

[54] SADDLE CLIP FOR MOUNTING AND REINFORCEABLY SUPPORTING C-SHAPE METAL BEAMS

[75] Inventor: George D. Ratliff, Jr., Pittsburgh, Pa.

[73] Assignee: United States Steel Corporation, Pittsburgh, Pa.

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[58] Field of Search ..... 52/357-361, 52/715, 712, 760, 758 A, 665; 403/189, 217, 219, 406, 751, 752

[56] References Cited UNITED STATES PATENTS

3,714,752 2/1973 Ratliff ..... 52/758 A

Primary Examiner—Ernest R. Purser  
Assistant Examiner—James L. Ridgill, Jr.  
Attorney, Agent, or Firm—Rea C. Helm

[57] ABSTRACT

The saddle clip of the invention is an integral element used for mounting and reinforceably supporting a C-shape metal beam on a transversely extending structural support of metal, wood or other material in a building. The saddle clip has a horizontal flat web portion with an upstanding flange formed along one edge. The flange is provided with an inwardly and slightly downwardly turned lip or hook along its upper edge. A pair of parallel ears depend one from opposite sides of the web adjacent the ends of the flange. A pair of upright L-shaped tabs project upwardly from the same opposite sides of the web the ears are formed on but are disposed toward the edge of the web remote from the flange. The short leg portions of the L-shaped tabs are turned inwardly toward each other substantially parallel with and spaced from the flange. The clip is applied to the C-shape beam by pivoting the hook edge of the clip flange over the bottom flange lip of the C-shape beam to restrain the bottom flange and the clip web is interposed between the bottom flange of the C-shape beam with the short legs of the upright L-shaped tabs abutting and reinforcing the web of the C-shape beam. The depending ears of the clip are affixed to the supporting structure.

