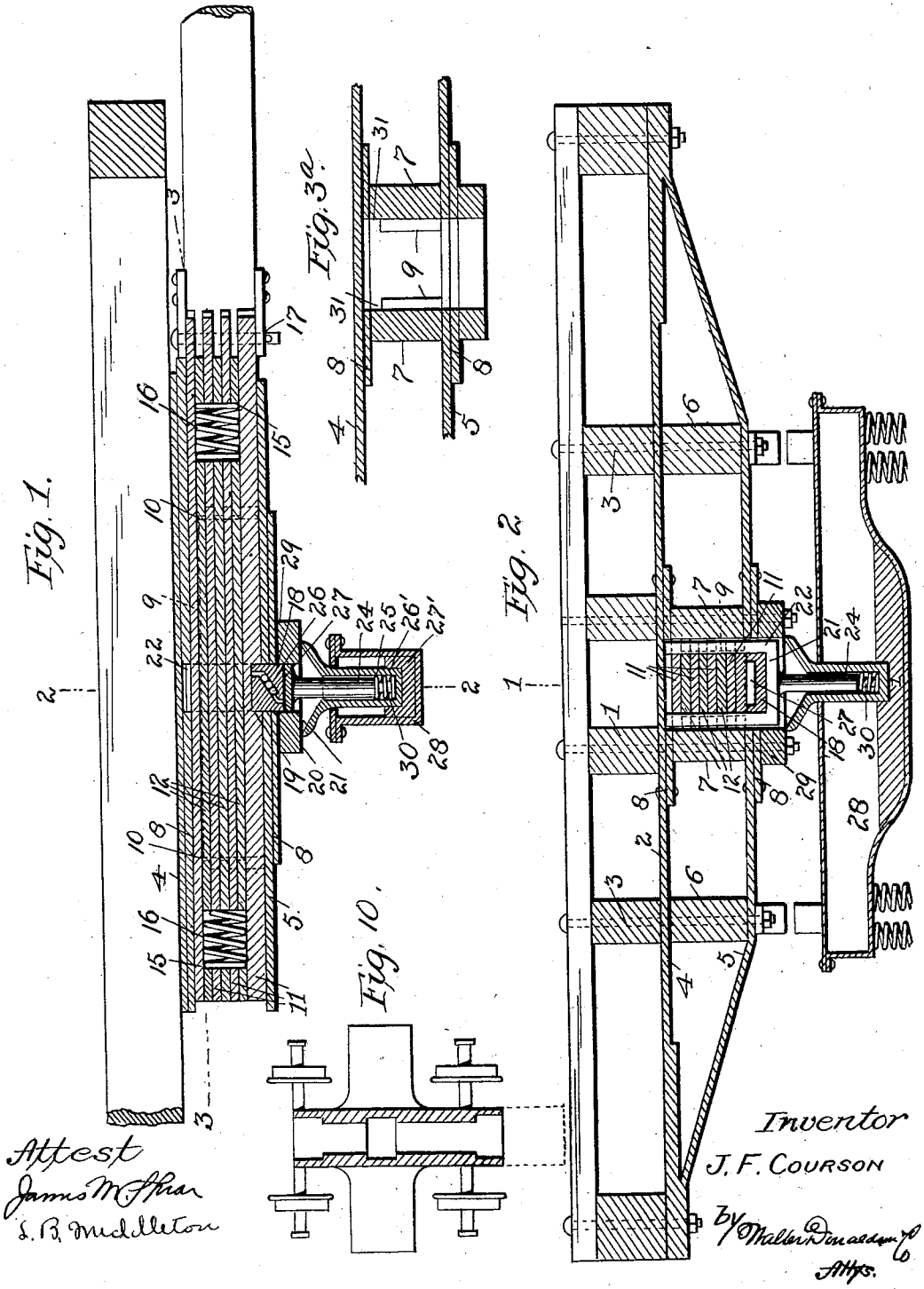
No. 715,990. Patented Dec. 16, 1902.

J. F. COURSON.

DRAFT GEAR.

(Application filed June 23, 1902.)

