March 13, 1928. 1,662,767

W. WAIT

INTERLOCKING JOINT FOR METALLIC FRAMES

Filed Feb. 9. 1927 2 Sheets-Sheet 1

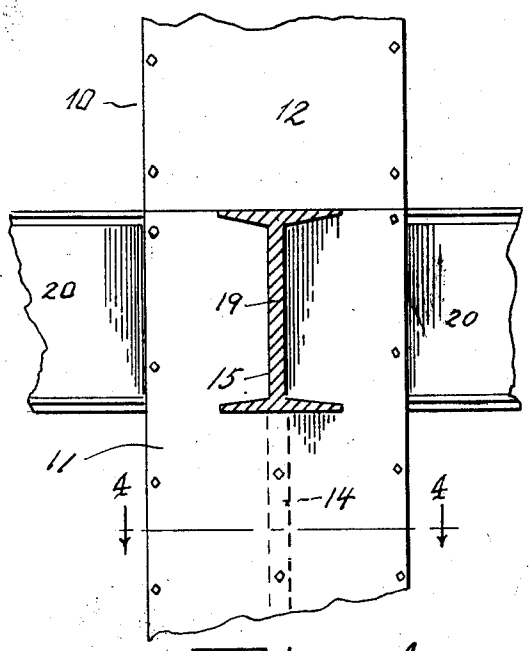


Fig. 1.

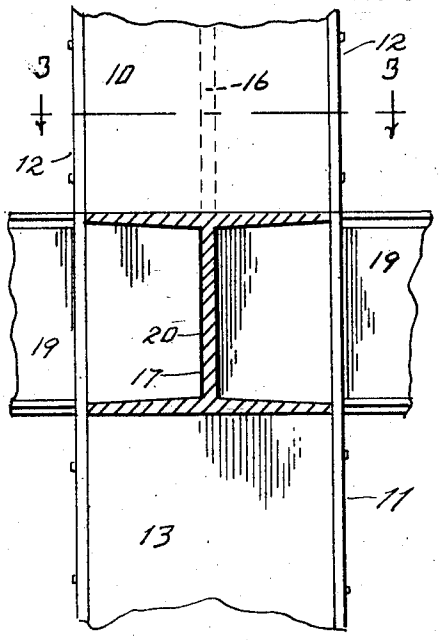


Fig. 2.

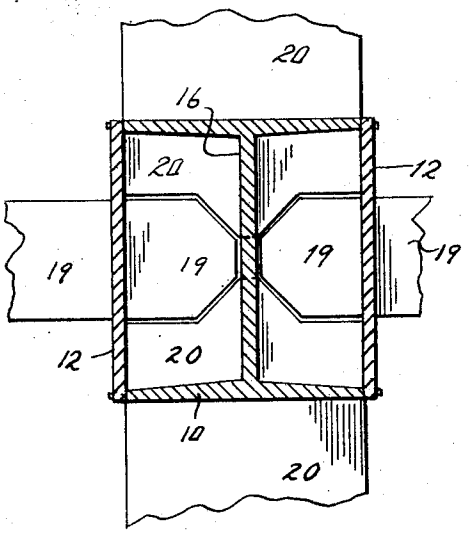


Fig. 3.

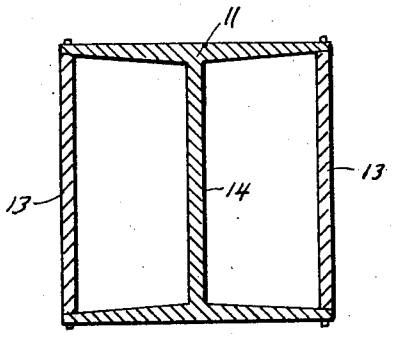


Fig. 4.

INVENTOR.
Wesley Wait
BY J. L. Newton
ATTORNEY.

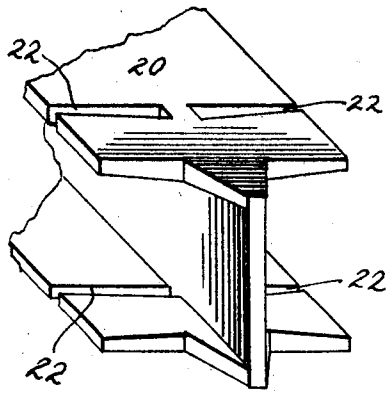
March 13, 1928. 1,662,767

W. WAIT

INTERLOCKING JOINT FOR METALLIC FRAMES

Filed Feb. 9. 1927 2 Sheets-Sheet 2

Fig. 5.



