July 28, 1925. 1,547,639

A. CAMPBELL

UNDERFRAME FOR RAILWAY CARS

Filed Nov. 3, 1923 2 Sheets-Sheet 1

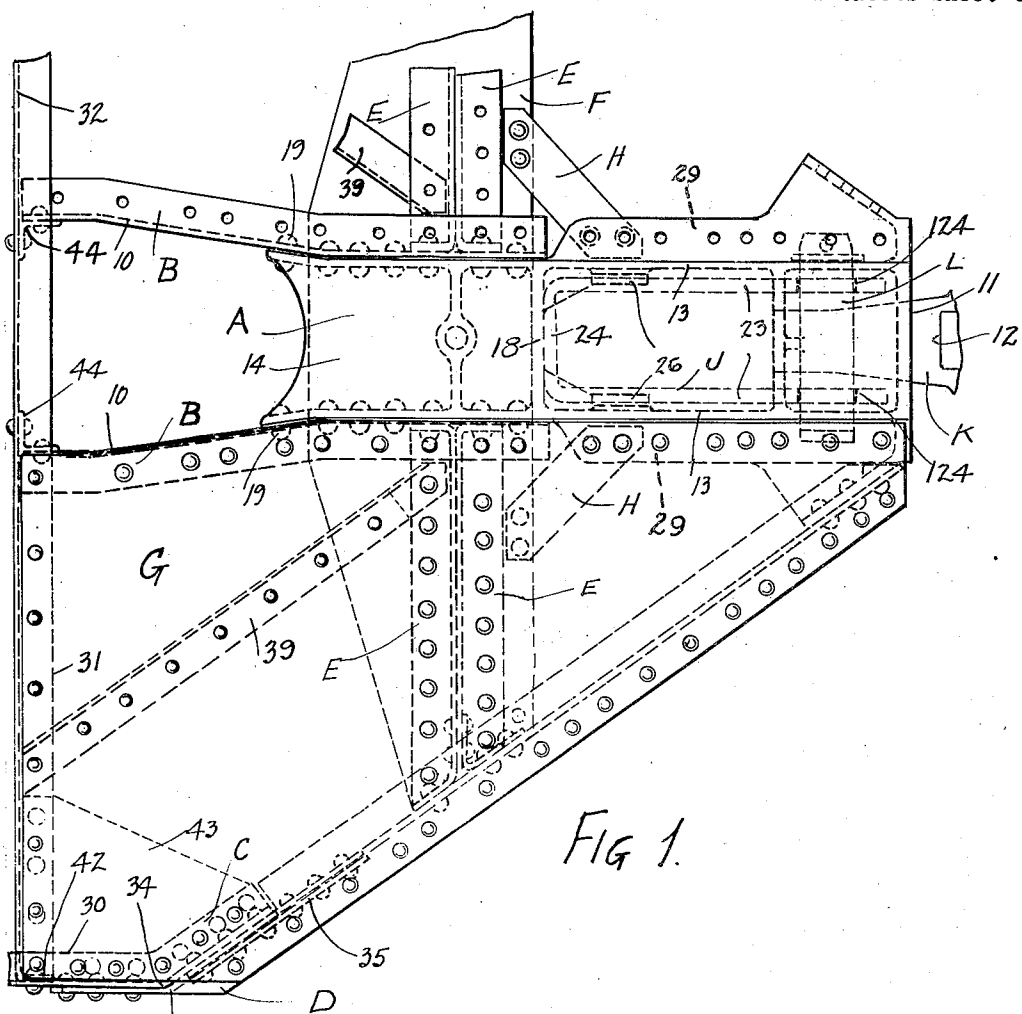


FIG 1.

