No. 684,247. Patented Oct. 8, 1901.

J. A. HINSON.

DRAW BAR DRAFT RIGGING FOR CAR COUPLINGS.

(Application filed May 25, 1901.)

(No Model.)

Fig. 1.

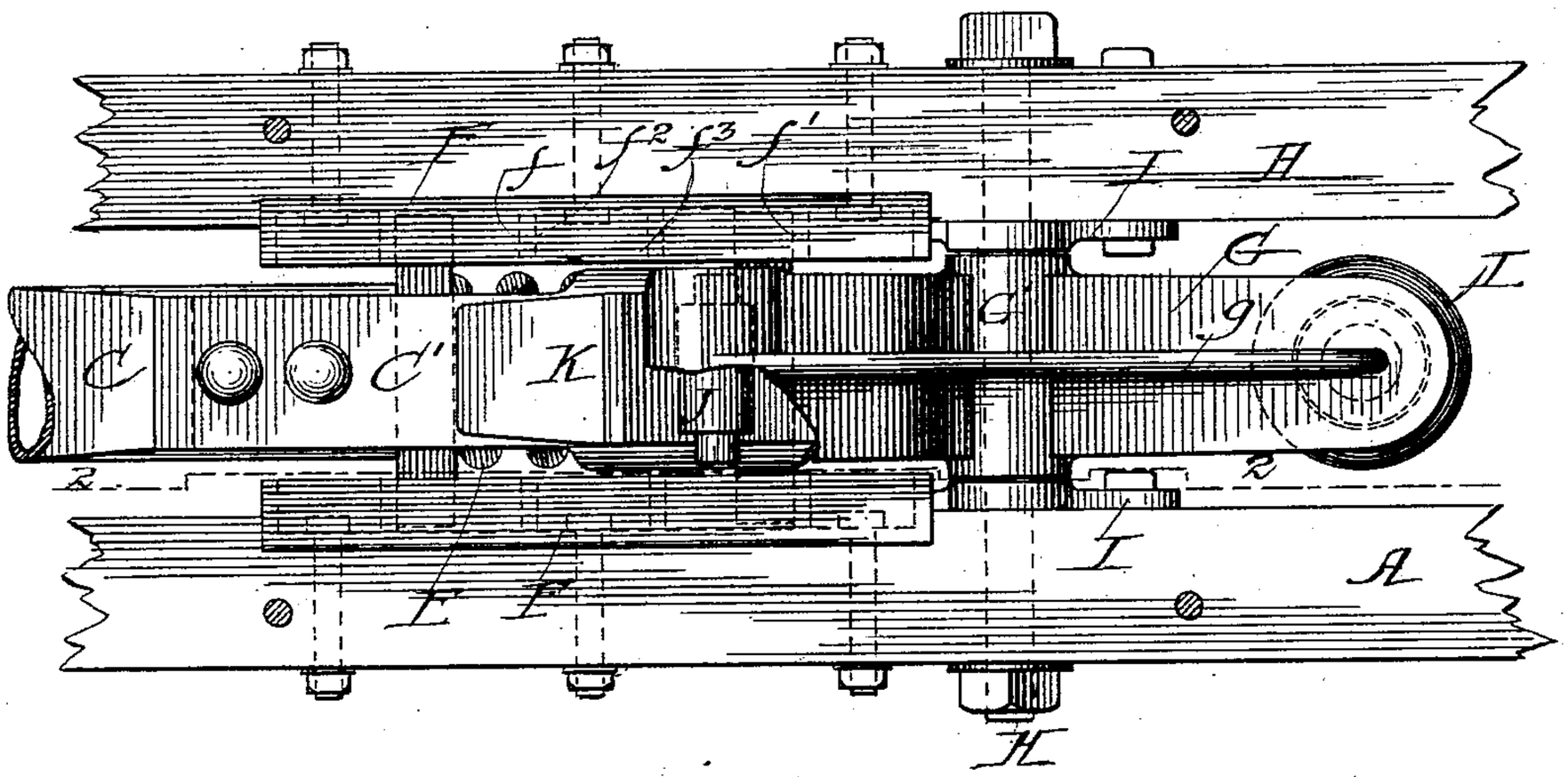
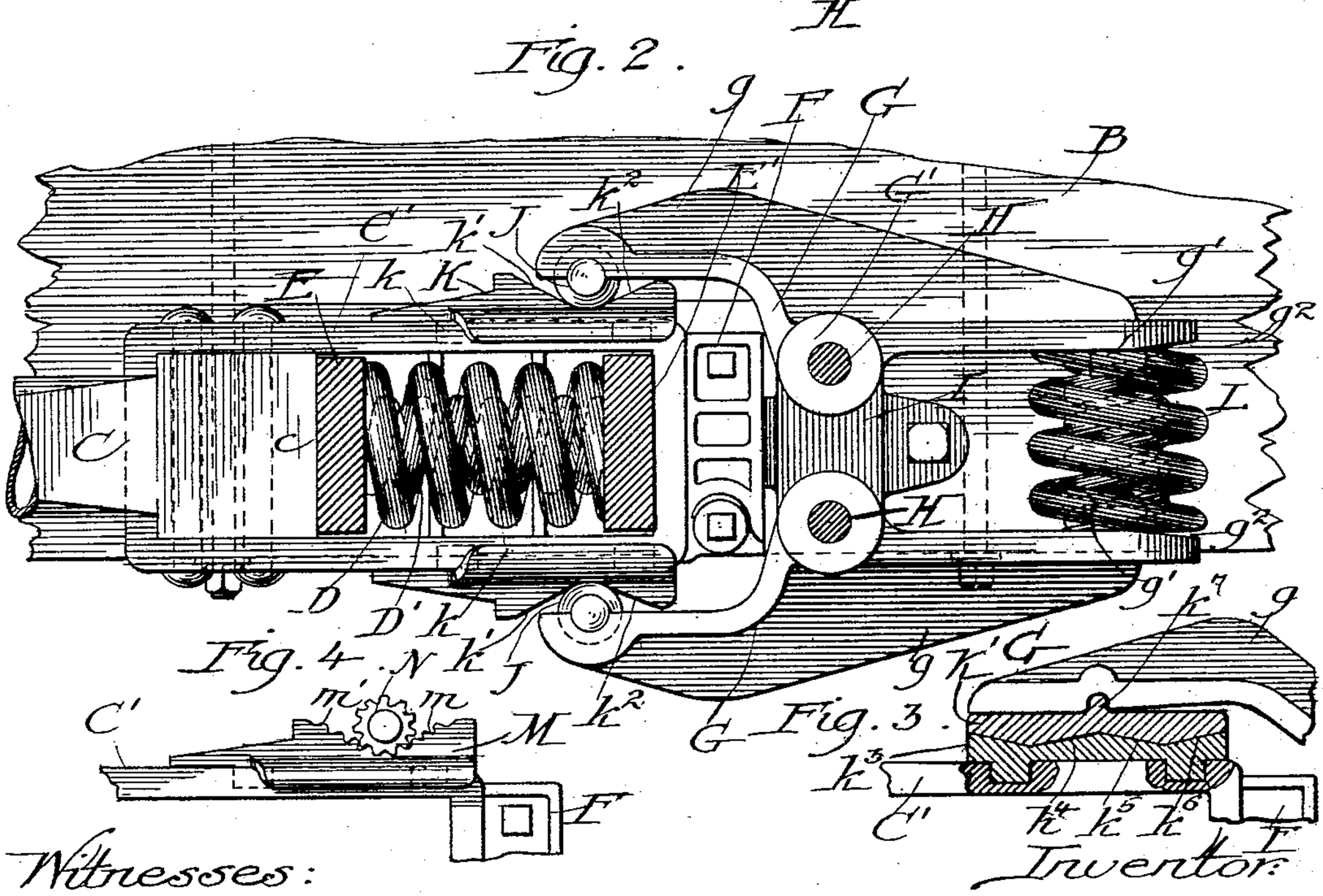


