

May 21, 1940.

F. DITCHFIELD

2,201,826

BRACKET AND MANUFACTURE THEREOF

Filed April 7, 1938

2 Sheets-Sheet 1

FIG-1

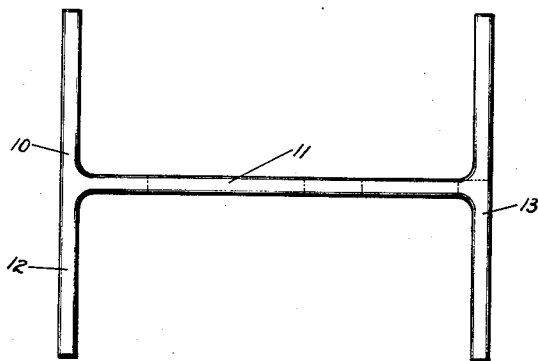


FIG-6

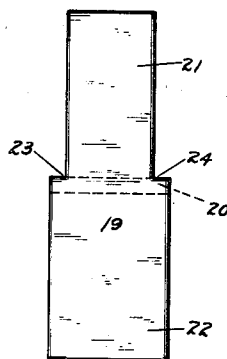


FIG-2

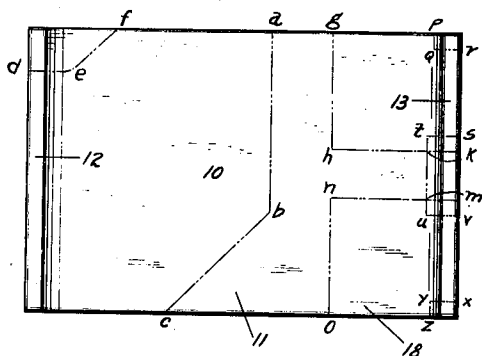


FIG-3

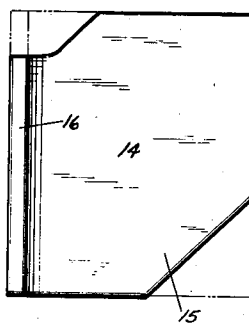


FIG-4

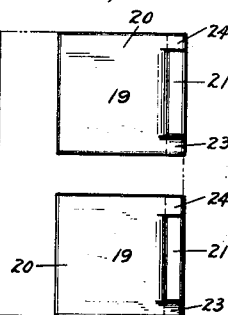


FIG-5

FIG-7

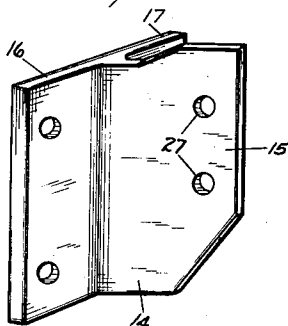
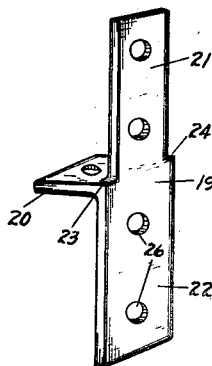


