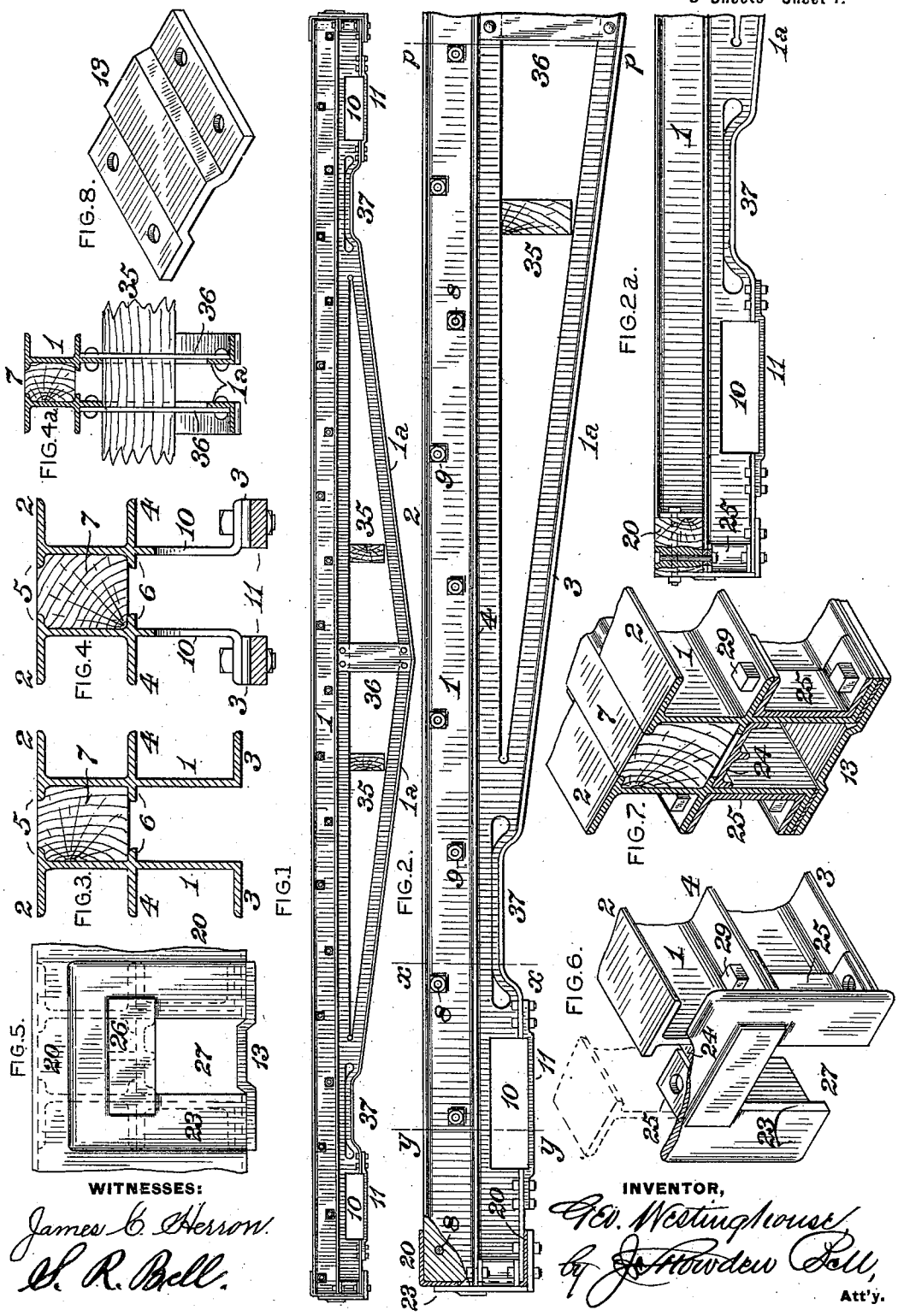
No. 615,118. Patented Nov. 29, 1898.

G. WESTINGHOUSE.

CENTER SILL FOR RAILROAD CARS.

(Application filed Oct. 7, 1898.)

