Oct. 16, 1928.

1,688,016

B. J. KLAASEN

HOLLOW METAL JOIST

Filed June 23, 1927

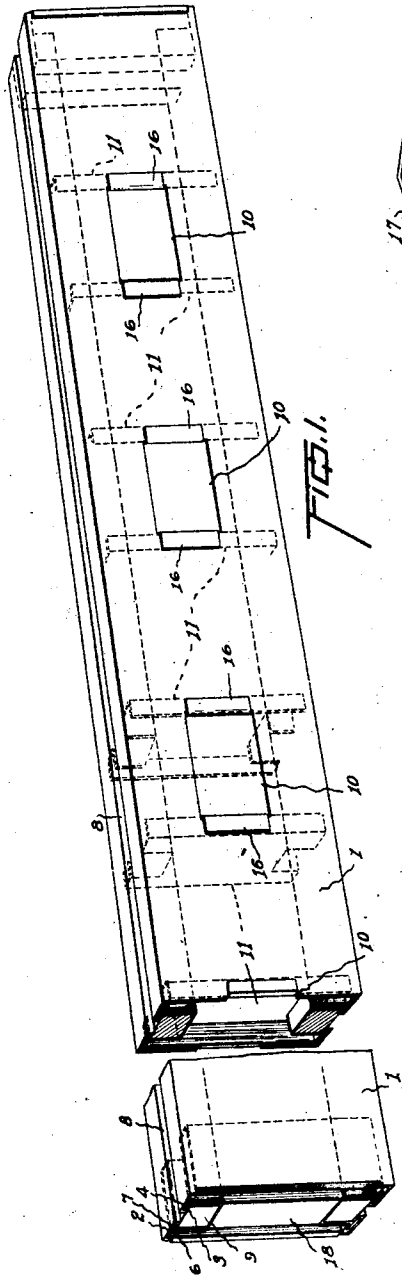


FIG. 1.

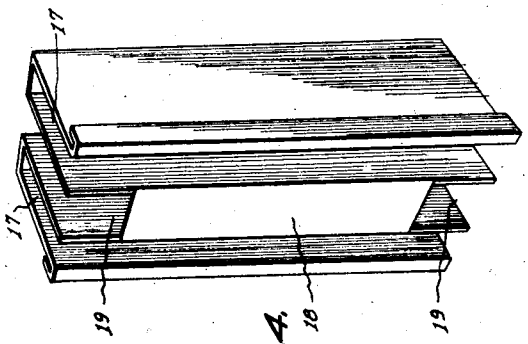


FIG. 4.

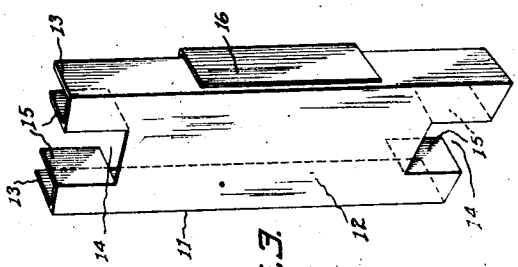


FIG. 3.

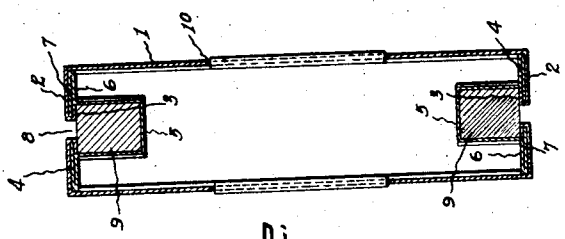


FIG. 2.

Inventor

Benjamen J. Klaasen

By Barnhart & Barnhart

Attorney

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UNITED STATES PATENT OFFICE.

BENJAMIN J. KLAASEN, OF HIGHLAND PARK, MICHIGAN.

HOLLOW METAL JOIST.

Application filed June 23, 1927. Serial No. 200,838.

The present invention pertains to a hollow metal joist for replacing solid metal or wooden joists, beams and similar structures in building construction.

