

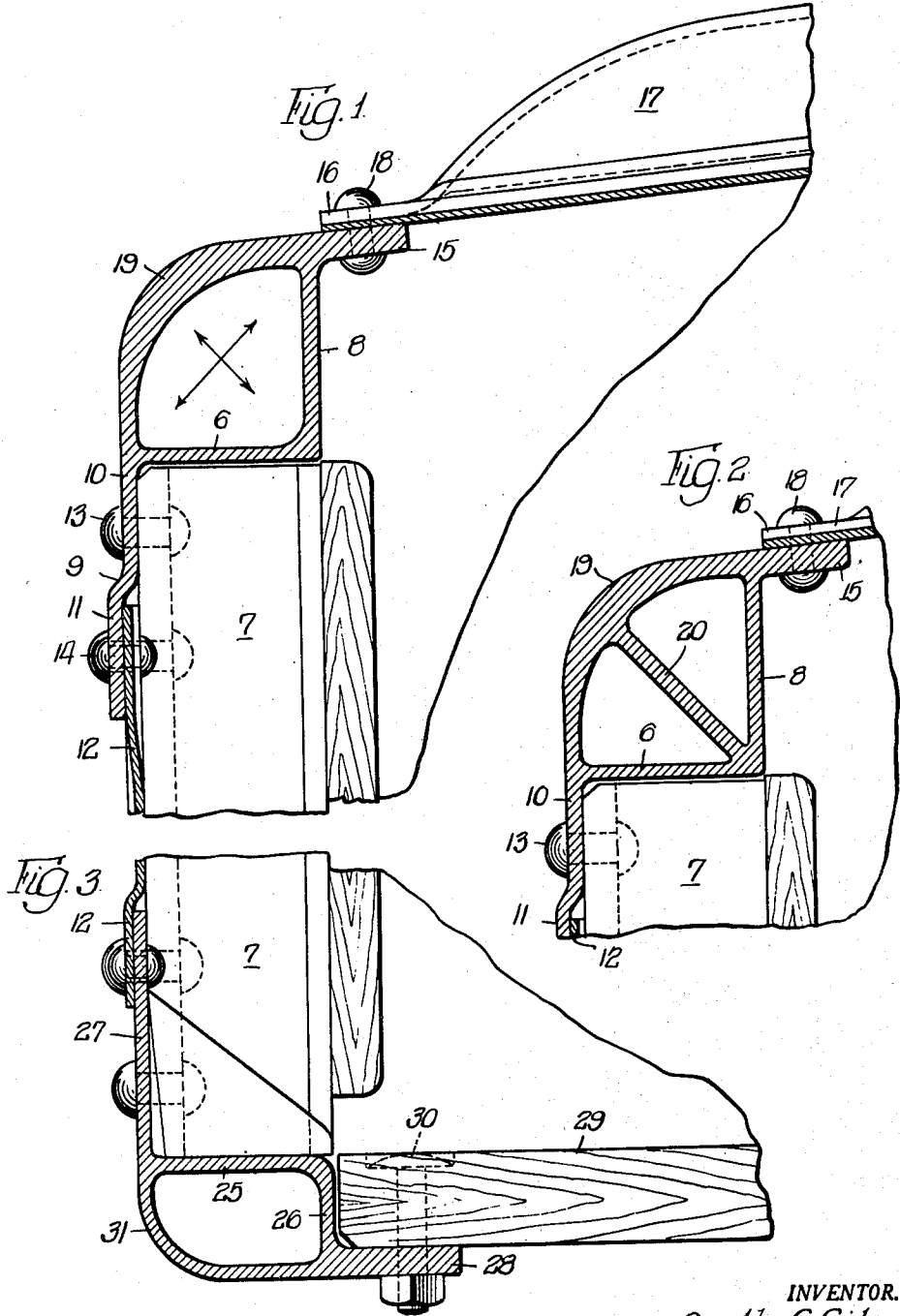
Feb. 8, 1949.

