

955,850.

Patented Apr. 26, 1910.

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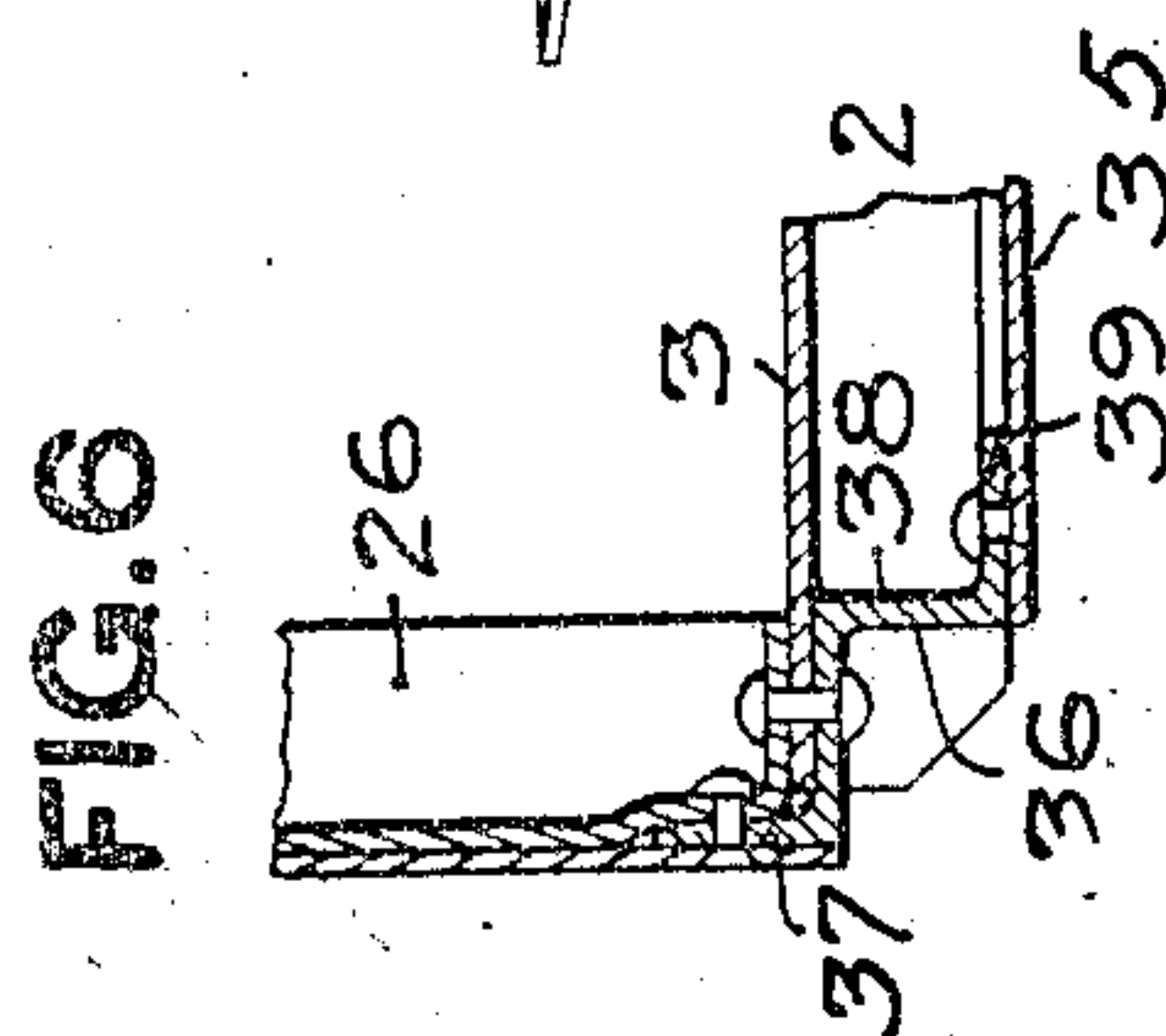


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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## STEEL-CAR FRAME.

