITED STATES PATENT OFFICE.

INGVARDT JOHNSEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

STEEL RIB FOR CONCRETE CONSTRUCTIONS.

Application filed March 2, 1925. Serial No. 12,601.

To all whom it may concern:

Be it known that I, INGVARDT JOHNSEN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Steel Ribs for Concrete Constructions, of which the following is a specification.

This invention relates to ribs for concrete constructions and particularly for use in forming ceilings and walls.

The principal object of the invention is to provide a rib with a knock-down structure that may be easily and quickly assembled or disassembled.

Another important object of the invention is to provide a rib structure which is strong, durable, efficient and reliable and otherwise well adapted to the purpose for which it is designed.

Another specific important object of the invention is to provide an end structure for the ribs which may be quickly attached to the ends so as to finish the rib structure.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:—

Figure 1 is a sectional view through a pair of the rib structures showing the supports therefor in elevation.

Figure 2 is a fragmentary top plan view of the structure shown in Figure 1.

Figure 3 is a perspective view of one of the rib sections.

Figure 4 is a disassembled perspective view of one of the end sections, and

Figure 5 is a side elevation of one of the main rib sections and one end section assembled thereon.

Referring to the drawing in detail, it will be seen that A designates the ribs generally, and each is formed from a single sheet of metal preferably steel which is bent over upon itself so as to provide a base 1, a ledge 2 which merges in an inverted U-shaped web 3 which in turn terminates in the other ledge 4. The ledges 2 and 4 lie flat on the base 1 while the web 3 is disposed perpendicularly therebetween. A pair of strips 5 are disposed alongside of the web 3, one on each side thereof and projecting beyond

the opposite ends thereof, as is clearly shown in Figure 3. These strips 5 are securely bolted or otherwise fixed to the web 3 as is indicated at 6. The strips 5 are of a rectangular tubular formation being preferably formed from a single strip of metal such as steel and the bottoms thereof are in two overlapping layers as may be seen from an inspection of Figure 1. It will thus be seen that a plurality of these rib structures may be placed in end to end relationship and securely bolted together, openings 7 being provided in the ribs proper and openings 8 in the extended portions of the strips 5 in order that bolts may be passed therethrough. When thus fastened together in end to end relationship, a rigid joint is inserted so that the rib structures will be strong and easily support the weight to be placed thereon. It is to be noted that the height of the strips 5 is less than that of the web 3 so that plates 9 may be supported across the adjacent strips 5 of two spaced rib structures as is shown in Figure 1, the plates being flush with the upper surface of the ribs proper, that is the upper surfaces of the webs thereof. It is, of course, understood that these rib structures are supported on the usual beams 10 mounted on suitable uprights 11. The beams 10 and uprights 11 are conventional and do not form a part of this invention.

In order to form a finished end for the rib structures I provide a special end structure which may be assembled on the exposed ends of the end sections of the rib structure. The end structure includes a rib proper which is formed identical with the rib proper A previously described except that it is nowhere as long. This rib proper B of the end structure is provided with a reduced web extension 12 which is telescoped a distance into the web 3' and welded or otherwise firmly fixed therein and is adapted to be inserted in the end of the web 3 as is indicated in Figure 5 so that a bolt may be passed through the opening 13 and the opening 7 for holding the ribs A and B securely assembled. A strip filler 14 is adapted to be placed in alignment with the strip 5 that terminates short of the end of the rib structure A so as to terminate evenly with the other strip and is secured in place by the bolt which has been passed through openings 7 and 13. Auxiliary filler strips 15 are then placed in alignment with the strip 5

which extends partially over the rib proper B and the filler strip 14 as is clearly illustrated in Figure 5. If desired, a rib filler 16 may be utilized for covering the extension 12 so that the upper edge thereof may be made flush with the upper edges of the webs 3 and 3' of ribs proper A and B.

In using this construction it will be seen that it is capable of being easily and quickly assembled so that a very efficient, reliable, strong, durable structure is provided. After the concrete has been poured on the plates 9 and set a certain number of days the strips 5, 14 and 15 may be removed and the plates removed, and the ribs proper left in place for a longer period. Thus the strips which have been removed may be used in conjunction with other ribs proper. It is thought that the construction, usefulness, and advantages of the ribs will now be clearly understood by those skilled in the art of concrete construction without a more detailed description. It is apparent that the present embodiment of the invention has been disclosed merely by way of example and that it attains all the features of advantages enumerated as desirable in the statement of the invention and the above description as well as others which will be evident. It is desired, however, to point out that numerous changes in the details of construction, in the materials, in the size, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described the invention, what I claim as new is:—

1. In combination, a plurality of ribs disposed in parallel spaced relationship, strips on the sides of the ribs, and plates resting on the upper edges of the strips between the ribs and flush with the upper edges of

the ribs, said ribs being formed in sections, and the strips thereof extending beyond opposite ends thereof in order that a secure joint may be made between the sections.

2. In combination, a rib section including a rib proper with strips on its sides, one terminating short of its end and the other extending beyond its end, and an end structure including a rib proper having a reduced extension adapted to telescope in the rib proper aforementioned and filler strips for association alongside of the two ribs proper.

3. In combination, a rib section including a rib proper with strips on its sides, one terminating short of its end and the other extending beyond its end, and an end structure including a rib proper having a reduced extension adapted to telescope in the rib proper aforementioned and filler strips for association alongside of the two ribs proper, and a rib filler member adapted to go over the extension so that its upper edge which is exposed will be flush with the upper edges of the two ribs proper.

4. A rib structure including a rib proper formed of a single sheet of material bent over upon itself so as to provide a base, a ledge resting thereon adjacent one side and merging into an inverted U-shaped web which in turn terminates in another ledge resting on the base.

5. A rib structure including a rib proper formed of a single sheet of material bent over upon itself so as to provide a base, a ledge resting thereon adjacent one side and merging into an inverted U-shaped web which in turn terminates in another ledge resting on the base, and rectangularly shaped tubular strips, one on each side of the web and formed from single strips of metal.

In testimony whereof I affix my signature.

INGVARDT JOHNSEN.