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G. P. RITTER.

DRAFT GEAR FOR RAILWAY CARS.

(Application filed May 6, 1901.)

(No Model.)

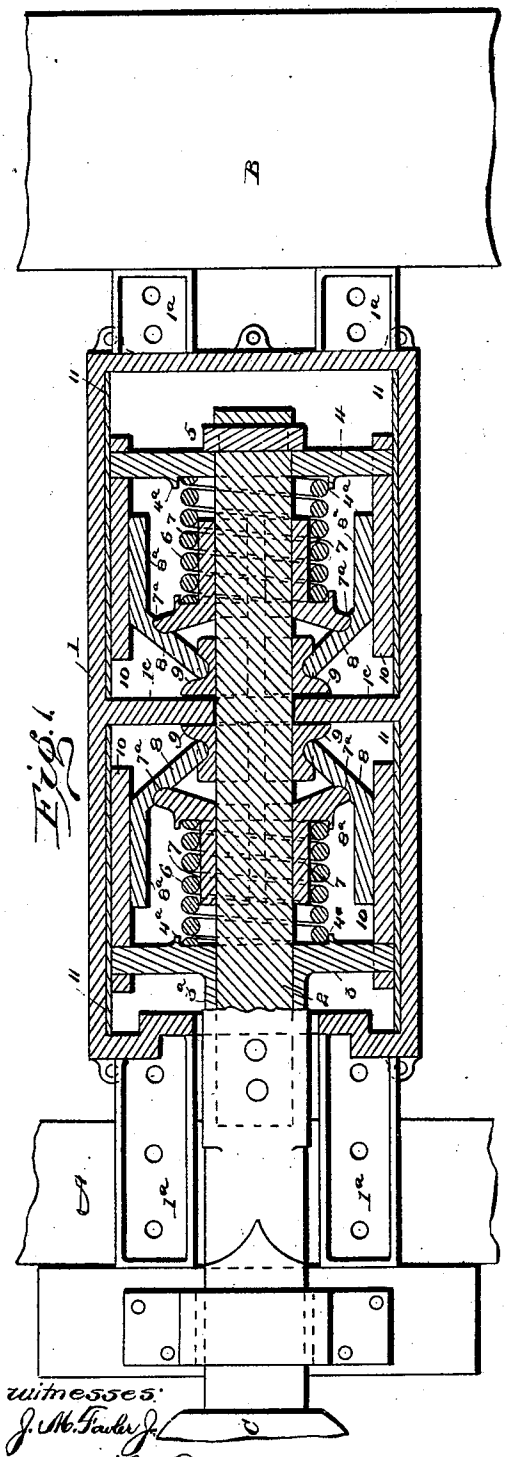


Fig. 1.

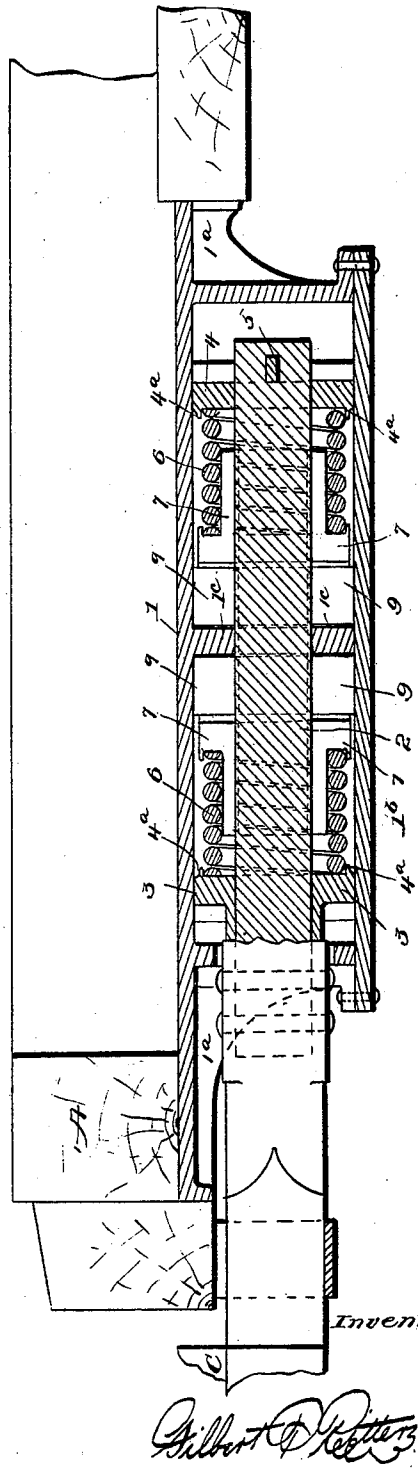


Fig. 2.