G. G. GILPIN
EXTRUDED FRAME MEMBER

2,460,982

Filed Aug. 12, 1944

2 Sheets-Sheet 1



INVENTOR.
Garth G. Gilpin,
BY *Antonia E. Gilpin*
att'y

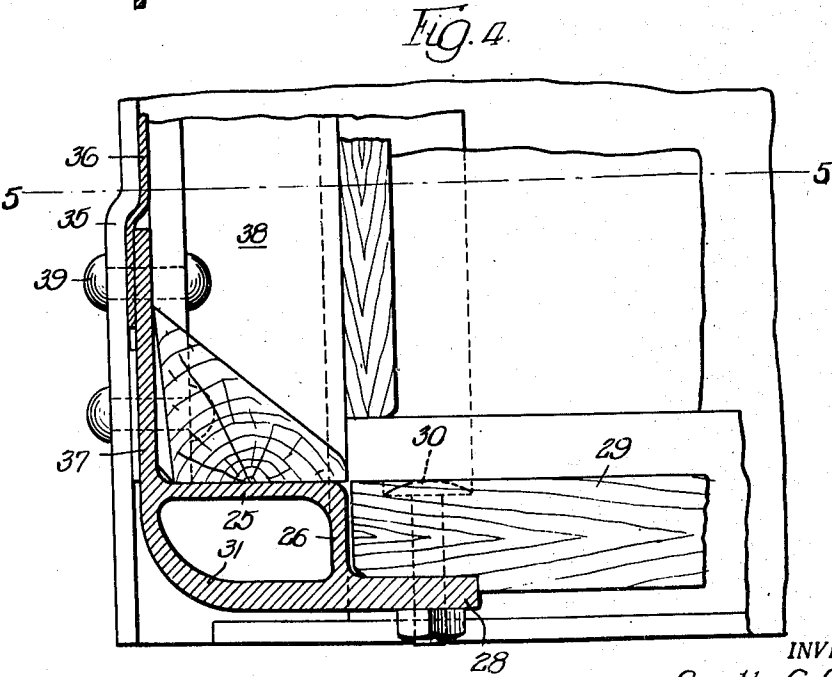
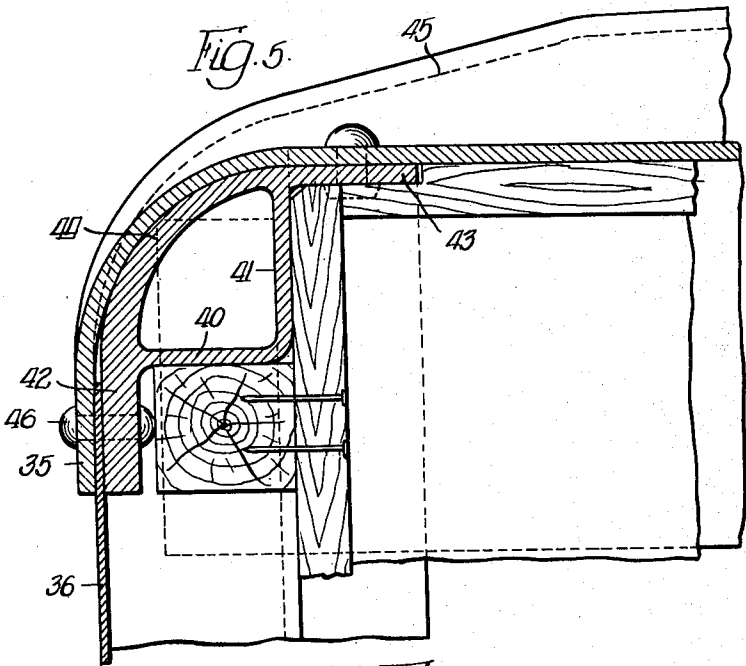
Feb. 8, 1949.