The principal object of the invention is to provide a device of this character which may readily be assembled from simple metallic parts. The nature of the parts is such that they may be formed by simple and inexpensive mechanical operations. These parts are provided with simple interlocking elements so that no auxiliary attaching or joining devices are necessarily required in the assembly and completion of the joist.

The device of the invention consists essentially of a pair of flanged lateral members and intermediate connecting members which join the flanges of opposed side members. The formation of the connecting members is preferably such that they are capable of supporting wooden nailing strips at the upper and lower faces of the hollow structure. The connecting members are constructed to hold the flanges of opposed members slightly spaced from one another, so that narrow spaces are retained longitudinally of the hollow structure to provide access to the wooden strips for the purpose of nailing other structural elements thereto.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings, in which—

Figure 1 is a perspective view, partly broken away, of a hollow metal joist constructed according to the invention;

Fig. 2 is a transverse section thereof;

Fig. 3 is a perspective view of one of the intermediate trusses; and

Fig. 4 is a perspective view of one of the end pieces.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The sides of the joist consist each of a metal plate 1 having a flange 2 at each longitudinal edge. The flanges are again turned under as at 3 to provide a channel formation 4. The connecting members between opposed side members consist each of a channel 5 having substantially the same longitudinal extent as the members 1. Each chanel member has outwardly extending flanges 6 from the walls thereof, and these flanges are bent back upon themselves as at 7 and projected somewhat into the channel space to the extent of the depth of the channel formations 4. It will be seen in Figure 2 that the flanges 6 project laterally far enough to engage the inner faces of the side members 1, and from the description of the portions 7 just given, it is apparent that these portions fit snugly beneath the flanges 2. The width of the connecting member 5 is preferably such that a longitudinal space 8 is retained between the connected flanges of opposed side members 1 at the top and bottom of the hollow structure thus formed.

In order that other structural units may be nailed to the hollow joist, a wooden bar or nailing strip 9 is passed into each channel 5 and is preferably coextensive with the unit. The members 9 are accessible through the slots 8 retained between the flanges 2 of opposed side members.

Openings 10 may be formed in the side members 1 for the passage of piping, wiring and the like through the hollow joist. The joist is reinforced at intervals by trusses 11 fitted therein and preferably disposed at the ends of the openings. Each truss consists of a metal sheet 12 which is stamped to form flanges 13 at the longer edges thereof. The body of the sheet 12 is stamped out to form at each end an opening 14, the material taken out of this opening being split and bent over in the form of a pair of flanges 15 parallel to the members 13 and thereby forming channel formations at the corners. The openings 14 have the same cross sectional area as the interior of the channels 5 in order to receive the longitudinal nailing strips 9. The outer flanges 13 carry each a central tongue 16 which preferably lies in the same plane as the flange when the truss is inserted. The truss is moved into the joist until the tongue is fully exposed at an end of one of the openings 10, and the tongue is then bent back upon itself to engage the outer surface of the adjacent side member 1 as illustrated in Figure 1.

After the trusses 11 have been inserted, the ends of the joist are fitted with closure members of the type shown in Figure 4. These members consist of a blank of metal stamped to form a pair of parallel channel sections 17 joined by a back 18. The back is cut away at the ends to form openings 19 for the purpose of accommodating the strips 9 in the manner described in connection with Figure 3. The outer walls of the channels 17 have their free edges bent back upon themselves to form narrow channels 20 adapted to receive

the ends of the plates 1. The closure members extend for a considerable distance into the hollow truss and thereby reinforce the same at the ends where it is most likely to be supported and where greater strength is needed.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What I claim is:—

1. A hollow metal joist comprising flanged side members and a channel connecting member inserted between said side members and joining the flanges of opposed side members, said flanges extending over the open side of said channel member, said connecting member holding said flanges in spaced relation, and a nailing piece inserted in said channel connecting member and accessible through the space between the flanges.

2. A hollow metal joist comprising flanged side members and a connecting member inserted between said side members and joining the flanges of opposed side members, strengthening end members fitted into the ends of the hollow structure thus formed, and nailing pieces passing through said end members and connecting members and disposed adjacent said flanges.

In testimony whereof I affix my signature.

BENJAMIN J. KLAASEN.