Fig. 2.



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DRAW-BAR DRAFT-RIGGING FOR CAR-COUPLINGS.

SPECIFICATION forming part of Letters Patent No. 684,247, dated October 8, 1901.

Application filed May 25, 1901. Serial No. 61,824. (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 Draw-Bar 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 devices for taking up or absorbing the shock between the draw-bar and draft-sills in the operation of the coupling and in general usage and for also preventing recoil of the parts under the action of the spring or springs under tension.

The invention as herein illustrated is designed to be employed in connection with draft-rigging of the general type shown in my prior application for United States Letters Patent, Serial No. 60,668, filed May 17, 1901, although it will be obvious from the following description that the invention or improvements may be employed with other draft-riggings of this general type.

As shown in the drawings, Figure 1 is a plan view, partly broken away, of the rear end of the coupler-bar, the draft-sills, and showing my improvements associated with said parts. Fig. 2 is a longitudinal section on the indirect line 2 2 of Fig. 1. Figs. 3 and 4 illustrate modifications of certain parts of the improvements hereinafter to be explained.

As shown in said drawings, A A designate the draft-sills, which are attached to the under sides of the longitudinal floor-sills B by bolts or like means.

C designates the draw-bar of the coupler, which is located centrally between the draft-sills A. To the inner end of said draw-bar is attached a yoke C′, which is herein shown as formed of a single piece of metal bent between its ends and which ends overlap and are secured to an enlargement or head *c* at the inner end of the draw-bar.

D D′ designate two coiled spiral springs, one within the other, which are located between the arms of said yoke and are held from vertical displacement by said arms. Said springs bear at their ends against follower-plates E, located at the forward and rearward ends of the yoke. The follower-plates E fit at their opposite ends in recesses in the inner faces of draft-plates F, secured to the adjacent faces of the draft-sills, said plates having forwardly and rearwardly facing shoulders $f f' f^2 f^3$, as indicated in dotted lines in Fig. 1, which limit the forward and rearward movements of the follower-plates in the usual manner.

The construction thus far described may have the form of any of the well-known patterns of draft-riggings of this general type, as before stated, and constitutes no part of the present invention.

The improvements which constitute my present invention consist of one or more pivoted levers movable toward and away from the draw-bar, said lever or levers and the draw-bar being provided with coacting parts which when the draw-bar is suddenly moved either forwardly or rearwardly from its position of rest thrusts or forces the lever or levers outwardly away from the draw-bar against the resistance of a spring which is applied to said lever or levers, and thereby absorbs or counteracts the shock due to such movement of the draw-bar. Preferably two levers are employed, one located at each side of the draw-bar and each having parts which coact with parts carried by the draw-bar, whereby upon movement of said draw-bar the levers are both moved laterally with respect to the draw-bar and a resistance-spring is applied to said levers, said spring being so constructed and applied as to resist the lateral movement of said levers. As herein shown, the levers are of the first class, the resistance-spring being interposed between the levers at one end thereof and exerting outward force and the coacting parts carried by the lever on the ends thereof remote from the resistance-spring and adapted to be spread outwardly through movement of the draw-bar; but this arrangement need not be adhered to.

As herein shown, G G designate two rigid levers made, preferably, of cast metal, one located above and the other below the draw-bar. Said levers are pivoted between their

ends upon pivot-bolts H, which extend between and pass transversely through the draft-sills A and one of which is located vertically above the other, as clearly shown in Fig. 2. Said bolts H pass through stiffening-plates I, which are attached to the inner faces of the draft-sills A by bolts or like means and are provided with square shoulders at their forward ends, which abut against the rear ends of the draft-plates F. The arms G G are provided at their central parts with massive hubs G′, through which the pivot-bolts pass, and are also stiffened by vertical ribs *g*, extending from the outer faces thereof. The forward ends of said levers carry bearing-rollers J, which latter are provided with reduced trunnions at their ends, which engage inwardly-opening bearing-recesses in said levers. Said rollers are adapted for engagement with saddle-blocks K, which are affixed to the upper and lower faces of the arms of the yoke C′, said saddle-blocks for this purpose being provided, as herein shown, with inwardly-extending lugs which enter outwardly-opening recesses or sockets in the yoke-arms and the blocks being further provided with laterally-directed lips or flanges *k*, which overlap the side margins of said arm. Said blocks may, however, be attached to the yoke-arms in any other suitable or preferred manner. The outer faces of said blocks are formed of two oppositely-inclined surfaces k' k^2, the former of which faces rearwardly and the latter of which faces forwardly, said surfaces being so disposed with respect to each other as to provide between the same depressions which are normally occupied by the rollers J when the draw-bar is in its central position or position of rest. The rear ends of said levers G are extended rearwardly some distance past the pivot-bolts H and in said parts in rear of said pivots occupy a generally horizontal position and are approximately parallel with each other. Between said rear ends of the levers are interposed a double pair of spiral springs L L′, one within the other, said springs bearing at their opposite ends against the inner faces of the rear ends of said levers. Said inner faces of the levers are provided with centering-studs g', as indicated in dotted lines in Fig. 2, which serve to hold the springs in place. The inner faces of the levers at the extreme rear ends thereof are provided with oblique or inclined parts g^2, as shown in Fig. 2, which prevent said end surface coming in contact with the spring when the forward ends of the arms are spread apart in a manner to displace the springs.