955,850.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed January 11, 1909. Serial No. 471,755

*To all whom it may concern:*

Be it known that I, ANDREW CHRISTIANSON, a resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Steel-Car Frames; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to frame for steel cars, more particularly to underframes for steel railroad cars employing swinging draft rigging, that is buffer and draft rigging, or draft rigging pivoted some distance back from the end of the car and arranged to swing and conform to curves.

It also includes certain improvements with the frame or superstructure of the car.

The underframe comprises, generally stated, center sills, car sides, a bolster and a pivot casting for mounting the swinging draft gear, and a flaring center sill construction extending from the pivot casting to the end sill, or, where the invention is used with passenger cars, to the platform end sills beyond the main end sills.

It also comprises certain improvements in the side sills and superstructure, as well as to other improvements hereinafter set forth and claimed.

In the accompanying drawing Figure 1 is a plan view of a passenger car floor embodying the invention, the floor being partly broken away to illustrate the construction, the car sides and superstructure being shown in cross section; Fig. 2 is a longitudinal central section; Fig. 3 is a cross section on the line 3—3, Fig. 1, looking toward the platform of the car; Fig. 4 is a perspective view of the pressed center sill extension; Fig. 5 is a perspective view of the vertical car rib; and Fig. 6 is a detail view of the corner framing of the car.

The invention may be employed with any suitable car frame, whether for cars operated with steam, electricity or other power, and whether for freight or passenger cars. It is illustrated in connection with passenger cars and will be so described, it being un-

derstood that when employed in connection with a freight car the platform and sill locates the ordinary position of the end sill for such a car.

The drawing illustrates diagrammatically a swinging buffer and draft rigging for which the underframe is designed to be especially employed and which forms the subject matter of a companion application filed by me of even date, Serial No. 471,757, though, of course, it is intended that it shall be employed with any suitable form of swinging buffer or draft rigging.

The underframe, as illustrated, has the center sills 1 which are shown as formed of channel beams, and the side sills 2, which are preferably of peculiar section, each having the web portion 3, the inwardly extending top flange 4 and the outwardly extending bottom flange 6 having at its outer edge the extension 6 leading up from the bottom flange and providing means for securing thereto the base of the side plates 7 forming the outer body of the car.

The bolster is shown as formed of pressed channel sections 8 extending from the center sills to the side sills and a center casting 8' between the center sills, together with a top plate 9 and the bottom plate 10 to which bottom plate the usual center plate 11 is secured. The center sills 1 project through the bolster, out to the pivot casting 13 at which point said center sill extensions 12 are spread apart so as to flare out toward the end sill of the car, such spreading extensions 12 being carried out to the end sill, at which point the flanges of the channel center sills are cut off leaving the web portions 15 extending in line with the end sills so as to provide for riveting thereto, this being shown in Fig. 1. Such center sill extensions 12 are carried beyond the end sills by means of the pressed Z-bar platform sills 16 which extend from a point near the pivot pin casting 13 out to the platform end sill 17, and form the only support for the platform end sill, being riveted to the center sill extensions 12 through the webs and bottom flanges of



such center sills and Z-bar platform sills. The Z-bar platform sills are of peculiar construction, as shown in Fig. 4, each having a rear portion 18 corresponding substantially in height to the channel center sill for practically the distance where they lap the same and then having a downward jog 19 to bring the body of the Z-bar platform sill in proper position to support the platform without reducing the strength thereof, the body of said platform sill then extending forward, as at 20, to the platform end sill 17 and being pressed to form to fit the same and provide an end flange 21 to be riveted to the channel platform end sill.