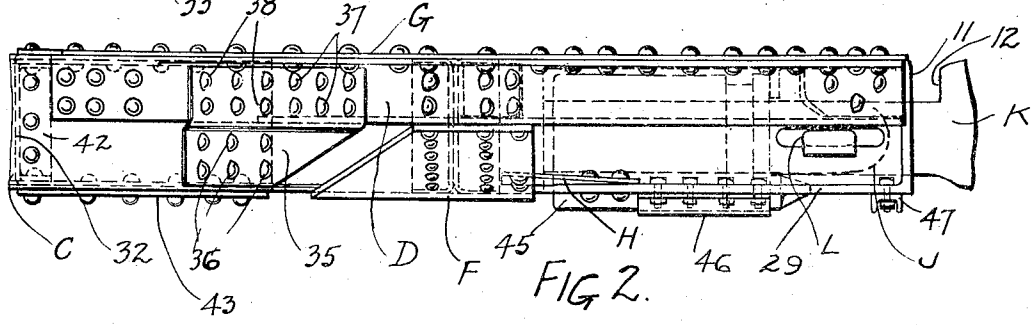


FIG 2.

Witnesses.
Harriette M. Dramer
Frances Savage

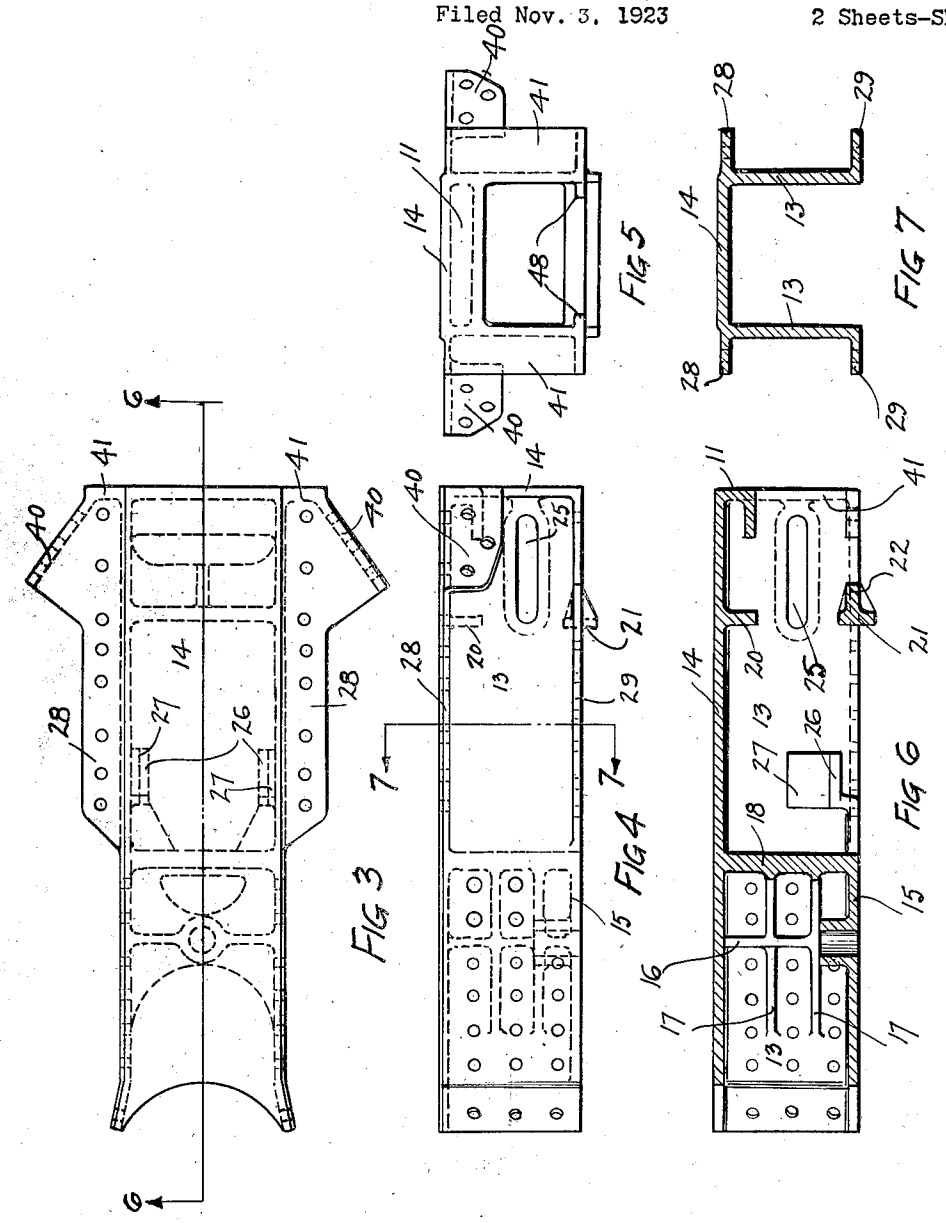
Inventor
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By
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His Attorney

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UNDERFRAME FOR RAILWAY CARS

Filed Nov. 3, 1923 2 Sheets-Sheet 2



Witnesses.
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Patented July 28, 1925. 1,547,639

UNITED STATES PATENT OFFICE.

