(No Model.) 2 Sheets—Sheet 1.

W. H. MINER.

DRAFT RIGGING FOR CARS.

No. 570,038. Patented Oct. 27, 1896.

FIG. 1.

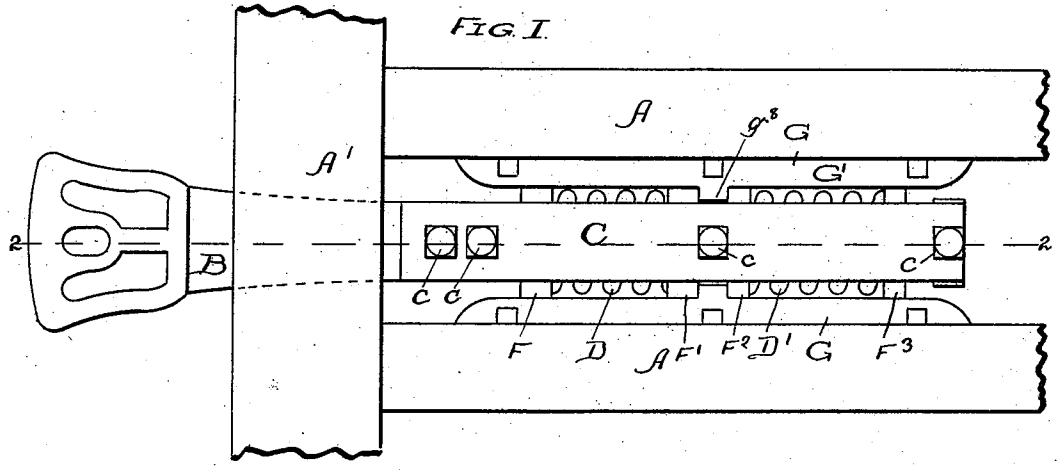


FIG. 2.

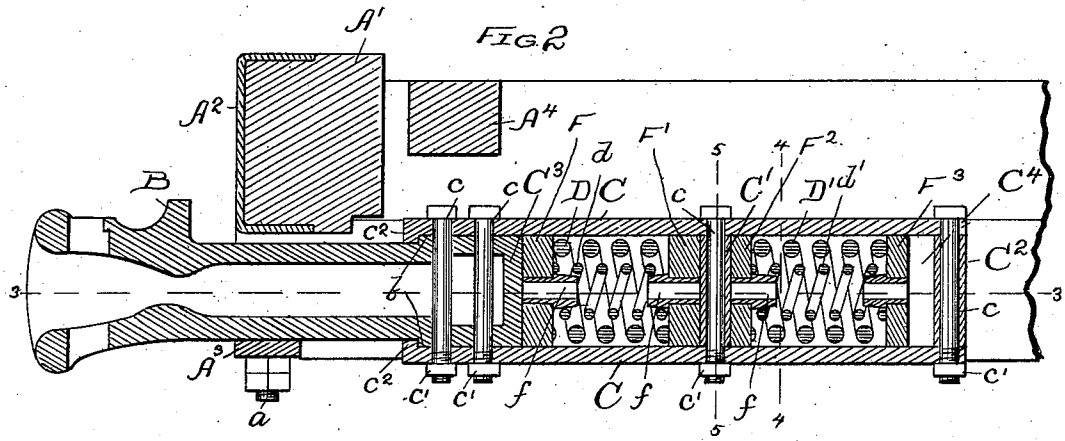
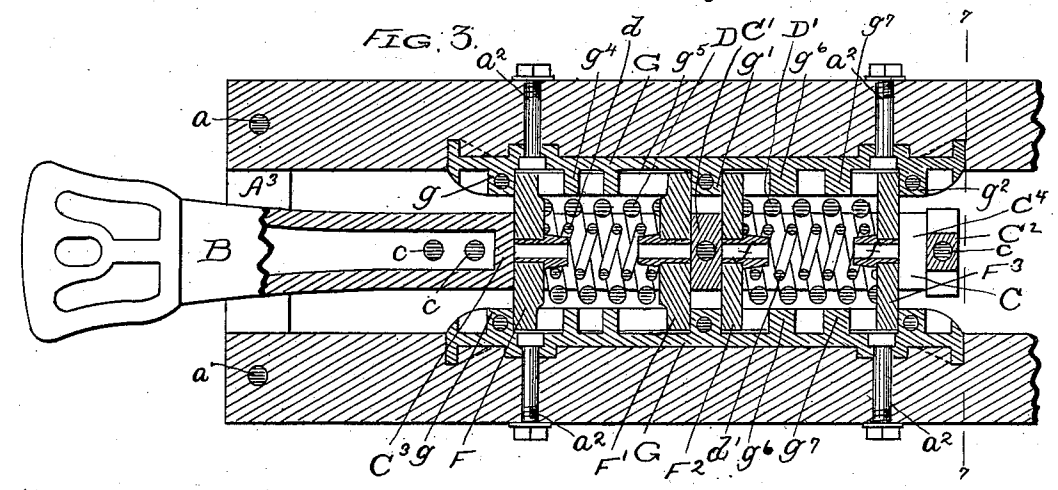


