June 4, 1935. A. H. OELKERS 2,003,583

DRAFT GEAR

Filed Feb. 4, 1932 2 Sheets-Sheet 1

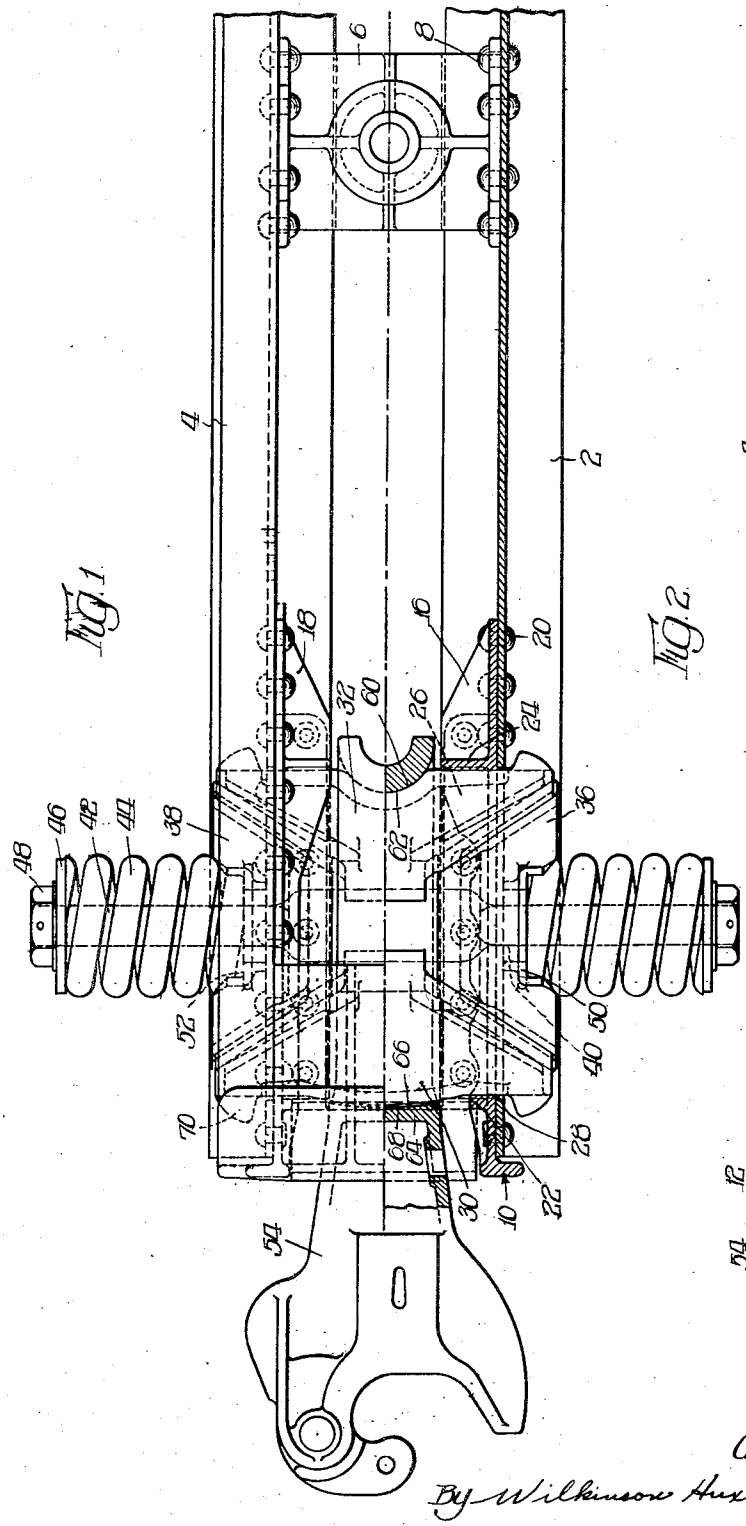


Fig. 1

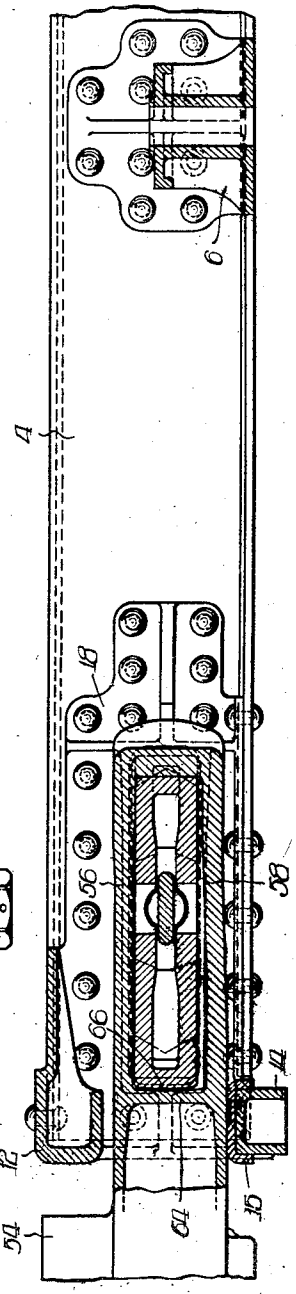


