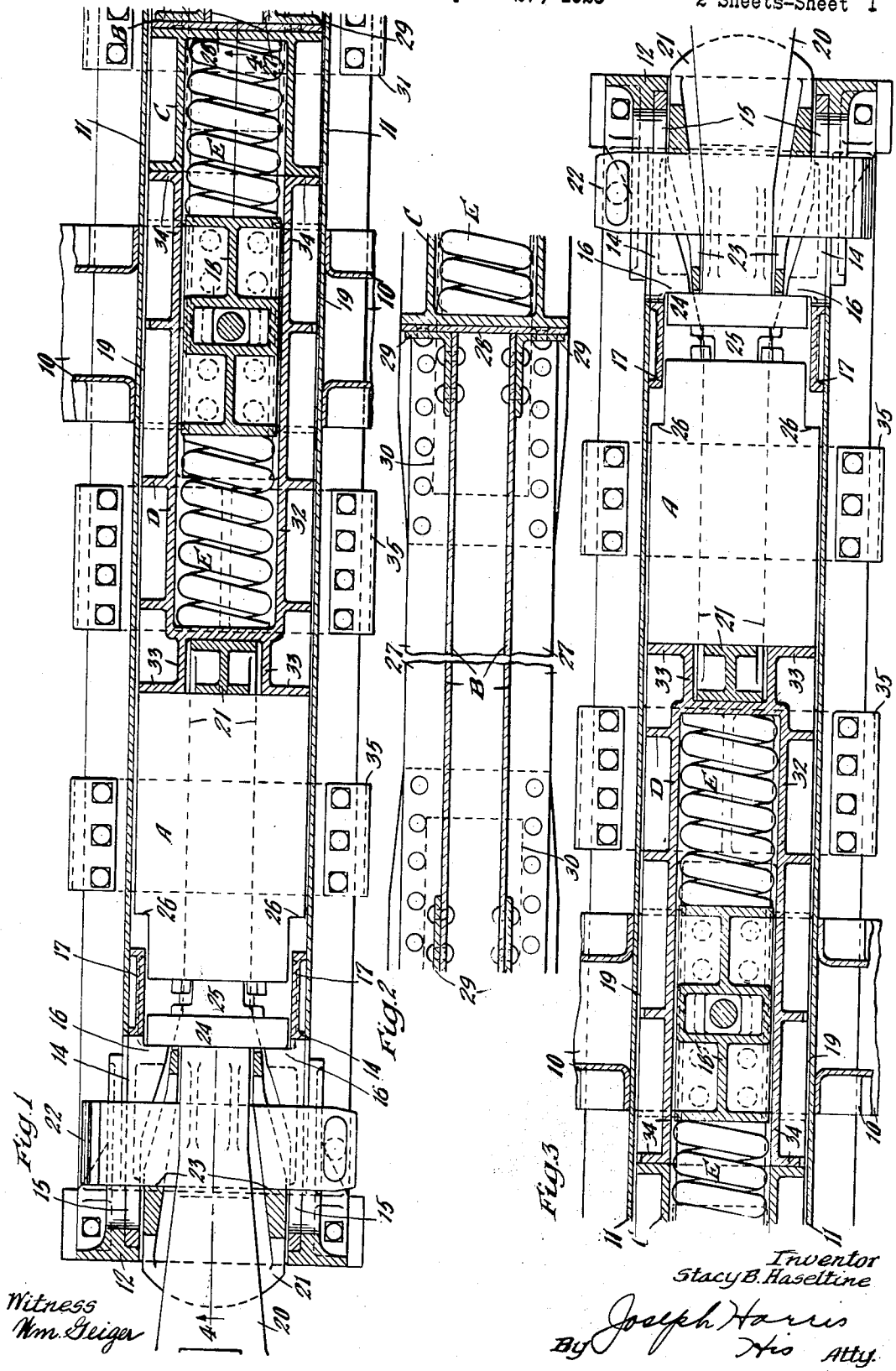
March 13, 1934. S. B. HASELTINE 1,950,609