(No Model.) 2 Sheets—Sheet 1.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

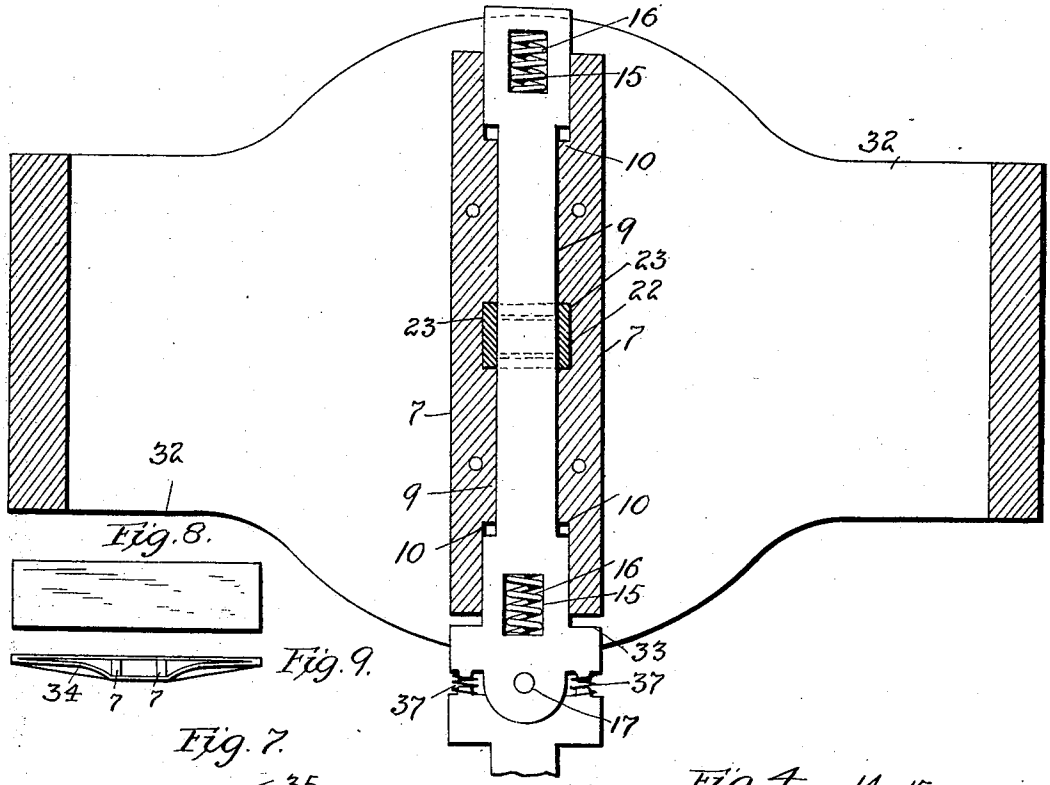


Fig. 8.

Fig. 9.

Fig. 7.

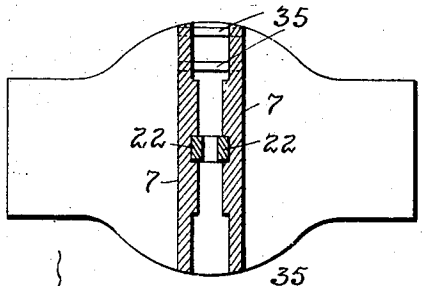


Fig. 4.

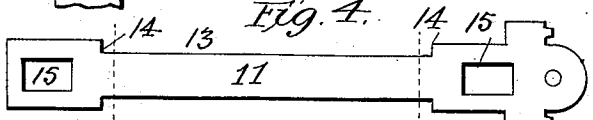


Fig. 5.

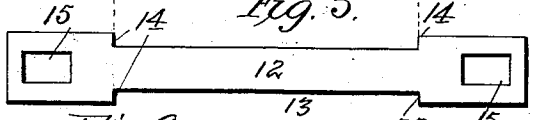
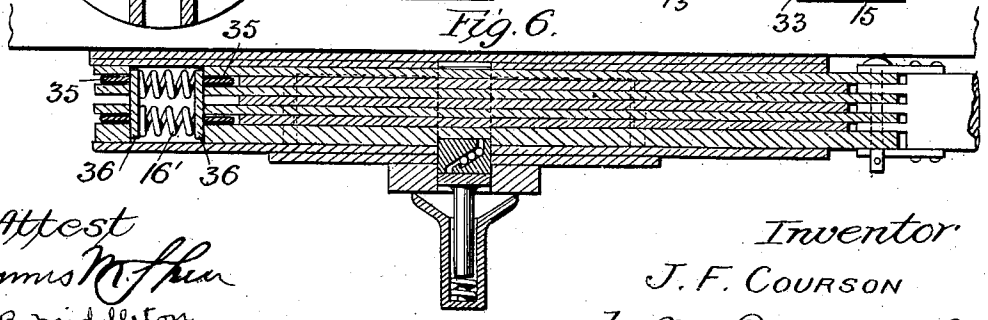


Fig. 6.



