Oct. 18, 1955 E. H. BLATTNER 2,720,987

DRAFT RIGGING

Filed Jan. 30, 1950

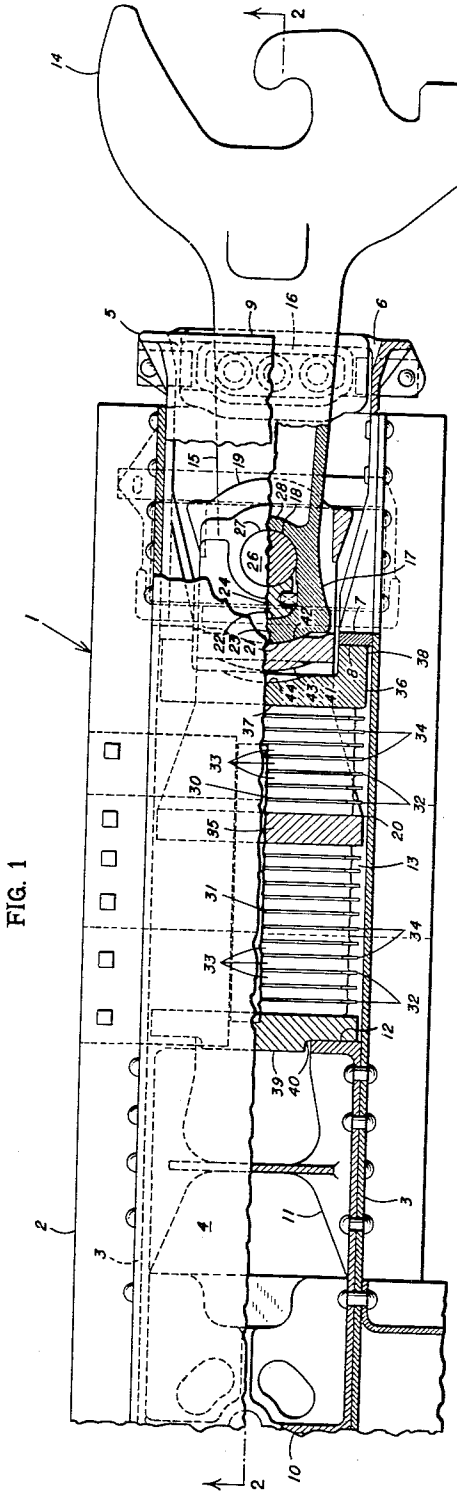


FIG. 1

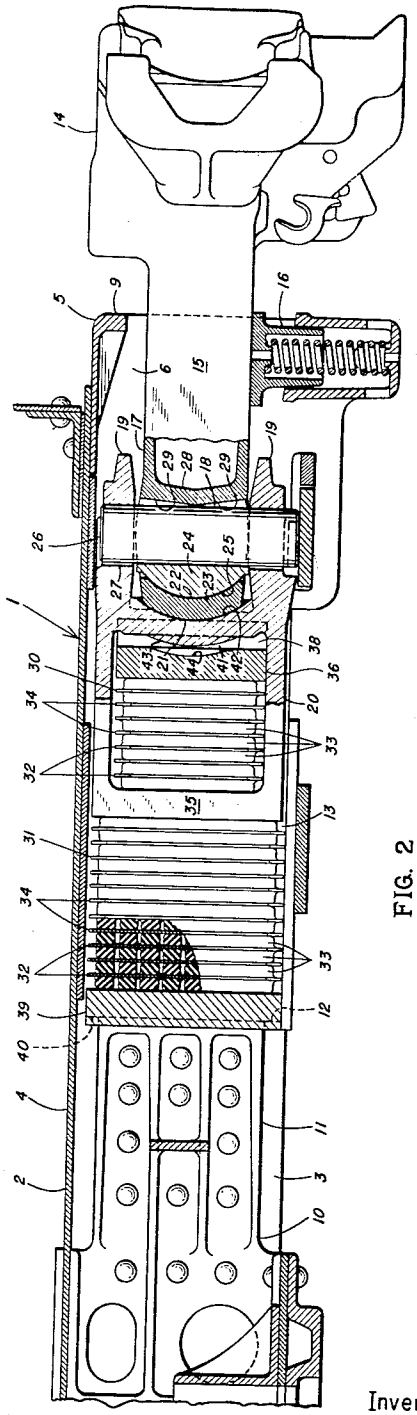


FIG. 2

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2,720,987

Patented Oct. 18, 1955



2,720,987

# DRAFT RIGGING

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Application January 30, 1950, Serial No. 141,332

6 Claims. (Cl. 213—47)

This invention pertains to a draft rigging for use in a railway vehicle.

