

No. 716,542.

Patented Dec. 23, 1902.

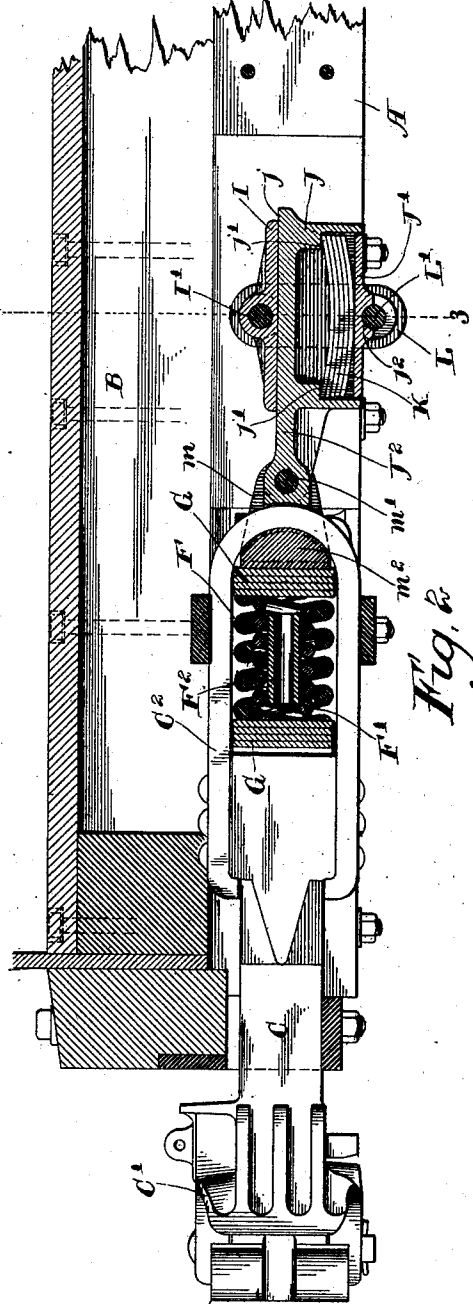
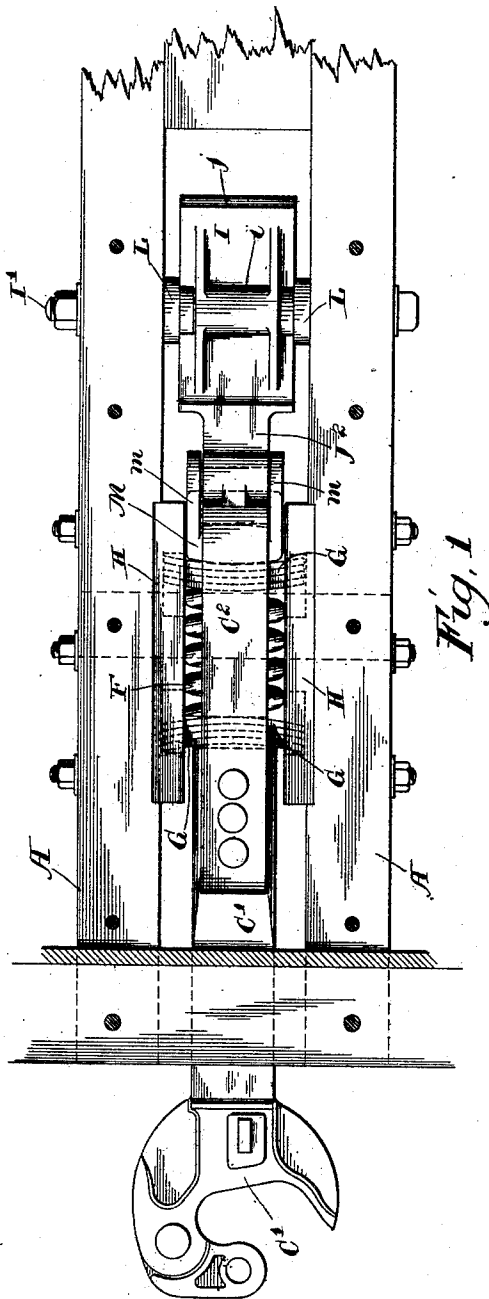
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DRAFT RIGGING FOR CAR COUPLINGS.