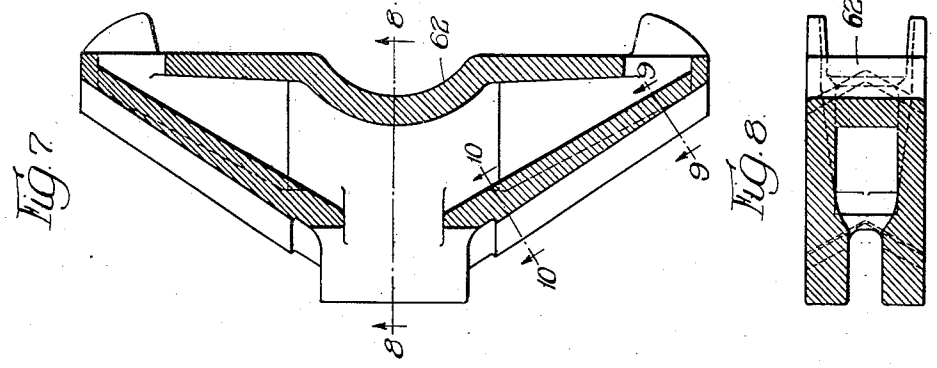
Fig. 2

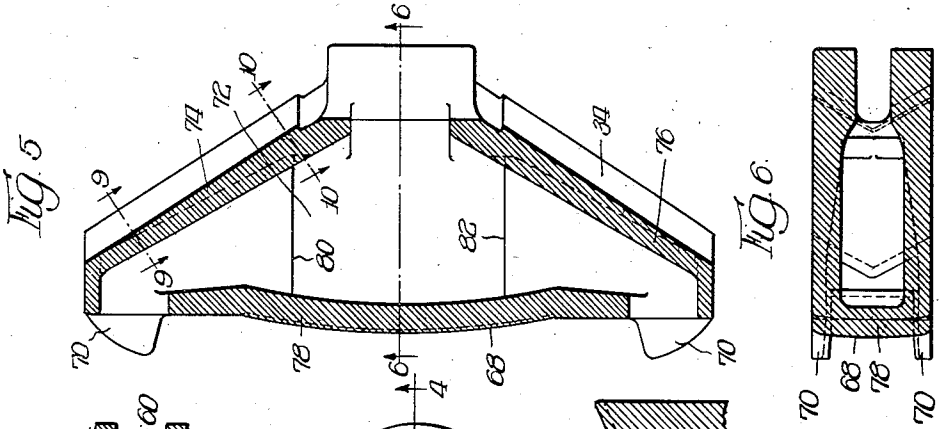
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Attys.