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UNITED STATES PATENT OFFICE.

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DRAFT-GEAR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 683,576, dated October 1, 1901.

Application filed May 6, 1901. Serial No. 59,011. (No model.)

To all whom it may concern:

Be it known that I, GILBERT P. RITTER, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Draft-Gear for Railway-Cars; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a view from below, partly in horizontal section, of a draft-rigging embodying my invention; and Fig. 2 is a vertical central section of my draft-rigging as shown in Fig. 1.

Like symbols refer to like parts wherever they occur.

My invention relates to that class of draft-rigging for railway-cars commonly termed "friction" draft-gear, wherein a yielding frictional grip proportional to the load and shock is exerted on the endwise-movable draw-bar, and has for its object such an application of the frictional grip as shall insure at all times a yielding resistance to the impact and also a braking resistance to the reaction incident to sudden and forcible reversal of the draw-bar.

To this end the main feature of my invention consists in the combination, with an endwise-movable draw-bar, of coacting friction-surfaces arranged in parallel relation with said draw-bar, a lever system for causing the contact of the friction-surfaces, and an interposed spring or springs whereby a gradually-increasing yielding frictional grip is exerted to retard the movement of the draw-bar.

There are other minor features of invention, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same either in the form shown in the drawings or in such modification thereof as circumstances may dictate.

In the drawings, A B indicate the end sill and body-bolster, to which or equivalent timbers the draft-gear casing or housing is secured in any suitable manner, and C a coupler of any desired pattern bolted or otherwise secured to the draw-bar proper, which latter, together with the mechanism coacting therewith, is contained within the housing 1.

1 indicates a suitable casing or housing provided with brackets 1^a for attachment to the supporting-timbers and preferably in the form of the box marked 1 with a detachable bottom 1^b and provided with a transverse partition 1^c, having an opening for the passage of the draw-bar 2. This partition 1^c serves as a convenient abutment, fulcrum, or point of resistance for the levers of the system and divides the casing where separate draft and buffing mechanism are employed; but other points of resistance for the lever system may be provided, if desired.

2 indicates the draw-bar, provided with the followers 3 4, through which the draw-bar passes and on which they are confined by the usual key 5 or in other suitable manner, or, if preferred, the follower may be fixed to the draw-bar, though for facility in setting up the parts the follower is generally loose on the draw-bar. The follower 3 is preferably provided with a distance collar or flange 3^a, which abuts against the inner end of the shank of coupler C, and between said followers, so as to be acted on and compressed by the travel of the draw-bar 2, are coiled or equivalent springs 6, for which seats may be provided on the inner faces of the followers, as at 4^a.

The draw-bar 2 is provided with friction-surfaces, and in contact therewith and included within the springs 6 are coacting friction devices or a friction-lever 7, terminating at one end in a projection or toe 7^a, which finds its fulcrum or support outside the spring on a second bent lever 8, so that said element rocks or tends to rock toward its coacting friction element.

9 9 indicate friction-shoes which have a frictional bearing on the endwise-movable draw-bar 2 and also bear on the central partition 1^c of the housing 1, each of which shoes forms a support or fulcrum for the bent lever 8, the friction-arm 8^a of which has a bearing on friction-slide 10, carried by and movable with the follower.

10 10 indicate friction-slides carried by and movable with the followers 3 4, against which the friction-arms 8^a of the levers 8 bear, and for purposes of economy friction-liners 11 11, which can be removed and replaced, may be interposed between said friction-slides 10 10 and the inner walls of the casing or housing 1.

In the application of the invention chosen for the purposes of this specification it will be noted that with each follower 3 or 4 and the spring 6, acted on thereby, are combined two of each of the following elements—to wit, two friction devices or friction-levers 7 7, included within the spring and acted on thereby, two friction-shoes 9 9, which have a bearing on the endwise-movable draw-bar 2 and which afford fulcrums for two bent levers 8 8, which in turn afford fulcrums for the two friction-levers 7 7 within the spring, and finally two slides carried by the follower and movable between the friction-arms 8^a of levers 8 and the housing.

The cross-section of the element 7 will of course depend on the shape of its coacting friction element, which need not necessarily be the draw-bar itself, but may be either an included or including element movable independently of or with the draw-bar, as preferred, but preferably is the draw-bar itself, and if the draw-bar then preferably the draw-bar 2 will be a cylinder and the element 7 curved in cross-section and somewhat less than a half-circle.

