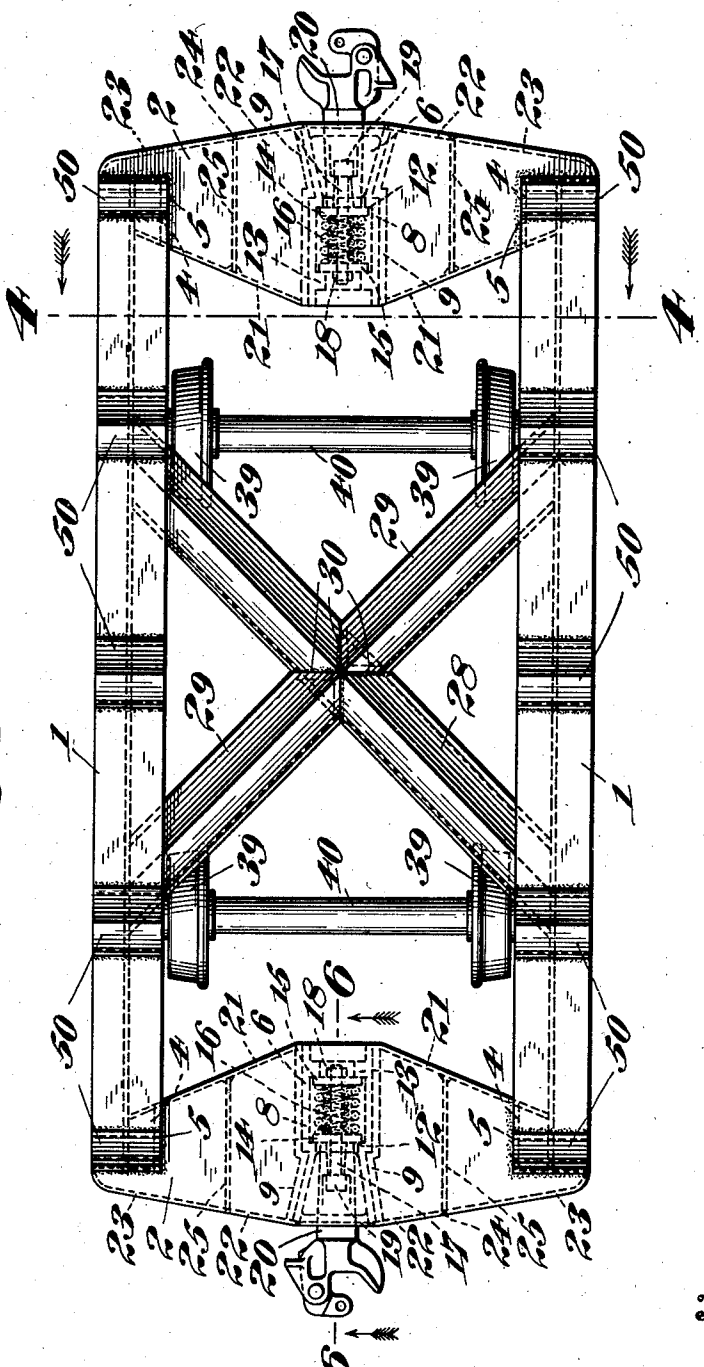
Jan. 3, 1939. C. E. LEHR 2,142,792

CHARGING BOXCAR

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Fig. 1.