ARGYLE CAMPBELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO ENTERPRISE RAILWAY EQUIPMENT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

UNDERFRAME FOR RAILWAY CARS.

Application filed November 3, 1923. Serial No. 672,463.

To all whom it may concern:

Be it known that I, ARGYLE CAMPBELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Underframes for Railway Cars, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in underframes for railway cars, and especially to the type of dump car wherein the draft or center sills are intercepted by a dumping hopper.

An object of this invention is to provide a central draft sill member of improved construction and of great strength and durability and one which will simplify the construction of the car by eliminating a number of parts.

A main object of the invention is to construct the draft sills and allied parts in such a manner that the usual weakness of the draft attachments due to shearing of rivets will be eliminated.

It is also a further object of this invention to provide a novel means of attaching a draft member to the underframe of a car in such a manner that the stresses due to buffing and pulling strains will be properly distributed to the side sills.

The invention furthermore consists in the improvements in the parts and devices, and in the novel combinations of parts and devices herein shown, described and claimed.

Referring to the drawings, Figure 1 is a horizontal plan view of the end portion of the underframe of a car showing the improved draft sill member and the adjacent parts of the draft sills and a portion of one of the side sills embodying my invention. Figure 2 is a side elevational view of the portion of the car shown in Figure 1. Figure 3 is a plan view of the improved draft sill member. Figure 4 is a side elevational view of the draft sill member shown in Figure 3. Figure 5 is an end elevational view of the draft sill member. Figure 6 is a vertical, longitudinal, section taken on line 6—6 of Figure 3. Figure 7 is a vertical, transverse, sectional view taken on line 7—7 of Figure 4.

Inasmuch as the structure on both sides of the longitudinal center line of the car is the same, only one side of the car is shown and described, and it will also be understood that the same structure is employed at each end of the car.

In the drawings, A represents the draft sill member, B—B the draft sills, C one of the side sills, D one of the diagonal connecting members between the draft sill member and one of the side sills, E the bolster diaphragms, F the bolster bottom cover plate, G one of the upper horizontal bracing plates, H the lower horizontal bracing plates, J a draft yoke, K a coupler and L a coupler connecting key.

The draft sills B—B extending longitudinally of the car being shown as channels each formed with a diverging portion as at 10 in order to present a transversely widened space therebetween for the purpose of accommodating a car door operating mechanism, said sills B—B extending forwardly to a point substantially in alignment with the outer edge of the body bolster bottom plate F. Disposed between the draft sills B—B and secured thereto I provide a heavy draft sill member A formed of a casting, said casting having a striking face 11 formed integrally therewith against which the horn 12 of the coupler is adapted to strike. Said draft member A, in its preferred form, is box shaped having spaced vertical walls 13—13 united by a horizontally disposed upper wall 14, the vertical walls are braced centrally of the bolster by a structure constituting a filler between the draft sills and consisting of a lower wall 15, vertical transversely extending ribbing at 16 and horizontal ribs 17—17 which also serve to brace the heavy transverse vertical wall 18 constituting the rear draft gear abutment, said wall 18 is formed integrally with the vertical walls 13—13 and the upper wall 14. The longitudinal vertical walls 13—13 of the draft member A are each extended rearwardly of the bolster a sufficient distance to overlap the diverging portion 10 of the sills B—B and are secured thereto by means of rivets 19. The front draft gear abutment consists of upper and lower portions, the abutment consists of upper transverse vertical wall 20 formed integrally with the vertical walls 13—13 and the upper wall 14, and the lower draft gear abutment consists of a transverse vertically extending wall 21 depending below and united in-