FIG-8



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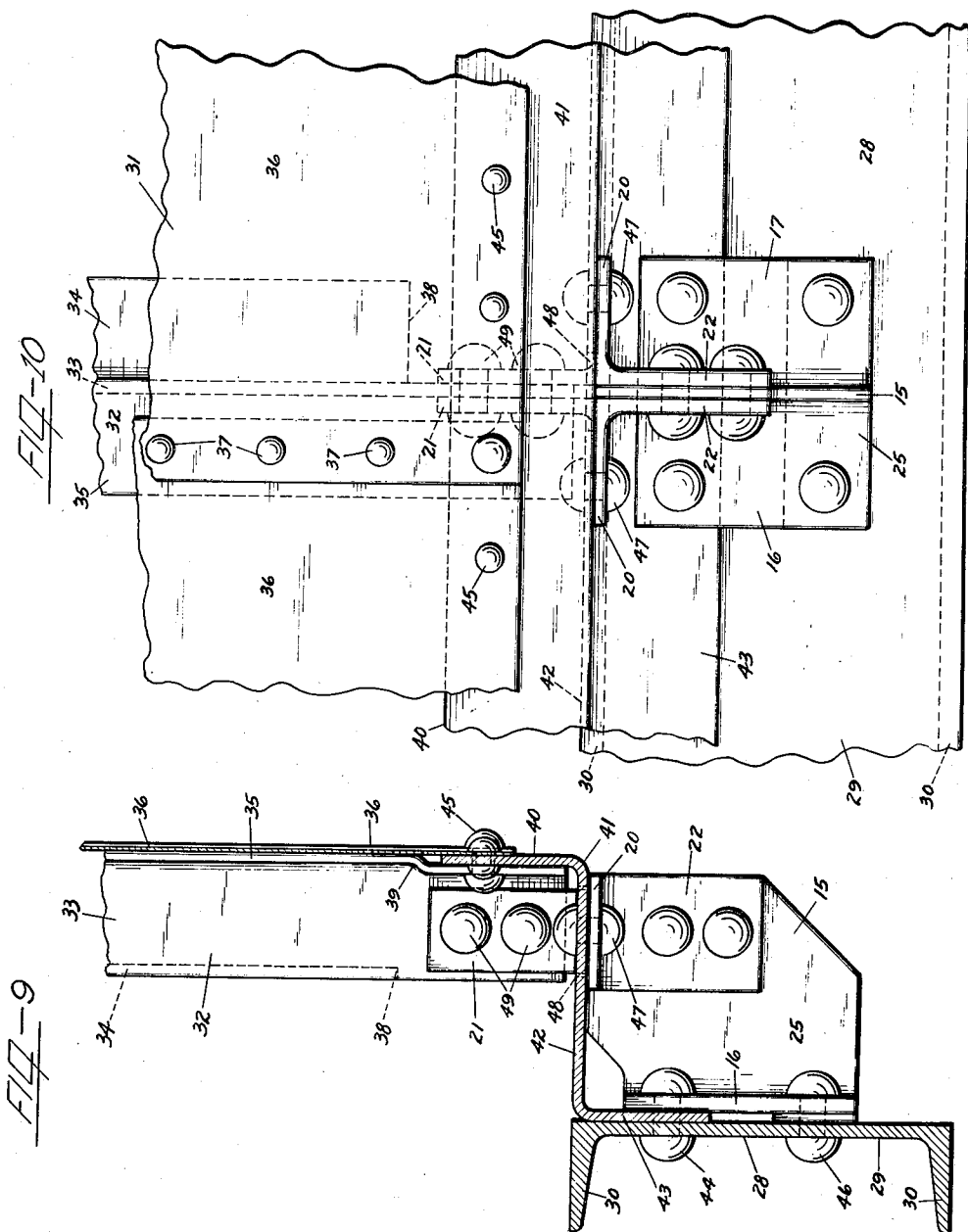
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BRACKET AND MANUFACTURE THEREOF

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,201,826

BRACKET AND MANUFACTURE THEREOF

Frank Ditchfield, Cleveland, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio, a corporation of Ohio

Application April 7, 1938, Serial No. 200,803

9 Claims. (Cl. 29—150)

This invention relates to brackets and to the method of manufacturing said brackets.

It is an object of this invention to provide brackets formed from rolled metallic members which shall be stronger, less expensive, of equal adaptability and of about the same weight as brackets not formed of rolled members.

A further object is to provide brackets capable of being formed from structural sections.

A further object is to provide a novel and economical method of producing brackets from structural sections.

A further object is to provide brackets capable of being formed from standard rolled structurals wherein rivets utilized to secure the bracket elements together and the brackets to their associated members are subjected to shearing stresses and not tension stresses.

Other objects of the invention will become clear as the description thereof proceeds.

In the drawings forming part of this specification:

Figure 1 is an end elevation of a structural section from which brackets embodying the invention are produced and shows in dot and dash lines cuts made in the section to secure the several members of the bracket.

Figure 2 is a side elevation of the structural section of Figure 1.

Figure 3 is an elevation of one of the bracket members.

Figures 4 and 5 are plan views of the remaining members of the bracket.

Figure 6 is an elevation of the members of Figures 4 and 5.

Figure 7 is a perspective view of the member of Figure 3.

Figure 8 is a perspective view of the members of Figures 4 and 5.

Figure 9 is a partial vertical elevation showing one application of the bracket.

Figure 10 is an elevation of the structure shown in Figure 9.

Referring to Figures 1 to 8 inclusive of the drawings which illustrate the bracket and process of manufacturing said bracket, the numeral 10 designates a section of a structural H-beam from which the elements of the bracket are produced. The H-beam 10 comprises a web 11 and flanges 12 and 13. In Figure 2 of the drawings, the H-beam is illustrated in side elevation and shows more clearly the cut lines made in the H-beam in order to yield the elements of the bracket. The web 11 of the H-beam may be cut along the dot and dash line "abc" in order to

produce the element 14. This element may additionally be cut along the dot and dash line "def" for a purpose which will hereinafter appear. The element 14 is more clearly illustrated in Figure 7 of the drawings from which it will appear that the element is substantially T-shaped in section and comprises the stem 15 and the oppositely extending flanges 16 and 17 disposed at right angles to the stem.