The main end sill 14 of the car is of peculiar construction in order to provide space for the swinging of the buffer and draft rigging, which, as above stated, is shown diagrammatically, being mounted in the pivot casting 13 by means of the pivot pin 23, the special construction of which is described in said application of even date herewith, Serial No. 471,757. The buffer and draft gears are shown as having the buffer head 24 and the coupler 25, which form no part of the present invention. The end sill proper has the diaphragm plates 26 extending between the flaring center sill extensions 12 and the side sills 2 of the car riveted to both. These can be made of sufficient strength to properly brace the car outside of the center sills but to bridge the space for the swinging of the buffer and draft rigging I employ the shallow Z-bar 27 which extends between the two diaphragms 26 of the end sills and is riveted to them, as at 28, said Z-bar section of the end sill extending past the channel portions of the end sill which terminate at this point, while it extends above and fits into the depression 29 formed therefor in the Z-bar platform sills. The top plate 30 of the car floor extends from the pivot casting 13 to which it is riveted forward to this Z-bar cross piece 27 of the end sill and is riveted to the top flange thereof, as shown, being also riveted to the top flanges 31 of the Z-bar platform sills. The said top plate 30 preferably extends from side to side of the car, above the diaphragms 26, being carried over and riveted to the top flange 4 of the side sill. The platform end sill 17 is curved according to the desired curve of the forward end of the platform and is formed of channel section so as to unite with the ends of the Z-bar platform sills 16 and it has a suitable slot for the passage of the swinging buffer 24. It also serves with the Z-bar platform sills for the support of the guide 33 for the buffer which can be of any suitable construction, being more clearly shown in detail in said companion application and in fact forming the proper mounting for the draft rigging so that it does not require description here.

It will thus be seen that while providing a strong underframe for the car I provide full space for the swinging of any suitable construction of swinging draft gear. The main channel sills extend out to the end sill and are connected thereto, while on account of the flaring ends thereof they aid in bracing the same, and the Z-bar platform sills have a lapped riveted joint with the center sills and project out in flaring position toward the platform sill and form the only support therefor, and though the main end sill is built up, as a continuous platform end sill is employed the structure provides for the strong bracing of all parts and the space between the flaring center sills is properly bridged at the end sill by a strong Z-bar connection, fully bracing the car at this point. At the same time the flaring Z-bar platform sills form a strong connection between the center sills and the platform end sill, which is riveted directly to the center sills and yet provides for the support of the platform on a lower level than the main floor of the car and for the passage of the Z-bar cross sill 27 over the same, as shown. Such platform sills also provide for easy repair of the car in case of accident without disturbing the main body of the car.

As above stated the side sills of the car are provided with upwardly extending flanges 6 at their outer edges, so providing a Z-bar side sill with an upward lip portion to which the side plates 35 are secured. These side plates are secured at their ends to the double Z-bar vertical corner ribs 36 which form the corners of the car body, these double Z-bar corner pieces being secured to both the side sills and the diaphragms 26 of the end sills and rising from such point to the full height of the body of the car. As shown in Fig. 6 the main portion of such Z-bar corner rib 36 is riveted through the web of the Z-bar side sill 2 and also to the end flange of the diaphragm 26 of the end sill, while its flange 37 extends inwardly along the face of said diaphragm, which is set inwardly to receive it and provide support for the riveting of the corner piece directly to said diaphragm. The arm 38 of said corner piece extends over the bottom flange 5 of the side sill while its outer flange 39 forms a face to which the side plate 35 of the car body can be secured. To give a finish around said Z-bar vertical corner rib I provide the cover plate 41.

The car may have any suitable vertical ribs secured in any suitable position riveted to the car floor, or otherwise, such as the ribs 42 forming the sides of the door in a passenger car and the ribs 43 also in line with the end of the car body. It is desirable to provide means for locating the ribs along the car sides in any position required and to that end I provide the vertical car rib diaphragms 45 fitting within the base of the side sill 2.