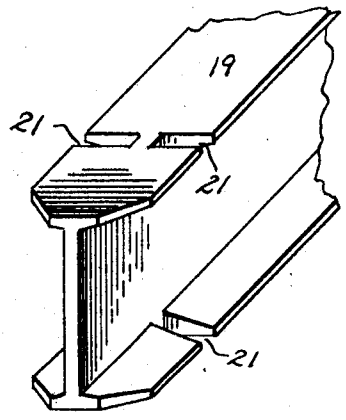
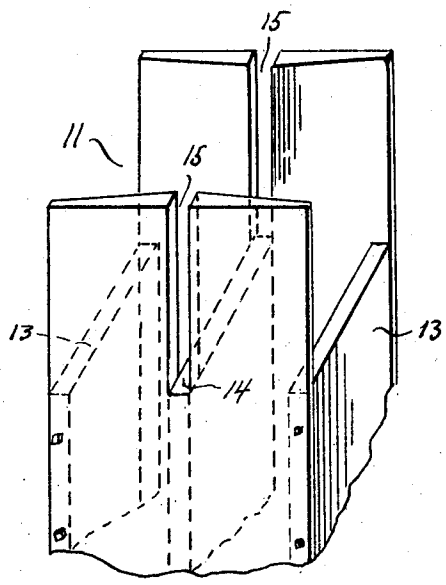


Fig. 6.

Fig. 7.



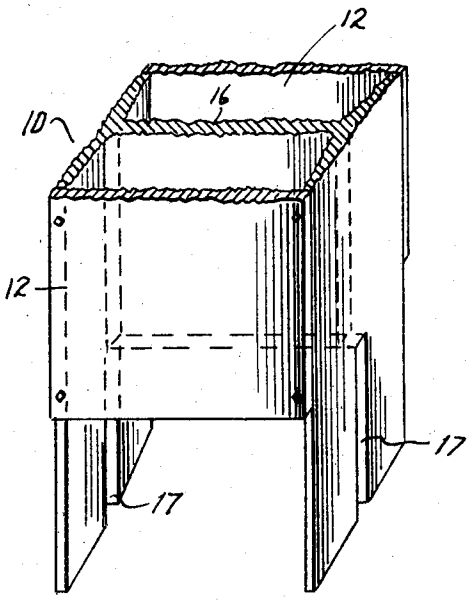


Fig. 8.

INVENTOR.
Wesley Wait
BY
ATTORNEY.

Patented Mar. 13, 1928. 1,662,767

UNITED STATES PATENT OFFICE.

WESLEY WAIT, OF NEWBURGH, NEW YORK.

INTERLOCKING JOINT FOR METALLIC FRAMES.

Application filed February 9, 1927. Serial No. 167,008.

This invention relates to improvements in interlocking joints for metallic columns and girders, such as are employed in heavy building construction. It has for its object the provision of a joint of this type in which the component parts can be readily assembled in interlocking relation, one in which the use of bolts and rivets is avoided, and one in which the load is distributed so as to avoid its concentration on any part that might be susceptible to easy fracture. The structure of the joint is described in detail hereinafter, illustrated in the accompanying drawings, and the novelty is particularly defined in the appended claims.

In the drawings, in which similar reference characters designate corresponding parts.

Figure 1 is a side elevation, partly in section and partly broken away, of a column and girders connected by the interlocking joint.

Figure 2 is a similar view, showing the side at right angles to that shown in Fig. 1.

Figure 3 is a horizontal section on the line 3—3 of Fig. 2.

Figure 4 is a horizontal section on the line 4—4 of Fig. 1.

Figures 5 and 6 are detail perspective views showing the ends of the girders.

Figure 7 is a detail perspective view showing the upper end of the lower column section.

Figure 8 is a similar view showing the lower end of the upper column section.