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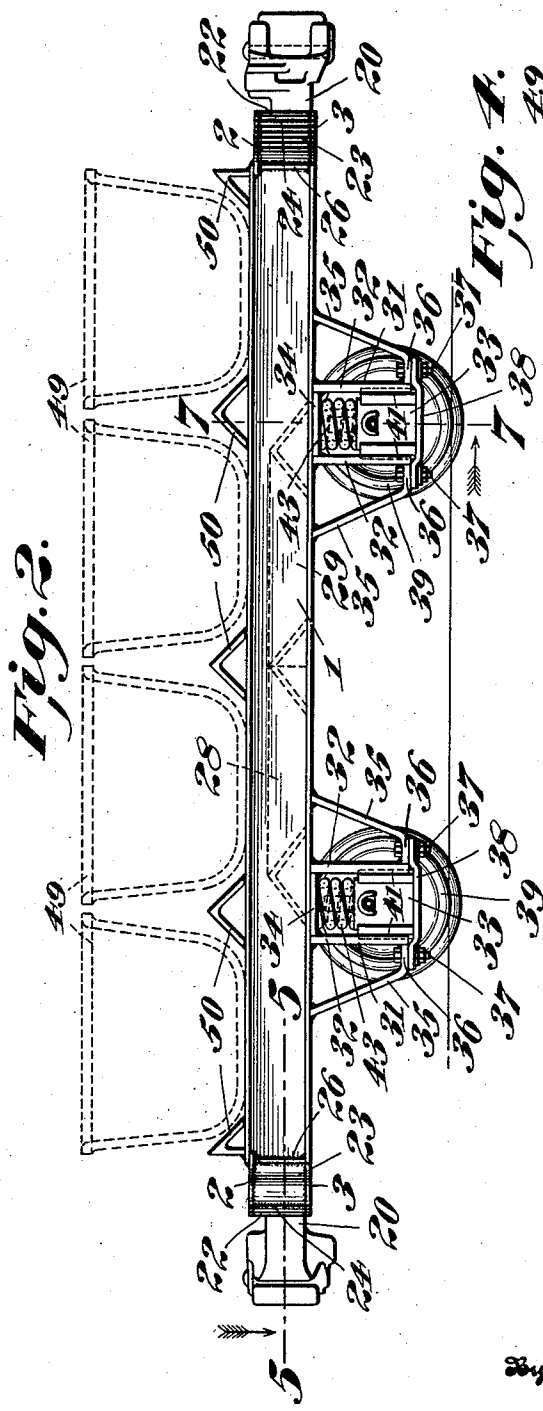


Fig. 2.

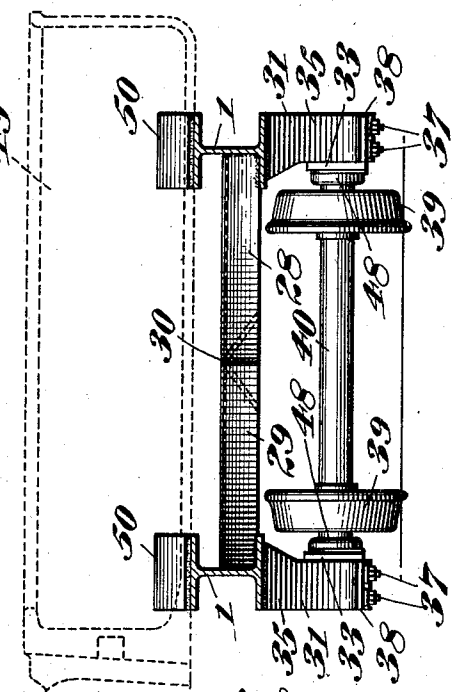


Fig. 4.

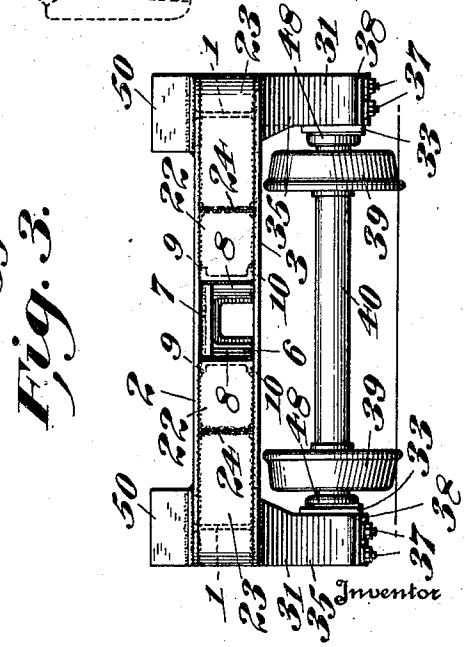


Fig. 3.