tegrally to the vertical walls 13—13 directly and by means of a horizontally extending wall 22 integrally formed with the transverse vertical wall 21 and the vertical walls 13—13. The horizontal wall 22 is preferably so disposed in relation to the vertical wall 21 as to present a T shaped beam which forms draft gear abutments of great strength and further serves to tie the vertical walls 13—13 against outward or inward bending. The aforesaid upper wall 20 and lower wall 21 are separated by an intervening space through which the draft yoke J is adapted to pass. Said yoke J presents a plurality of vertical walls 23—23 united by a transversely extending vertical wall 24 at the inner end thereof and which is adapted to abut against the rear draft gear abutment 18. At its outer end each wall 23 of draft yoke J is provided with an elongated slot 124 through which the coupler connecting key L extends and whereby a connection is effected between the yoke J and the coupler K. The vertical walls 13—13 of the draft member are each formed with an elongated slot 25 adapted to accommodate the draft key, which forms a support for the outer end of the yoke J and the inner end of the coupler K. Intermediate the draft gear abutments the vertical walls 13—13 of the draft member are each provided with an outstanding horizontally extending shelf 26 which acts as a support for the yoke. Raised portions 27—27 formed on the respective side walls 13—13 of the draft member act as guides for the yoke and prevent undue sidewise movement thereof.

In order to provide longitudinal stiffness for the side walls 13—13 of the draft members and provide suitable connecting means between the same and other portions of the car underframe an upper flange 28 and a lower flange 29 are provided on each side of the member thereby providing channel shape walls from a point substantially from the end of the draft sills B—B to the end of the car. The lower flange 29 is connected to the bolster bottom cover plate F by means of a gusset plate H which is securely riveted to both of said members. The upper surface of the upper flange 28 is substantially on the same level as the upper surfaces of the bolster sections E, the upper surface of the channel draft sills B and the upper surface of the upper flange 30 of the side sill C, and a connection between these members is effected by means of a horizontally extending plate G which is riveted to each of the said respective members and also to the upper flange 31 of a transversely extending member 32 which preferably extends between the side sills and also preferably constitutes a portion of the end wall of a dumping hopper.

While the plate G and the members connecting therewith are shown on only one side of the longitudinal center of car, it will be understood that the construction of the car is duplicated on both sides of the longitudinal center of the car thereby providing a very simple and strong structure for transmitting buffing and pulling shocks to the sides of the car.

Connection between the Z bar diagonal connecting member D and the side sill C is further effected by overlapping the respective members for a portion of their length, the Z bar connecting member D being bent at 33 and the channel side sill member C bent at 34, the respective members being continued side by side to both sides of the bend therein, for a limited distance and riveted together, thereby providing a double thickness of material at the bend. The webs of the respective members C and D are further secured together by means of a plate 35 which is secured directly to the sill C by means of rivets 36 and directly to the member D by means of rivets 37 and to both of the side members C and D by means of rivets 38.

A supplementary reinforcing member 39, preferably formed of a heavy angle is disposed intermediately of the draft sill B and the draft member D and extends from the bolster to the transverse member 32 at an angle to the line of draft and is suitably secured to both of said members and to the plate G, thereby serving to rigidify the said plate G and assist the inclined draft member D to transmit draft strains from the centrally disposed draft sills to the widely spaced side sills C. The outer end of each draft member D is secured to a bracket portion 40 extending outwardly from the draft member and formed integrally with the top flange 28 thereof, one of said brackets being disposed on either side of the longitudinal center of car. At the end of the draft member there is a vertically extending flange or web 41 connecting the upper and lower flanges 28 and 29 which greatly rigidifies the wall 13 and forms a suitable bracing for the bracket portion 40.

The underframe is tied transversely by means of bolster bottom cover plate F and by means of the transversely extending member 32 which may be of a single piece or a plurality of parts suitably joined together and secured at its ends to the side sills C as indicated at 42 and also by means of a lower gusset 43. When the said transverse member 32 is formed to constitute a portion of the end wall of a dumping hopper, the draft sills B—B then terminate thereat being connected to the same by means of connections 44 which serve to effectively space the inner ends of said sills.

The draft gear 45 is inserted from below and held in position by means of a draft

gear carrying plate 46 which is bolted or otherwise secured to the flanges 29 of the draft gear abutment. The coupler is inserted from the end of the car between the vertical walls 23—23 of the yoke J and is supported in position by means of a coupler carrier 47 which rests on lugs 48 and is also bolted to the outwardly extending flanges 29. Connection between the coupler K and the yoke J is effected by means of the key L in the manner already described.