(Application filed Jan. 20, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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William H. Hall

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James A. Hinson

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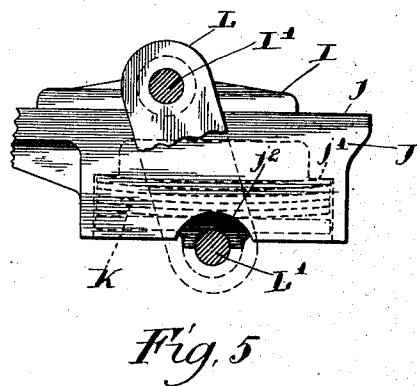
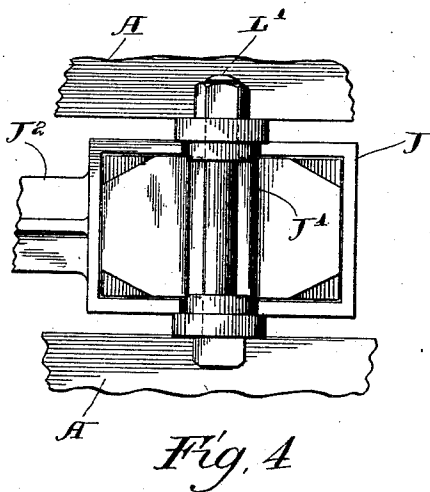
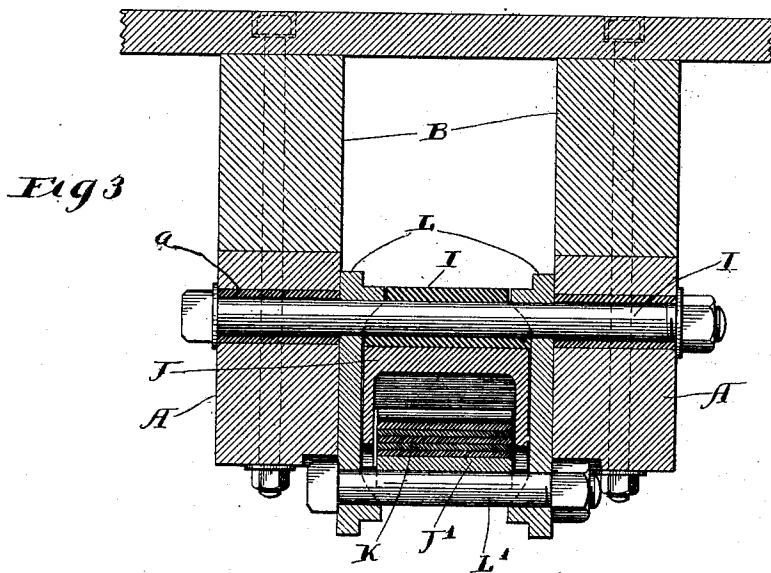
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UNITED STATES PATENT OFFICE.

JAMES A. HINSON, OF CHICAGO, ILLINOIS.

DRAFT-RIGGING FOR CAR-COUPPLINGS.

SPECIFICATION forming part of Letters Patent No. 716,542, dated December 23, 1902.

Application filed January 20, 1902. Serial No. 90,416. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. HINSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Draft-Rigging for Car-Couplers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in draw-bar draft-rigging for car-couplers, and refers more specifically to cushioning devices interposed between said draw-bar and draft-sills for taking up or absorbing shocks transmitted to the draw-bar in the tractive usage of the car and during the operations of coupling and for also lessening the recoil of the parts under the action of the springs or springs placed under tension.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

As shown in the drawings, Figure 1 is a plan view of the principal parts of a draft-rigging embodying the improvements constituting my invention. Fig. 2 is a longitudinal sectional view of the parts shown in Fig. 1, showing also the floor and the floor end and buffer-sills of the car. Fig. 3 is a transverse section taken on line 3 3 of Fig. 2. Fig. 4 is a bottom plan view of the auxiliary cushioning device constituting the principal feature of my invention. Fig. 5 is a side elevation of the parts shown in Fig. 4 with the parts broken away.

As shown in said drawings, and referring more particularly to Figs. 1 and 2, A A designate draft-sills which are attached to the under sides of the longitudinal floor-sills B of the car by bolts, as shown in Fig. 2.

C designates the draw-bar of the coupler, which is located centrally between the draft-sills A and provided at its outer end with the usual draw-head C' and at its inner end with a yoke C².