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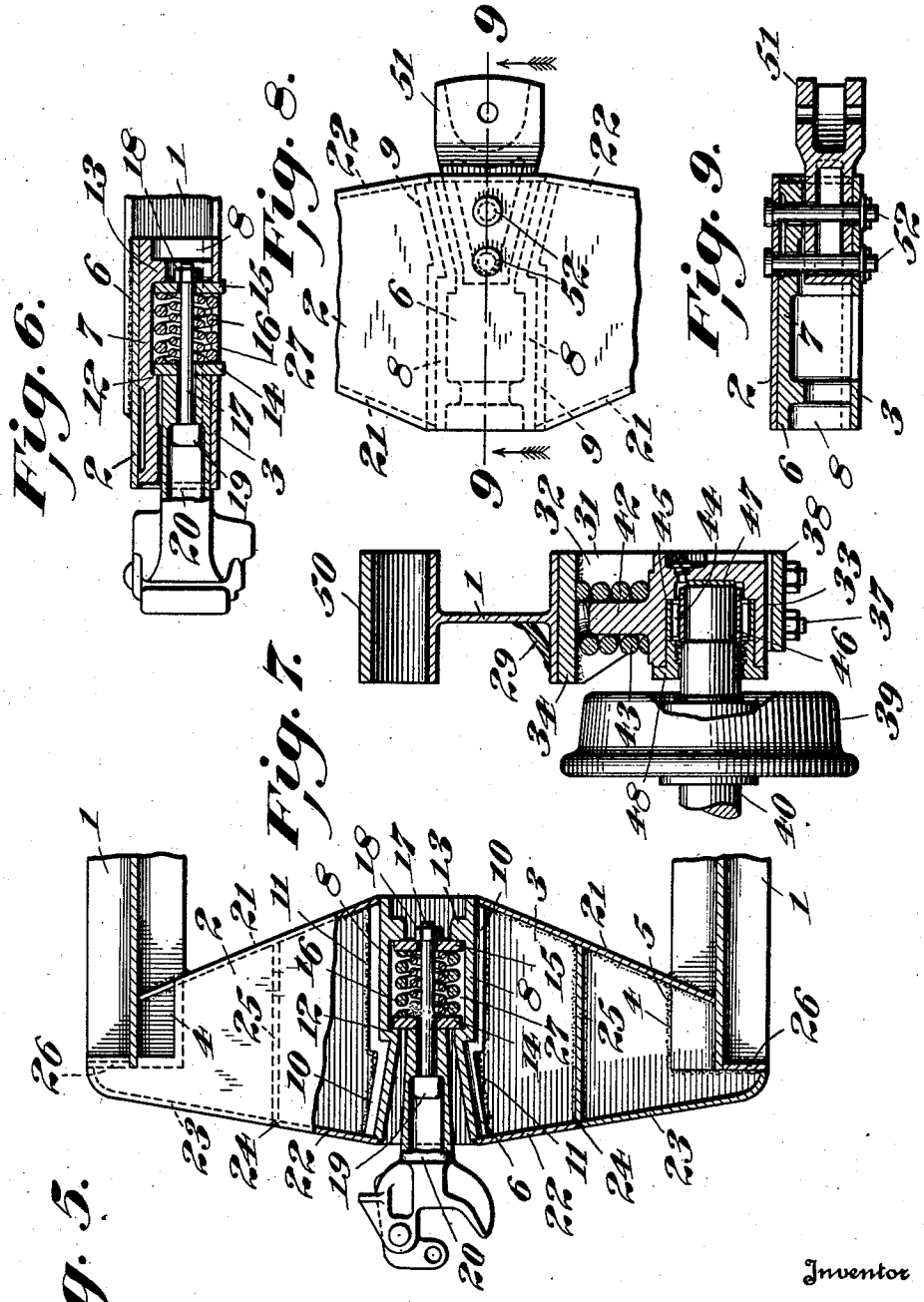


Fig. 6.

Fig. 8.

Fig. 9.

Fig. 7.

Fig. 5.

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UNITED STATES PATENT OFFICE

2,142,792

CHARGING BOXCAR

Charles E. Lehr, Bethlehem, Pa., assignor to Bethlehem Steel Company, a corporation of Pennsylvania

Application August 20, 1937, Serial No. 160,034

19 Claims. (Cl. 105—367)

My invention relates to small cars such as used in industrial plants for transporting products from one part of the plant to another and is more especially designed for carrying boxes used in charging open hearth furnaces.

One of the objects of the invention is to produce a car of this type of rolled shapes and cast metal which are welded together to form a unitary structure thereby eliminating the use of rivets and at the same time form a car which will be light of weight but of maximum strength for a minimum amount of metal used.

Another object of my invention relates to the manner of forming and reinforcing the end structure of the car.

Another object of the invention is to provide means for bracing the central portion of the car.

A further object of the invention relates to construction of the pedestals for the journal boxes.

These and other objects will be apparent from the specification and appended claims.