A general object of the invention is the provision of an improved draft rigging employing rubber mats or cushions of a given capacity and arranged to fit into existing draft gear pockets in draft or center sills.

Another object of the present invention is the provision of an improved draft rigging having a yoke with integral forward and rear walls and embracing or encircling a group of rubber cushions while abutting another group of rubber cushions so that the groups will be selectively subjected to compressive forces.

The above and many other objects of the invention will become apparent from the succeeding description considered together with the accompanying drawing wherein:

Figure 1 is a horizontal view partly in section of a draft rigging embodying the present invention.

Figure 2 is a vertical view partly in section of the draft rigging illustrated in Figure 1 and considered along the the lines 2—2 thereof looking in the direction of the arrows.

Referring now in detail to the various figures of the drawing wherein like reference characters indicate like parts, the numeral 1 is employed to designate, in a somewhat general manner, a draft rigging for use in a railway vehicle which is capable of withstanding buffing and draft strains and shocks to which the railway vehicle will be subjected in service. The particular portion of the railway vehicle to which the draft rigging is applied is what is commonly termed a center or draft sill 2. The sill may be of any configuration or design and most usually comprises transversely spaced, vertically extending, side flanges 3 joined at their upper extremities by a horizontal top web 4. The sill at or adjacent its extremity has secured thereto, by any desired means, a striker plate or casting 5 which defines a restricted opening 6 into the sill. Also, usually, or particularly with the type of railway vehicle now being considered, an inward extension of the striker plate or casting forms what is commonly termed a front draft lug 7. These front draft lugs extend transversely of the center sill inwardly thereof so that companion front draft lugs extend toward one another to limit or restrict, at a localized area the clear opening into the center sills and in effect form definite barriers or pulling shoulders for the purpose to be made herein apparent. Also in present or existing equipment the distance from an abutment or pulling face 8 of each front draft lug to the front face 9 of the striker plate is established or definite. The center sill has, spaced a predetermined distance inwardly thereof from the striker casting, a center sill filler casting 10 which is formed with rear draft lugs 11 extending toward the front draft lugs. The center sill filler casting and rear draft lugs are most usually formed as a unitary structure and secured to the center sill within the confines thereof by any desired means. Pushing faces 12 of the rear draft lugs, in longitudinal alignment with the pulling faces 8 of the front draft lugs, define the longitudinal extent of



a draft gear pocket 13. For the purpose of illustration only, the longitudinal extent of this draft gear pocket is twenty-four and five-eighths inches and such dimension is considered as a standard or adopted as such by the domestic railroads for certain types of railway vehicles.

What is considered as a standard type F coupler is associated with the draft sill and as such comprises a coupler head 14 having extending rearwardly therefrom through the striker restricted opening, a shank or stem 15 with ample clearance being provided about the coupler shank to allow the coupler to execute a somewhat universal movement in response to forces to which it will be subjected in service. As usual the coupler is resiliently supported at a predetermined elevation by means of a coupler carrier 16 forming a component of the striker casting or plate. Part of the characteristics of this standard type F coupler is that a rear extremity 17 thereof is provided with a vertically directed opening 18 and lies between vertically disposed, horizontally directed legs or arms 19 of a draft yoke 20 with sufficient clearance particularly above and below as well as at the sides of the coupler stem to allow the coupler to execute the universal movement above mentioned. The extreme inner end of the coupler stem terminates in a spherically disposed convex surface 21 about which more will be related hereinafter and spaced a desired distance toward the coupler head from the convex surface is a spherically disposed concave surface 22 with these two surfaces forming the horizontal limits or thickness of a back web 23 of appreciable thickness capable of withstanding the shocks to which it will be subjected in service. This back web also assists in defining the opening 18 in the coupler stem. Disposed within the coupler stem opening is a filler block 24 having as a rear face, a spherically disposed, convex surface 25 nesting in or mating with the concave surface 22 of the coupler stem so that as the coupler is subjected to draft or pulling forces and as it executes a pivotal or universal movement a full bearing relationship will exist at all times between the coupler back web and filler block. Extending vertically through the coupler opening in front of the filler block is a coupling pin 26 preferably circular in horizontal section or cylindrical in formation with this pin projecting upwardly and downwardly beyond the limits of the coupler stem to be lodged in suitable or aligned openings 27 in the yoke arms. A front web 28 of the coupler stem defines the forward limits of the coupler opening and is arranged with oppositely sloping surfaces 29 so that when the coupler head moves vertically, sufficient clearance is provided about the pin forwardly thereof to allow such vertical head movement without interference by the coupling pin.

This structure so far considered is present in existing equipment; however, a slight variation in the relationship of components is here present in that the coupler horn is at a greater normal distance from the striker plate in the present embodiment than in the case of existing equipment. For purposes of illustration only, the reason for this being that certain draft gears of existing equipment are such that the coupler horn is spaced normally a fixed distance of three and one-quarter inches from the striker casting while in the present embodiment, due to the particular type of draft gear employed this normal distance is increased to four inches.