F F' designate two coiled spiral springs, one contained within the other and which are located between the arms of the yoke and are held from vertical displacement by said arms. Said springs bear at their ends against fol-

lower-plates G, which are herein shown as made of compound structure, consisting of a plurality of curved leaf-springs which engage at their opposite ends recesses or notches in the inner faces of draft-plates H, as indicated in dotted lines in Fig. 1, the ends of said notches constituting stops which limit the movements of the follower-plates in a familiar manner. Contained within the central spring F' is a short hollow stop-bar, which transmits pressure from one set of follower-plates to the other when the springs F F' are closed. The springs F F' act in the usual manner to yieldingly resist the thrust of the draw-bar with respect to the draft-sills in either direction, and to thereby cushion the blows due to such movements of the draw-bar in tractive usage and during coupling operations.

In addition to the cushioning resistance afforded by the springs F F', I have provided an auxiliary cushioning device which acts in conjunction with said springs to cushion or absorb the blows or shocks brought upon the draft-rigging. Said auxiliary cushioning device is made as follows: I designates a horizontally-arranged friction-plate located between the draft-sills and stationary therewith. Said plate is shown as fixed to the sills by means of a bolt I', which extends through an enlargement *i*, formed in the upper surface of said plate and through apertures in the draft-sills, as most clearly shown in Fig. 3. Desirably the apertures in the draft-sills are provided with bushings *a*, through which the bolt I' extends. Said plate is provided with a flat lower surface, constituting friction-surfaces. The shapes of the bolt I' and the apertures in the block I are such as to permit vertical oscillatory movement of the plate, the purpose of which will hereinafter more fully appear. J designates a movable carrier, which is provided with an upward-facing friction-surface *j*, opposed to and adapted to engage the friction-surface of the plate I. Said carrier is made hollow and opens downwardly and is elongated from front to rear of the draft-rigging. Contained within said carrier are a plurality of leaf-springs K, which are curved or bowed downwardly. Said springs extend longitudinally, as herein shown, of the carrier and bear at

their ends against downwardly-facing shoulders j' inside of said carrier. J' designates a follower-plate, which enters the downwardly-opening side of the carrier and is adapted to
 5 bear against the convex side of the lowermost of the springs K , centrally thereof, as clearly shown in Fig. 2. Said plate J and the springs K are supported in said carrier and the carrier held against the friction
 10 block or plate I by means of short links L , one at each side of the carrier and between the same and the draft-sills, and which links are pivoted at their upper ends to the transverse bolt I' . L' designates a bolt which extends transversely between and through the
 15 lower ends of the links below said plate J' , and said bolt engages between said links L a downwardly-opening concave recess j^2 , formed in the bottom surface of the follower-plate J' , said bottom surface of the plate being thickened around said recess j^2 . The links L and bolts L' constitute what may be termed a
 20 "swing-frame," which supports the carrier and connected parts. Said carrier is provided at its front end with an extension or neck J^2 , which fits at its front end between the rearwardly-extending arms m of a clevis M , which latter is fitted to the rear end of the yoke C^2 of the draw-bar. Said clevis is connected with said extension J^2 by means of a
 30 transverse pivoted bolt m' , whereby the carrier may have a slight vertical oscillation with respect to the draw-bar. The rear end of the yoke is preferably made transversely curved, as most clearly shown in Fig. 2, and the transverse member m^2 of the clevis is correspondingly rounded on the rear surface, thereby permitting the clevis to adjust or accommodate itself to the yoke in case of slight
 40 shifting of the latter without exerting a binding action between said parts. The front end of the extension or neck J^2 is also made concave to correspond to the curvature of the draw-bars. When said draw-bar and its
 45 yoke are thrust either rearwardly or forwardly past its central position of rest, the carrier J is also correspondingly shifted with respect to the stationary friction-plate I . Owing to the fact that the lower ends of the
 50 links L are connected with the movable carrier and the upper ends of said links are pivoted to the bolt I' , which is stationary with respect to the draft-sills, said links when the carrier is shifted past its central position of
 55 rest in either direction assume inclined positions, as shown in Fig. 5. In other words, the lower ends of said links are swung in the direction of movement of the carrier to an extent equal to the movement of said carrier,
 60 said links swinging in the arcs of circles concentric with the axis of the bolt I' . It is manifest that when the links are swung in the position shown in Fig. 5 the distance between the planes of the axis of the lower bolt L' and
 65 the axis of the bolt I' is shortened, whereby said lower bolt exerts an upward stress or force on the follower-plate J' and the springs K ,