Referring now to the three sheets of drawings forming a part of this specification:

Figure 1 is a top plan view of the car;

Fig. 2 is a side elevation;

Fig. 3 is an end elevation;

Fig. 4 is a vertical transverse section taken on the line 4—4 of Fig. 1;

Fig. 5 is a longitudinal section through one end of the car taken on the line 5—5 of Fig. 2;

Fig. 6 is a central vertical longitudinal section through one end of the car taken on the line 6—6 of Fig. 1;

Fig. 7 is a vertical section through one of the side sills, journal box and pedestal therefor taken on the line 7—7 of Fig. 2 with the wheel shown in elevation;

Fig. 8 is a top plan of the end portion of a car showing a modified form of a draft rigging I may use; and

Fig. 9 is a vertical longitudinal section taken on the line 9—9 of Fig. 8.

Referring now to the various characters of reference on the drawings, and first to Figs. 1 to 7, inclusive: The side sills are indicated as 1 and are formed of rolled H or I-beam section disposed with their webs vertically and the flanges extending laterally therefrom along the top and bottom edges. The ends of the side sills are connected together by means of top and bottom plates 2 and 3 which are of greater width at the central portions and have converging end portions notched as at 4 and welded to the top and bottom flanges as at 5. A draft casting 6 of inverted U-shape is disposed centrally between the top and bottom plates at each end of the car having a top wall portion 7 and spaced downwardly extending vertical legs 8 having a portion diverging toward the end of the car and formed with outwardly extending flanges 9 and 10 at the upper and lower edges which are welded to the top and bottom plates as at 11. The draft castings each have abutments 12 and 13 formed therein for engaging the front and rear follower plates 14 and 15. Springs 16 are interposed between the follower plates and a bolt 17 passes through the springs and the follower plates having a nut 18 threaded on its inner end and a head 19 on its outer end for attaching the drawbar 20 thereto. The inner edges of the top and bottom plates between the draft casting 6 and the side sills are connected together by means of vertical plates 21, while the outer edges of said top and bottom plates are connected together on each side of the draft casting by means of vertical plates 22 and 23 which are welded together as at 24 and to the end of a vertical longitudinally extending rib plate 25 which connects and is welded to the top and bottom plates 2 and 3 and the inner vertical plate 21.

The ends of the outer flanges of the side sills 1 and the top and bottom plates 2 and 3 are connected together by means of a filler plate 26. As each of the draft castings 6 are open at the bottom side, the bottom plate 3 which extends the full width of the car is adapted to support the draft rigging and is provided with a central opening 27 for inserting or removing the follower plates 14 and 15 and the springs 16.

The central portion of the car is provided with an X-brace formed of angles disposed with their legs extending downwardly, comprising a single angle 28 which is continuous and has its opposite ends welded to the side sills at each side of the car and a pair of angles 29 each having an outer end welded to one of the side sills and the inner ends welded centrally to the angle 28 as at 30.

Pedestals 31 are welded to the lower surfaces of the side sills, each formed of spaced vertical side plates 32 forming the guide ways for the journal boxes 33. The top ends of the side plates 32 are welded to the lower surface of the side sills and are connected by means of a spring seat plate 34. Each of the side plates 32 has a brace plate 35 having its upper end welded to the under surface of the side sills and its lower end flanged as at 36 and welded to the lower end of the vertical side plates 32. The lower flanged end 36 is perforated to receive a bolt 37 for attaching a pedestal tie bar 38 thereto.

The wheels for the car are indicated at 39

mounted on axles 40 which have their ends journaled in boxes 33 of well known standard construction having recessed side guides 41 for engaging the vertical side plates 32, an upwardly extending boss 42 upon which a spring 43 is mounted and is also provided with roller bearings 44, cylindrical sleeves 45 and 46, thrust plate 47 and retaining cap 48.

The charging boxes 49 are adapted to be seated directly on the tops of the side sills 1 which are provided with a plurality of spacing members 50 formed of angles having their legs extending downwardly and welded to the tops of the side sills.

Referring now to the modification shown in Figs. 8 and 9. In this construction the coupler 51 is attached directly to the end of the car by means of bolts 52 while the draft casting and end plate structure is the same as shown and described for Figs. 1 to 7, inclusive, and the same reference numerals will apply thereto.