It has been found that, at times, it may be highly desirable to substitute for certain draft gears now associated with draft riggings in certain existing equipment, a different type of draft gear. Also before one draft gear can be substituted for another draft gear the former must be of comparable capacity to adequately and successfully perform its office. It has also been found that draft gears of different types and of comparable capacity may not, without some innovation, be introduced into

the same draft gear pocket and since the draft gear pocket is fixed with respect to one type of draft gear it is not advisable, expedient, or commercially sound to change all the components in the center sill from the center filler to the striker plate inclusive of these two specifically mentioned components. Accordingly, this invention is actually concerned with the improvement of components between the coupler stem or front draft lugs and the rear draft lugs so that no alteration need be made in existing or the previously described structures and still permit the substitution of one type of draft gear for another type thereof.

The particular type of cushioning unit or draft gear herein employed is comprised of two groups or units of sandwiched rubber pads or rubber cushions and herein designated for the purpose of identification as a front group **30** and a rear group **31**. This particular type of draft gear may be of various constructions but preferably each unit or group includes a plurality of metallic plates **32** carrying or having bonded thereto masses of resilient material **33** such as rubber or rubber compound so that masses of rubber are carried by each metallic plate on opposite side or faces thereof. Completing each group is the presence of separation plates **34** loosely interposed between certain pads or masses of rubber.

The draft yoke arms are extended horizontally and rearwardly to adjacent the area between the two units or groups where they are joined integrally by a rear wall **35**; thus the yoke encircles or embraces the front group only for the purpose to be made herein apparent. Also it may be well to state at this juncture that the front group is only subjected to compressive forces when the coupler is subjected to a pulling or draft force and accordingly need only be of a given number of metallic plates and masses of rubber; as for example 4 metallic plates and 8 masses of rubber as illustrated. In order to establish a given or predetermined precompressive value in the front group a front follower block **36** of particular configuration is employed. The front follower block comprises a web **37** extending vertically and in a direction transversely of the center sill through the draft yoke and at its transverse limits merges with forwardly directed legs **38**; the latter of which bear against the front draft lugs. Since the front follower block bridges the front draft lugs at one end of the front group or unit, any draft forces applied to the coupler will be transmitted in a cushioned manner to the vehicle through the yoke, front group and front follower block. Thus the front follower being of channel configuration in horizontal section assists in allowing the application of the front group in the existing draft gear pocket with some of other existing components and still establish or maintain definite requirements.

Disposed immediately in back of the yoke rear wall is the second or rear group; however, since this group is subjected to compressive forces only when the coupler is subjected to buffing forces it is believed essential to establish a greater force absorbing capacity in this second or rear group as compared with the front group. In this group it is proposed to provide 6 metallic plates and 12 masses of rubber as illustrated but it is to be clearly understood that this is only set forth herein as an exemplification and not to be considered as a limitation of this invention. Because of the limitation of the draft gear pocket and the presence of the previously described construction therein the rear follower block **39** is also of a particular configuration. The rear follower block bridges the distance between the rear draft lugs and functions as an abutment or bulkhead against which the rear group may bear or be compressed so that when the coupler is driven or urged in a buffing manner the rear group will be compressed against the rear follower and such forces will be transmitted to the vehicle through the rear draft lugs. In order, therefore, to insert the particularly comprised rear group in the draft gear pocket with the other components, the transverse ends of the rear follower block are undercut as at **40** to comprise end portions of lesser thickness than an intermediate portion and since the rear follower block thus formed presents a uniformly loaded beam it is of sufficient strength to withstand the forces or shocks to which it will be subjected in service.



The draft yoke has formed therein, intermediate its ends, an integral intermediate or forward wall **41** which has a forwardly facing, spherically disposed concave surface **42** arranged to be in constant and full bearing relation with the coupler stem convex surface **21**. Any buffing forces imparted to the coupler stem are transmitted directly to the yoke intermediate wall and because of the nesting or mated spherical surfaces, the coupler is free to execute a universal movement during such buffing movements with a full bearing still present between the coupler and yoke. In normal position the yoke intermediate or forward wall is positioned in substantial alignment with the front draft lugs and desirably is spaced a slight distance from or forwardly of the front follower block web. This latter feature is present in the construction so that the yoke will be in the nature of a floating member and capable of instantly subjecting either the precompressed front or rear group to additional compressive forces to adequately meet conditions encountered in service.

The yoke intermediate wall is further provided with a rear convex spherical surface **43** spaced from normally and arranged to bear against a concave spherical surface **44** disposed centrally in the front or companion follower block. Accordingly, as the coupler is driven rearwardly in buff the yoke and front follower block may also execute a relative universal movement to insure, at that time, a full bearing relationship therebetween.

