C. A. LINDSTRÖM.

CENTER SILL CONSTRUCTION.

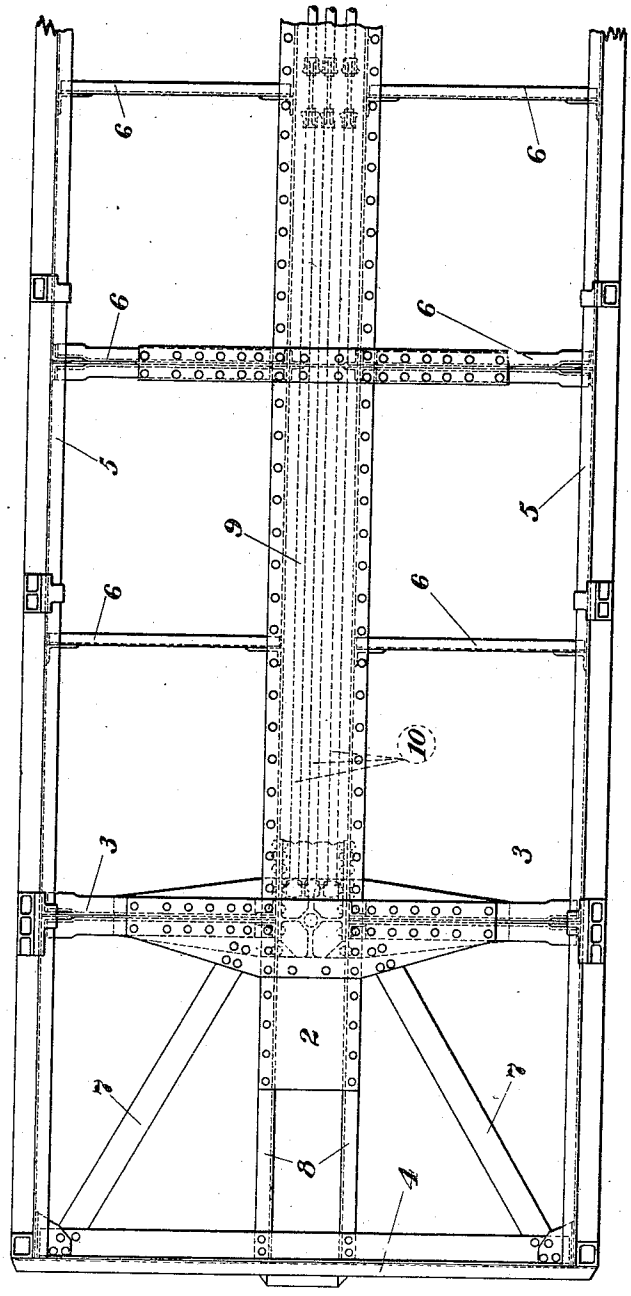
APPLICATION FILED NOV. 7, 1910.

990,572.

Patented Apr. 25, 1911.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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Lela M. Grunder.

Inventor

Charles A. Lindström.

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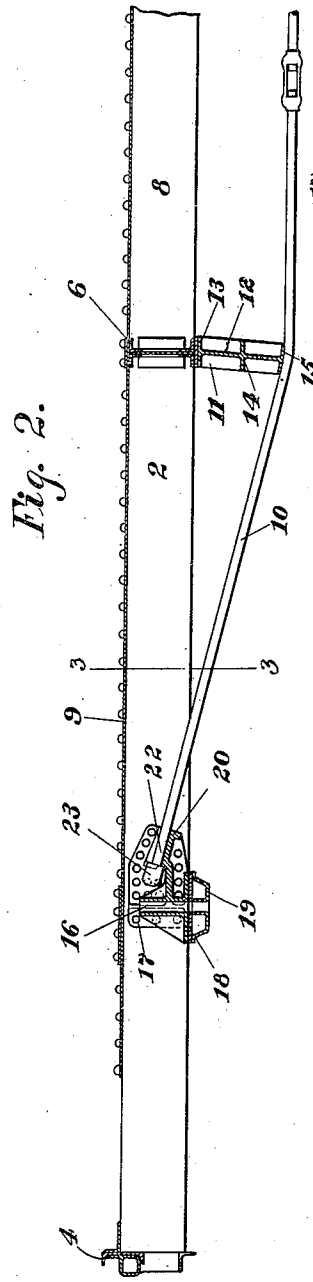

Fig. 2.