Attest

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN F. COURSON, OF PITCAIRN, PENNSYLVANIA.

DRAFT-GEAR.

SPECIFICATION forming part of Letters Patent No. 715,990, dated December 16, 1902.

Application filed June 23, 1902. Serial No. 112,903. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. COURSON, a citizen of the United States, residing at Pitcairn, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Draft-Gear, of which the following is a specification.

My invention relates to the form of draft-gear for railway-cars and in similar situations described in my applications for Letters Patent of the United States filed by me May 6, 1902, serially numbered, respectively, 106,179 and 106,180, for improvements in draw-gear for railway-cars.

My present improvements are designed to utilize the weight of the car as the means for creating the strongest degree of frictional contact between the friction plates or members of the draft-gear in absorbing the shock or strain, lesser degrees of frictional contact being obtained by a yielding tightening device, which gradually causes increased frictional resistance between the frictional members up to the point that the weight of the car is brought into use.

The features of my invention will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a sectional view longitudinally of the draft-gear and through the body and truck bolsters on line 1 1 of Fig. 2. Fig. 2 is a sectional view on line 2 2 of Fig. 1. Fig. 3 is a plan view of a section on line 3 3 of Fig. 1. Fig. 3^a is a detail relating to Fig. 1. Fig. 4 is a plan view of one of the movable friction plates or members. Fig. 5 is a plan view of one of the fixed friction plates or members. Fig. 6 represents a different form of draft-gear from that shown in Fig. 1, particularly in the arrangement of the yielding resistance medium. Fig. 7 is a sectional plan view of the form of body-bolster shown in Fig. 6. Fig. 8 is a plan view on a reduced scale, and Fig. 9 is a front view of a modified form of bolster. Fig. 10 is a detail view.

In the drawings, 1 represents the center sills of the car-body, to which in ordinary practice the draft beam or bar is directly attached by bolts. This construction results frequently in breakage of the center sills, and the car must be laid aside until repaired. I avoid this direct connection between draft-gear and the center sills by connecting the draft-beam with a bolster 2, which, as shown in Fig. 2, is secured by bolts 3 to the sills of the car. This bolster is of metal, preferably, and is composed of upper and lower plates 4 and 5, which are stayed by blocks or timbers 6 and bars 7, secured in place between the upper and lower plates. Reinforcing-plates 8 are also employed, these being located centrally of the upper and lower plates and on the under side of the same. The bars 7 have abutments 9 on their inner faces, Fig. 3, ending in front and rear shoulders 10. Between these bars the friction members of the draft beam or bar are located, said friction members comprising plates 11, which have movement in the longitudinal direction of the car, and the plates 12, which are fixed in relation to the plates 11 and are in frictional contact therewith. The plates are placed one on top of the other, as shown in Fig. 1, first a movable plate, then a fixed plate resting on this, then a movable plate on top of the fixed plate, and so on, the plates being sufficient in number to fill the whole space between the bars 7 7. Each fixed and movable plate has the central part cut away, as at 13, Figs. 4 and 5, thus forming shoulders 14, adapted to engage the shoulders on the abutments to hold the plates in place. The distance between the shoulders on the fixed plates is just equal to that between the shoulders on the abutments, so that said fixed plates will be held against longitudinal movement by the engagement of these shoulders. The shoulders on the movable plate are, however, located at a greater distance apart than the abutment-shoulders to allow the longitudinal movement of the plates 11 to take place. Each fixed and movable plate at its front and rear end has an opening 15 formed therein, and springs 16 are located in these openings, bearing against the edges of the fixed and movable plates, so as to yieldingly resist the movement of the movable plates 11 in either direction. The movable plates are pivotally connected, as at 17, to the stem of the coupling-head, and thus partake of the strain in starting or of the shock in coupling, and in either case the springs tend to take up the thrust directly.