From the above it will be noted that various changes and alterations may be made to the illustrated and described construction without departing from the spirit of the invention or scope of the appended claims.

I claim:

1. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear groups of sandwiched rubber pads, a yoke universally connectable to a coupler, said yoke encircling said front group and having a rear connecting wall disposed between said groups and arranged to subject selectively both groups to compressive forces, a front follower within said yoke, said front follower being of channel shape in horizontal section with oppositely spaced forwardly extending legs in bearing relation with said front draft lugs, an integral wall in said yoke intermediate ends thereof normally spaced from said front follower, and a rear follower interposed between said rear group and rear draft lugs; said rear follower having end portions bearing against said rear draft lugs and of less thickness than an intermediate portion of said rear follower for permitting an application of said groups between said front and rear draft lugs.

2. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear groups of rubber cushions, a yoke encircling only said front group and comprising a rear connecting wall interposed between said groups and arranged to subject selectively said groups to compressive forces, an integral front wall in said yoke intermediate ends thereof and having a forwardly facing concave spherical surface arranged to be contacted constantly by a rear convex spherical surface on a coupler stem, a front follower block between said front wall and front group, said front follower block arranged to contact said front draft lugs for limiting movement of said front group in one direction, and a rear follower block interposed between said rear group and rear draft lugs for limiting movement of said rear group in an opposite direction.

3. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear cushioning mechanisms, a yoke

embracing only said front mechanism and comprising a rear connecting wall interposed between said mechanisms and arranged to subject alternately said mechanisms to compressive forces, an integral front wall in said yoke intermediate ends thereof and in substantial alignment with said front draft lugs, said front wall having a forwardly facing concave spherical surface in constant contact with a rear convex spherical surface of a coupler stem, a front follower block between said front wall and front mechanism, said front follower block having spaced legs extending in the direction of said integral front wall and in contact with said front draft lugs for limiting movement of said front mechanism toward said front draft lugs, and a rear follower block interposed between said rear mechanism and rear draft lugs for limiting movement of said rear mechanism in a direction toward said rear draft lugs.

4. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear groups of rubber cushions, a yoke encircling only said front group and comprising a rear connecting wall interposed between and contacting both groups to subject selectively both groups to compressive forces, a front wall integral with said yoke intermediate ends thereof and in substantial alignment with said front draft lugs, said front wall having a forwardly facing concave spherical surface in constant contact with a rear convex spherical surface of a coupler stem, a front follower block interposed between said front wall and front group, said front follower block being normally spaced from said front wall and in contact with said front draft lugs, and a rear follower block interposed between said rear group and rear draft lugs; said rear follower having end portions bearing against said rear draft lugs and of less thickness than an intermediate portion of said rear follower block for permitting application of said groups between said front and rear draft lugs.

5. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear groups of rubber cushions, a yoke encircling said front group and having a rear connecting wall interposed between and contacting said groups to selectively subject said groups to compressive forces, a front wall on said yoke intermediate the ends thereof and having a forwardly facing concave spherical surface in constant contact with a rear convex spherical surface of a coupler stem, a substantially U-shaped front follower block having a web portion normally spaced



from said front wall of said yoke and disposed rearwardly of said front draft lugs, said front follower block having forwardly projecting portions normally engaging said front draft lugs, surfaces on confronting faces of said web portion of said front follower block and said front wall of said yoke interfitting on engagement of said front follower block and front wall for maintaining substantially longitudinal alignment of said forwardly projecting portions of said front follower block with said front draft lugs, and a rear follower block interposed between said rear group and rear draft lugs for limiting movement of said rear group in a direction toward said rear draft lugs.

6. In a draft rigging arranged to be positioned in a center sill between front and rear draft lugs, the combination of, front and rear groups of rubber cushions, a yoke encircling said front group and having a rear connecting wall interposed between and contacting said groups to selectively subject said groups to compressive forces, a front wall on said yoke intermediate ends thereof and having a forwardly facing concave spherical surface in constant contact with a rear convex spherical surface of a coupler stem, a substantially U-shaped front follower block having a web portion normally spaced from said front wall of said yoke and disposed rearwardly of said front draft lugs, said front follower block having forwardly projecting portions normally engaging said front draft lugs, surfaces on confronting faces of said web portion of said front follower block and said front wall of said yoke interfitting on engagement of said front follower block and front wall for substantially maintaining longitudinal alignment of said forwardly projecting portions of said front follower block with said front draft lugs, and a rear follower block interposed between said rear group and rear draft lugs and having end portions bearing against said rear draft lugs of less thickness than an intermediate portion of said rear follower block.

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