with the result of compressing said springs, as clearly shown in Fig. 5, and also pressing the carrier more closely against the friction-plate I . The side walls of the carrier are provided with downwardly-opening notches, as shown in Fig. 5, to permit the bolt to pass upwardly thereinto, and the lower surfaces of the draft-sills are notched to permit the required swing of the ends of the bolt L' . The end thrust of the draw-bar therefore is resisted by a cushioning force in addition to that of the springs $F F'$ of that required to compress the springs K and also that added by the friction of the carrier J against the stationary friction-plate I . It is obvious, therefore, that the cushioning resistance of the device as a whole is enormously increased over that of the springs $F F'$ and that by reason of the peculiar construction of the carrier and the parts associated therewith the strength of the auxiliary cushioning device may be increased as desired by the addition of leaves to the set of springs inside said carrier and the proportioning of the carrier to receive the required number of leaves. A wear-plate may be interposed between the plate I and carrier J to take the wear between said parts and may be attached to the plate
 95 I by folding the ends thereof upwardly around the ends of the plate I . The springs K when the parts are assembled will be placed under some tension, so as to hold the parts firmly in place and take up slight wear between the plate I and carrier without loosening of the parts. In case of a considerable wear the parts may be tightened by inserting fillers between the ends of the springs and the interior shoulders j' of the carrier. It will further be manifest that in the beginning of the swinging movement of the links the effect of said links to compress said springs will be but little at the start of said swinging movement, so that in the initial movement of the carrier in either direction there is little stress brought on the auxiliary springs K ; but the force of such initial movement is taken up or absorbed by the springs $F F'$. In practice the parts are so adjusted that when a relatively light strain is transmitted to the draw-bar, such as would occur in tractive usage due to slight undulations of the road-bed or to gently starting or stopping the train, the thrust of the draw-bar due to such initial movements will be absorbed by the springs $F F'$ without placing any considerable tension on the auxiliary springs K , while a greater extent of movement of the draw-bar caused by heavier shocks brought thereon due to couplings or sudden starting and stopping of the train is absorbed by the combined action of the draw-bar and the supplemental springs. It will be understood, of course, that the combined resistance of the draw-bar and supplemental springs is made sufficiently great to absorb or counteract the practical maximum strains brought upon the draft-rigging.

By reason of the slight oscillation of the

plate I, due to the pivotal connection of the plate with the bolt I' and of the pivotal connection of the carrier with the draw-bar yoke, the friction-surfaces of the carrier and plate are maintained at all times in parallelism, whereby the wear on said surfaces is uniform. This is an important feature of the construction, as it makes it unnecessary that the parts shall fit with minute accuracy.

It is obvious that so far as the general results are concerned the part of the auxiliary device may be reversed—that is to say, the friction-plate I may be movable with the draw-bar, while the carrier may be stationary with the draft-sills. The location of the auxiliary cushioning device between the draft-sills in rear of the draw-bar yoke is of considerable practical importance, as it enables the device to be applied to cars already in use with little or no change in structure. So far as the broader features of the invention are concerned, however, the auxiliary cushioning device may be otherwise connected with the draw-bar or draw-bar yoke.

Other changes may be made in the structural details herein illustrated without departing from the spirit of my invention, and I do not wish to be limited to said details except as made the subject of specific claims. For instance, the bolt I' may when the auxiliary device is located in rear of the draw-bar yoke extend through the car-sills B instead of the draft-sills, and in some instances the friction feature of the auxiliary device may be omitted.

I claim as my invention—

1. A draft-rigging for car-couplers, comprising, in combination with a draw-bar, a spring which is compressible in a direction transverse to the direction of movement of the draw-bar, and means for compressing said spring comprising a part which is pivoted at one end to the draft-sills and which acts at its movable or swinging end against said supplemental spring, the swinging end of said pivoted part being connected with the draw-bar by means permitting movement of said swinging end of the said pivoted part relatively to the draw-bar in a direction transverse to the direction of movement of said draw-bar, whereby endwise movement of the draw-bar effects the compression of said spring.

2. A draft-rigging for car-couplers, comprising, in combination with a draw-bar, a spring which is compressible in a direction transverse to the direction of movement of the draw-bar, a carrier for said spring which is connected with the draw-bar by means permitting movement of the carrier relatively to the draw-bar in a direction transverse to the direction of movement of the draw-bar, a friction-plate connected with the draft-sills and engaging a friction-surface on said carrier, and a part which is pivoted at one end to the draft-sills and which acts at its movable or swinging end against said auxiliary spring

and the carrier, whereby movement of the draw-bar acts through said pivoted part to compress said spring and force said friction-plate and carrier one against the other.