G. G. GILPIN
EXTRUDED FRAME MEMBER

2,460,982

Filed Aug. 12, 1944

2 Sheets-Sheet 2



INVENTOR,
Garth G. Gilpin,
BY *Arthur E. Gibson*
att'y

UNITED STATES PATENT OFFICE

2,460,982

EXTRUDED FRAME MEMBER

Garth G. Gilpin, Chicago, Ill., assignor to Standard Railway Equipment Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application August 12, 1944, Serial No. 549,203

3 Claims. (Cl. 105-404)

1

My invention relates to the construction of side plates, side sills or corner posts of railway freight cars. It has for its principal object the formation of a simple and relatively inexpensive unitary structural member by an extruding or casting process so that the material of the section may be distributed to form a strong and rigid hollow box section having its greatest strength where needed for the car part it is designed to support.

With the development of high speed, lightweight railway freight cars it becomes essential to construct the various structural parts of the car of lighter materials without sacrificing strength, and my invention lends itself readily to being formed by extruding or casting of aluminum alloys. Since the ratio of the modulus of elasticity of aluminum to steel is about one to three, it becomes apparent that if the strength of a given section of aluminum is to be equal to that of steel, the volume of material in the portion of the aluminum section subjected to the greater stresses must be increased. This cannot be done if the section is formed of sheet material, but by forming the section of extruded or cast material the volume can be proportioned as desired. The invention consists, therefore, in the extruded or cast construction of structural member for use as a side plate, side sill or corner post as hereinafter described and claimed.

Referring now to the accompanying drawings forming part of this application and wherein like reference characters indicate like parts, and wherein:

Fig. 1 is a vertical section through the preferred form of my invention adapted as a side plate showing the adjacent car parts to which it is secured.

Fig. 2 is a similar section through a modified form of side plate.

Fig. 3 is a similar section of the invention adapted as a side sill.

Fig. 4 is a section similar to Fig. 3 near the end wall of the car.

Fig. 5 is a section on the line 5-5 of Fig. 4.

In the adaptation of the invention as a side plate the member comprises an integral section having a horizontally disposed arm 6 that is adapted to rest upon the tops of the side posts 7 and which arm is provided along its inner edge with a vertical or right angularly disposed arm 8, and along its outer edge with a depending flange 9 that bears flatwise a short distance, as at 10, against the outer faces of said posts, and for the remainder of its length is offset, as at 11,

2

to overlap the upper margin of the side sheathing 12 of the car. The portion 10 of the flange is secured as by rivets 13 directly to the side posts, and the portion 11 and overlapped upper margin of the side sheet are likewise secured by the rivets 14 to said side posts. Extending inwardly of the car from the upper edge of the arm 8 is a flange 15 to which the outer margin 16 of the roof sheet 17 is secured as by the rivets 18. The flange 15 and portion 10 are joined by an arched portion 19 formed on a curve of suitable radius, thereby forming an integral hollow box section. When used as a side plate, as illustrated in Figs. 1 and 2, the section is a compression member or top chord and, therefore, it is desirable to increase the strength of the portions thereof which are subjected to the greater stresses. Consequently from the outer edge of the arm 6 to the inner edge of the flange 15, the thickness of the arch 19 and flange 15 is progressively increased, thus adding strength to the member where most required.

It will be noted too that the corner juncture of the arms 6 and 8 is provided with an increased amount of material to strengthen that corner which would be more apt to collapse under severe compression and which increase in material would obviously not be possible were the members made of pressed sheet steel.

The structure shown in Fig. 2 is identical with that shown in Fig. 1 save the diagonal bracing member 20 which extends from the juncture of the arms 6 and 8 at substantially forty-five degrees to the arched portion 19, thereby materially increasing the strength of the member under compression by preventing the section from collapsing. By being attached to the roof and to the side wall the member is also stiffened against collapsing.

In Fig. 3 the invention is shown as adapted for a side sill and wherein there are formed angularly disposed arms, one, 25, being disposed horizontally and upon which the lower ends of the side posts 7 are adapted to rest. Along the inner edge of the arm 25 is provided the depending angularly disposed arm 26 and along the outer edge of said arm 25 is provided the upstanding flange 27 which bears flatwise against and is secured to the outer faces of the lower ends of said side posts 7 and is overlapped by the lower edge of the side sheathing 12. The lower edge of the vertically disposed arm 26 is provided with an inwardly extending flange 28 upon which the floor 29 of the car rests and is secured thereto as by the through bolts 30. The flanges 27 and

3

28 are joined by an arched portion 31 extending therebetween and between the outer edges of the arms 25 and 26, thereby forming a hollow box structural member. The flange 28 is of increased thickness to give it greater strength as a supporting member for the floor, and also the juncture of the arms 25 and 26 is of increased cross section to prevent the section from collapsing under compression and to resist any tendency of said arms to spread under compression.