The action of the device will be clear from the foregoing, but may be briefly stated as follows: Upon rearward movement of the coupling-bar, such as occurs in the act of coupling, the springs D D′ are depressed, and at the same time the saddle-blocks K are carried rearwardly, so as to bring the rearwardly-inclined surfaces k' of said blocks against the bearing-rollers J. The bearing-rollers and outer ends of the levers G are thereby spread or thrust outwardly and the rear ends of the levers forced inwardly against the action of the springs L L′, interposed between the same, and the combined resistance of the springs D D′ and springs L L′ serves to absorb the shock due to the momentum imparted to the draw-bar. When said draw-bar is arrested, or, in other words, when the shock of the same has been completely absorbed by the springs and the compressive strain relieved, the draw-bar and parts carried thereby will be returned by the springs to their position of rest. Any tendency of the springs thus relieved to carry the draw-bar past its central position and produce a recoil therein will be counteracted by the bearing-rollers J encountering the forwardly-facing inclined surfaces k^2 of the saddle-blocks, whereby said recoil is reduced to a practical minimum.

The action of the device in the forward movement of the draw-bar from its central position, as when the middle of a train passes over the highest point of a grade or hill or when the train is suddenly started, will be like that before described, with the exception that the movement of the parts will be reversed and the tendency to the recoil will be overcome by the bearing-rollers encountering the rearwardly-inclined faces k' of the saddle-blocks.

It will be obvious from the foregoing that the construction described may be made of enormous strength, so as to be capable of withstanding any shocks ordinarily brought upon the draft-rigging in the operation of coupling or in general usage. The construction is such also as to enable the parts to be readily adapted to the modern heavy cars without unduly adding weight to the cars thereby. The invention is, moreover, very simple in its construction, and, being made of few parts, is not likely to get easily out of order. If desired, the levers may be extended rearwardly a sufficient distance to accommodate a second pair of springs, like the springs L L′.

In Fig. 3 I have shown a modification of the coacting parts between the forward ends of the levers G and the parts carried by the draw-bar yoke. In this construction the saddle-blocks K are provided with four oppositely-inclined surfaces k^3 k^4 k^5 k^6, which are engaged by bearing-blocks K′, having inclined surfaces corresponding to the inclined surfaces k^3 to k^6, inclusive, of the saddle-blocks K. Said bearing-blocks K′ are detachably connected with the forward ends of the levers G, said blocks being for this purpose provided with lugs k^7, which engage grooves or sockets in the inner faces of said levers. In the operation of this construction the free ends of the levers G are moved outwardly when the saddle-blocks are moved either forwardly or rearwardly with respect to the bearing-blocks K′, the strength of the springs L L′, together with the springs D D′, resisting such longitudinal movement of the draw-bar and

saddle-blocks, as in the construction before described. Such resistance is further increased by the frictional contact between said saddle and bearing blocks. If the springs D D′ act as preliminary springs to be brought under compression before the springs L L′ are brought under compression, the saddle-blocks (shown in Figs. 1 and 2) may be constructed with a short horizontal bearing-surface at their lowest parts, whereby the initial movement of the draw-bar and saddle-blocks have no effect on the springs L L′. The modification shown in Fig. 3 may also be similarly constructed.

I have shown in Fig. 4 a modification wherein the coacting surfaces of the bearing-rollers and saddle-blocks are so formed as to secure a positive rotation of the bearing-rollers upon movement of the saddle-blocks relatively thereto. In said construction, M designates the saddle-block, which is formed substantially like the saddle-blocks shown in Figs. 1 and 2 and mounted in a similar manner on the arms of the yoke C′. The forwardly and rearwardly inclined surfaces *m m′* of said blocks are provided with a series of transverse corrugations or teeth, and the bearing-roller N, corresponding to the roller J, before described, is provided on its periphery with a plurality of longitudinal teeth or cogs adapted to engage the teeth or corrugations of the inclined surfaces *m m′*. With this construction movement of the saddle-blocks M under said bearing-roller N serves to give positive movement to the bearing-roller and prevents the said roller from slipping on the saddle-block in case excessive frictional resistance is exerted between the bearing-trunnions of said rollers and the levers G.