3. A draft-rigging for car-couplers, comprising, in combination with a draw-bar, a carrier which is connected with the draw-bar by means permitting movement of the carrier in a direction transverse to the direction of movement of the draw-bar, a spring seated in said carrier, a friction-plate connected with the draft-sills and having a limited oscillatory movement, said friction-plate engaging an opposing friction-surface on the carrier, and a part which is pivoted at one end to the draft-sills, and which acts at its swinging end against said carrier and springs, said parts being arranged in such manner that movement of the draw-bar acts to swing said part on its axis, which in turn compresses said auxiliary spring and presses said friction-block and carrier one against the other.

4. A draft-rigging for car-couplers, comprising, in combination, the draw-bar and its spring, a carrier pivotally connected with the draw-bar yoke, an auxiliary spring seated in said carrier, a friction-plate adapted to be connected with the draft-sills and having a limited oscillatory movement, said friction-plate engaging an opposing friction-surface on the carrier, and a part adapted to be pivoted at one end to the draft-sills and which supports at its free end said carrier and springs, said parts being so arranged that movement of the draw-bar acts to swing said part on its axis, which in turn compresses said auxiliary spring and presses said friction-block and carrier one against the other.

5. A draft-rigging for car-couplers comprising, in combination with the draw-bar and its spring, a carrier located between the draft-sills in rear of the draw-bar, means for loosely connecting said carrier with the draw-bar yoke, a supplemental spring seated in said carrier, a friction-block adapted to be connected with the draft-sills and engaging an opposing friction-surface on the carrier, links adapted to be pivoted to said draft-sills, one on each side of the carrier, and a transverse member connecting the free ends of said links and extending beneath said carrier and auxiliary springs and adapted to exert pressure on said springs.

6. A draft-rigging for car-couplers comprising, in combination with the draw-bar and its spring, a carrier, means for connecting said carrier with the draw-bar yoke, an auxiliary spring seated in said carrier, a follower-plate bearing against said auxiliary spring, a friction-block adapted to be connected with the draft-sills and engaging an opposing friction-surface on the carrier, and links adapted to be pivoted to said draft-sills, one on each side of the carrier, and connected at their free ends by a transverse part which extends beneath and engages said follower-plate.

7. A draft-rigging for car-couplers, com-

prising, in combination with the draw-bar and its spring, a carrier located in rear of the draw-bar, means for connecting said carrier with the draw-bar yoke, a friction-plate adapted to be located between the draft-sills and to be connected therewith by a bolt which extends transversely through an aperture in the plate, a supplemental spring in said carrier, a follower engaging said spring, links pivoted at their upper ends to said transverse bolt, one on each side of the carrier, and a transverse part extending between the free ends of said links and engaging said follower-plate.

8. A draft-rigging for car-couplers, comprising, in combination with the draw-bar and its spring, a carrier, a clevis fitted to the yoke of the draw-bar and pivotally connected with said carrier, an auxiliary spring seated in said carrier, a follower-plate engaging said auxiliary spring, a friction-plate adapted to be connected with the draft-sills and engaging an opposing friction-surface on the carrier, and a part which is adapted to be pivoted at one end to the draft-sills and extends at its other end beneath and engages said follower-plate.

9. A draft-rigging for car-couplers, comprising, in combination with the draw-bar and its spring, a carrier, one or more curved leaf-springs seated against shoulders on said carrier, a follower-plate engaging the convex part of the spring or springs, a friction-block

adapted for connection with the draft-sills, and engaging an opposing friction-surface on the carrier, and a part adapted to be pivoted at one end to the draft-sills and having a transverse member which extends across and engages said follower-plate.

10. An auxiliary cushioning device for car-couplers, comprising a carrier, a spring seated in said carrier, a follower-plate engaging said spring, a friction-plate adapted to engage an opposing friction-surface on the carrier, and a part pivotally connected at one end with said friction-plate and having a transverse part which engages said follower-plate.

11. In a buffing device, a draw-bar having endwise movement only, means for compressing a spring comprising a link or links oscillating on an axis transverse to the direction of compression of the spring and acting on the spring in a manner to compress the spring upon swinging the link or links about said axis; and means for transmitting to the swinging end or ends of said link or links, the endwise movement of the draw-bar.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 18th day of January, A. D. 1902.

JAMES A. HINSON.

Witnesses:

WILLIAM L. HALL,
BERTHA A. PRICE.