Although I have shown and described my invention in considerable detail, I do not wish to be limited to the exact and specific details shown and described, but may use such substitutions, modifications or equivalents thereof, as are embraced within the scope of my invention or as pointed out in the claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A car comprising I-beam side sills, a brace connecting the lower intermediate portion of the side sills, top and bottom plates connecting the top and bottom flanges of each end portion of the side sills, a draft casting of inverted U-shape connecting the central portions of the top and bottom plates between the side sills at each end of the car adapted to receive the draft rigging, and a welded connection between the draft casting and the top and bottom plates.

2. A car comprising side sills, a brace connecting the intermediate portion of the side sills, top and bottom plates connecting the top and bottom of each end portion of the side sills, a draft casting disposed in a central position between each of the top and bottom plates at the opposite ends of the car adapted to receive a draft rigging, spaced abutments formed in the draft castings, and vertically transversely disposed plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills.

3. A car comprising side sills each having a vertical web with flanged top and bottom edges, top and bottom plates connecting the top and bottom flanges at each end of the side sills, a welded connection between the top and bottom plates and the side sills, a draft casting having a top wall and downwardly extending spaced leg portions disposed between the central portions of the top and bottom plates at each end of the car adapted to receive a draft rigging, a welded connection between the draft casting and the end plates, vertical transversely disposed plates having their upper and lower ends welded to the inner and outer edges of the top and bottom plates between the draft castings, and the side sills, and vertical longitudinally extending rib plates connecting the top and bottom plates at intermediate points between the draft casting and the side sills.

4. A car comprising I-beam side sills, top and bottom plates connecting the top and bottom flanges of each end portion of the side sills, an inverted U-shaped draft casting disposed centrally between the side sills and each of the top and bottom plates at opposite ends of the car, and a welded connection between the draft castings and the top and bottom plates.

5. A car comprising I-beam side sills, top and bottom plates connecting each end portion of the side sills, an inverted U-shaped draft casting disposed centrally between the side sills and each of the top and bottom plates at opposite ends of the car, a welded connection between the draft casting and the top and bottom plates, and vertical transverse plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills.

6. A car comprising side sills, top and bottom plates connecting the top and bottom of each end of the side sills, a centrally disposed draft casting connecting and welded to the top and bottom plates, vertically disposed transversely extending plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills, spaced abutments formed in the draft casting, follower plates adapted to engage each abutment, a spring interposed between the follower plates, a bolt extending through the spring and the follower plates, a nut threaded on the inner end of the bolt, a drawbar connected to the outer end of the bolt, said bottom plate adapted to support the drawbar in position, and an opening in the bottom plate for inserting or removing the springs and follower plates from the draft casting.

7. A car comprising I-beam side sills, top and bottom plates connecting the opposite ends of the side sills, an X-shaped brace centrally connecting the lower portions of said side sills, said X-shaped brace formed of angles welded together and disposed with their legs extending obliquely downwardly, and a welded connection between the ends of the brace and the lower portions of the webs and bottom flanges of the side sills.

8. A car comprising side sills, top and bottom plates connecting the opposite ends of the side sills, an X-shaped brace comprising a continuously extending angle disposed obliquely with its legs extending downwardly and having its opposite ends welded to the side sills, a pair of angles disposed obliquely in alignment with each other having their legs extending downwardly, each of said pair of angles having one end welded to a side sill and the other welded to the central portion of the continuously extending angle.

9. A car comprising I-beam side sills, top and bottom plates connecting the opposite ends of the side sills, an X-shaped brace connecting the intermediate lower portions of said side sills, said X-shaped brace comprising a plurality of angles welded together at the central zone of the brace and disposed with their legs extending obliquely downwardly, and a welded connection between the ends of the arms of the brace and the lower portions of the webs, and bottom flanges of the side sills.

10. A car comprising side sills each having a vertical web with flanged top and bottom edges, top and bottom plates connecting the opposite ends of the side sills, a notch formed in the ends of the top and bottom plates, a welded connection between the notched ends of the top and bottom plates and the flanges of the side sills, an X-shaped brace connecting the intermediate portions of said side sills, said X-shaped brace comprising a plurality of angles welded together at the central zone of the brace and disposed with their legs extending downwardly, and a

welded connection between the ends of the arms of the brace and the webs and bottom flanges of the side sills.

11. A car comprising side sills, top and bottom plates extending the full width of the car having their ends welded to the top and bottom of each end of the side sills, a longitudinally extending draft casting having a top wall with vertically disposed spaced legs between the ends of the side sills and the central portions of the top and bottom plates, and a welded connection between the draft casting and the top and bottom plates.

