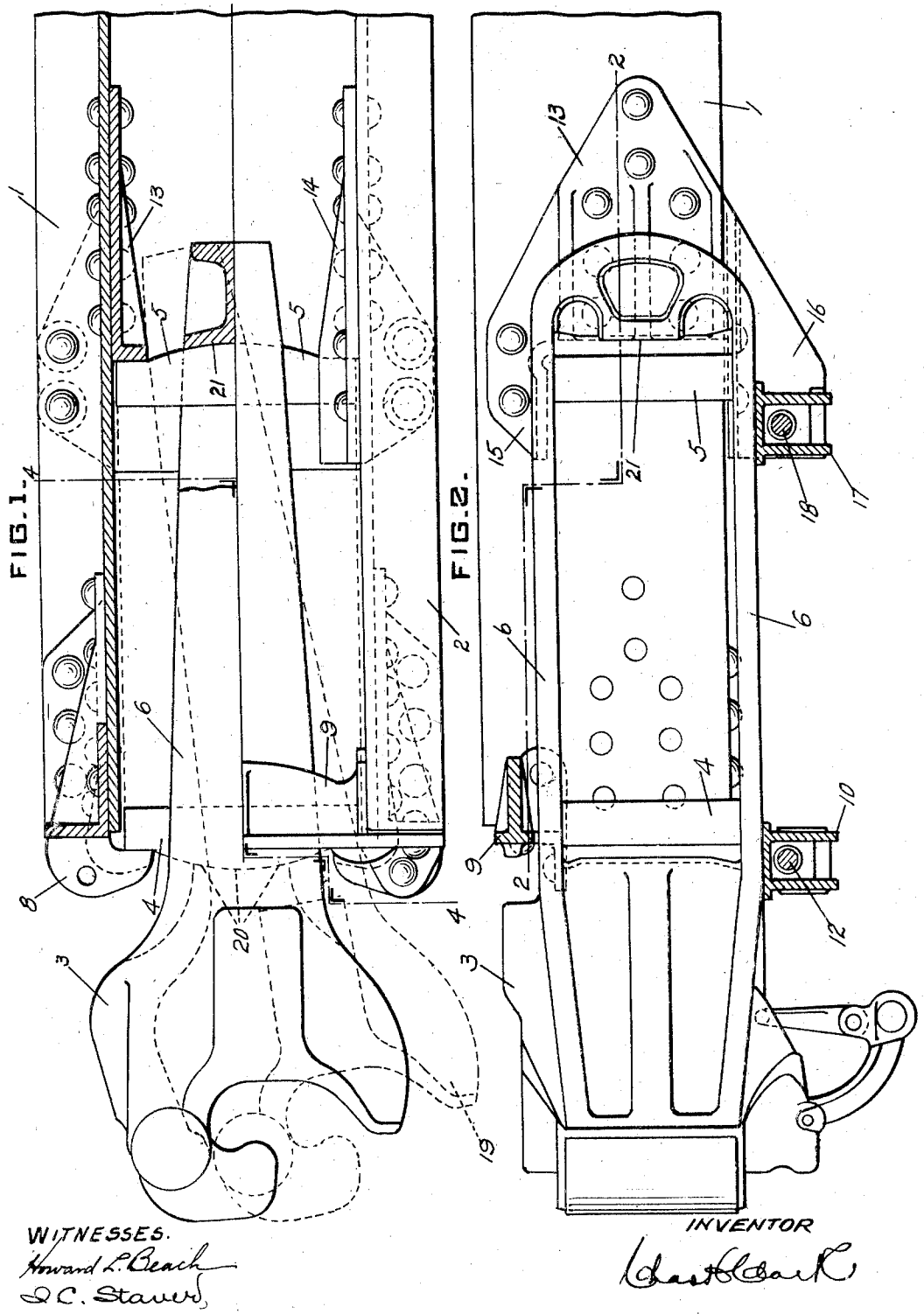
Feb. 14, 1928. **1,659,457**

C. H. CLARK

RAILROAD CAR PARTS

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C. H. CLARK

RAILROAD CAR PARTS

Filed June 1, 1923 2 Sheets-Sheet 2

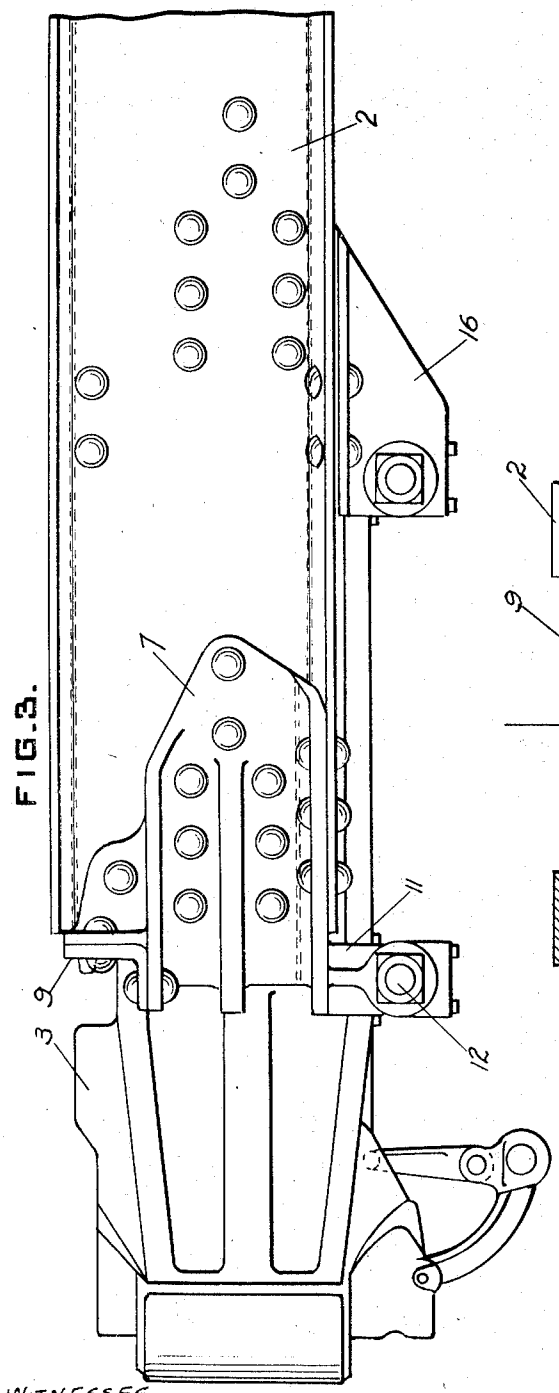


FIG. 3.

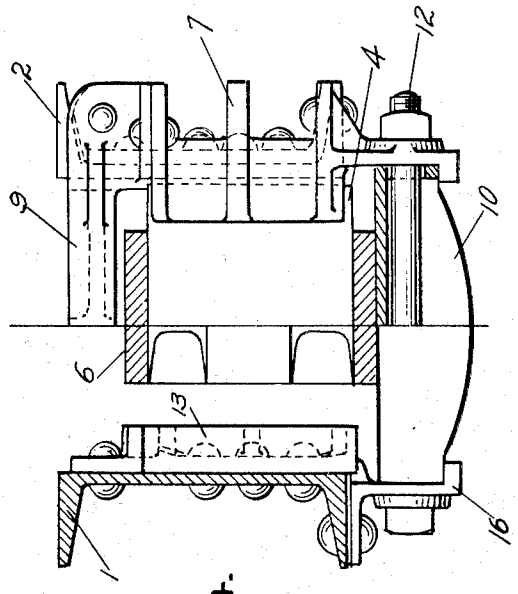


FIG. 4.

WITNESSES.
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UNITED STATES PATENT OFFICE.

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RAILROAD-CAR PARTS.

Application filed June 1, 1923. Serial No. 642,783.