3 Claims, 2 Drawing Figures

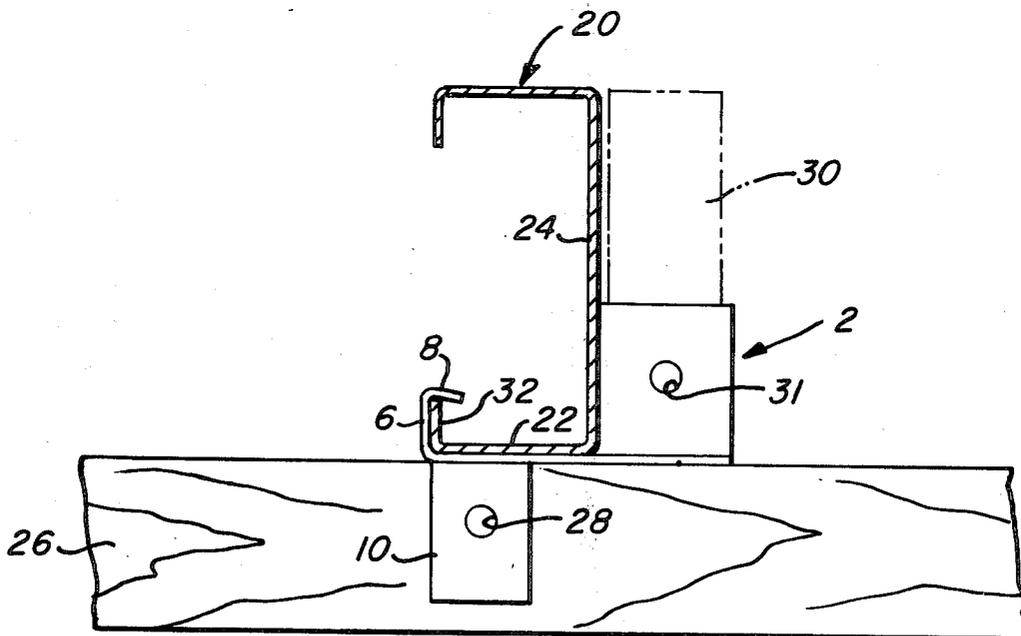


FIG. 1

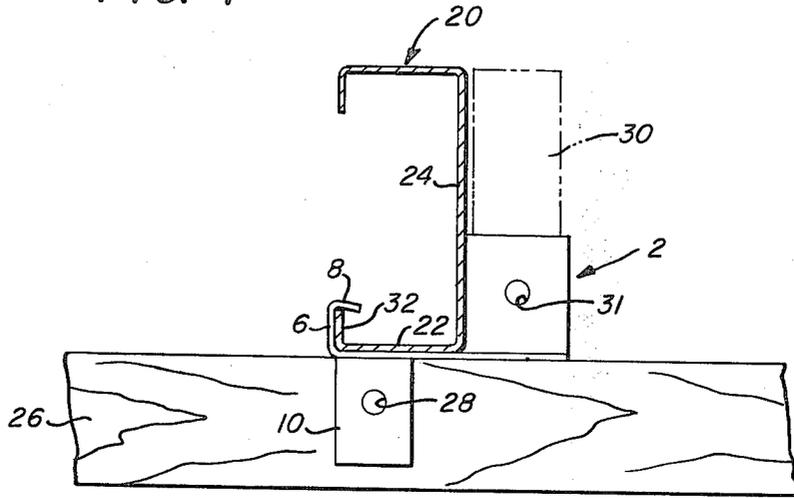
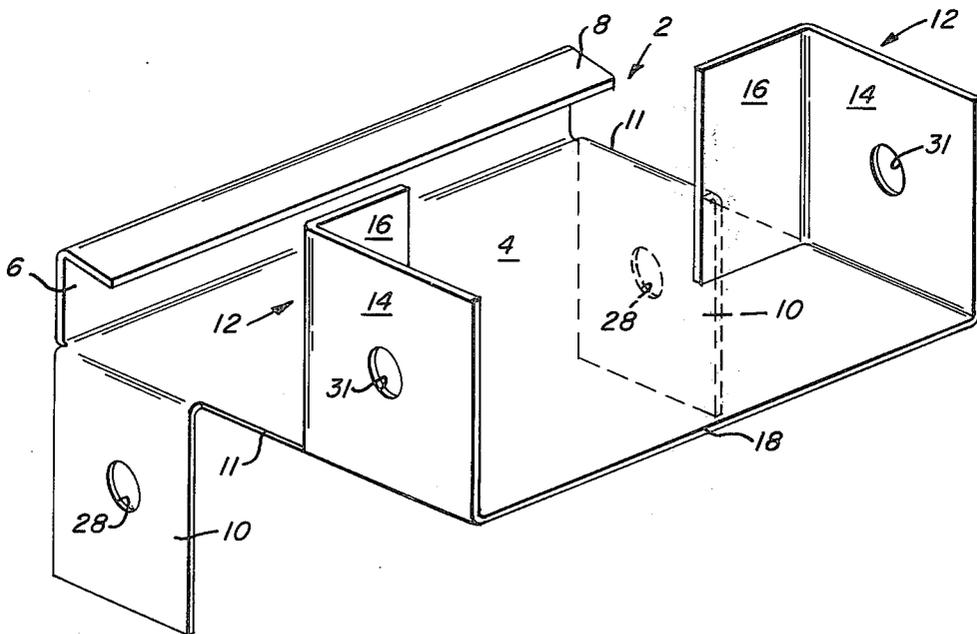


FIG. 2



**SADDLE CLIP FOR MOUNTING AND  
REINFORCEABLY SUPPORTING C-SHAPE  
METAL BEAMS**

The present invention relates generally to building structures and more particularly to an improved saddle clip especially suitable for mounting and reinforceably supporting C-shape sheet-metal beams on transversely extending supporting structural members in a building.

The present invention is an improvement over my reinforcing and supporting saddle for a C-shaped sheet-metal beam disclosed in U.S. Pat. No. 3,714,752 issued Feb. 6, 1973 and assigned to United States Steel Corporation.