It will be understood that the modification last described may be employed in the construction shown in my prior application for Letters Patent, Serial No. 60,668, before referred to, or in any other form of this device wherein a bearing-roller and a part having inclined surfaces form coacting parts between the draw-bar and parts which are moved through the longitudinal movement of said draw-bar against the resistance of suitably-applied springs.

It will be understood that the springs L L′ exert sufficient pressure on the levers G, when the bearing-rollers occupy the lowest parts of the saddle-blocks, to hold said blocks properly engaged with the yoke of the draw-bar and the rollers in place in their bearing-recesses without the necessity of additional fastening means.

While I have herein shown a desirable form of my invention, I do not wish to be limited thereto, except as hereinafter may be made the subject of specific claims, as it will be obvious that many changes may be made in the details thereof without departing from the spirit of my invention.

I claim as my invention—

1. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, a lever which is movable toward and from the draw-bar, coacting parts on the lever and draw-bar acting to give positive movement to said lever through longitudinal movement of the draw-bar in both directions of movement from its central position, and a spring applied to said lever for resisting such movements of the draw-bar.

2. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, two pivoted levers one on each side of the draw-bar, coacting parts on said levers and draw-bar acting to give lateral movement to the levers through longitudinal movement of said draw-bar, and a single spring or set of springs applied to both of said levers resisting said movement thereof.

3. A draft-rigging for cars comprising draft-sills, a draw-bar, a draw-bar spring, two levers pivoted between the draft-sills, one on each side of the draw-bar, coacting parts on the forward ends of said levers and draw-bar, embracing oppositely-inclined surfaces on one of said parts, whereby longitudinal movement of said draw-bar acts to give lateral movement to said levers, and a spring interposed between the rear ends of said levers.

4. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, two pivoted levers which are movable laterally toward and away from the draw-bar, coacting parts on said levers and the draw-bar embracing oppositely-inclined surfaces on one of said parts, and a bearing-roller carried by the other of said parts, and a spring applied to said levers acting to resist lateral movement thereof.

5. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, two pivoted levers which are movable laterally toward and away from the draw-bar, bearing-rollers carried by said levers, saddle-blocks on the draw-bars having outwardly-facing, oppositely-inclined, surfaces adapted for engagement by said bearing-rollers, and a spring applied to said levers acting to resist lateral movement thereof.

6. A draft-rigging for cars comprising draft-sills, a draw-bar, a draw-bar spring, a second spring which is compressible in a direction transverse to the direction of compression of the draw-bar spring, and coacting parts on the draw-bar and on the draft-sills producing compression of said second spring through longitudinal movement of said draw-bar, comprising a roller on one of said parts and an inclined surface on the other part, the contacting parts of said roller and inclined surface being provided with interfitting recesses and projections whereby movement of one of said parts imparts a positive movement to the other part.

7. A draft-rigging for cars comprising draft-sills, a draw-bar, a draw-bar spring, a second spring which is compressible in a direction transverse to the direction of compression of

the first spring, and coacting parts on the draw-bar and on the draft-sills producing compression of said second spring through longitudinal movement of said draw-bar, comprising a roller on one of said parts and oppositely-inclined surfaces on the other part which are disposed to form between the same a depression normally occupied by said roller, the contacting parts of said roller and inclined surfaces being provided with interfitting recesses and projections, whereby movement of one part causes a positive movement of the other part.

8. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, a spring-arm, the outer or free end of which is movable toward and from the draw-bar, and coacting parts on the spring-arm and draw-bar acting to give lateral movement to said part against its spring resistance through longitudinal movement of the draw-bar, comprising a bearing-roller on one of said parts, and oppositely-inclined surfaces on the other part, the contacting parts of said bearing-roller and inclined surfaces being provided with interfitting recesses and projections, whereby movement of one of said parts gives positive movement to the other part.

9. A draft-rigging for cars comprising draft-sills, a draw-bar between the same, a draw-bar spring, two levers pivoted between their ends to bolts extending between and through the draft-sills, coacting parts between the forward ends of said levers and the draw-bar acting to give lateral movement to said forward ends of the levers through longitudinal movement of the draw-bar, and a spring interposed between the rear ends of said levers and acting to resist such lateral movement of the forward ends of said levers.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 23d day of May, A. D. 1901.

JAMES A. HINSON.

Witnesses:
WILLIAM L. HALL,
GERTRUDE BOYCE.