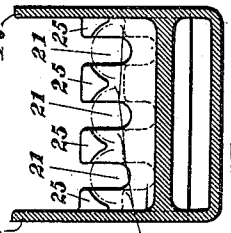

Fig. 6.

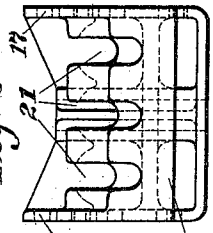

Fig. 7.

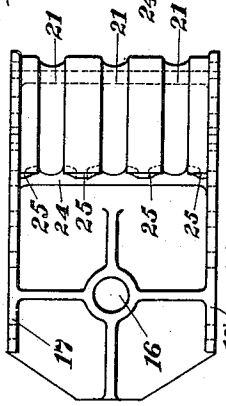

Fig. 4.

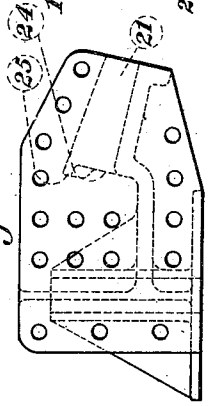

Fig. 5.

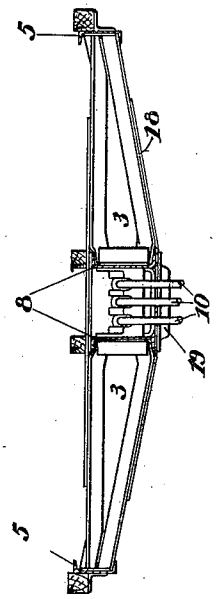

Fig. 3.

Witnesses

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4 SHEETS—SHEET 3.

Fig. 9.

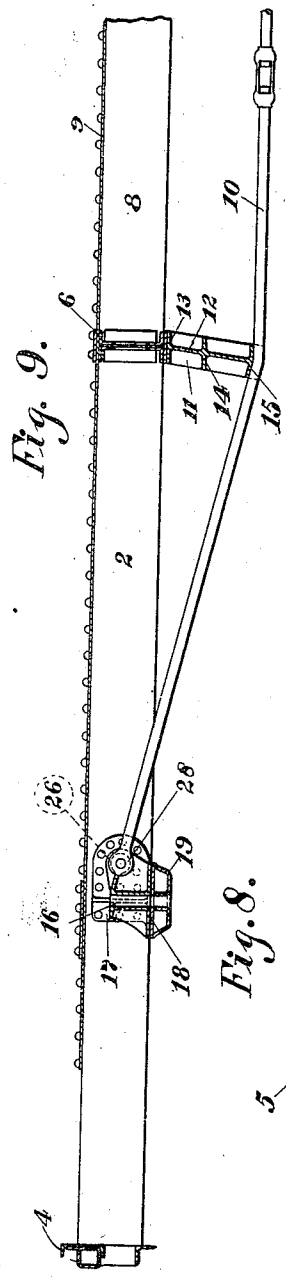


Fig. 10.

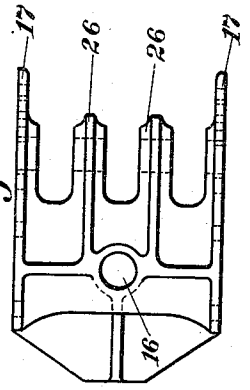


Fig. 12.

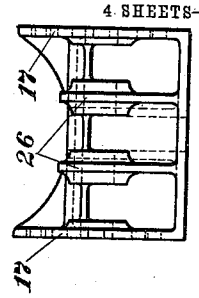


Fig. 11.