Cold-formed C-shape sheet-metal beams have been proposed for use as joists and other purposes in residential building construction. When employed as joists, opposite ends of such beams are supported on the laterally spaced walls of a building in a manner similar to the support for the ends of 2 x 10 inch wooden planks commonly used as joists for this purpose. Where the distance between the walls of the building is sufficiently great, and single continuous joists are used to span this distance, the center portions of the joists are commonly supported on an I-beam or other supporting structure which may be made of metal, wood or other material, or the upper end of an intermediate partition wall. A support of this type at the center of the joist limits the load which can be carried by the C-shape beams, since the load concentration at this point will result in failure of the central portions of the beams.

It is, accordingly, the primary object of my invention to provide an improved saddle clip for mounting and reinforceably supporting C-shape metal beams.

It is a more specialized object of my invention to provide a saddle clip as set forth in the above-stated object which has a horizontal web portion formed with a hook-topped flange upstanding along one edge, a pair of ears depending one from two opposite sides of the web adjacent the ends of the flange, and a pair of spaced upstanding L-shaped tabs projecting upwardly from the web with the short legs of the tabs turned toward each other and extending substantially parallel with but spaced from the flange.

It is another object of my invention to provide a saddle clip of the character set forth above that will provide a stiffener which prevents the web of a C-shape beam from crippling.

Another object of my invention is to provide a saddle clip as set forth by the above-stated objects to stiffen the web of a C-shape beam against crippling without extending beyond the plane of the bearing support.

Still another object of my invention is to provide a saddle clip of the character set forth above which can be formed in a press at low cost.

It is still another object of my invention to provide an improved saddle clip as set forth by the above statements of objects which will reinforce and stiffen the web of a C-shape beam supported by either metal or wood-bearing surfaces.

It is yet another object of my invention to provide an improved saddle clip as set forth above which includes a pocket or space for the addition of a short column of wood or other rigid material to share a concentrated vertical load applied to a C-shape beam from above.

These and other objects will become more apparent after referring to the following specification and attached drawing, in which:

FIG. 1 is an elevational view partly in section showing the saddle clip of the invention in use mounting and reinforceably supporting a C-shape beam on a wooden structural support member; and

FIG. 2 is a perspective view of the saddle clip of the invention.

Referring more particularly to the drawing, reference numeral 2 designates generally the saddle clip of the invention which is preferably integrally cold-formed in a metal press. Clip 2 is formed with a longitudinally extending clip web 4, a clip flange 6 extending normal to the clip web along one edge thereof. A clip lip 8 is formed on the upper edge of the web 4 extending substantially normal thereto and spaced above the clip web 4. The clip lip 8 extends substantially normal to the upper edge of the clip flange 6 but is turned slightly downwardly toward the clip web 4 at its outer edge as best shown in FIG. 1. A pair of ears 10 depend substantially parallel with each other from each of two opposed sides 11 of the clip web 4 adjacent to the ends of the clip flange 6. A pair of L-shaped tabs 12, each having a long leg 14 and a short leg 16, project upwardly from the opposed sides 11 of the clip web 4, as best shown in FIG. 2. The tabs 12 are disposed with the long legs 14 parallel with the opposed sides 11 of the clip web, and the short legs directed toward each other substantially parallel with and spaced from the clip flange 6 intermediate the edge 18 of the clip web remote from the flange 6 and the flange 6.

In operation, the saddle clip 2 is affixed to the bottom of a C-shape beam 20 by placing the clip lip 8 on the upstanding lip 32 of the bottom flange 22 of the C-shape beam and then pivoting the clip 2 so that the web 4 thereof is parallel with the bottom flange 22 of the C-shape beam and the clip flange 6 extends parallel with the upstanding lip 32 of the beam, and the short legs 16 of the tabs 12 abut the web 24 of the C-shape beam, as best shown in FIG. 1. The short legs 16 of the tabs 12 abut and reinforce the lower portion of the long web 24 of the C-shape beam. With the saddle clip thus in position on the bottom of the C-shape beam, the beam is disposed on a transverse structural member 26. FIG. 1 illustrates the beam 20 with the saddle clip attached thereto resting on a wooden structural member. When the C-shape beam 20 is placed on the wooden structural member 26, the ears 10 of the saddle clip depend downwardly on opposite sides of the structural member 26 and may be rigidly affixed thereto by driving a connecting member, such as a screw or nail (not shown), through the hole 28 formed in the ears 10.