It has heretofore been a matter of considerable difficulty to insert a connecting key through the draft member in instances where diagonal reinforcing members diverge outwardly from the ends of the car towards the sides thereof and I overcome this difficulty by providing the beams D of a very heavy section and of a comparatively shallow depth so that the same may be disposed above the key slot 25 and still possess the requisite strength to adequately transmit the heavy draft shocks encountered in service.

I have herein shown and described what I now consider a preferred manner of carrying out the invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a railway car, the combination with a centrally disposed draft member provided with a draft key slot; of side sills disposed on either side thereof and terminating at an appreciable distance from the end of the car; and connections respectively connecting each side sill with the draft member, each of said connections extending at an angle to the line of draft and being of less depth than the draft member thereby permitting the passage of a draft key beneath the angularly disposed connections and through the central draft member.

2. In a railway car, the combination with side sills; of a transversely extending structure; body bolsters disposed intermediately of said transverse structure and the end of the car; draft sills extending from the transverse structure towards the end of the car; a draft member disposed between the draft sills and secured thereto, said member extending from the bolster to the end of the car; an outer member secured to the draft member on each side thereof and extending at an angle to the line of draft and secured to the corresponding side sill; a plate connecting said draft member with the said outer member; and additional reinforcing means between the body bolster to the transverse structure, said additional means comprising a member extending at an angle to the line of draft from the body bolster to the transverse structure.

3. As an article of manufacture, a box shaped draft member having formed integrally therewith: spaced parallel vertical walls connected by means of a horizontally extending upper wall; a rear draft gear abutment comprising a transverse wall uniting said vertical walls; and a front draft gear abutment connecting the aforesaid vertical walls and depending below the same.

4. As an article of manufacture, a box shaped draft member having formed integrally therewith: spaced parallel vertical walls connected by means of a horizontally extending upper wall; a rear draft gear abutment comprising a transverse wall uniting said vertical walls; and a front draft gear abutment forming a beam of T-shape and connecting the aforesaid vertical walls.

5. As an article of manufacture a box shaped draft member having: spaced parallel vertical walls connected by means of a horizontally extending upper wall; a rear draft gear abutment comprising a transverse wall uniting said vertical walls; a front draft gear abutment formed of upper and lower transverse beams separated by an intervening space through which a yoke is adapted to pass, said upper beam being connected with the aforesaid horizontal wall and the vertically spaced walls and said lower beam being connected with the vertically spaced walls.

6. As an article of manufacture, a draft casting embodying in a one piece member: a coupler stop, front and rear draft gear follower abutments, draft gear yoke carrying means and a bolster center brace.

7. In a railway car a draft member presenting: a plurality of spaced vertical portions; a horizontally extending upper wall connecting the said vertical portions; a transverse wall at the rear end thereof connecting said vertical portions; a plurality of beams connecting the vertical portions near the front end of the draft member, said beam portions being separated in a vertical direction by an intervening space adapted for the passage of a draft yoke therethrough.

8. The combination with an integral draft member having a plurality of spaced vertical walls; of a horizontal upper wall connecting said vertical walls; front and rear draft gear abutments extending transversely between the aforesaid spaced vertical walls, the aforesaid front abutment being formed of two beams separated by an intervening space; and a yoke adapted to abut against the rear abutment and pass through the intervening space between the beams constituting the front abutment.

9. In a railway car the combination with a body bolster; of draft sills intersecting the same, said draft sills diverging inwardly of the bolster thereby presenting a transversely widened portion between bolsters;

and a draft member extending from the end of the car and lying between the sills, said draft member conforming to the diverging portion of the draft sills and being secured thereto.

10. In a railway car, the combination with a body bolster; of draft sills passing through the same and terminating substantially in alignment therewith, said draft sills being formed of channel members having the flanges thereof facing outwardly; a draft member lying within the said channels and secured thereto, said member extending outwardly to the end of the car and presenting a coupler striking face; and a plate connecting the upper flange of each channel sill with the draft member.