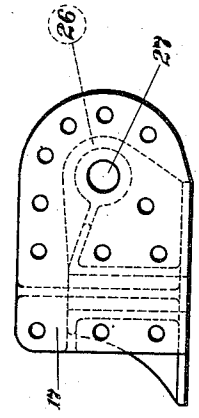
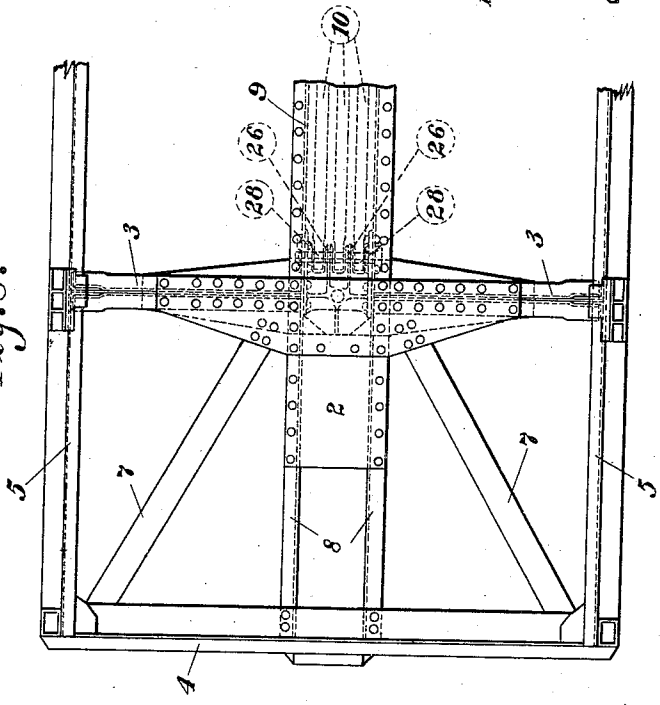


Fig. 8.



Witnesses

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4 SHEETS—SHEET 4.

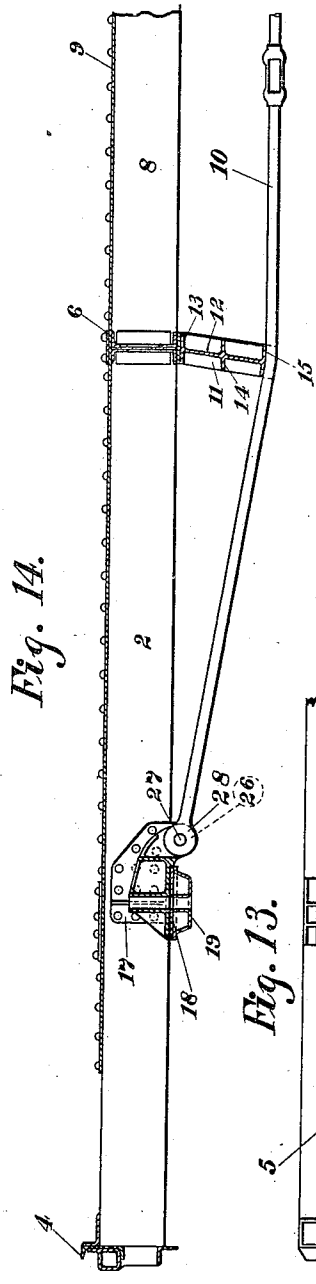

Fig. 14.