FIG. 3.



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(No Model.) 2 Sheets—Sheet 2.

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FIG. 4

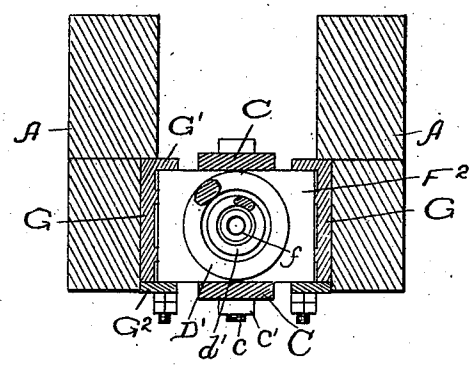


FIG. 5

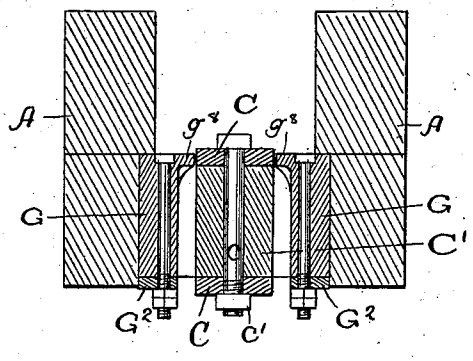


FIG. 7

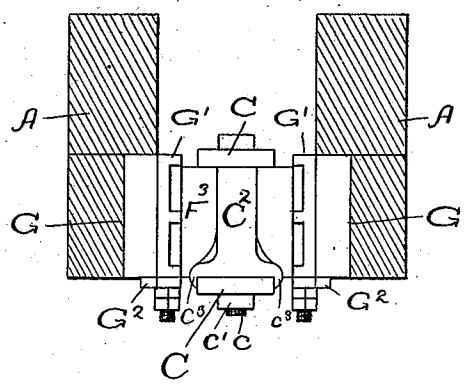
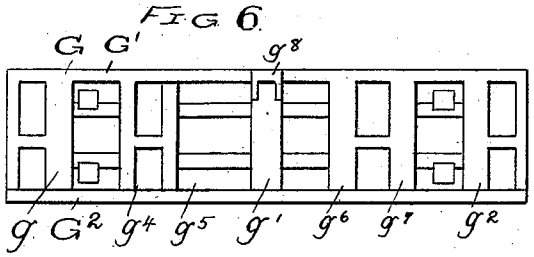


FIG 6



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UNITED STATES PATENT OFFICE.

WILLIAM H. MINER, OF CHICAGO, ILLINOIS.

DRAFT-RIGGING FOR CARS.

SPECIFICATION forming part of Letters Patent No. 570,038, dated October 27, 1896.