My invention relates to parts of railroad cars of the types which are built in accordance with American railroad practice, in which the connection between each two cars in train is required to embody particular elements, especially those cars in which the draft sills and draft parts are required to come within defined limitations of more or less uniform and interchangeable character. Such cars have built into their structures at each end, a pair of draft sills which are equipped with a group of parts generally referred to as the draft rigging. My invention has particular reference to improvements in the forms and arrangement of the draft rigging parts.

The forces and shocks which are applied to the draft rigging parts in coupling cars together and also in train travel, have been greatly increased in the last few years by the increased size and capacity of the cars, the increased number of cars in train and the increased weight of motive power employed.

The draft rigging at each end of a car is made up of a coupler and one or more draft gears (either with or without followers) together with various parts used to establish and maintain working relation between these elements and the draft sills. Owing to the large number of cars already in service, certain characteristics must be continued as standard for any new couplers which are hereafter used, although they are not necessarily made alike by the different coupler manufacturers. Similar conditions more broadly obtain as to the draft gears, there being a large number of different types of draft gears manufactured by different concerns, all conforming, however, to standard limitations of dimension and motion, which render them interchangeable in the draft rigging. My invention provides the improvements described herein with the parts coordinately operative with the essential standards for couplers and draft gears.

An object of my invention is to bring the draft gear in the rigging into immediate operative relation to the coupler head, the latter being the element which first receives shocks and draft forces and from which they must be transmitted to the draft gear to be neutralized.

Another object of my invention is to so distribute the material of which the coupler and yoke are made that the stresses due to bending moments are reduced to a minimum, and to also eliminate the fatigue caused by quick reversal of forces between tension and compression due to alternate tugging and buffing.

A further object of my invention is to simplify the primary parts of the draft rigging, consisting of the coupler, the draft gear and the yoke, the latter being an element which holds the coupler and draft gear in operative relation to each other.

With the increase in weight, size and capacity of cars and trains, a marked increase in the weight of the draft rigging elements has naturally resulted. One of the objects of my invention is to reduce the required weight of the necessary elements of the draft rigging.

A further object of my invention is to improve the effectiveness of the cushioning characteristics of the draft gear in relation to the coupler head.

The increased draft forces referred to above and which are being directly applied to the coupler head, necessitate considerable increase in the weight of the coupler head overhanging beyond the end of the draft sills. An object of my invention is to connect the coupler head to the draft yoke with greater depth and greater width of material, thus making the connection between them more secure and reducing the opportunity for distortion.

In the general design of railroad cars of the character considered, it is desirable to have the distance between the engaging surfaces of two connected couplers and the centers of the adjacent trucks as short as other elements of the cars will permit, as this distance is a prime factor in the amount of side swing required for the coupler head to compensate for the angularity between the center lines of two cars when on curved tracks. In large capacity cars intended to be operated in long trains, the practice of using two draft gears with each coupler is being followed. A further object of my invention is, therefore, to so shorten the draft rigging that it is no longer a controlling factor in determining the distance between a coupler and the center of the adjacent truck.

Throughout the accompanying drawings, my invention is illustrated in place in relation to a pair of draft sills of an American standard railroad car, they being marked respectively 1 and 2 wherever shown.

In applying my invention to a single draft gear arrangement, Fig. 1 of the accompanying drawings is a half plan and a partial half section on line 2—2, Fig. 2. Fig. 2 is a sectional elevation with near draft sill 2 and attached parts removed. Fig. 3 is a side elevation of draft sill 2. Fig. 4 is a sectional view on line 4—4, Fig. 1, with rear follower removed.

Throughout the drawings, 3 is a coupler head, the one illustrated conforming in outline to what is known in American railroad practice as type "D" bottom operated.

The draft gear is indicated by the space left between front follower 4 and rear follower 5, the particular type of draft gear being no part of this invention. Although front and rear followers are shown, their use is not the invariable practice, and, therefore, for the purpose of this description, the draft gear will be considered as including the followers 4 and 5. It will be observed that the upper and lower horizontal sections of the yoke 6 are wider where they join the coupler head 3 than the buffing surface 20 of the coupler head 3 on the follower 4, and that the depth between the upper portion of the yoke 6 and its lower portion, is greater than the depth of the front draft lugs, hereinafter described and marked respectively 7 and 8, where they engage the front follower 4. This arrangement permits the normal side swing for the coupler head 3 in conjunction with a very wide and deep connection between the coupler head 3 and the yoke 6.