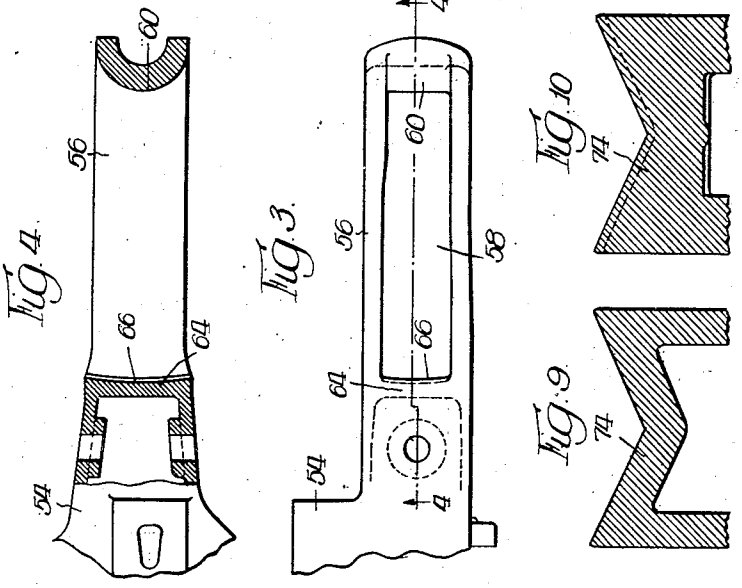
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DRAFT GEAR

Filed Feb. 4, 1932 2 Sheets-Sheet 2







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Patented June 4, 1935

2,003,583

UNITED STATES PATENT OFFICE

2,003,583

DRAFT GEAR

Alfred H. Oelkers, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application February 4, 1932, Serial No. 590,811

8 Claims. (Cl. 213—38)

This invention relates to improvements in railway draft rigging and particularly to the attachment of a car coupler to the draft gear and sills.

An object of the present invention is to provide a simplified practical construction for attaching car couplers to the draft gearing of railway cars involving a cushioned attachment having a high frictional resistance, a sturdy attachment of the cushioning member to the car sills and a simple attachment of the coupler to the cushioning member or draft gear.

Another object is to provide a simplified practical construction for attaching car couplers to draft gearing constructed and arranged to allow the coupler to pivot laterally when the car rounds a curve.

Still another object is to provide a coupler having a yoke integral therewith, the yoke embracing the draft gear members and being secured to the sills by means of the members.

A still further object is to provide a pivotal connection between the yoke and draft gear to allow the coupler to pivot in relation to the draft gear when the car is being pulled. To this end a further object is to provide cooperating surfaces on both yoke and draft gear members for engagement in buff, the surfaces having the same center as the pivot on which the coupler pulls.

A still further object is to provide a connection between coupler and draft gear which will result in maximum bearing area in both draft and buff.

Still another object is to provide a draft gear wherein the friction blocks or wedge elements are assembled through slots in the car sills.

A still further object is to provide a combined striking casting and draft gear carrier formed to reinforce slots in the car sills and by means of which the car coupler and draft gear will be secured to the sills.

The present invention contemplates the idea of providing a draft rigging including a draft gear formed with a plurality of cooperating friction elements and in which the coupler is formed with integral yoke portions adapted to embrace certain of the friction elements, the draft gear forming a key for attaching the coupler member to the center or draft sills, means being further provided for preventing lateral displacement of these cooperating friction elements. More specifically, the present invention contemplates the idea of forming certain of these cooperating friction elements with projecting portions adapted to cooperate with the center or draft sills to provide for the proper seating of these elements, as likewise to prevent their lateral displacement, which might otherwise occur.