Application filed March 2, 1896. Serial No. 581,513. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. MINER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Draft-Rigging for Cars, of which the following is a specification.

My invention relates to improvements in draft-rigging for railway-cars.

The object of my invention is to provide a double or tandem spring draft-rigging which, while having the full yielding support or resistance of both springs under both pulling and buffing strains, will at the same time enable the two springs to come into operation successively under pulling strains in order to facilitate the starting of the train. Where the two tandem springs are arranged to come into operation simultaneously in the pulling action as well as in the buffing action, the combined resistance or stiffness of the two springs is such as to render the starting of the train more or less difficult, causing the locomotive to act at a disadvantage or like as under a dead-load. By my present improvement in the initial or starting movement of the train the draw-bars of each car have a limited movement against one only of the tandem springs, and then the other comes into operation, thus enabling the locomotive to start the cars of the train more or less successively and to make one revolution of the drivers, or a partial revolution thereof, before encountering the full load of the whole train.

Another feature of my improvement consists in adding supplemental stops to the draw-bar castings or side plates, which serve to arrest the movement of the followers just before the springs are compressed solid. This prevents the springs being compressed absolutely solid and the consequent danger of breaking the springs, which might otherwise sometimes occur even in a tandem spring draft-rigging where the train is subjected to enormous shocks, as, for example, in a collision or wreck.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout the several views, Figure 1 is a plan view of a draft-rigging embodying my invention. Fig. 2 is a central vertical longitudinal section on the line 2 2 of Fig. 1. Fig. 3 is a horizontal section on line 3 3 of Fig. 2. Figs. 4 and 5 are cross-sections on lines 4 4 and 5 5, respectively, of Fig. 2. Fig. 6 is a detail side elevation of one of the draw-bar stop-castings, and Fig. 7 is a section on line 7 7 of Fig. 3.

In the drawings, A A are the draw-bar timbers, to which the stop-casting or side plates of the draft-rigging are attached. A′ is the end sill of the car-body; A^2, the buffer-plate; A^3, the carrier-iron, secured to the draft-timbers by the bolts *a*, and A^4 is the sub end sill of the car-body; B, the draw-bar, and C the draw-bar extension, the same being preferably in the form of separate upper and lower pocket-straps or extension-plates adapted to fit above and below the followers, instead of in the form of a single stem or rod extending centrally through the followers. All these parts may be of any known or suitable construction.

The pocket-straps or extension-plates C C are secured to the rear end of the draw-bar by threaded bolts *c c*, having nuts *c′ c′* in connection with the shoulders *b b* on the draw-bar and the corresponding shoulders or flanges c^2 c^2 on the pocket-straps or extension-plates.

C′ C^2 are abutment blocks or thimbles secured to the draw-bar extension C C by bolts *c c*, having nuts *c′ c′*. The inner end C^3 of the draw-bar serves as the other abutment-block for the followers of the two tandem springs.

D and D′ are two tandem-arranged springs, and *d d′* are two smaller tandem springs inside the larger ones, which are sometimes preferably employed. Instead of making the springs of equal length I prefer to make the spring D′ slightly longer than the spring D. Ordinarily I make the spring D seven inches in length and the spring D′ eight inches in length, the compressive extent of each of the springs being two inches, although of course the springs may be of any dimensions desired. One of the two tandem springs has a limited clearance or play-space C^4 between its rear follower and its rear abutment on the draw-bar

extension, so that in the pulling action the draw-bar may have a limited movement against the resistance of only one of the two tandem springs before the other comes into action. This clearance or play C^4 is preferably left between the rear follower F^3 and the rear abutment C^2, so that the rear spring will be the one to come last into action under pulling strains.

The four followers F F' F^2 F^3 are preferably rectangular blocks or plates fitting between the draw-bar extension-plates C C, there being one pair of followers for each of the two tandem springs D D'. Each of the followers F is provided with a short thimble or lug *f*, which fits inside the springs to center or hold the springs in position.