If desired, a short column 30 of wood or other suitable material, as shown in broken lines in FIG. 1, may be inserted in the pocket formed by the tabs 12 spaced slightly from the C-shape beam web 24 to provide extra support for the C-shape beam 20 when excessive vertical pressure is to be applied downwardly thereon. The short column 30 may be secured in position by means of nails or screws or other similar means driven through the holes 31 provided in the long legs 14 of the tabs 12.

Referring to FIG. 1, it will be seen that the C-shape beam 20 is supported by the structural member 26 and reinforced by the saddle clip 2. The flange 6 fits around the bottom flange 22 of the C-shape beam and the clip web 4 straddles the structural member 26 with the ears

10 of the clip 2 depending along opposite sides thereof. The fit around the bottom flange 22 of the C-shape beam 20 is assured by the clip lip 8 which spans the top of the upstanding lip 32 of the bottom flange 22. The L-shaped tabs 12 of the saddle clip confine the C-shape beam and prevent the web 24 thereof from bulging outwards. Normal crippling failure of C-shape beams over structural support members usually takes place when the lower portion of the web 24 of the C-shape beam bulges outward. When this happens, it is also usual for the bottom flange 22 of the C-shape beam to lift up. This lifting is particularly noticeable at the upstanding lip 32 of the bottom flange 22. The ears 10 prevent the saddle clip 2 from lifting along with the lip 32, and also provide a positive connection between the saddle clip 2 and the structural support member 26. It will be understood that if the structural support member is in the form of a steel I-beam, the ears 10 can be affixed thereto by bending them around the outer edges of the upper flange of the I-beam. The long legs 14 of the tabs 12 reinforce or buttress the bearing short legs 16 and help restrain the lower portion of the web 24 of the C-shape beam 20.

While I have shown but one embodiment of my invention, other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. In the combination of an elongated longitudinal structural support member having an upper bearing surface, and a C-shape beam having opposed substantially parallel spaced beam flanges jointed by a beam web connected with and extending between said beam flanges, and a beam lip on one of said beam flanges, said C-shape beam being disposed above said bearing surface extending transversely thereof; the improvement therewith of a saddle mounted and reinforceably

supporting said beam on said bearing surface, said improvement comprising a saddle clip having a longitudinally extending clip web, a clip flange attached to and extending normal to said clip web, a clip lip on said clip flange extending substantially normal thereto spaced from said clip web, the clip flange extending and providing a snug fit for the beam flange between the clip lip and the clip web, the free longitudinal edge of said clip lip being disposed slightly downwardly from the opposed longitudinal edge thereof, means connected to said clip web adjacent said clip flange anchoring the clip web flat on the upper bearing surface of the support member, a pair of upright L-shaped tabs one on each of the opposed sides of said clip web, said tabs each having a long leg connected to a short leg and being disposed with the long legs parallel with the opposed sides of said clip web and the short legs directed toward each other substantially parallel with and spaced from said clip flange and the edge of said clip web remote from said clip flange, said clip flange being spaced from the short legs providing a snug fit for the C-shape beam in the saddle clip whereby upon application of a vertical load upon the C-shape beam the long legs buttress the web of the beam against a tendency to bulge outward and the clip lip restrains the bottom flange of the C-shape beam against a tendency to lift up.

2. The improvement as defined by claim 1 including an upright reinforcement column member disposed by one end between the tabs of said interposed clip and projecting substantially parallel with and spaced from said beam web so as to share a vertical load exerted downwardly on said beam.

3. The improvement as defined by claim 2 in which said column member is connected with said tabs.

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