(No Model.) 3 Sheets—Sheet 1.



WITNESSES:

James E. Herron.

S. R. Bell.

INVENTOR,

Geo. Westinghouse,

by Howard Bell,

Att'y.

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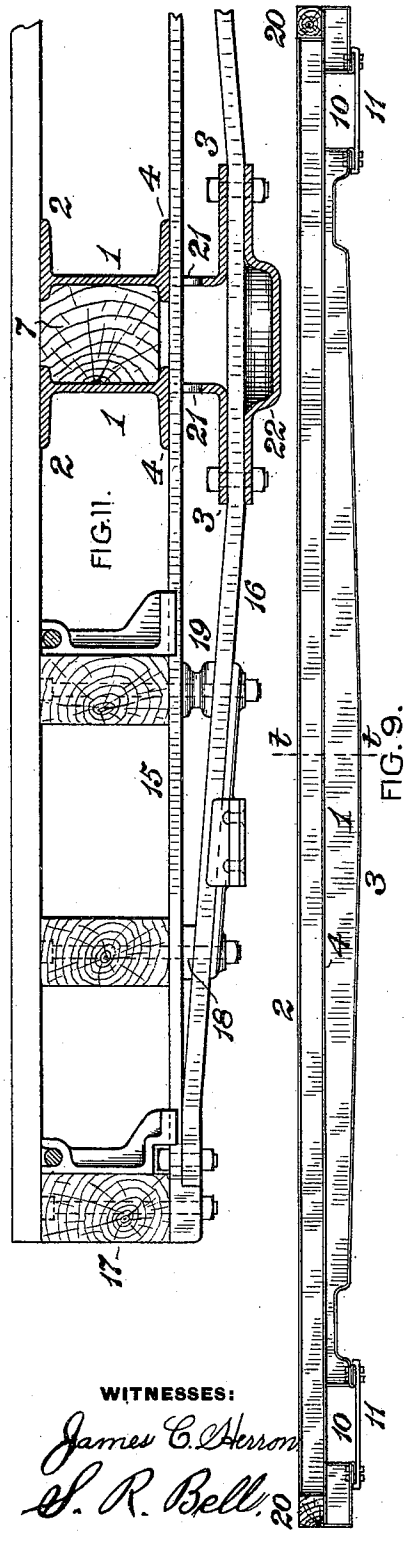

FIG. 11.