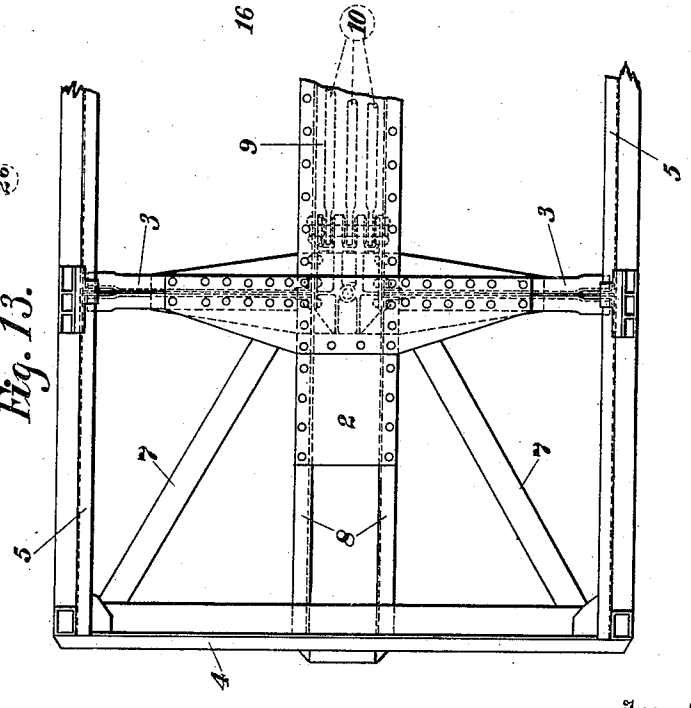

Fig. 13.

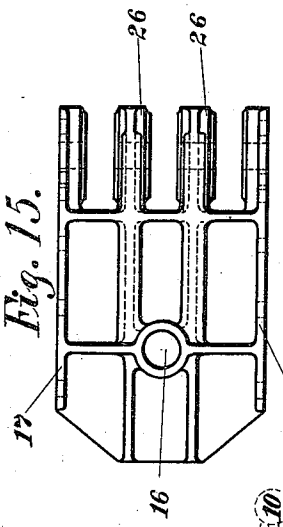

Fig. 15.

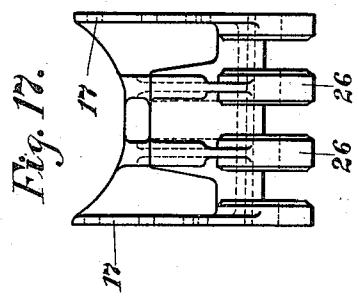

Fig. 17.

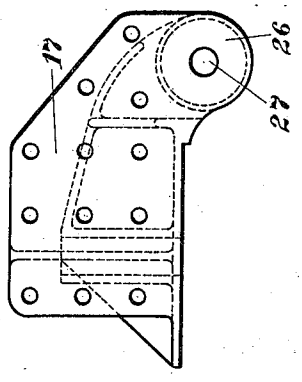

Fig. 16.

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UNITED STATES PATENT OFFICE.

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CENTER-SILL CONSTRUCTION.

990,572. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed November 7, 1910. Serial No. 591,030.

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTRÖM, a citizen of the United States, residing at No. 138 Stratford avenue, Pittsburg, E. E., in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Center-Sill Constructions, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which like characters refer to like parts, and in which—

Figure 1 is a top plan view of approximately one half of a car underframe constructed in accordance with my invention, the floor and superstructure being omitted. Fig. 2 is a longitudinal vertical sectional view of the underframe, through the center of the center sill; Fig. 3 is cross sectional view of the underframe taken on line 3 3 adjacent to and looking toward the bolster; Fig. 4 is detail top plan view of, Fig. 5 a detail side elevation of, Fig. 6, a cross section through, and Fig. 7 an end elevation of, the center brace casting shown in Figs. 1, 2, and 3. Figs. 8 to 12 inclusive are similar plan, sectional elevation and detail views of the center brace casting, showing a modified form; and Figs. 13 to 17 inclusive show another modification of my invention.

My invention relates to steel underframes for railway cars, and has for its principal object to obtain a maximum strength and weight sustaining capacity with a minimum weight of material, and is designed to provide a simple, cheap and efficient construction which will take the place of the fish-belly form of sill. These objects I secure by the employment of commercial forms of structural steel throughout the framework of the car, and very few parts which need to be specially made, so that in addition to being strong, durable and simple in construction it can also be manufactured at a small cost, in the least possible time, and without the necessity of using special and expensive machinery.

