

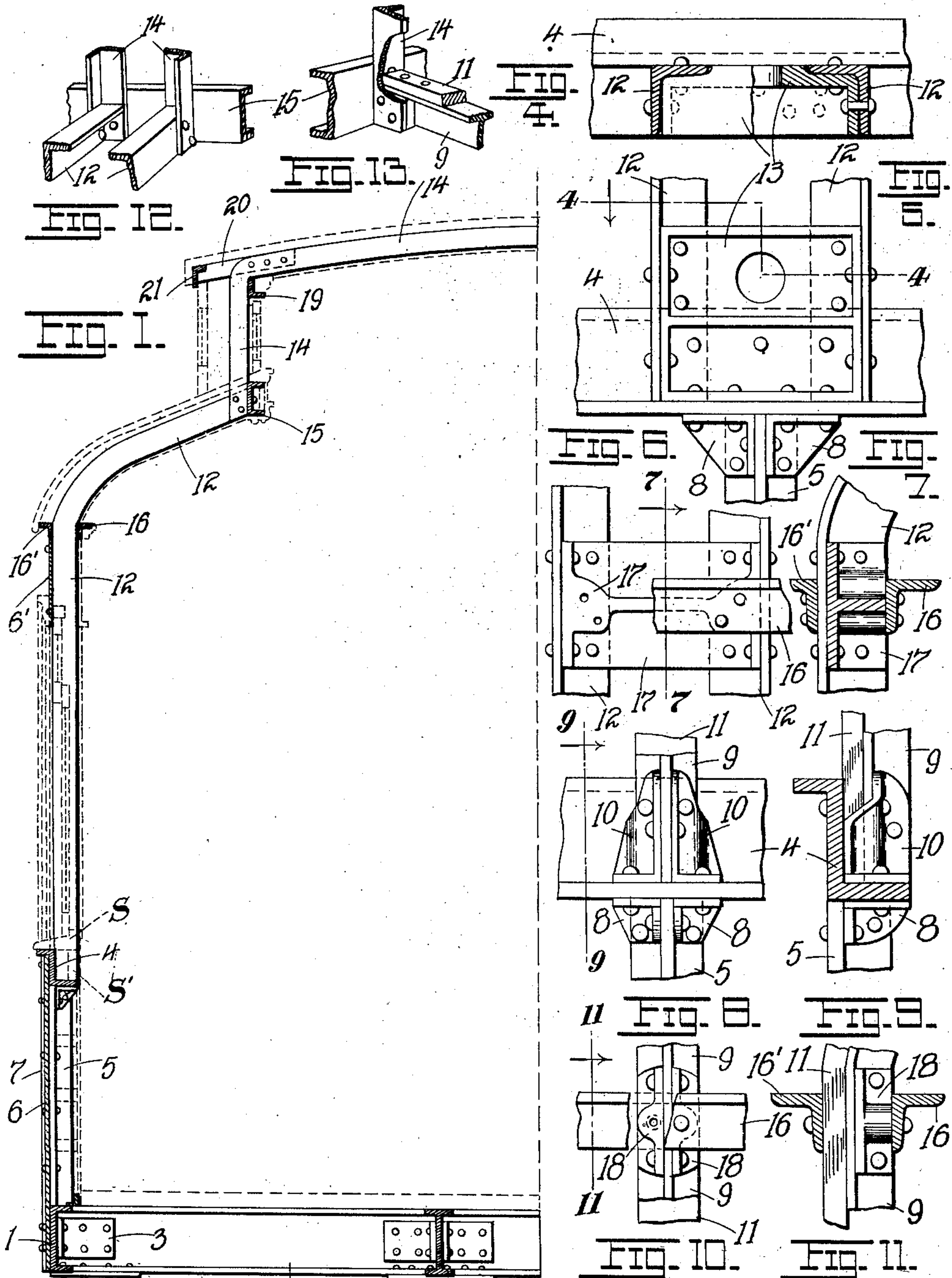
No. 826,832.

PATENTED JULY 24, 1906.

C. T. CLARKE.
METAL CAR FRAME.

APPLICATION FILED DEC. 26, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS--SHEET 2.

FIG. 2.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 16', 17, 18, 19, 20, 21

3-3

FIG. 3.

1, 2, 4, 5, 6, 9, 10, 11, 12, 13

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METAL CAR-FRAME.

No. 826,832.

Specification of Letters Patent.

Patented July 24, 1906.