RAILWAY DRAFT RIGGING

Filed April 27, 1928 2 Sheets-Sheet 1



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RAILWAY DRAFT RIGGING

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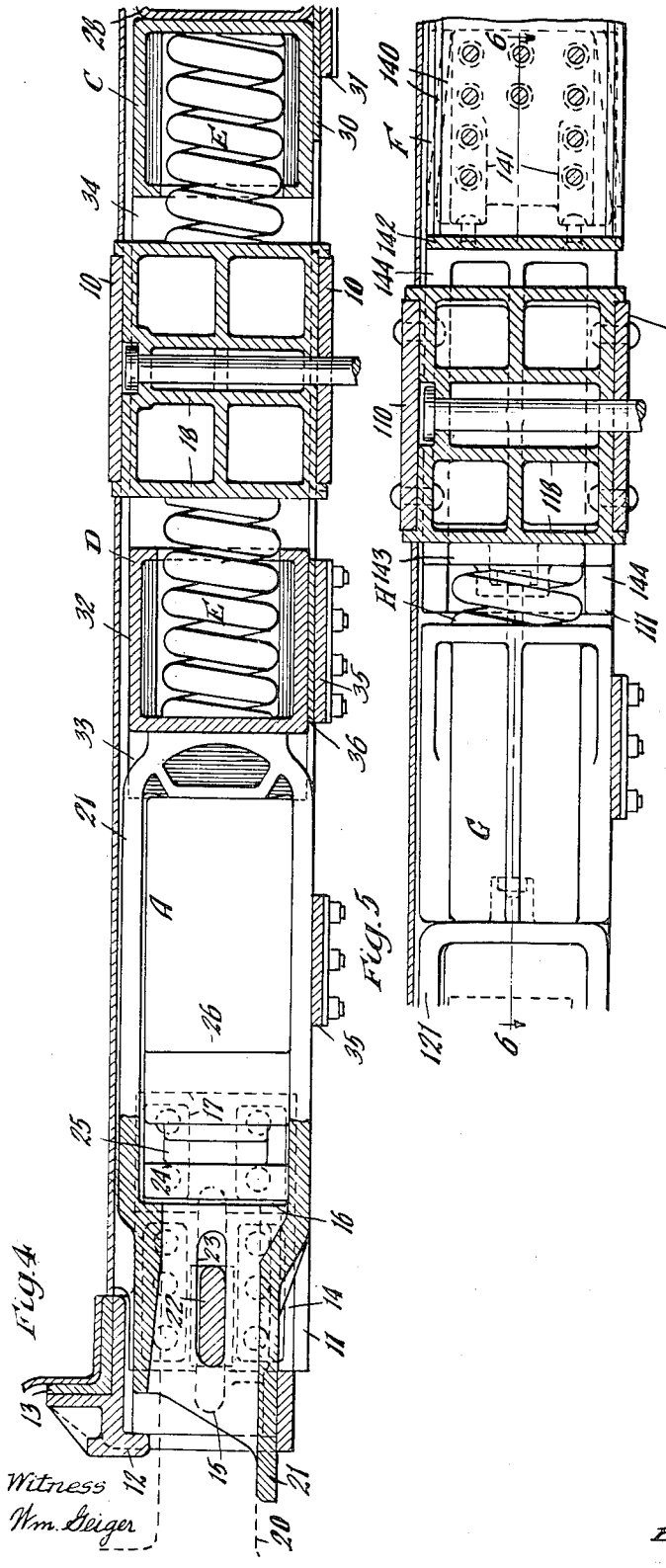


Fig. 4

Fig. 5

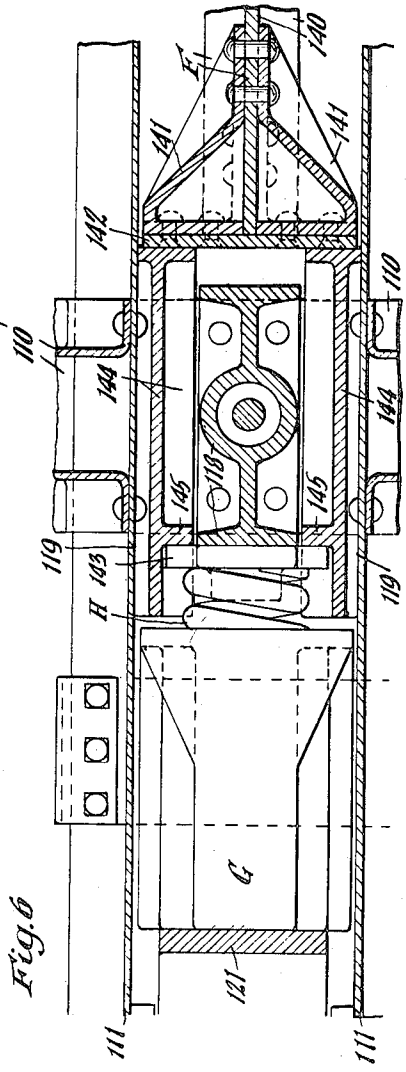


Fig. 6

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UNITED STATES PATENT OFFICE

1,950,609

RAILWAY DRAFT RIGGING

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Application April 27, 1928, Serial No. 273,184

6 Claims. (Cl. 213—8)

This invention relates to improvements in railway draft riggings.

In the operation of railway cars, it has been the general practice to employ independently acting shock absorbing means at opposite ends of each car, each shock absorbing means co-operating with stop means on the center or draft sills of the railway draft rigging at the corresponding end of the car. It will be evident to those skilled in this art that this form of railway draft rigging is objectionable because center or draft sills of the car and the car itself are subjected to compression strain between the ends thereof, causing buckling of the longitudinal sills and car structure or other distortion of the same in service, due to the impact of buffing shocks, thereby causing serious damage to the rolling stock.

The main object of my invention is to overcome the defects pointed out by providing a railway draft rigging having shock absorbing means at each end of the car, wherein means is provided for transmitting the buffing shocks received by the shock absorbing means at one end of the car to the shock absorbing means and stop means at the other end of the car, thereby subjecting the draft sills and car structure to tension only, thus entirely eliminating buckling or other distortion of the underframe structure and the car proper, which inevitably results when the parts are subpjected to compression strains.