The ends of the draft sills 1 and 2 are equipped respectively with front draft lugs 7 and 8 riveted to the outer surfaces of the draft sills, and so formed as to overlap the ends of the draft sills and engage the ends of front follower 4. These draft lugs are so formed in their forward upper portions as to provide convenient riveted connection for striking bar 9. Front bottom carrier bar 10 is of a usual form supported on depending portions 11 of draft lugs 7 and 8, and held in place by bolt 12.

Although the draft sills 1 and 2 are usually held in fixed relationship to each other and to the car by cover plates across their upper flanges, end sills, bolsters, etc., these parts are omitted for the purpose of clearness in illustrating this invention, and the parts described in the preceding paragraphs may depart from the forms shown to conform to any desired arrangement of the car end construction without departing from their novel characteristics in connection with this invention.

At the rear end of the draft gears and engaging the ends of follower 5 are rear draft lugs 13 and 14. These include upper extended guides 15 and lower depending portions 16, which, together with duplicates of the forward carrier bar 10 and bolt 12, here marked 17 and 18 respectively, maintain the alignment of the rear end of the draft gear. The rear draft lugs are sometimes made an integral part of the bolster diaphragm of the car body, and this or other modifications of these pieces will naturally suggest themselves to those familiar with railroad car design.

Proper operation of the draft rigging requires provision for a limited travel of the coupler head 3 longitudinally parallel with the draft sills 1 and 2, to operate the draft gear, and also a limited horizontal motion of the coupler head 3 to compensate for the angularity of the center lines of cars in train when on curved tracks. In the drawings illustrating this invention, longitudinal travel is permitted outward from the car by compressing the draft gear through tension in the upper and lower portions of the yoke 6, and inwardly toward the car by compressing the draft gear through direct contact between the coupler head 3 and front follower 4 on the buffing surface 20. The limited horizontal motion of the coupler head 3 (and connected parts) is indicated by dotted outline 19, Fig. 1, and is attained by moving contact between the coupler head 3 and the front end of the draft gear at 20, and a related opposite moving contact between the rear vertical portion 21 of yoke 6 and the back end of the draft gear. The limited horizontal motion of the coupler head may be attained by other means than that shown, dependent upon the vertical line selected on or near the longitudinal center of the draft rigging, as the axis about which the coupler head moves. The drawings illustrating this invention presume this axis to be at the center of the draft gear.

In railroad cars of the character considered, it is necessary to have means for readily removing and replacing the couplers, yokes and draft gears. To install or remove a coupler and draft gear, bolts 12 and 18 and carrier bars 10 and 17 are removed. This opens sufficient space downward for ingress and egress of the interchangeable parts.

In the construction of railroad cars of the character considered, it is a matter of prime importance to obtain the highest degree of efficiency in use for every part of material entering into the car, as these cars are built in very large numbers and the first cost renders the attainment of higher efficiency in the use of material a matter of very large economy. This would be sufficient reason for the novelty of this invention, but it represents comparatively a small part of the economy when compared with reduction in the expense of operation and maintenance of the cars in service which results from lowering their weight and simplifying the num-

ber of their repair parts either co-incidently with maintaining their stability of construction or, as this invention does, improving it. For this reason, this invention is wholly within the practice in design of American standard railroad cars intended for interchangeable use and repair upon the railroads of North America and in other countries where standard American railroad practice is followed in car design.

I claim:

1. A combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear and a coupler head integrally and directly joined to the yoke arms, a portion of the coupler head closing the draft gear space.

2. A combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear and a coupler head integrally and directly joined to the yoke arms, a portion of the coupler head closing the draft gear space, said portion being formed for buffing contact only.