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To all whom it may concern:

Be it known that I, CARL T. CLARKE, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Metal Car-Frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in metal car-frames; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a vertical transverse section of one-half of the frame, taken on the line 1 1 of Fig. 2 between a post and window-pier. Fig. 2 is a part side elevation and part section, the sectional portion showing the inner elevation of the parts composing the opposite side of the frame. Fig. 3 is a horizontal section on the broken line 3 3 of Fig. 2. Fig. 4 is a horizontal section on line 4 4 of Fig. 5, showing the pier-section at the window-sill. Fig. 5 is an elevation of Fig. 4. Fig. 6 is an inside elevational detail showing connection between the inside stiffener or side plate and the window-piers. Fig. 7 is a vertical cross-section on line 7 7 of Fig. 6. Fig. 8 is an elevational detail showing connection between a side post and stud and the longitudinal structural member or runner below the line of the window-sill. Fig. 9 is a vertical cross-section on line 9 9 of Fig. 8. Fig. 10 is an inside elevational detail showing connection between the inside stiffener and the side post. Fig. 11 is a cross-section on line 11 11 of Fig. 10. Fig. 12 is a perspective showing the connection between the upper extension of the window-piers, the base of the carline, and the deck-sill; and Fig. 13 is a similar perspective showing connection between the upper extension of the post, the carline, and deck-sill.

The object of my invention is to provide a metal frame for railway-cars which shall possess a maximum stiffness, one in which all oscillation of the vertical posts and piers constituting the sides of the frame shall be eliminated both in a longitudinal and transverse plane, one having a special longitudinal structural member interposed between the bases of the side posts and the bottom side sill and in a plane contiguous to and just below the line of the window-frames, one in which the space between such structural

member and bottom sills is strengthened by suitable studs resting on said sills, one in which the side posts arch toward the carlines, thereby reducing in a measure the lateral thrust on the posts, one in which the body of the carline conforms to the contour of the roof of the car, one in which the connection between the carlines and the arched extension of the posts is reinforced by the deck-sill, one making special provision for stiffening the posts at the bases of the arched extensions, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents the basal longitudinal or side sill, and 2 the cross-sill, connected by angle-pieces 3 and otherwise bound and strengthened within the limits of the car-frame in any manner, not here necessary to mention, as the present invention is not particularly concerned with these details. The side of the car-frame is composed of a longitudinal structural member or runner 4, being virtually a Z-bar, as shown, and occupying a plane just below the window-sill. To the lower horizontal flange of the Z-bar are secured a series of studs 5, being T's in cross-section, the flanges of the T's being directed outwardly and the webs inwardly. It may be stated in passing that the section showing these studs in Fig. 3 cuts the near wall or that partly broken away in Fig. 2. To the flanges of the studs is secured a covering of quarter-inch plate 6, the joints between the sheets being covered by suitable batten-strips 7, as shown. The plate 6 and battens 7 cover the face of the web portion of the Z-bar, as clearly indicated in the drawings. The connection between the studs and the runner 4 is made, as shown in Fig. 8, by means of castings 8. Superposed directly over the studs 5 and carried by the lower flange of the Z-bar are the posts 9, which are likewise T's, the bases of the T's being secured to the Z-bar by castings or shoes 10, an iron filler-block 11 being interposed between the post and the web of the Z-bar, Figs. 8, 9. The posts 9 mark the exterior boundaries of any pair of windows, the interior boundaries of such pair being marked by the piers 12, which are angle-bars disposed in pairs, one window being located between a post and a pier, so that the members of any pair of windows are spaced apart a distance determined by the distance between any pair of piers.

The bases of the piers are connected to the lower flange of the Z-bar by means of a casting 13, as fully shown in Figs. 4 and 5, and instead of being superposed directly over a stud 5, as are the posts 9, they are disposed symmetrically on each side of such stud. The several posts and piers are each composed of a lower straight section and an upper curved extension, the straight portion being substantially tangent to the curvature of the curved extension, the free ends of the several posts and piers being secured to the lower ends of the carlines 14, Figs. 12, 13, along whose inner faces are in turn disposed the channel-deck sills 15, Figs. 1, 2, 12.

An inspection of Figs. 4 and 9 discloses the fact that the cross-section of the pier 12 is equal to the width of the flange of the Z-bar supporting it; but the cross-section of the post 9 being less than the width of the supporting-flange of the same Z-bar the difference is compensated by the filler 11, so that all the posts and piers may be disposed on the Z-bar in the same plane, the filler 11, in effect, forming an extra thickness for the flange of the T 9.

Disposed along the bases of the curved extensions of the several posts and piers and secured to the inside of the straight portions thereof are the inner stiffeners or side plates 16, the manner of securing them to the piers being indicated in Figs. 6 and 7 and the manner of securing them to the posts being shown in Figs. 10 and 11. Between the piers is received a casting 17, to which the vertical member of the plate is secured, and to the webs of the posts 9 are secured castings 18, to which the corresponding vertical members of the side plate are secured. The outer stiffener 16' is of course conveniently secured to the outer flange portions of the several posts and piers, requiring no special castings for its support, since the outer flanges of the posts and piers are disposed in the same plane and already form a continuous surface, to which such outer stiffener may be secured. Below the stiffeners 16' are secured the upper plates 6', as fully indicated in Figs. 1 and 2. The carlines 14 are curved angle-bars, as shown, being of convenient form cross-sectionally to afford support for the deck-plates 19 at the corner formed between their straight terminals and the middle curved or arched portions thereof. To afford the proper support for the overhanging portion or eaves of the roof, the vertical flanges of the carlines have secured to them the outwardly-projecting arms 20, whose free outer ends carry an outer angle-piece or stiffener 21.