In Fig. 4 the illustration of the invention is identical to that shown in Fig. 3, except that the section is taken near the corner post of the car and illustrates the application of the end flange 35, side sheathing 36, and vertical flange 37 of the side sill to the lower end of the corner post 38 of the car. In this view the lower margin of the side sheathing 36 overlaps the upper margin of the flange 37 and the flange 35 of the end wall overlaps and bears against the outer face of the side sheathing 36 and all three of these portions are secured as by the through rivets 39. In addition the arched portion 31 progressively increases in thickness from the vertical flange 37 to the flange 28, thereby materially increasing the strength of this portion of the hollow box structure.

In Fig. 5 the invention is illustrated as applied to a corner post of a car and comprises a vertical member having an arm 40 provided with an angularly disposed arm 41 issuing from the inner edge thereof, and a flange 42 issuing from the outer edge thereof. From the outer edge of the flange 41 there is provided the inwardly extending flange 43. The flanges 42 and 43 and outer edges of the arms 40 and 41 are joined by an arched portion 44, thereby providing a hollow corner post. The corrugated end wall 45 is provided along its vertical margins with an arched portion which follows the curvature of the arched portion 44 and terminates in a flange 35 secured as by a vertical row of rivets, one of which is shown at 46, to the flange 42 of the corner post. Since this flange 42 is, therefore, subjected to the greater stresses and strains being carried thereto by those imposed upon the end wall, I have illustrated said flange 42 as being of increased thickness to withstand such stresses carried thereto. The arched portion 44 progressively increases in thickness from the flange 43 to the flange 42, thereby strengthening said post against compressive stresses.

Being of extruded metal the invention may be formed of aluminum alloys or other materials not subjected to rusting or corrosion, and well adapted to the newer designs of light-weight streamlined construction of railway freight car.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

4

I claim:

1. A structural member adapted for use as a railway car side plate, side sill or corner post comprising an extruded hollow metallic section having angularly disposed arms and an arch between said arms formed on a radius, whereby a box structural member is provided, said arch being thicker at one end than at the other end thereof and flanges extending from said arch beyond said arms, said flanges providing means for attachment of cooperating parts of a railway car structure, the flange extending from the thicker end of said arch being of greater cross sectional area than the other, to provide additional strength to support a cooperating load bearing car part.

2. A structural member adapted for use as a railway car side plate, side sill or corner post comprising an extruded hollow metallic section having angularly disposed arms and an arch between said arms formed on a radius, whereby a box structural member is provided, said arch increasing in thickness from said arms to the center thereof and one end of said arch being thicker than the other end, and flanges extending from said arch beyond said arms, said flanges providing means for attachment of cooperating parts of a railway car structure, said flange extending from the thicker end of said arch supporting a cooperating load bearing car part.

3. A structural member adapted for use as a railway car side plate, side sill or corner post comprising an extruded hollow metallic section having angularly disposed arms and an arch between said arms formed on a radius, whereby a box structural member is provided, said arch being thicker at one end than at the other end thereof a diagonal reinforcing web extending from the vertex of said arms to said arch, and flanges extending from said arch beyond said arms, said flanges providing means for attachment of cooperating parts of a railway car structure, and said flanges extending from the thicker end of said arch being thicker than the other flanges so as to support a greater load.

GARTH G. GILPIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
431,203	Dithridge	July 1, 1890
924,005	Schwieger	June 8, 1909
1,335,104	Fouhy	Mar. 30, 1920
2,036,555	Thompson et al.	Apr. 7, 1936
2,225,170	Gilpin	Dec. 17, 1940
2,260,512	Crede	Oct. 28, 1941
2,379,604	Johnsen	July 3, 1945