My invention further relates especially to that type of metallic underframes wherein the material is placed mostly in line with the end shocks and having the main longitudinal carrying members or sills placed at the center of the car, thus being directly in line with the draft rigging in order to receive the end shocks, and having comparatively light side sills, which are connected to the center sills by means of transoms or cross bearers, thereby transmitting the load from the car sides to the center sills, the latter carrying practically all of the load. In order to make the center sills sufficiently strong for this purpose they are reinforced by means of truss members.

My invention consists in improving underframes of this character by fastening the truss members to the center sills, and in a novel manner to the center brace member, so as to transfer practically all of the stress to the center plate, and without danger of sheering off the rivets.

I have shown my invention as embodied in an underframe for a box-car, but it is not limited to this type of car, as it is obvious that the car frame herein described and claimed is equally applicable to other forms of cars, such as flat-cars, gondola cars, etc.

The description being confined to that portion of the car which is illustrated it will be understood that the opposite end of the car is in all material respects similar to that which is shown.

My improved car underframe comprises center sill 2, body bolster 3, end sill 4, side sills 5, and cross bearers or transoms 6. The side sills, however, are not necessary in all types of cars, as the metallic side walls of certain cars can be formed as plate girders, and serve not only to confine the lading, but also as sills to carry part of the load.

The body bolster may be of any preferred construction that shown comprising web filling members extending between the center and side sills and suitably secured thereto at their ends, together with top and bottom cover plates. This construction however is old and forms no part of my invention. The draft sills and end sills likewise may be of any suitable or preferred type.

The drawings show diagonal braces 7, extending from the corners of the underframe

to the intersection of the draft sills and body bolsters; but these also are old and form no part of my invention. The side sills 5, when used may be of any form of beam, either trussed or otherwise, those shown in the drawings being rolled channel beams.

The center sill 2, is of a special trussed construction. It comprises a pair of parallel beams 8, which may be of any suitable form, either rolled shapes or of built-up plate-girder type, those shown being rolled channels which are preferred as they provide smooth inner faces for the attachment of draft lugs or struts. These parallel beams 8, with the cover plate 9 extending from beam to beam and riveted thereto, form the compression member of the truss. The tension members 10, may be formed of any suitable rolled commercial section, and are shown in the drawings as round rods. Intermediate their ends, the tension members are separated from the compression members, and interposed between them is a strut or struts 11, two such struts being used in the design of car shown in the drawings, one on either side of the transverse center thereof. Only one of these struts appears in the drawings. These struts may be of any suitable form, but for convenience they are provided with a web 12, extending vertically between the flanges 13 and flanges 15, either integral therewith or riveted thereto, the flanges 13 serving as convenient means for attachment to the beams 8. The particular strut shown is a cast member having not only the edge flanges 13 and 15, but also ribs 14, and end flanges 11. The flanges 15, at the lower end form a convenient seat for those portions of the tension members which contact with it.

In the preferred form of my invention, the center brace member, shown in detail in Figs. 4 to 7 inclusive, is constructed with a hole 16 for the reception of the king-pin, flanges 17, for securing the member to the webs of the center sills 8, and a lower flange which rests upon and is riveted to the bolster tie plate 18, and center bearing plate 19. The center brace member is also provided with an extended portion 20, which is provided with two or more grooves or recesses 21, for the reception of the ends of the truss members 22, which lie in these grooves or recesses. It is also so braced or ribbed as to form an efficient member of the underframe for resisting the strains due to the tension members and the weight transmitted by it to the center plate.

In the preferred form of my invention the ends of the truss members are formed with large heads 23, of cylindrical or other suitable shape, which abut against the inner ends of the walls forming the recesses in the center brace member, the ends of the walls 24, of the recesses 21, forming shoulders for the inner ends of the heads of the truss members to bear against.

To prevent the ends of the tension members 10 from jumping out of the recesses 21, due to shock or distortion of the center sills, projections 25 are formed on the upper portions of the walls forming the recesses, which projections, when the heads of the tension members are in normal position, overlap the same and prevent any tendency of the ends of the tension members to rise out of their normal position.