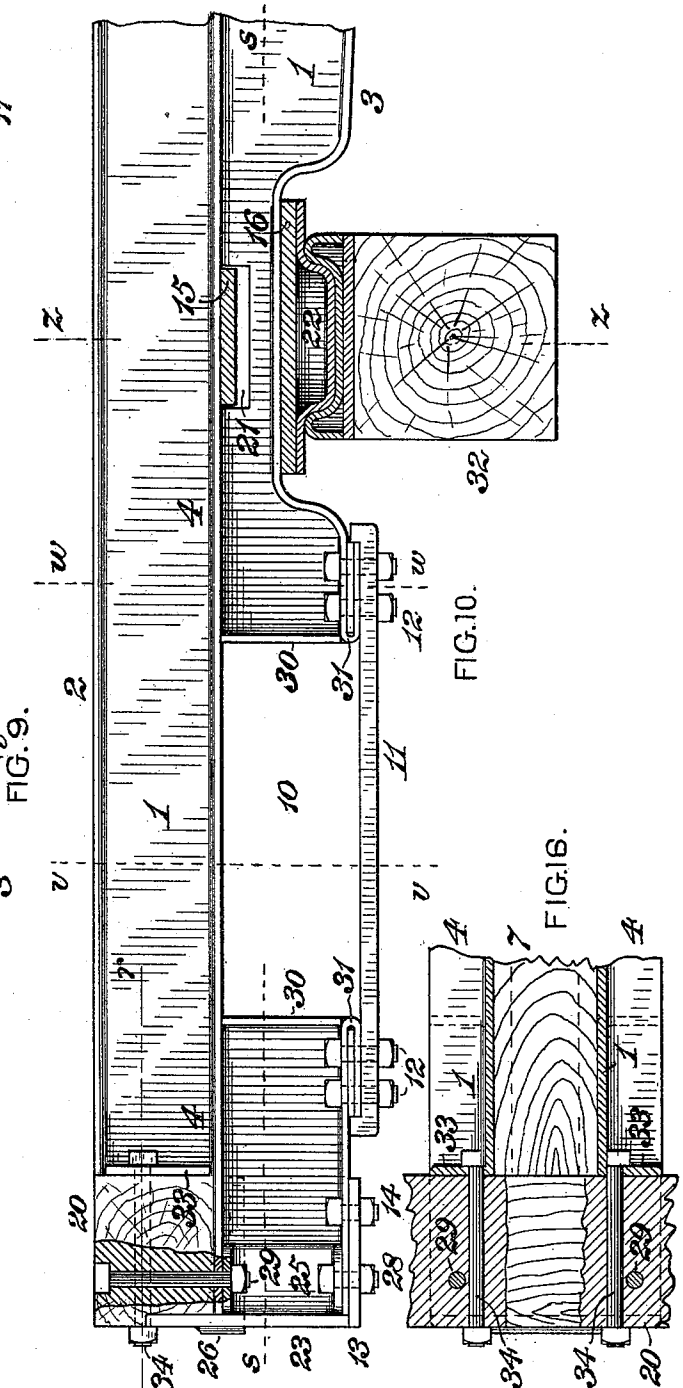

FIG. 10.

FIG. 16.

FIG. 9.

WITNESSES:

James C. Herron

S. R. Bell.

INVENTOR,

Geo. Westinghouse,

by Howden Bell,

Att'y.

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(No Model.) 3 Sheets—Sheet 3.

FIG. 15.

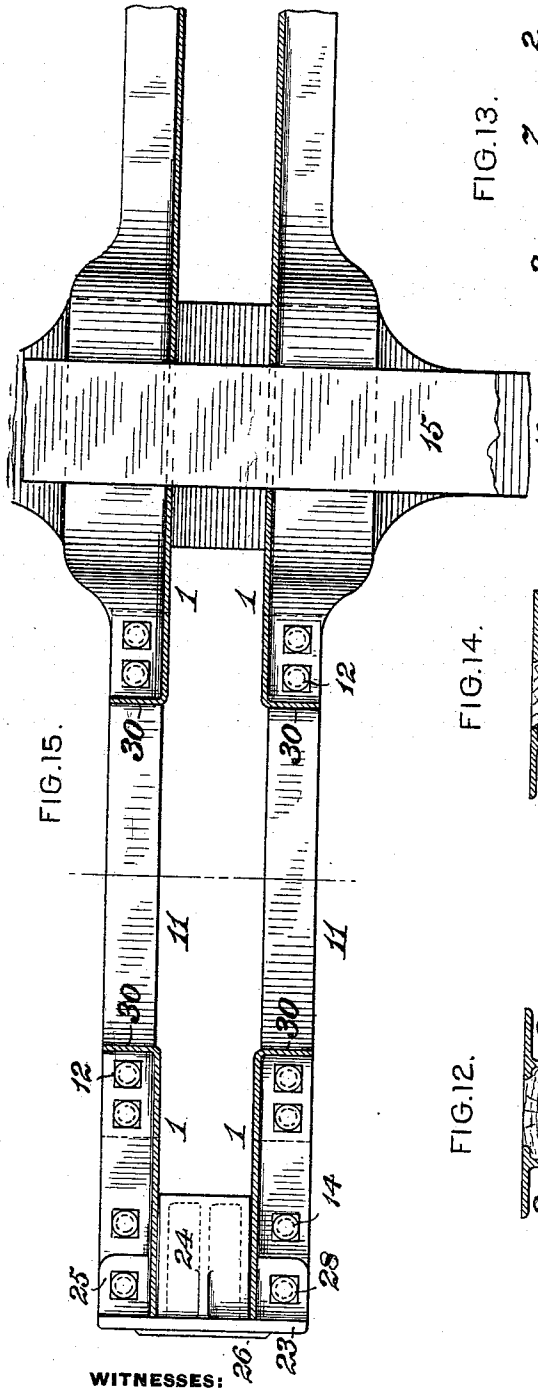


FIG. 13.