The connection between the followers 3 and 4, and the slides 10 may be of any loose character—as, for instance, a slot in the friction-slide into which a projection enters—all that is required being that the connection shall be such that while the slide 10 will move with the follower it will be free to accommodate itself to any wear incident to service.

It will be noted that a like combination of levers 7 and 8 and slides 10 exists with relation to each follower, the parts, however, being in reverse arrangement, so that while there is at all times a friction-grip existing said grips shall alternately increase and decrease according to the direction of the power.

The devices being constructed and combined substantially as hereinbefore set forth will operate as follows: Draft being made on the draw-bar 2, the follower 4 acting on the spring 6, and thence on the levers 7, said levers rocking on their fulcrums 7^a will cause the friction-arms 7 to grip the draw-bar, and at the same time will transmit power to the friction-shoes 9, which form the fulcrums of the levers 8, causing said friction-shoes to also grip the draw-bar, while the friction-arms 8^a of levers 8 will oppose a frictional resistance to the travel of the slides 10, the power thus distributed over a great frictional surface being a yielding resistance throughout, gradually increasing or diminishing with the movement of the draw-bar. On the reversal of the draw-bar, as in buffing, the recession of follower 4 as its spring expands will of course gradually diminish the frictional grip of the first-named devices on the draw-bar; but at the same time the inward movement of follower 3 will compress its spring 6, and, acting through the levers 7 and 8, shoe 9, and slides 10, combined, as aforesaid, with said follower 3, will grip the draw-bar with a proportionately-increasing frictional resistance, so that in going from draft to buffing, or vice versa, no sudden shock or other destructive force can be exerted either on the draft-rigging or the car to which it is attached, as a friction-grip exists while passing the center of movement or reversal point.

It will be at once evident to those skilled in the art that the typical or elemental form of the structure resides in the combination, with the endwise movable draw-bar, of the element 7 and the interposed spring for causing the movement of the draw-bar to bring the friction-surfaces into a yielding contact and that though by the introduction into said combination of the shoes, secondary levers, and slides the frictional resistance to the movement of the draw-bar is greatly increased, yet said last-named elements may be dispensed with, provided a suitable fulcrum or fixed point for the support of toe 7^a of lever 7 is provided, and, further, that instead of forming the coacting friction-surfaces on the lever 7 and draw-bar 2 said friction-surfaces may be distinct therefrom, provided always that the movement of the endwise-movable draw-bar is communicated to said friction elements through the spring 6 and a lever, such as 7 7^a.

Therefore, having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of a rocking friction element, and a spring compressible by the movement of the draw-bar which spring has its bearing on the rocking friction element between the fulcrum thereof and the draw-bar, substantially as and for the purposes specified.

2. In a draft-rigging for railway-cars, the combination with an inner friction element, of a plurality of coacting friction elements external thereto, and a yielding element interposed between the draw-bar and the external elements for forcing the latter toward the axis of the draw-bar, substantially as and for the purposes specified.

3. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of a follower, a rocking friction element, a friction-slide, a secondary lever upon which the friction element is fulcrumed and which bears on the slide, and a spring interposed between the follower and the friction element; substantially as and for the purposes specified.

4. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of a follower, a rocking friction element, a spring interposed between the follower and the rocking friction element, a friction-shoe which bears on the draw-bar, and a lever having its fulcrum on the shoe and forming a fulcrum or support for the rocking friction

element, substantially as and for the purposes specified.

5. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of a follower, a rocking friction element, a spring interposed between the follower and the rocking friction element, a friction-shoe, a friction-slide movable with the follower, and a lever interposed between the friction shoe and slide and which forms a support or fulcrum for the rocking element, substantially as and for the purposes specified.

6. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of rocking friction elements having interposed fulcra, and springs which are alternately compressed by the movement of the draw-bar, said springs being disposed on opposite sides of the fulcra and having their bearings on the rocking friction elements, substantially as and for the purposes specified.

7. In a draft-rigging for railway-cars, the combination with an endwise-movable draw-bar, of two sets of friction elements, one element of each set arranged to rock to and from its companion element, and a spring for each set of friction elements having its bearing or seat on the rocking element of its set said springs arranged to be alternately compressed by the movement of the draw-bar, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 6th day of May, 1901.

GILBERT P. RITTER.

Witnesses:
J. M. FOWLER, Jr.,
H. M. STERLING.