3. A combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear and a coupler head integrally and directly joined to the yoke arms, a portion of the coupler head closing the draft gear space, the width of said yoke arms being greater at the coupler head than the width of the portion of the coupler head which closes the draft gear space.

4. A combined coupler head and yoke adapted to receive a standard draft gear and a coupler head integrally and directly joined to the yoke arms, the width of the yoke arms being greater at the coupler head than at the portion of the yoke opposite the coupler head.

5. An integral standard coupler head and yoke adapted to receive a standard draft gear, the arms of the yoke extending respectively over and under the coupler head and merging therewith, forming respectively immediate connections between the upper and lower knuckle pin clevis portions and the corresponding yoke arms.

6. A combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear the coupler head being integrally and directly joined to the yoke arms with a portion of the coupler head closing the draft gear space, in combination with means for operatively associating said combined coupler head and yoke with a standard draft gear in a railroad car.

7. A combined coupler and yoke adapted to receive a standard draft gear and embodying a coupler head integral with the yoke arms and closing the draft gear space, in combination with means for supporting said coupler and yoke in a railroad car in operative association with a standard draft gear, rear and front stops for the draft gear, the front stops being located at the outer end of the car draft structure.

8. A combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear the coupler head being integrally and directly joined to the yoke arms with a portion of the coupler head closing the draft gear space, means for supporting the combined coupler head and yoke in a railroad car in operative association with a standard draft gear, rear and front stops for the draft gear, the front stops being located at the outer end of the car draft structure.

9. In a draft rigging for railroad cars, a combined coupler head and yoke comprising a yoke adapted to receive a standard draft gear with a coupler head integrally and directly joined to the yoke arms wherein a portion of the coupler head forms a buffing face constituting the front end wall of the yoke, and a draft gear the followers of which and said buffing face and the rear end wall of the yoke are formed to cooperate to permit lateral movement of said coupler and yoke with respect to said draft gear.

10. In a draft rigging for railroad cars, a combined coupler head and yoke comprising a yoke formed to receive a standard draft gear with a coupler head integrally and directly joined to the yoke arms, wherein a portion of the head forms the front end wall of the yoke constituting a buffer face, and a draft gear, the followers of the draft gear and said buffing face and the rear end wall of the yoke having curved surfaces to facilitate lateral movement of said coupler and yoke with respect to the draft gear.

11. In a draft rigging for railroad cars, a standard draft gear provided with followers having convexed outer surfaces, and a combined coupler head and yoke with the arms of the yoke directly and integrally joined to the coupler head wherein a portion of the coupler head forms the front wall of the yoke with a concaved buffing face to cooperate with the convexed face of the front followers, the rear end wall of the yoke having a concaved face to cooperate with the convex surface of the rear followers, said coupler head and yoke being laterally movable with respect to said draft gear.

12. In combination, in a railroad car, a pair of draft sills, standard draft gear arranged between said sills and held against lateral movement, a combined coupler head and yoke having the arms of the yoke directly and integrally joined to the coupler head, and formed for lateral movement with respect to said gear and sills, said gear being arranged within said yoke and immediately behind the rear face of said head and arranged to cooperate therewith, and means to transmit the draft forces to said sills.

13. In a draft rigging between a pair of

draft sills, a coupling device, draft gear, means for operatively engaging the coupling device and draft gear, front draft lugs in operative engagement with the draft gear and arranged beyond the ends of the draft sills, and rear stop means for the draft gear.

14. In a draft rigging between a pair of draft sills, a pair of front draft lugs respectively attached to the draft sills with inwardly extending portions of the draft lugs beyond the ends of their respective draft sills.

15. In a draft rigging between a pair of draft sills, a pair of front draft lugs respectively attached to the outer surfaces of the draft sills with inwardly extending portions beyond the inner faces of their respective draft sills.

16. In a railroad car, a pair of draft sills, a pair of front draft lugs attached respectively to the outer surfaces of the draft sills and projecting inwardly at the front portions of the sills, rear abutment means carried by said sills. draft gear between said sills and arranged to cooperate with said lugs and with said abutment, and a coupler head and yoke unit arranged between said sills and supported for lateral movement with respect to the draft gear and sills, said coupling head extending rearwardly between said front draft lugs and forming the front end wall of the yoke operatively cooperating with the front end of the draft gear.