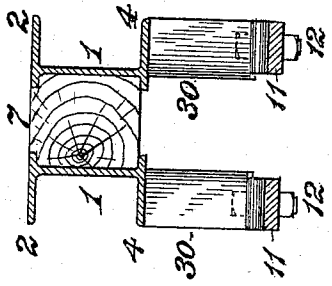


FIG. 14.

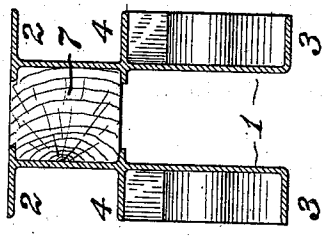
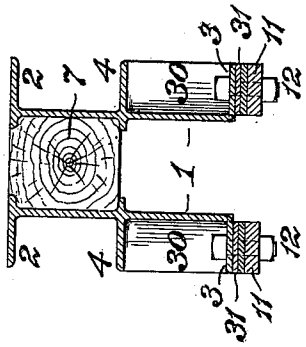


FIG. 12.



WITNESSES:

James C. Herron.

S. R. Bell.

INVENTOR,

Geo. Westinghouse,

by J. Howden Bell,

Att'y.

UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

CENTER SILL FOR RAILROAD-CARS.

SPECIFICATION forming part of Letters Patent No. 615,118, dated November 29, 1898.

Application filed October 7, 1898. Serial No. 692,941. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Center Sills for Railroad-Cars, of which improvement the following is a specification.

The object of my invention is to provide a center sill for the frames of railroad-cars which shall be of strong and durable construction and present facilities for receiving and supporting draft and buffing mechanism with the capacity of convenient and rapid insertion and removal as required and which shall also perform the functions of and obviate the necessity for the independent continuous draw-bar sometimes employed in practice.

To this end my invention, generally stated, consists in the combination of two rolled-metal side members having lateral flanges and recessed adjacent to their ends for the reception of draft and buffing mechanism, an interposed timber filling through which the side members are connected one to the other, and end castings through which the composite center sill is connected to the end sills of a car; also, in a rolled-metal side member for car center sills having lateral flanges and an integral lower tension member composed of a partially-severed and outwardly-sprung portion of its metal, and a rolled-metal side member having integral body-bolster bearings composed of inwardly sprung or pressed portions of its metal.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view in elevation of a center sill for a railroad-car, illustrating an embodiment of my invention; Fig. 2, a similar view, on an enlarged scale, of one-half of the same; Fig. 2^a, a partial side view showing a timber end sill and modified means for connection thereto; Figs. 3 and 4, transverse sections, on an enlarged scale, at the lines $x\,x$ and $y\,y$, respectively, of Fig. 2; Fig. 4^a, a similar section on the same scale as Fig. 2, at the line $p\,p$ of said figure; Fig. 5, a side view of a portion of an end sill, showing the end casting of the center sill; Fig. 6, an isometrical view illustrating the relation of an end casting to the side members; Fig. 7, an isometrical section through an end casting and the connected side members; Fig. 8, an isometrical view of a bottom end plate; Fig. 9, a side view in elevation, illustrating a modified form of center sill; Fig. 10, a similar view, on an enlarged scale, of a portion of the same at and adjacent to one of its ends; Fig. 11, a transverse section through the same and through a connected body-bolster at the line $z\,z$ of Fig. 10; Figs. 12, 13, and 14, transverse sections at the lines $w\,w$ and $v\,v$ of Fig. 10 and $t\,t$ of Fig. 9, respectively; Fig. 15, a horizontal section at the line $s\,s$ of Fig. 10, and Fig. 16 a similar section at the line $r\,r$ of Fig. 10.