Referring to the drawings in detail, 10 and 11 respectively designate upper and lower sections of a column rectangular in cross-area. Each of these sections is of H-shape formation. The sides of the upper section between the flange edges are closed by the opposite face plates 12 secured to the edges of the flanges. The sides of the lower section between the flange edges are closed by the opposite face plates 13 secured between the edges of the flanges. The face plates 12 and 13 are secured in place by bolts, as indicated on the drawings, but it is obvious that they can be economically welded to the flanges by the electric welding apparatus now coming into general use for extensive operations of this character. The face plates not only strengthen the column sections, but also serve to impart a box-like formation to the same. The face plates 13 and the web 14 of the lower section are cut away to provide a transverse recess between the flange sides at the upper end of the lower section, the upper edges of the web and cut away face plates being in the same transverse plane. The upper parts of the flanged sides of the lower section are slotted, as at 15, in the plane of the web 14. The web 16 of the upper section and the face plates 12 are cut away at the lower part of said section to provide a transverse recess between the flange sides, the lower edges of the web 16 and the opposite face plates 12 being in the same plane normal to the longitudinal axis of the section. In assembling the column parts, the recessed ends of the sections are fitted together with the flange sides interspaced and their end edges respectively abutting the end edges of the plates 12 and 13. So assembled, the webs of the two sections are normal to each other, but spaced apart and the flange sides of the upper section are seated between the flange sides of the lower section, thereby providing a closed box-like formation at the junction between the two sections.

Between the interfitting ends of the two column sections are mounted the ends of the girders 19 and 20, the former being of I-shape and the latter of H-shape. The girders 19 extend in horizontal alinement from the flange sides of the lower section 11 in opposite directions. Likewise, the girders 20 extend from the opposite flange sides of the upper column section 10 and at right angles to the girders 19. The upper and lower flanges on each side of the girders 19 are notched, as at 21, so that the girders can be fitted into the slots 15 of the lower section 11. Also, the upper and lower flanges on each side of the girders 20 are notched, as at 22, so that these girders can be fitted into the slots 17 of the upper section 10. The width of the girders 20 is the same as the width of the flange sides with which they are engaged and this width is the same as the space between the flanged sides of the lower section 11. The width of the girders 19 is less than that of the girders 20 and the ends of the former fit between the ends of the latter.

The inner ends of both pairs of girders are shaped to fit in interspaced relation to each other and between the upper edge of the web 14 and the lower edge of the web 16. The upper surfaces of the girders 19 are flush with each other and with the upper edges of

the flange sides of the lower section 11. On these upper edges are seated the lower edges of the face plates 12 of the upper section and these plates also seated on the upper faces of the girders 19 hold the latter against any tendency that the girders might have to move upward in the slots 15. The under surfaces of the girders 20 are flush with the lower edges of the flange sides of the upper section 10 of the column and these lower edges are seated on the upper edges of the face plates 13 of the lower section of the column. The girders 20 are also seated, between the lower slots 22, on the upper edge of the face plates 13 and thereby the load of these girders is sustained.

By the foregoing construction an interlocking point is provided between the upper and lower column sections and between the ends of the girders. The parts can be quickly assembled in engaged relation without the use of bolts or rivets and the joined parts are securely held against displacement.

What I claim is:

1. In an interlocking joint for metallic frames, the combination with a column formed of upper and lower sections of H-shape, each section having an end with the web removed between the flange sides and said sides having slots therein in the same plane as the web of the section, said sections being interfitted with the ends of the flange sides of one section seated between similar ends of the other section and with the webs of the two sections normal to each other, and flanged girders seated in the slots in the ends of the column sections, the flanges of said girders being notched for the insertion of the flange sides of the column sections.

2. In an interlocking joint for metallic frames, the combination with a column formed of upper and lower sections of H-shape, face plates closing the open sides of the two sections, each section having an end with the web and face plates removed between the ends of the flange sides, the flange sides of each section having slots therein in the same plane as the web of the section, said sections being interfitted with the ends of the flange sides of one section seated between similar ends of the other section and the flange sides of one section abutting the face plates closing the sides of the other section, and flanged girders seated in the slots in the ends of the column sections, the flanges of said girders being notched for the insertion of the flange sides of the column sections.

3. In an interlocking joint for metallic frames, the combination with a column formed of upper and lower sections of H-shape, face plates closing the open sides of the two sections, each section having an end with the web and face plates removed between the ends of the flange sides, the flange sides of each section having slots therein in the same plane as the web of the section, said upper and lower sections being interfitted with the ends of the flange sides of one section seated between similar ends of the other section and the flange sides of one section abutting the face plates closing the sides of the other section, and flanged girders seated in the slots in the flange sides of the column sections, each girder having a top or bottom surface flush with the edge of the flange side in which the girder is seated and each girder contacting with the edge of the closing face plate abutting the flange side in which the girder is seated, the flanges of said girders being notched for the insertion of the flange sides of the column sections.

In testimony whereof I affix my signature.

WESLEY WAIT.