17. In a railroad car, a pair of draft sills with space between them for draft rigging, a pair of front draft lugs attached respectively to the outer surfaces of the draft sills with inwardly extending portions beyond the front ends of the sills to engage the draft rigging.

18. In a railroad car, a pair of draft sills with space between them for draft rigging, a pair of front draft lugs attached to the outer surfaces of the draft sills having downwardly depending portions formed to engage and directly support a carrier bar under the draft rigging space.

19. In a railroad car, a pair of draft sills with space between them for draft rigging, and a pair of front draft lugs attached respectively to the outer surfaces of the draft sills and constructed and arranged to operatively engage draft gear extending forwardly between said sills.

20. In a railroad car, a pair of draft sills with space between them for draft rigging, a pair of front draft lugs fixed to the draft sills and having their operative draft gear stop portions in front of the space between the sills, and a coupler head striking bar connected to the front draft lugs and to the draft sills.

21. In a railroad car, a pair of draft sills with space between them for draft rigging, front draft lugs attached to the outer surfaces of the draft sills, a striking bar joining the front draft lugs above the draft rigging space, and a carrier bar with detachably connected means joining the front draft lugs below the draft rigging space.

22. An automatic coupler head for railroad cars, provided with a draft-gear-receiving yoke integral therewith, said coupler head forming the draft gear buffing face, said yoke having upper and lower horizontal bars merging forwardly into said head above and below, and overhanging said buffing face of the head.

23. An automatic shankless coupler head for railroad cars having a rear surface forming a vertical transversely-curved draft-gear-buffing face adapted to directly engage and cooperate with the front follower of draft gear, said head provided with means for assembling with draft gear to maintain said gear in operative draft and buffing relation to said head.

24. An automatic coupler head for railroad cars, provided with a draft yoke integral therewith, said yoke and head providing a space for draft gear, said head being formed to cooperate with the front follower of the gear when assembled within the yoke, said yoke having upper and lower horizontal bars merging forwardly into the upper and lower portions of said head above and below said space, the yoke being of maximum strength at its union with the head.

25. An automatic coupler head for railroad cars, provided with a draft yoke integral therewith and formed with longitudinal bars merging forwardly and laterally into said head in rearward continuation of opposite sides of the head, said head and yoke forming space to receive draft gear, the front end wall of said space being formed by the rear end of the coupling head between said bars of the yoke.

26. An automatic coupler head for railroad cars, having a rear end face constructed and arranged to cooperate with draft gear when assembled with said head and located immediately in rear thereof, said head having a draft gear yoke forming a rigid permanent part thereof and embodying longitudinal bars constituting direct rearward continuations of the top and bottom faces of the head and of the top and bottom portions of the opposite side faces of said head.

27. An automatic coupler head and head supporting draft yoke unit for railroad cars, said unit embodying a coupler head and a yoke, the head forming the front end wall of the yoke, the yoke having longitudinal bars merging forwardly into the head with their outer surfaces in rearward continuity of outer surfaces of the head, the maximum cross sections of the yoke being at its junction with the head.

28. An automatic coupler head and yoke

unit for railroad cars, the coupler head of said unit forming a rear vertical buffing face, said yoke of the unit having upper and lower longitudinal bars merging forwardly into said head above and below said face and projecting laterally at both side edges immediately above and below the ends of said face.

29. In combination, in a railroad car, a pair of draft sills having draft lugs arranged at the front ends of the sills, a coupler head extending between and formed for lateral movement with respect to said lugs and constituting a rear buffing face located approximately between said lugs, draft gear between said sills with its front end immediately behind and in operative relation to said buffing face, and coupler head supporting and draft applying means operatively arranged with respect to said draft gear.

In testimony whereof, I have hereunto subscribed my name this twenty-eighth day of May, 1923.

CHAS. H. CLARK.