G G are the two draw-bar stop-castings or side plates secured to the inner faces of the draft-timbers A A by bolts a^2. Each of these stop-castings is provided with an upper integral guide-flange G' and a lower removable guide-plate G^2, between which the followers reciprocate and by which the followers are guided and supported. Each side plate G is further provided with three stops g g' g^2, preferably formed integrally therewith and against which the followers F F' F^2 F^3 abut, the middle stops g' g' serving for the two middle followers F' F^2. If the two tandem springs D D' are made the one longer than the other, the space between the stops g g' and between the stops g' g^2 will be made correspondingly the one greater than the other; otherwise the two spaces may be made equal. To prevent the springs being compressed solid under either pulling or buffing strains, I provide each of the stop-castings or side plates G G with supplemental stops g^4 g^5 g^6 g^7, so arranged as to arrest the movement of the followers just before the springs are compressed. In practice, for example, where the extent of compression is two inches I usually arrange these supplemental stops so as to allow a movement of the followers of an inch and seven-eighths, so that the springs will thus lack one-eighth of an inch of being compressed solid. To prevent the rear abutment-block C^2 from turning, I ordinarily provide it with lugs c^3 to fit astride of the draw-bar extension-plate C, as the rear follower does not normally abut directly against this abutment-block, owing to the clearance or space C^4.

As the clearance or space C^4 is only left between the rear follower of one spring and the rear abutment which bears against such rear follower, it will be readily understood that both the tandem springs D D' will come simultaneously into action and be simultaneously compressed under bunting strains, while they will come successively into action and then be simultaneously compressed under pulling strains.

The feature of my invention consisting in providing the draft-rigging with supplemental stops to prevent the spring or springs being compressed solid is not limited to the use of these supplemental stops in connection with both of the tandem springs, as it will be obvious that these supplemental stops may be used with one of the two tandem springs and not with the other, and also that this feature may be employed in a single-spring draft-rigging.

It should also be observed that the feature of my invention relating to the successive coming into action of the tandem springs under pulling strains may be employed where a greater number of springs than two are arranged tandem, or one behind the other.

The upper guide-flange G' G' of the draw-bar stop-castings G G are each provided at or near their middle with guide-lugs or projections g^8 g^8, which fit against the edges of the upper draw-bar extension-plate C and thus serve as a guide to keep the draw-bar and its extensions centrally in position, while at the same time permitting the draw-bar and its extension-plates to have the necessary lateral play, as required in rounding curves in the railway-track.

It will be understood from Fig. 1 that the draw-bar and its extension may vibrate laterally to a limited extent on these guide-lugs g^8 g^8 as a pivot.

I claim—

1. In a double or tandem spring draft-rigging, the combination with a draw-bar and its extension and abutments to bear against the followers, of two tandem-arranged springs, a pair of followers for each of said springs, stops secured to the draft-timbers for the followers to abut against, there being a limited clearance or play space between the rear follower of one of said springs and the abutment bearing against said follower to cause the two springs to come successively into action under pulling strains, substantially as specified.

2. In a tandem spring draft-rigging, the combination with the draft-timbers, of the draw-bar stop-castings or side plates secured to the inner faces of said timbers, and provided each with three stops for the followers to abut against, of two tandem-arranged springs, four followers, one pair for each of said springs, and a draw-bar and its extension provided with abutments to bear against said followers, said abutments being spaced relative to the length of said springs substantially as described, so as to cause the two springs to come simultaneously into action and be simultaneously compressed under buffing strains, and to come successively into action and then be simultaneously compressed under pulling strains, substantially as specified.

3. In a draft-rigging, the combination with a draw-bar, its extension and abutments, four followers, stops for the followers to abut

against and two tandem-arranged springs coming simultaneously into action under buffing strains and successively into action under pulling strains, substantially as specified.

4. The draw-bar stop-casting or side plate G having integral upper guide-flange G' and guide G^2, and provided with integral stops g g' g^2, and integral supplemental stops g^3 g^4 g^5 g^6, substantially as specified.

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