In order to create frictional pressure between the friction members or plates, I provide an antifrictional tightening device consisting of a box 18, having its upper portion fitting in a recess 19 in the under face of the lower movable friction-plate, while its lower portion is guided in an opening 20 in the bolster and rests upon the cross-piece 21 of a center fork 22, the arms of which extend up on each side of the box 18 and nest of friction-plates and are guided in recesses 23 in the abutments. The box is divided diagonally, thus providing inclined faces 26, between which antifriction rollers or balls 27 are arranged. The fork 22 has a stem 24, resting upon a spring 25, held in a socket 26', which in turn rests in a seat 27', carried by the truck-frame bolster 28. The upper part of the socket-piece is flared and bears against the under side of a block 29, upon which the upper bolster bears. This block is perforated for the passage of the center fork 22. From this construction it will be seen that when the draft-bar is pulled and the movable plates begin to move forwardly the lowermost plate will press forwardly the upper section of the box 18, thus causing its inclined face to act on the rollers and forcing the lower section of the box downwardly together with the center fork, so as to compress the spring 25, which yieldingly resists, and reacting through the fork and box causes the friction-plates to be pressed upwardly one against the other, creating a gradually-increasing frictional pressure between the plates to absorb the shock or strain. This frictional resistance will increase by degrees until the lower end of the stem of the fork strikes a pin 30, arranged centrally of the spring 25, but with its upper end somewhat below the upper end of the spring. When the contact between the fork-stem and pin takes place, the fork, together with the lower section of the antifriction-box, will have no further yielding movement, and any further vertical separation of the box-sections can take place only by the upward movement of the upper section against the weight of the car, and as the lifting force from this box-section must be transmitted vertically through the nest of plates it will be seen that these plates would be pressed into frictional contact with a force equal to the weight of the overlying car-body.

The action, briefly stated, is as follows: When the draft-beam is pulled or pushed, the springs 16, interposed between the fixed and movable plates, will act as buffers to resist the movement of the draft-beam and the movable plates. At the same time the fixed and movable friction-plates will be pressed into firm contact by the action of the antifriction tightening device, comprising the divided box, under the pressure of the spring 25. This frictional contact between these plates will absorb the shock or strain, and should this be excessive the spring 25 will be compressed until the stem of the center pin or fork finds an unyielding bearing on the pin 30, and then continued vertical separation of the sections of the tightener-box can take place only in opposition to the weight of the car.

It will be noticed that the center fork takes the place of the ordinary center-pin connection between the truck and the car-body, and while providing for the swiveling action of the truck it also allows me to combine my improved draft-gear or nest of plates with the body-bolster.

By referring to Fig. 3ª it will be seen that the abutments or holding means for the nest of plates within the bolster do not extend all the way up to the top plate thereof, but an opening or way 31 is left on each side of the central space above each abutment. In placing the friction members in place they are slid through these ways until their side recesses aline with the abutments, when they drop down vertically, and thus their shoulders get into position to engage those on the abutments, thus preventing longitudinal movement of the fixed plates and limiting the displacement or movement of the movable plates. The plates or friction members are inserted one at a time, and the topmost plate fills the ways 31, so that the whole space between the abutment-bars is filled with plates to be pressed into frictional contact. The upper plate need not have the lateral recesses. Both the fixed and movable plates may be provided with shoulders at 33 at the front to abut against the front ends of the abutment-bars, and thus limit the rearward movement of the plates.

The preferred form of bolster for the car-body is shown in Fig. 3, from which it will be noticed that the ends 32 are reduced in size in respect to the central portion of the bolster. This form enables me to obtain a strong central construction and arrangement of the abutment-bars, while at the same time ample space for the car-wheels is afforded by reducing the ends of the bolster. I do not wish to limit myself to this form of bolster, for, as shown in Figs. 8 and 9, the bolster may at its upper part be of one width throughout, while its lower plate may be pressed upwardly at its edges, as at 34, to provide room for the car-wheels.

Referring to the form of the invention shown in Figs. 6 and 7, it will be seen that instead of interposing the resistance-springs 16 between the fixed and movable friction-plates they may be arranged entirely independent of the fixed friction-plates, for which purpose I employ cross-bars 35, extending between and supported in the abutment-bars. Between these cross-bars the springs 16' are arranged, bearing on plates 36, set vertically to be engaged by the edges of the movable plates, the said movable plates having openings in which the springs and the vertical plates are located. Movement of the movable plates in either direction will be resisted by these springs, which

will be held by the cross-bars. In Fig. 7 I show the arms of the center fork projecting slightly into the space between the abutment-bars of the bolster. These projecting portions of the fork may in themselves constitute abutments for the friction-plates, which latter will be formed with recesses in their sides. This abutment form of fork may be used with the form of the invention first described.

The manner of connecting the coupling-head to the movable plates is shown in Fig. 3, in which springs 37 are interposed between the said head and the ends of the plates.

The abutment-bars, together with the top and bottom plates of the bolster, form, in effect, a friction-chamber for receiving the draft-bar, and the tightening device acts to press the draft-bar up against the upper plate. The divided box, with its inclined faces, constitutes a wedge means for creating the frictional resistance. The upper and lower plates of the bolster extend far enough to the front and rear to afford a substantial support for the draft-bar.