The web 11 is also cut along the dot and dash line "ghkmno" thereby producing the section 18 from which the two elements 19—19 of the bracket are formed. In the preferred method of carrying out the invention the web 11 is cut simultaneously along the lines "abc" and "ghkmno" in order to provide the element 14 and the section 18.

It will be apparent from a consideration of the section 18 and the bracket elements 19—19 which are preferably identical that the bracket elements are included in the section 18 and in said section are connected by a portion of the flange 13 of the H-beam section 10. To secure the bracket elements 19—19 the section 18 is preferably disposed with the outside of the flange 13 uppermost. In this position the section 18 is cut along the dot and dash lines "pqr", "stuv" and "xyz", these cuts preferably being made simultaneously.

The bracket element 19 is illustrated in greater detail in perspective in Figure 8 of the drawings. This element embodies a stem 20 and oppositely extending flanges 21 and 22. It will be apparent from this figure of the drawings that the flange 21 is narrower than the stem 20 and is so disposed relative to the stem that shoulders 23 and 24 are provided. The length of each flange 21 and 22 which are at right angles to the stem 20 is sufficient to properly accommodate two rivets.

The bracket elements 14 and 19—19 are assembled as follows in order to provide the bracket 25. The elements 19—19 are disposed with their flanges 22—22 lying upon opposite sides of the stem 15 of the bracket element 14. The flanges 22—22 are then secured to the stem 15 preferably by means of rivets which pass through the aligned openings 26 formed in the flanges 22—22 and 27 formed in the stem 15. The disposition of the elements 19—19 is such that their narrower flanges 21—21 extend upwardly above the stem 15 of the element 14. Moreover, the shoulders 23 and 24 of each of the elements 19 are arranged flush with the upper edge of the stem 15. Also the stems 20—20 of the elements 19—19

extend horizontally in opposite directions from the stem 15. The arrangement of the elements 14 and 19—19 to provide the brackets 25 is more clearly illustrated in Figures 9 and 10 of the drawings which in addition show one practical application of the novel bracket.

Referring to Figures 9 and 10 of the drawings, the numeral 28 indicates a side sill of a railway house car arranged with its web 29 vertical and its upper and lower flanges 30—30 extending inwardly toward the center of the car. An intermediate post of the car side wall 31 is shown at 32 and as illustrated is formed of a member which is Z-shaped in section and which comprises a web 33 at right angles to the wall, and inner and outer flanges 34 and 35. Metallic sheets 36—36 are overlapped upon and secured to the outer flange 35 by means of rivets 37.

The inner flange 34 preferably terminates above the outer flange 35 as indicated at 38. The outer flange 35 is offset inwardly as indicated at 39 in order to accommodate the upstanding flange 40 of a bottom Z connecting member 41, the web 42 of which extends inwardly so that the inner depending flange 43 of said member may be riveted to the web 29 of the channel shaped side sill 28 as by rivets 44. The metallic sheathing 36—36 is secured by means of rivets 45 along its lower margin to the upstanding flange 40 of the bottom connecting Z member 41.

Applicant's novel bracket 25 is employed in the above described car construction in order to provide a direct connection between the intermediate post 32 and the side sill 28. In this application of the bracket the flanges 16 and 17 of the bracket element 14 constitute attaching flanges by means of which the bracket is fastened to the web of the side sill by the rivets 44 and rivets 46. The upper edge of the stem 15 and the stems 20—20 of the bracket elements 19—19 underlie the web 42 of the bottom connecting Z member 41 so as to provide a support for said member. The portion of the web 11 and flange 12 of the H-beam removed by cutting along the dot and dash line "def" prevents interference between the bracket member 14 and the re-entrant angle formed by the web 42 and the depending flange 43 of the bottom connecting Z member 41. It is to be understood that the recess provided by the removal of this portion of the H-beam is not limited either in size or contour to that shown in Figure 9 of the drawings. Any contour or size of recess which will avoid the interference above referred to is sufficient.

Stems 20—20 may be fastened to the web 42 by means of rivets 47. The flanges 21—21 of the bracket elements 19—19 are utilized to provide attachments between the bracket and the web 33 of the post 32. To this end the web 42 of the bottom connecting Z 41 is coped as indicated at 48 so that the flanges 21—21 may extend upwardly through the bottom connecting Z and receive between them the web of the post 32. Securement between the flanges 21—21 and the web 32 of the post may be obtained by means of rivets 49. It is to be observed that the upper edge of the stem 15 of the bracket element 14 together with the stems 20—20 of the bracket elements 19—19 effectively seal the cope 48 provided in the web 42 so as to prevent the ingress of weather into the interior of the car and grain leakage. It is to be understood that the above described application of the bracket 25 is merely exemplary and that the invention is not to be limited to the

use of the brackets in the particular structure illustrated.