Figures 8 to 12 inclusive, illustrate a modified form of my invention in which the center brace member, shown in detail in Figs. 10 to 12 inclusive, is formed with projecting lugs 26, having perforations therein 27. In this modification the ends of the tension members are formed as eye bars 28, these ends being placed between the lugs 26, and connected thereto by a pin connection, the pin passing through the vertical webs of the center sills, the projecting lugs on the center brace member and the eye bar ends of the tension members.

Figs. 13 to 17 inclusive illustrate another modification of my invention in which the projecting lugs of the center brace member, shown in Figs. 8 to 12, are made to also project downwardly, so that the pin connection between the lugs and the tension members will be below the plane of the underside of the sill beams 8, thus obviating the necessity of perforating the webs of the sill beams.

In the drawings of the preferred and modified forms of my invention, three truss rods are shown, but it is obvious that within the scope of my invention as defined in the claims, the number of truss rods, and also the other parts, may be modified by the skilled mechanic, since

What I claim is:—

1. In a car underframe, a trussed center sill construction in which the ends of the truss tension members are anchored in a center brace member secured between the center sills, substantially as described.

2. In a car underframe, a trussed center sill construction in which the ends of the truss tension members are anchored to a center brace member secured between the center sills, substantially as described.

3. In a car underframe, a trussed center sill construction, in which the ends of the truss tension members rest in grooves formed in the center brace member, substantially as described.

4. In a car underframe, a trussed center sill construction, and truss tension members having ends suitably formed for engagement with anchoring means provided in the center brace members, substantially as described.

5. In a car underframe, a trussed center sill construction, truss tension members having ends suitably formed to abut against shoulders formed in the center brace members, substantially as described.

6. In a car underframe, a trussed center sill construction, truss tension members having ends suitably shaped to rest in grooves formed in the center brace members, and bear against shoulders formed by the walls of said grooves, substantially as described.

7. In a car underframe, a trussed center sill construction, truss tension members having ends suitably shaped to rest in grooves formed in the center brace members, and to bear against shoulders formed by the walls of said grooves, and projections on the ends of said walls to retain the ends of the tension members in normal position, substantially as described.

8. In a car underframe, the combination of center sill beams of equal depth throughout their length, and truss tension members having their ends secured to a center brace member fixed between the center sills, substantially as described.

9. In a car underframe, the combination of center sill beams of equal depth throughout their length, and truss tension members having their ends anchored in a center brace member secured between the center sills, substantially as described.

10. In a car underframe, the combination of a body bolster, and trussed longitudinal center sill comprising compression and tension members and a strut, said compression members comprising two parallel beams, said tension members at their ends extending between the parallel beams of the compression member and anchored in the center brace member, substantially as described.

11. In a car underframe, the combination of a body bolster, and a trussed longitudinal center sill comprising compression and tension members and a strut, said compression member comprising two parallel beams, said tension members at their ends extending between the parallel beams of the compression member and terminating short of the center line of the body bolster, and anchored in the center brace member, substantially as described.

12. A center sill structure for a car underframe, comprising a pair of beams, a strut, a center brace member between said beams, and truss tension members anchored in said center brace member, substantially as described.

13. A center sill structure for a car underframe comprising longitudinal sills, a transverse brace between said sills, a strut, and a tension member anchored in said transverse brace, substantially as described.

14. A car underframe, comprising center sill beams, a strut, tension members and a transverse center brace member between said sill beams, said brace having supporting grooves formed therein for the reception and securing of the ends of the truss tension members, substantially as described.

15. A car underframe comprising center sill beams, a strut, tension members and a transverse center brace between said sill beams, said brace being provided with means for securing thereto the ends of the truss tension members, substantially as described.

16. A car underframe having a center sill consisting of two parallel beams, a strut member, truss tension members terminating adjacent to but short of the bolster, and a transverse center brace member between said beams, said brace being provided with means for securing thereto the ends of the truss tension members, substantially as described.

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

CHARLES A. LINDSTRÖM.

Witnesses:
FRANK E. MILLER,
LELA M. GRUNDER.