I do not wish to limit myself to the combination in the one draft-gear of the springs 16 and the spring 25. The former springs may be omitted.

In Fig. 10 I show a slightly different form of bolster from that described. This figure illustrates the relation of the car-wheels to the reduced ends of the bolster. The form of bolster shown in full lines is that adapted for freight, while for passenger cars the bolster is provided with an extension, as indicated in dotted lines.

I claim—

1. In combination with a body-bolster, a draft-bar connected therewith and arranged therein and means for creating a frictional resistance to the movement of said bar, said means acting within the body-bolster, substantially as described.

2. In combination with a car and draft means, abutments having a space above them for the insertion of the draft means which is engaged with the said abuments by dropping the same vertically into place, substantially as described.

3. In combination with a car, a bolster having abutments with a space or way above the abutments, friction-plates adapted to be inserted through said space or way one or more of which has shoulders for engaging the abutments and means for creating a frictional resistance between the plates, said plates forming parts of the draft-gear, substantially as described.

4. In combination with a car, a body-bolster having upper and lower plates and bars intermediate the plates with a space between the bars and a draft-bar held in said space, substantially as described.

5. In combination with a car, a transverse bolster having a chamber with top, bottom and sides and a draft-bar located therein and means for creating a frictional resistance to the movement of the draft-bar in said chamber, substantially as described.

6. In combination with a car, a chamber having top, bottom and sides and a draft-bar located therein and means for creating a frictional resistance to the movement of the draft-bar in said chamber, said draft-bar being composed of fixed and movable plates, in frictional contact and filling the said chamber, substantially as described.

7. In combination with a draft-bar, means applying a frictional resistance thereto under the weight of the car, substantially as described.

8. In combination with a car, a draft-bar, a truck-bolster and means tending to lift the car in relation to the truck-bolster, said means acting through the draft-bar to thereby place the same under the frictional resistance of the weight of the car, substantially as described.

9. In combination with a car, a truck-bolster, a draft-bar, means exerting an upward pressure as the draft-bar moves longitudinally to thereby resist the movement thereof, said means being supported by the truck-bolster, substantially as described.

10. In combination with a car, a truck-bolster, a draft-bar, yielding means exerting an upward pressure as the draft-bar moves longitudinally to thereby resist the movement thereof, said means being supported by the truck-bolster, substantially as described.

11. In combination with a car, a draft-bar, wedge means for creating a frictional resistance to the movement thereof, said wedge means being interposed between the draft-bar and the truck and finding a support on the latter, substantially as described.

12. In combination, the car, a draft-bar, wedge means for forcing the draft-bar upwardly against the weight of the car to create a frictional resistance on the said draft-bar, and a spring acting against the wedge means, substantially as described.

13. In combination with the car, a draft-bar and an antifriction tightening means for placing the said draft-bar under frictional restraint, said device consisting of the two-part box with antifriction members between, substantially as described.

14. In combination, a draft-bar and wedge means through which the weight of the car is placed on the draft-bar to resist the movement of the same, substantially as described.

15. In combination with the body and truck bolsters, a center pin, a draft-bar and means for placing a frictional resistance on the draft-bar acting through the said center pin, substantially as described.

16. In combination, the draft-bar, means for placing the same under frictional resistance including the center pin between the car and truck, a spring upon which the center pin rests and an unyielding connection be-

tween the car body and truck, substantially as described.

17. In combination, the draft-bar, means for placing the same under frictional resistance including the center pin between the car and truck, a spring upon which the center pin rests and an unyielding connection between the car body and truck, said connection including the socket supported on the truck-bolster and receiving the center pin and spring and being in connection at its upper end with the car, substantially as described.

18. In combination with the car and truck, a center pin having a forked upper end, a draft-bar passing through the said fork and means for applying a frictional resistance to the movement of the draft-bar, substantially as described.

19. In combination with the plate having a recess in its side edges, a movable plate in frictional contact therewith and a center-pin connection between the car and truck comprising a fork, the arms of which form abutments for holding the fixed plate, substantially as described.

20. In combination with a draft-bar, antifriction means for applying a frictional resistance thereto consisting of the wedge members with rollers between them, substantially as described.

21. In combination, the fixed and movable plates, a spring resisting the movement of the plates in either direction and cross-bars for holding the spring in position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. COURSON.

Witnesses:

CARL W. HOLMES,

JOHN A. FRIESEL.