12. A car comprising side sills, top and bottom plates extending the full width of the car for connecting each end of the sills, a longitudinally extending inverted U-shaped draft casting centrally disposed between the top and bottom plates at each end of the car having a top wall with spaced leg portions, flanges extending laterally from the top and bottom edges of the said draft casting and welded to the top and bottom plates, and means for connecting the inner and outer edges of the top and bottom plates together between the draft casting and the side sills.

13. A car comprising side sills, top and bottom plates extending the full width of the car for connecting each end of the sills, a notch formed in the ends of the top and bottom plates, a welded connection between the notched ends of the plates and the side sills, a longitudinally extending inverted U-shaped draft casting centrally disposed between the top and bottom plates at each end of the car having a top wall with spaced downwardly extending legs with outwardly inclined end portions, flanges extending laterally from the top and bottom edges and welded to the top and bottom plates, vertical transversely extending plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills, and vertically disposed longitudinally extending rib plates connecting the top and bottom plates at an intermediate point between the draft casting and each side sill.

14. A car comprising side sills of I-section having their webs vertically disposed and their flanges extending laterally therefrom, top and bottom plates connecting each of the ends of the side sills, an X-shaped brace connecting the intermediate portions of the side sills, a plurality of spaced angle members having their legs extending downwardly and welded to the top of each side sill, said spaced angle members on one side sill at one side of the car being in alignment with the spaced angle members at the opposite side of the car, a longitudinally extending draft casting connecting the central portions of the top and bottom plates at each end of the car, and a welded connection between the top and bottom plates and the draft castings.

15. A car comprising side sills of I-section having their webs vertically disposed and the flanges extending laterally therefrom, transversely extending plates having notched ends welded to the ends of the top and bottom flanges of the side sills, a filler plate connecting the ends of the top plate and the bottom outer flanges of the side sills, a draft casting inserted centrally between the top and bottom plates and welded thereto, and vertical transversely disposed plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills.

16. A car comprising side sills of I-section having their webs vertically disposed and their flanges extending laterally therefrom, transversely extending top and bottom plates having notched ends welded to the ends of the top and bottom flanges of the side sills, said top and bottom plates having the edges of the central portions formed parallel and the end portions converging, a longitudinally extending draft casting adapted to receive the draft rigging connecting the central portions of the top and bottom plates, vertically disposed transversely extending plates connecting the converging edges of the top and bottom plates between the draft casting and the side sills, vertical longitudinally extending rib plates connecting the top and bottom plates at an intermediate point between the draft casting and the side sills, and an X-shaped brace having its ends welded to and connecting the intermediate portions of the side sills.

17. A car comprising side sills of I-section having their webs vertically disposed and their flanges extending laterally therefrom, top and bottom plates extending the full width of the car having notched ends welded to the top and bottom flanges of the ends of the side sills, an inverted U-shaped draft casting mounted centrally between the top and bottom plates and welded thereto, abutments formed in the draft casting, and X-shaped brace formed of angles welded together at the central zone of the brace and the ends of the arms welded to the side sills, and spacing members welded to the tops of the side sills.

18. A car comprising side sills of I-section having their webs vertically disposed and their flanges extending laterally therefrom, spacing members welded to the top of each side sill, plates having notched ends welded to the top and bottom ends of the side sills, a longitudinally extending centrally disposed draft casting inserted between the top and bottom plates and welded thereto, vertically disposed transversely extending plates connecting the inner and outer edges of the top and bottom plates between the draft casting and the side sills, spaced abutments formed in the draft casting, follower plates adapted to engage each abutment, a spring interposed between the follower plates, a bolt extending through the spring and the follower plates, a nut threaded on the inner end of the bolt, a drawbar connected to the outer end of the bolt, said bottom plate adapted to support the drawbar in position, and an opening in the bottom plate for inserting or removing the springs and follower plates from the draft casting.

19. A car comprising side sills, top and bottom plates connecting each end of the side sills, a draft casting between the end portions of the side sills of inverted U-shape centrally disposed between each top and bottom plate, said draft casting having a top wall with downwardly extending legs formed with spaced abutments, a welded connection between the draft castings and the top and bottom plates, a coupling extending into each draft casting, and means for securing each of the couplings in the draft casting.

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