Still another object within the purview of the present invention is to provide a novel draft rigging including a draft gear having a plurality of cooperating friction elements which are embraced by the integral yoke portion of a coupler member, the coupler member and a friction element of the draft gear being formed with cooperating spherical surfaces adapted to transmit maximum buffing forces, while permitting relative angular movement between these members of the draft rigging in a plurality of planes, as for example, in a horizontal and vertical direction.

Still another object of the present invention is to provide a draft rigging in which the opening of the integral yoke portion of the coupler member varies in width, whereby relative vertical and horizontal movement of this coupler member may be effected without causing displacement of the cooperating friction elements which act as a key for attaching this coupler member to the draft sills, and in which the cooperating spherical surfaces of the coupler member and a friction element provide for the maximum transfer of buffing forces, irrespective of this relative movement in a plurality of planes.

The present invention still further contemplates the idea of improving the structure of certain of the friction elements forming the draft gear of a draft rigging, this improvement being constituted by tapering or varying the thickness of certain of the walls thereof to more effectively distribute and transmit forces to which these elements may be subjected, it having been found that certain of the walls of these friction elements are subjected to beam action and heavy buffing and draft forces peculiarly distributed thereover.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, claims and drawings appended hereto.

In the drawings, which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

Figure 1 is a fragmentary top plan view of a draft rigging made in accordance with the present invention, certain portions thereof being shown in cross section to disclose the construction thereof more in detail;

Figure 2 is a view in longitudinal vertical cross section taken substantially through the center of

the device, as shown in Figure 1 of the drawings;

Figure 3 is a detached fragmentary view in side elevation of the coupler member shown in Figures 1 and 2 of the drawings;

Figure 4 is a fragmentary view in cross section taken in the plane represented by line 4—4 of Figure 3 of the drawings;

Figure 5 is a view in horizontal cross section of the front wedge member shown in Figures 1 and 2 of the drawings;

Figure 6 is a view in cross section taken in the plane represented by line 6—6 of Figure 5 of the drawings;

Figure 7 is a view in horizontal cross section of the rear wedge member of the draft gear shown in Figures 1 and 2 of the drawings;

Figure 8 is a view in cross section taken in the plane represented by line 8—8 of Figure 7 of the drawings; and

Figures 9 and 10 are fragmentary views in cross section taken in the planes represented by the lines 9—9 and 10—10, respectively, of Figures 5 and 7 of the drawings.

Referring now more in detail to the drawings, a railway draft rigging made in accordance with the present invention is shown in association with channel shaped center or draft sills 2 and 4 suitably secured in spaced relation to a railway car underframe and having a back stop casting 6 secured thereto, as by means of rivets 8, or the like. At the forward end of the draft sills 2 and 4 is a unitary draft sill attachment 10 formed with a striking casting 12 and a carry iron 14 providing a support for a wear plate 15, this unitary draft sill attachment being formed with rearwardly extending cheek plates 16 and 18 secured to the center or draft sills 2 and 4, respectively, as by means of rivets 20, or the like. Each of the cheek plates 16 and 18 is of similar construction and is formed with inwardly disposed front or draft lugs 22 and rear or buffing lugs 24, integral and inwardly extending flanges 26 being provided for reinforcing purposes and for support of a draft gear (to be later more fully disclosed). The lugs 22 and 24, as well as the flanges 26, define slots in these cheek plates for movement of this draft gear, to be later more fully disclosed, and the same are substantially coextensive with slots 28 formed adjacent the forward ends of the center or draft sills 2 and 4.