11. In a railway car, the combination with a body bolster; of draft sills intersecting the same and composed of channel shaped members extending through the body bolster and terminating substantially in alignment therewith; and a one piece draft member extending from the end of the car through the body bolster and rearwardly of the same, said draft member lying between the draft sills and being secured thereto rearwardly of the bolster.

12. In a railway car the combination with a body bolster provided with a bottom plate; of draft sills, said sills terminating an appreciable distance from the end of the car; a bolster bottom cover plate extending across the draft sills; a unitary draft member disposed between the draft sills and forming a continuation of the draft sills to the end of the car, said member having outer vertical walls, each provided with a flange outstanding therefrom; and a substantially horizontally disposed plate connecting said lower flange with the bolster bottom plate.

13. In a railway car, the combination with draft sills of channel shape, said sills terminating an appreciable distance from the end of the car; of a unitary draft member disposed between the sills and forming a continuation of the draft sills, said member having outer vertical walls thereof each provided with an upper flange outstanding therefrom and a horizontally extending plate connecting each of said upper flanges with upper flange of a draft sill.

14. In a railway car, the combination with a body bolster; of draft sills intersecting the same, and spaced apart; and a draft member extending across said body bolster disposed between the said draft sills and connected thereto, said member having a plurality of vertically extending walls spaced apart and united by a horizontally extending upper wall, the vertically extending walls being of channel shape with the flanges thereof facing outwardly and connecting plates between the body bolster and the respective upper and lower flanges.

15. In a railway car, the combination with a body bolster and side sills; of draft sills terminating an appreciable distance from the end of the car; a draft member secured to the draft sills and extending to the end of the car; a member secured to the draft member on each side thereof and extending at an angle to the line of draft and secured to the corresponding side sill; and a plate connecting each of the aforesaid draft sills with one side of the draft member, a side sill, one of the said angularly disposed members and the body bolster.

16. In a railway car, the combination with side sills; of draft sills; bolster sections extending outwardly from the draft sills; a draft member disposed between the sills and extending to the end of the car, said draft member having brackets on each side thereof formed integrally therewith; and members extending at an angle to the line of draft, each secured to one of said brackets and the corresponding side sill and bolster section.

17. In a railway car, the combination with side sills; of a centrally disposed draft member presenting a coupler striking face; brackets formed integrally with the said draft member and disposed on either side thereof; and members extending at an angle to the line of draft, secured to said brackets and side sills.

18. In a railway car, the combination with side sills; of draft sills; a centrally disposed draft member secured to the draft sills and disposed therebetween, said draft member having integral brackets outstanding therefrom and disposed on either side thereof; and a Z bar disposed on each side of the draft sill, each Z bar having the web thereof connected to one of the said brackets and to the corresponding side sill, each of said Z-bars extending at an angle to the line of draft.

19. In a railway car, the combination with draft sills and side sills; of a Z-bar disposed on each side of the draft sills, at an angle to the line of draft; each said Z-bar having the web thereof respectively connected to the corresponding draft and side sills; a top plate connecting the top flange of each Z-bar with the corresponding draft sill; and a bolster bottom cover plate extending transversely of the car and secured to the lower flange of each Z-bar.

20. As an article of manufacture, a box shaped integral draft member having vertically spaced parallel walls and continuous front and rear draft gear abutments extending transversely of the draft member and integrally connected with the vertical walls, said front draft gear abutments comprising upper and lower beams spaced apart and adapted for the reception of a draft yoke.

21. As an article of manufacture, a box

shaped integral draft member having vertically spaced parallel walls united by transversely extending front and rear draft gear abutments, and yoke-carrying ledges outstanding from the vertical walls and disposed intermediate the aforesaid front and rear abutments.

22. In a railway car, the combination with side sills; of a centrally disposed draft member including a coupler striking face, said draft member having brackets formed integrally therewith and disposed on either side thereof; means connected to said brackets and extending at an angle to the line of draft toward the side sills for the purpose of transmitting buffing shocks; and connecting means between said angularly disposed members and the side sills.

In witness that I claim the foregoing I have hereunto subscribed my name this 26th day of October, 1923.

ARGYLE CAMPBELL.

Witnesses:
FRANCES SAVAGE,
HARRIETTE M. DEAMER.