The posts and piers referred to serve the same function, being all virtually and generically "posts," though "piers" is used to distinguish the particular posts between each pair of windows, and unless specifically designated as "piers" the term "posts" in the

claims is to be understood as covering either or both. The runner or Z-bar 4 in effect shortens what would otherwise be a post (or pier) of substantially the full height of the car were such post to start from the floor of the car. The studs 5, however, reduce the length of the posts, thereby insuring for them a greater stiffness and power of resistance and confining the center of moments to the plane of the Z-bar in the event the posts are subjected to any bending strain. The studs, too, being comparatively short could not suffer much under such a strain, and in case of accident or collision the runner or Z-bar 4 would act as an effective barrier against any tendency on the part of the car to collapse.

In Fig. 2 a small section of the woodwork is shown; but since my invention is confined to the frame the covering therefor is merely indicated in dotted lines in Fig. 1. Such portions of the structure to which no reference is herein made are either old or well known and fully understood in the art, so that a description thereof is here unnecessary.

The Z-bar is eminently adapted not only for the support of the posts, piers, and studs, as described, but the upper outwardly-projecting flange thereof is utilized for the support of the wooden sill S, Fig. 1, the latter being additionally supported on the inside by a wooden block S', interposed between the sill proper and the lower flange of the Z-bar.

From the specific arrangement of posts and piers as shown each pair of piers is bounded by a post, one on each side. This results in the formation of a pair of carlines extending from the piers with a carline on each side extending from the posts aforesaid.

Having described my invention, what I claim is—

1. In a metal car-frame, a series of studs, a longitudinal runner or structural member surmounting the same in a plane below the line of the window-sills, and a series of posts projecting upward from said structural member, said posts having upper inwardly-curved extensions, substantially as set forth.

2. In a metal car-frame, a series of studs, a longitudinal runner or structural member surmounting the same in a plane below the line of the window-sills, and a series of posts projecting upward from the structural member and substantially over the studs, the posts having lower straight portions, and terminal inwardly-curved extensions, substantially as set forth.

3. In a metal car-frame, a series of studs, a longitudinal runner or structural member surmounting the same in a plane below the line of the window-sills, a series of posts projecting upward from the structural member and substantially over the studs, the posts having lower straight portions and terminal inwardly-curved extensions, and carlines

having their terminals secured to the ends of the curved extensions, substantially as set forth.

4. In a metal car-frame, a series of studs, a longitudinal runner or structural member surmounting the same in a plane below the line of the window-sills, a series of posts projecting upward from the structural member and substantially over the studs, the posts having lower straight portions and terminal inwardly-curved extensions, carlines having their terminals secured to the ends of the curved extensions, and deck-sills disposed at the juncture of the carlines with the posts, substantially as set forth.

5. In a metal car-frame, a series of studs, a longitudinal runner or structural member surmounting the same in a plane below the line of the window-sills, a series of posts projecting upward from the structural member and substantially over the studs, the posts having lower straight portions and terminal inwardly-curved extensions, stiffeners or side plates secured to the posts at the bases of the curved extensions, carlines having their terminals secured to the ends of the curved extensions, deck-sills disposed at the juncture of the carlines with the posts, the carlines having central arched portions and depending straight terminals, and suitable deck-plates disposed at the corners formed between the arched and straight portions of the carlines, substantially as set forth.

6. In a metal car-frame, a longitudinal Z-

bar structural member disposed on a line below the window-sills, pairs of angle-iron piers projecting upward from the lower flange of the Z-bar, T-posts disposed on opposite sides of the angle-iron piers, and studs disposed below the Z-bar and secured to the under surface of the lower flange of the Z-bar, and distributed, one stud beneath each post, and one stud beneath and between each pair of piers, substantially as set forth.

7. In a metal car-frame, a longitudinal runner of Z-bar construction disposed below the line of the window-sills of the car, a series of T-studs projecting downwardly from the lower flange of the Z-bar, and a metal cover-plate secured to the flanges of the T's, the webs of the latter being directed inwardly or toward the interior of the car, substantially as set forth.

8. In a metal car-frame, a longitudinal runner of Z-bar construction disposed below the line of the window-sills, substantially as set forth.

9. In a metal car-frame, a series of piers arranged on the sides of the car in pairs, posts on opposite sides of the piers, and carlines secured to said piers and posts respectively, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CARL T. CLARKE.

Witnesses:

EMIL STAREK,

MARY D. WHITCOMB.