The draft gear hereinbefore referred to comprises a forward or front wedge element 30 and a rear wedge element 32, each of these friction or wedge elements of the draft gear extending between the center sills 2 and 4 and through the slots provided in the cheek plates 16 and 18, as well as in the center or draft sills 2 and 4. The friction or wedge elements 30 and 32 are provided with friction faces, such as 34, which are wedge or V shaped, as clearly shown in Figures 9 and 10 of the drawings, and are diagonally disposed, as clearly shown in Figures 5 and 7 of the drawings, so as to provide friction surfaces diagonally disposed in a plurality of directions. Intermediate or between the wedge elements 30 and 32 are the movable friction or wedge members 36 and 38 which are formed with friction surfaces adapted to cooperate with the diagonally disposed friction surfaces 34 of the front and rear wedge elements 30 and 32, these wedge elements 36 and 38 being adapted to have lateral movement relative to the forward and rear wedge elements. The lateral movable friction elements 36 and 38 are formed with horizontal slots or apertures 40 for accommodating a spring supporting rod 42 which projects laterally of the center or draft sills 2 and 4 for support of the coil springs 44, these coil springs 44 being retained in position by means of washers 46 held in place by lock nuts 48, these coil springs 44 being adapted to seat in the spring seats 50 and 52 of the friction elements 36 and 38, respectively.

Interposed between the draft sills 2 and 4 is a coupler member 54 which is formed with an integral yoke portion 56 formed with a slot 58 adapted to embrace the front and rear wedge elements 30 and 32. The rear wall of the yoke portion 56 is formed with a cylindrical bearing 60 adapted to be received within the cylindrical notch 62 which is provided on the rear wall of the rear wedge element 32, thus permitting the coupler 54 to pivot laterally as the car is being pulled and to have relative horizontal angular movement with the friction elements of the draft gear, as likewise to provide a maximum bearing area between the yoke and the rear wedge element 32 in draft, irrespective of the relative angular position of the coupler member 54.

The opposite end of the horizontal slot 58 of the integral yoke portion 56 is formed with a wall 64 having a concave spherical surface 66 which is adapted to have cooperative relation with a complementary convex spherical surface 68, to thus provide a maximum bearing area for the transmission of buffing forces to the coupler member 54 and the front wedge element 30 of the draft gear when these elements are in cooperative relation during buff.

As clearly shown in Figure 4 of the drawings, the horizontal slot 58 varies in width and is wider adjacent the wall 64 than adjacent the bearing 60 at the rear end. This increase in width adjacent that part of the integral yoke portion 56 embracing the front wedge element 30 permits vertical angling of the coupler member 54 within the permitted limits of the striking casting 12 without causing displacement of the cooperating friction elements of the draft gear, while providing for a maximum bearing area between the coupler member 54 and the forward friction element 30 during this vertical angling.

From the above disclosure it will be clearly seen that the cooperating friction elements of the draft gear which extend through the slots of the cheek plates 16 and 18, as well as the slots in the center or draft sills 2 and 4 and the slot 58 of the integral yoke portion 56, serve as a key for attaching the coupler member 54 to the center or draft sills 2 and 4.

In order to provide for the proper seating of the cooperating friction surfaces of these friction elements and to prevent lateral shifting or displacement of the draft gear, certain of the friction elements, such as the forward and rear wedge elements 30 and 32, are formed with outwardly extending lugs, such as 70, adapted to cooperate with the center or draft sills 2 and 4 for properly positioning these elements, as likewise the entire draft gear when the draft gear is in open position, as shown in Figures 1 and 2 of the drawings.

Further, as hereinbefore referred to, the forward and rear wedge elements 30 and 32, as clearly shown in Figures 5 and 7 of the drawings, are formed with spaced walls 72 integrally connected by the diagonally disposed walls 74 and 76, as well as the wall 78. Experiments have shown that these walls are subjected to beam action when these elements are subjected to severe buffing or draft forces. and in order to properly

distribute these shocks and forces, these walls have been tapered. The walls **72** over the area defined by the lines **80** and **82** are of substantially uniform thickness, the remaining portions of these walls, however, varying in thickness and tapering decreasingly and outwardly toward the lugs **70**. Further, the walls **74** and **76**, as clearly shown in Figures 5 and 7 of the drawings, taper decreasingly and outwardly toward the lugs **70**, the construction of these walls providing an arrangement for effectively absorbing these severe buffing and draft forces.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown, which is merely by way of illustration and not limitation, as various and other forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, said draft gear comprising two longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, each of said longitudinal friction wedges having means adapted to cooperate with said sills to prevent lateral displacement of said gear in either of two directions in said slots.

2. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, said draft gear comprising two longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, and a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, said longitudinal friction wedges being provided with lugs adjacent their ends projecting laterally beyond said sills and adapted to cooperate with said sills to prevent lateral displacement of said gear in said slots.

3. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, said draft gear having a pair of lugs on both sides thereof, one of the lugs of each pair extending forwardly of said draft gear and disposed to engage a sill adjacent the forward end of the slot thereof and one of the lugs of each pair extending rearwardly of the draft gear and disposed to engage a sill adjacent the rear end of the slot thereof to prevent lateral displacement of the draft gear in the slots.

4. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, said draft gear comprising two longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, and a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, the front longitudinal wedge being provided with forwardly extending lugs each disposed to engage a sill adjacent the forward end of the slot thereof and the rear longitudinal wedge being provided with rearwardly extending lugs each disposed to engage a sill adjacent the rearward end of the slot thereof to prevent lateral displacement of the draft gear in the slots.

5. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, a yoke disposed between said sills and embracing said draft gear, said draft gear comprising two longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, said longitudinal friction wedges having arcuate surfaces cooperating with arcuate surfaces adjacent the front and rear of said yoke, each of said longitudinal friction wedges having means adapted to cooperate with said sills to prevent lateral displacement of said gear in either of two directions in said slots.

6. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, a yoke disposed between said sills and embracing said draft gear, said draft gear comprising two longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, said longitudinal friction wedges having arcuate surfaces cooperating with arcuate surfaces adjacent the front and rear of said yoke, said longitudinal friction wedges being provided with lugs adjacent their ends projecting laterally beyond said sills and adapted to cooperate with said sills to prevent lateral displacement of said gear in said slots.

7. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, a yoke disposed between said sills and embracing said draft gear, said draft gear comprising front and rear longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, each of said longitudinal friction wedges having means adapted to cooperate with said sills to prevent lateral displacement of said gear in either of two directions in said slots when the same is in its normal position, said longitudinal friction wedges having arcuate surfaces cooperating with arcuate surfaces adjacent the front and rear of said yoke, said cooperating arcuate surfaces providing for the uniform transfer of draft and buffing forces irrespective of the angling of said yoke, said means on the rear longitudinal wedge and the means on the front longitudinal wedge and the cooperating surfaces on said yoke and rear longitudinal wedge preventing lateral displacement of said gear in either of two directions in said slots during operation of said gear in buff and draft, respectively.

8. In a draft rigging, the combination of slotted draft sills, a draft gear extending between said sills and through said slots, a yoke disposed between said sills and embracing said draft gear, said draft gear comprising front and rear longitudinal friction wedges centrally spaced between said sills and projecting through and beyond said slots, a pair of transverse friction wedges engaging said longitudinal wedges and extending through and beyond said slots, said longitudinal friction wedges being provided with lugs adjacent their ends projecting laterally beyond said sills and adapted to cooperate with said sills to prevent lateral displacement of said gear in said slots when the same is in its normal position, said longitudinal friction wedges having arcuate surfaces cooperating with arcuate surfaces adjacent the front and rear of said yoke, said cooperating

arcuate surfaces providing for the uniform transfer of draft and buffing forces irrespective of the angling of said yoke, said lugs on the rear longitudinal wedge and the cooperating surfaces on said yoke and front longitudinal wedge and the lugs on the front longitudinal wedge and the cooperating surfaces on said yoke and rear longitudinal wedge preventing lateral displacement of said gear in either of two directions in said slots during operation of said gear in buff and draft, respectively.

ALFRED H. OELKERS.