It will be observed, moreover, that the construction of the bracket is such that the rivets utilized for the attachment of the bracket to the post and to the side sill as well as the rivets employed in the assembly of the bracket elements are subjected to shearing stresses and not tension stresses.

It will be apparent that numerous changes and modifications in the details of the invention will be clear to those skilled in the art. It is intended, therefore, that all such modifications and changes be comprehended within this invention which is to be limited only by the scope of the claims appended hereto.

I claim:

1. A bracket comprising a rolled T-shaped member, the flanges of said member constituting attaching flanges and a rolled T-shaped member on each side of the stem of said first mentioned member, each of said latter members having a flange secured to said stem, a flange extending beyond said stem and a stem extending from said latter flanges.

2. A bracket comprising a rolled member having an attaching flange and a flange at right angles thereto, and a rolled flanged member having a flange secured to and projecting beyond said right angular flange of said first member and a flange extending from said first mentioned flange of said second member, said last mentioned flange extending beyond the edges of said projecting portion of said first mentioned flange of said second member.

3. A bracket comprising a member embodying a flange and part of the web of an H-shaped blank and members secured to the opposite sides of said web portion, said latter members each embodying a part of the flange and of the web of an H-shaped blank, the flanged portions of said latter members projecting beyond the web portion of said first mentioned member and the web portions of said latter members extending from said flanges in opposite directions.

4. The process of producing a bracket from an H-beam comprising removing a portion of the web and a flange of said beam to form a member having a stem and oppositely extending flanges, removing a portion of the web and flange of the remainder of said beam to form a member having a stem and oppositely extending flanges and fastening one of the flanges of said latter member to the stem of said first mentioned member so that the remaining flange projects beyond said stem of said first mentioned member.

5. The process of producing a bracket from an H-beam comprising removing a portion of the web and a flange of said beam to form a member having a stem and oppositely extending flanges, removing portions of the web and flange of the remainder of said beam to form a pair of members each having a stem and oppositely extending flanges, arranging said latter members on opposite sides of the stem of said first mentioned member so that certain of the flanges overlap and the other flanges project beyond the stem of said first mentioned member and said stems thereof extending substantially horizontally in opposite directions and fastening said overlapping flanges thereof to the stem of said first mentioned member.

6. The process of producing a bracket from an H-beam comprising cutting through the web of said beam to form a member having a stem and

oppositely extending flanges and a member having spaced stems and oppositely extending flanges, removing the portion of said second member between said spaced stems to form a pair of members each having a stem and oppositely extending flanges and securing said pair of members on opposite sides of the stem of said first mentioned member through flanges overlapping said latter stem, the remaining flanges of said pair of members projecting beyond said latter stem and the stems of said latter members extending substantially horizontally in opposite directions.

7. The process of producing a bracket from an H-beam comprising cutting through the web of said beam to form a member having a stem and oppositely extending flanges and a member having spaced stems and oppositely extending flanges, simultaneously removing the portion of said second member between said spaced stems and marginal portions of certain of the oppositely extending flanges to provide a pair of members each having a stem and oppositely extending flanges, said stem extending beyond the edges of said certain flanges, arranging said pair of members on opposite sides of the stem of said first mentioned member with said one flange of each of said pair of members extending beyond the stem of said first mentioned member and the stems of said pair of members extending substantially horizontally in opposite directions, the remaining flanges of said pair of members being secured to the stem of said first mentioned member.

8. The process of producing a bracket from an H-beam comprising cutting through the web of said beam to form a member having a stem and oppositely extending flanges and a member having spaced stems and oppositely extending flanges, simultaneously removing the portion of said second member between said spaced stems and marginal portions of certain of the oppositely extending flanges to provide a pair of members each having a stem and oppositely extending flanges, said stem extending beyond the edges of said certain flanges, arranging said pair of members on opposite sides of the stem of said first mentioned member with said one flange of each of said pair of members extending beyond the stem of said first mentioned member and the stems of said pair of members extending substantially horizontally in opposite directions flush with the upper edge of the stem of said first mentioned member, the remaining flanges of said pair of members being secured to the stem of said first mentioned member.

9. A bracket comprising a rolled member, said member embodying an attaching flange for the bracket and a flange projecting from said attaching flange, said bracket comprising also a rolled flanged member secured to and extending beyond said projecting flange of said first member, said rolled flanged member having a flange extending at a right angle from said projecting flange.

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