In the practice of my invention I provide two rolled-metal side members of sufficient length to extend from one of the end sills 20 of a car to the other and to abut at their ends against said sills, to which they are connected, as hereinafter described. Each of the side members is, as shown in the drawings, preferably composed of a vertical web 1, a top flange 2, a bottom flange 3, and an intermediate flange 4, the intermediate flange being located in or adjacent to the middle line of the web and all the flanges extending from the outer sides of the webs. Short upper and intermediate flanges 5 and 6 may also be formed on the inner sides of the webs. The side members are thus in the general form of centrally-ribbed channels, a section which provides ample strength and stiffness to resist the strains to which the sill is subjected in service without involving undue or objectionable thickness and weight. The two side members are preferably spaced a proper distance apart by a timber filling 7, which rests upon the inner intermediate flanges 6 when the same are employed, and the side members are connected by bolts 8, passing through said filling and through their webs and provided with nuts 9. The timber filling, in addition to acting as a distance-piece, serves as a light stiffening member in the composite structure and also provides a bed to which the flooring of the car can be secured along its longitudinal center line.

The portions of the webs of the side members below the intermediate flanges and the

bottom flanges are cut away at a suitable distance from each of the ends of the center sill to provide recesses 10 to admit of the insertion and reception of draw-gear or draft and buffing apparatus of any suitable and preferred construction in the space between the side members below the timber filling. The draw-gear is supported, when in operative position, upon detachable bars or rails 11, which are secured to the bottom flanges by bolts 14 28. It will be seen that by the removal of the nuts of said bolts and the supporting-bars and bottom end plate the draw-gear may be conveniently and quickly removed and replaced whenever desired for purposes of adjustment, renewal, or repair without disturbing any other portions of the sill structure. The top and intermediate flanges of the side members and the metal of the web which lies between them being left intact when the draw-gear recesses are formed, the strength of the center sill is not objectionably reduced by the provision of said recesses.

Body-bolsters of any suitable and preferred construction may be connected to the bottom flanges of the side members at the points at which it is desired to locate the centers of the trucks of the car, and in order to enable such connection to be made above the normal level of the bottom flanges, as would in many cases be necessary, body-bolster bearings 37 may be formed at the proper points in the length of the side members by cutting out portions of the metal of the webs between the intermediate and bottom flanges and pressing or springing the metal of the webs and the bottom flanges upwardly and inwardly into the opening provided by the removal of the metal above the same. The body-bolster bearings may be raised to the desired level either as above described or by pressing a portion of the metal of the webs and bottom flanges upwardly or inwardly without cutting away the webs, as indicated in Figs. 9, 10, 11, and 15.

Figs. 10 and 11 show a body-bolster formed of an upper member 15 and a lower member 16, which are connected at their ends one to the other and to the outside sills 17 of the car-frame. Distance-pieces 18 19, having inclined lower faces, are interposed between the upper and lower members and maintain the lower member at the desired inclination on each side of its center to the upper member, and the bolster is connected to the intermediate sills by bolts passing through said distance-pieces. In the instance shown the upper member is increased in thickness at its ends, and slots 21 are formed in the webs 1 of the side members of the center sill to admit of the passage of one of said thickened ends when moving the upper member into position to be connected to the car-body. A suitable center plate 22 is connected to the lower member of the body-bolster and may also be, as shown, connected to the lower flanges of the side members of the center sill. It will be obvious that any other preferred form of body-bolster may be employed.

The side members of the center sill are connected at their ends to the end sills 20 of the car-frame and also connected one to the other by end castings, each composed of an end plate 23, which abuts against the ends of the webs of the side members and against the outside of the end sill, an inwardly-projecting plate 24, fitting between the inner sides of the webs 1 of the side members and against the short inner intermediate flanges 6 when the latter are employed, and channel-formed side flanges 25, fitting against the outer sides of the webs 1 and between the intermediate and bottom flanges 4 and 3. An upper striking-face 26 is formed on each end plate 23, below which a central recess 27 is formed in the plate for the passage of a draw-bar or coupler-stem.