and over its outwardly and upwardly extending flange 5 and also extending up within the side plate 35 of the car to any desired height, such as to the top of the car in which case in passenger cars they may be located so as to form the window openings. Such internal vertical ribs are provided with side flanges 46, 47, and the bottom flange 48. They are made of proper width to fit between the outer side plate 35 and the inner side plate 50 and they can be adjusted along between such plates to any desired position in the length of the car and secured to the inner and outer side plates by rivets or bolts, as desired. They thus provide adjustable stiffening members for the body of the car frame, bracing the car body by their connection with the side sill and with the plates forming the inner and outer walls of the car body and providing vertical filler pieces giving strength to the entire car body. As shown in Fig. 3 the inner side plates 50 can be provided with bottom flanges 51 to be riveted to the top flange 4 of the side sill and the top floor plate 30. Such construction of side sill, side plates and vertical filler pieces enables me to adapt the car construction for any purpose desired to provide any window openings therein and at the same time provide an exceedingly light construction for the car side. As illustrated in the drawing the frame provides for the swinging of either a draft or buffer gear, see Fig. 1, and it is to be understood that the term "draft rigging" or "draft gear" as used in the claims is intended to include either.

What I claim is:

1. The combination of the main center sills having flaring end portions, and center sill extensions lapping and riveted thereto on the same horizontal plane, and forming therewith a space for the swinging of the draft rigging.

2. The combination of channel center sills having flaring end portions, and Z-bar center sill extensions riveted thereto, and forming a space for the swinging of the draft rigging.

3. The combination with the main center sills having flaring end portions, of a pivot casting riveted thereto at the initial point of flare of said sills, and center sill extensions riveted to the flaring portions of said center sills beyond such pivot casting on the same horizontal plane and extending on the same flaring lines and providing space for the swinging of the draft gear.

4. The combination of the main center sills extending parallel with each other past the bolster and thence flaring out to and terminating at the end sill, and extensions thereof secured thereto on the same horizontal plane and extending on the same flaring lines to the platform end sill and

forming the only support therefor, while providing space for the swinging of the draft rigging.

5. The combination of the main center sills extending parallel with each other past the bolster and thence flaring out to and terminating at the end sill, and extensions thereof riveted thereto on the same horizontal plane and extending out therefrom on the same flaring lines having jogged portions at the end sills and forming flaring platform sills on a lower level than the center sills and fitting to and forming the only supports for the platform end sills.

6. The combination of the main center sills extending parallel with each other past the bolster and thence flaring out to and terminating at the end sill, and Z-bar extensions riveted to the webs and base flanges of the main center sills, and extending out therefrom on the same flaring lines to and forming the only support for the platform end sill.

7. The combination of the center sill extensions forming platform sills and a Z-bar connecting member extending above such platform sills and connected to the end sill.

8. The combination of the main sills having flaring portions extending out to the end sills, the side sills and diaphragm members extending between the flaring ends of the center and side sills, center sill extensions forming platform sills having a downward jog in line with the end sills, and a connecting member extending above such platform sills and connected to the other end sill members.

9. The combination of the main center sills having flaring end portions terminating at the end sills, center sill extensions thereof secured thereto on the same horizontal plane and extending past the end sill and forming flaring platform sills, and a platform end sill supported thereby, said flaring center sill extensions being the only support therefor.

10. The combination of the main center sills having flaring end portions, center sill extensions thereof extending past the end sills, a curved platform end sill, and a track-way for the buffer or draft rigging secured to such platform sills and platform end sill.

11. A pressed platform sill formed of a Z-bar cross section having a downward jog in the body thereof and an end portion to fit with the platform end sill.

12. A steel car side sill of Z-bar cross section having an upwardly extending flange formed with and extending up from its bottom flange, in combination with a car side plate secured thereto.

13. The combination of a Z-bar side sill having an upwardly extending flange at the upper edge of its bottom flange, a side plate



having its base secured to such vertical rib, and a vertical flanged filler piece having its base fitting within the base portions of such Z-bar side sill, and forming a rib for the support of the car side plate.

14. The combination of a Z-bar side sill having an upwardly extending rib at the outer edge of its base flange, an outer car side plate secured to said rib, an inner car

side plate, and a vertical flanged filler piece fitting between said car side plates and within the base of said Z-bar side sill.

In testimony whereof, I the said ANDREW CHRISTIANSON have hereunto set my hand.

ANDREW CHRISTIANSON.

Witnesses:

ROBERT C. TOTTEN,  
JOHN F. WILL.