In the construction shown in Figs. 1, 2, and 3 to 8, inclusive, which is designed more particularly for use in cars having iron or steel frames, the end sills 20 are rolled or pressed metal channels, and the bolts 28, which connect the side flanges 25 of the end castings to the lower flanges 3 of the side members, also pass through the lower flanges of the end sills and through the transverse bottom end plate 13, thereby connecting the end sills, end castings, and end plates with the side members. The side flanges 25 are also connected by bolts 29 to the intermediate flanges 4 of the side members. As shown in Figs. 2^a, 9, and 10, the end sills 20 are made of timber, and in this case the webs 1 of the side members are cut away or recessed at their ends above their intermediate flanges 4 to receive the end sills, and end plates 33, adapted to abut against the inner sides of the end sills, are formed on the side members by bending outwardly the portions of their webs between their top and intermediate flanges. The end sills are connected to the end castings and side members by the bolts 29, which pass through the intermediate flanges 4 and through the side flanges 25 of the end castings, and by bolts 34, passing through the end-sill-connecting plates 33.

Figs. 1 to 4^a, inclusive, illustrate a construction in which the side members are trussed and stiffened by the provision of integral lower tension members and attached struts. For this purpose the metal of the webs between the intermediate and bottom flanges is split or severed for any desired portion of the length of the side members between the inner ends of the body-bolster bearings 37, and the metal of the webs and bottom flanges below the line of division is sprung or forced outwardly, so as to form lower tension members 1^a, which extend in opposite upward inclines from the middle of the length of the sill to their junction with the unsevered metal of the web. Struts or compression-posts 36 are interposed between and riveted

to the intermediate and bottom flanges at the middle of the length of the lower tension members and maintain the same in proper position relatively to the upper portions of the side members. The open spaces provided by the formation of the lower tension members admit of the insertion of the center sill in the car-frame in proper relation to the needle-beams 35 thereof.

The modification shown in Figs. 9 to 16, inclusive, differs from the construction first described in not being provided with the lower tension members and also in the subordinate particulars of having end recesses in the webs of the side members to receive the end sills, as above described, and means for imparting additional stiffness to the side members at the ends of the draw-gear recesses 10. The webs 1 of the side members are pressed outwardly at the ends of the recesses 10 at right angles to the bodies of the side members, so as to form end plates 30, which may serve as bearings for the follower-plates of the draw-gear, and the bottom flanges 3 of the side members are doubled over interposed liners 31 at and adjacent to the ends of the recesses 10. The connecting-bolts 12 of the draw-gear-supporting bars 11 pass through the double thickness of the lower flanges 6 and through the interposed liners 31, and the side bars are thus materially stiffened in these locations. The webs and lower flanges of the side members are shown as pressed upwardly and outwardly at the points of attachment of the body-bolsters for distances substantially equal to the width of said bolsters, so as to reduce the depth of the center sill at these points for the introduction of the body-bolsters and correspondingly reduce the height of the car-frame above the truck-bolster 32.

While the advantages of an interposed timber filling in connection with metal side members, as herein described and shown, are such as to render the employment of said timber filling preferable in practice, it will be obvious that the same may, if desired, be dispensed with and the side members may be maintained at a proper distance apart by interposed blocks, castings, or forgings, performing the usual function of distance-pieces.

A center sill embodying the features herein set forth is readily applicable either in original construction or repair-work in car-frames of standard design and proportions, and while specially designed for use as a member of a metal car-frame it is desirably applicable as a strengthening element in wooden frames. Inasmuch as it forms a positive and rigid connection between the end sills of the frame it will be seen that it fully and effectively performs the important function of the ordinary independent continuous draw-bar, and by acting as a substitute therefor correspondingly effects a simplification of construction and reduction of cost.

I claim as my invention and desire to secure by Letters Patent—

1. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members having lateral flanges, recesses adjacent to their ends for the reception of draft appliances, and integral body-bolster bearings composed of inwardly sprung or pressed portions of their bottom flanges, and connections for securing said side members one to the other and to the end sills of a car-frame.

2. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members having lateral flanges, recesses adjacent to their ends for the reception of draft appliances, and integral lower tension members composed of partially-severed and outwardly-sprung portions of their webs and bottom flanges, and connections for securing said side members one to the other and to the end sills of a car-frame.

3. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members having lateral flanges, recesses adjacent to their ends for the reception of draft appliances, and integral lower tension members composed of partially-severed and outwardly-sprung portions of their webs and bottom flanges, struts interposed between and connected to flanges of the side members in the length of the lower tension members, and connections for securing the side members one to the other and to the end sills of a car-frame.

4. A rolled-metal side member for use in center sills for railroad-cars, having lateral flanges, recessed adjacent to its ends for the reception of draft appliances, integral body-bolster bearings composed of inwardly sprung or pressed portions of the bottom flange, and an integral lower tension member composed of a partially-severed and outwardly-sprung portion of the web and bottom flange.

5. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, adapted to form a continuous connection between opposite end sills of a car, each of said side members having a vertical web, and top, bottom, and intermediate flanges, and having its web and bottom flange cut away adjacent to its ends to form recesses for the reception of draft appliances, leaving its top and intermediate flanges and the portion of its web which is between them, intact, and connections for securing said side members one to the other and to the end sills of a car-frame.

6. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, having lateral flanges and recessed adjacent to their ends for the reception of draft appliances, an interposed timber filling connected to the side members, and end castings connecting the side members and adapted for connection to the end sills of a car-frame.

7. In a center sill for railroad-cars, the combination, substantially as set forth, of two

rolled-metal side frame members, having lateral flanges and recesses in their lower portions adjacent to their ends for the reception of draft appliances, a timber filling interposed between and connected to the side members, above and entirely clear of the recesses thereof, and end castings connecting the side members and adapted for connection to the end sills of a car-frame.

8. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, each composed of a vertical web, and top, bottom, and intermediate flanges, and having its web and bottom flange cut away adjacent to its ends to form recesses for the reception of draft appliances, leaving its top and intermediate flanges and the portion of its web which is between them, intact, an interposed timber filling connected to the side members, and end castings connecting the side members and adapted for connection to the end sills of a car-frame.

9. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, each having a vertical web, outer top, bottom, and intermediate flanges, and inner intermediate flanges, and having recesses below its intermediate flanges for the reception of draft appliances, an interposed timber filling resting on the inner intermediate flanges and connected to the side members, and end castings connected to the side members and adapted for connection to the end sills of a car-frame.

10. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, each having a vertical web, outer top, bottom, and intermediate flanges, and inner top and intermediate flanges, and having recesses below its intermediate flanges for the reception of draft appliances, a timber filling interposed between the webs of the side members and between their inner top and intermediate flanges, and end castings connected to the side members and adapted for connection to the end sills of a car-frame.

11. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, having lateral flanges and recesses in their lower portions adjacent to their ends for the reception of draft appliances, plates formed by outwardly-turned portions of the webs of the side members at the ends of said recesses, and supporting bars or rails connected detachably to the bottom flanges of the side members below the recesses thereof.

12. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, having lateral flanges and recesses in their lower portions adjacent to their ends for the reception of draft appliances, stiffening-plates, formed by bent-over portions of the bottom flanges of the side members at the ends of said recesses, and supporting bars or rails connected detachably to said stiffening-plates.

13. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members, having lateral flanges and recesses in their lower portions adjacent to their ends for the reception of draft appliances, end-sill-connecting plates formed by outwardly-turned portions of the webs of the side members, and end castings connecting the side members and adapted for connection to the end sills of a car-frame.

14. An end casting for center sills of railroad-cars, having an end plate adapted to abut against the outer side of an end sill and provided with a striking-face and a central recess for the passage of a draw-bar, a central projecting plate adapted to fit between the side members of the sill, and flanged side members adapted to fit against and be connected to the outer sides of the side members.

15. In a center sill for railroad-cars, the combination, substantially as set forth, of two rolled-metal side members each having a vertical web and top, bottom, and intermediate flanges, and having a portion of its top flange and of its web between its top and intermediate flanges cut away at and near each of its ends to admit an end sill, end sills fitting in the cut-away portions of the side members, and connections securing the end sills to the side members.

GEO. WESTINGHOUSE.

Witnesses:
J. SNOWDEN BELL,
W. D. UPTEGRAFF.