Another object of my invention is to provide in a draft rigging for railway cars provided with shock absorbing means at opposite ends of the car, means for transmitting the buffing shocks which are received by the shock absorbing mechanism at one end of the car to the shock absorbing mechanism at the other end of the car, so that the two mechanisms are simultaneously actuated, thereby obtaining a movement of the coupler or drawbar which receives the buffing shock, equal to the combined movement of the shock absorbing mechanisms as the opposite ends of the car.

A further object of the invention is to provide a railway draft rigging including shock absorbing means at opposite ends of the car, wherein when the buffing and draft shocks are applied to coupler or drawbar means at one end of the car the shock absorbing means at opposite ends of the car are operated in buff, while the shock absorbing means at the corresponding end of the car to which the buffing and draft shocks are applied only is actuated in draft, thereby providing a buffing stroke of the coupler or drawbar which is in excess of the draft stroke and approximately twice as great.

A further object of the invention is to provide cushioning means co-operating with the body bolsters of the car, whereby when one car is run against another car the momentum of the car will be partially absorbed by cushioning means at one side of the bolster and the recoil or whip back of the car after the impact will be dampened by the cushioning means on the other side of the bolster.

Still another object of the invention is to provide a railway draft rigging including draft sills having stops and shock absorbing means at opposite ends of the car co-operating with the corresponding stops, wherein movable column actuating means is interposed between the shock absorbing means to transmit the forces from the shock absorbing means at one end of the car to the other in buff, and wherein said shock absorbing means at each end of the car is independently actuated in draft.

Yet another object of the invention is to provide in a draft rigging for railway cars having body bolsters at opposite ends thereof and spaced draft sills having stop means thereon, shock absorbing means at each end of the car subject to draft and buffing shocks, pressure-transmitting means for transferring the buffing shocks from the shock absorbing means at one end of the car to the shock absorbing means at the other end of the car, and additional shock absorbing means for transmitting the force from said pressure-transmitting means to one of the bolsters of the car.

Another object of the invention is to provide a railway draft rigging as specified in the preceding paragraph, wherein the arrangement is such that the force is transmitted from the pressure-transmitting means through the additional shock absorbing means to the bolsters at both ends of the car.

A more specific object of the invention is to provide a railway draft rigging for railway cars having body bolsters at opposite ends thereof and spaced center or draft sills, the sills having stop means thereon, shock absorbing means at each end of the car connected to the corresponding drawbar to be actuated thereby in draft and co-operating with the drawbar to be actuated in buff and having its outward movement limited by said stop means, a pressure-transmitting column element movable bodily with respect to the car underframe structure for transmitting the actuating force direct from the shock absorbing means at one end of the car to the shock absorbing means at the other end of the car which is held against outward movement by the stop means of the sills.

Another object of the invention is to provide a railway draft rigging of the character specified in the preceding paragraph, wherein additional shock absorbing mechanisms co-operate with said column element and are compressed between the latter and the body bolsters of the car when the column element is actuated.

Other and further objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings, forming a part of this specification, Figures 1, 2 and 3, taken together, show a longitudinal sectional view of a portion of a railway car underframe structure, illustrating my improvements in connection therewith, Figure 1 showing the structure at one end of the car, Figure 2 being a continuation of Figure 1 and showing the structure approximately at the central portion of the car, Figure 3 being a continuation of Figure 2 and showing the structure at the other end of the car. Figure 4 is a longitudinal, vertical, sectional view, corresponding substantially to the line 4—4 of Figure 1. Figure 5 is a longitudinal, vertical, sectional view, similar to Figure 4, but omitting the structure at the left-hand end of Figure 4, illustrating a different embodiment of the invention. And Fig. 6 is a horizontal, sectional view, corresponding substantially to the line 6—6 of Figure 5.

Referring first to the embodiment of the invention illustrated in Figures 1 to 4, inclusive, 10—10 indicate the usual body bolsters at the opposite ends of the car and 11—11 the fixed center or draft sills of said car. At each end, the underframe structure of the car is provided with the usual striking casting 12 and attached carry iron, which are suitably secured to the spaced draft sills 11.

The striking casting is provided with a coupler shank receiving opening, the coupler being supported by the carry iron. The striking casting is also secured to the corresponding angle end sill of the car, which is designated by 13.

In carrying out my invention, I provide the draft sills with stop lug castings 14 at each end of the car. The stop lug castings 14 are secured to the inner sides of the sills and have drawbar key receiving slots 15 which are aligned with the drawbar key receiving slots of the draft sills. Each of the stop lug castings is provided with a laterally inwardly projecting portion which has a flat rear abutment face, forming the stop lug proper 16. The stop lug castings are inwardly extended to provide additional stop members 17 integral therewith, which are disposed inwardly of the stop lug castings 14, as most clearly shown in Figures 1 and 3. A filler block 18 is disposed between the draft sills at each bolster, the filler block being secured to the bolster in the usual manner or forming a part thereof. In the present instance, the same is shown as a separate block. At each side, the bolster filler block is cut away, as indicated at 19, to provide a guideway for a purpose hereinafter pointed out.

A coupler 20 is employed at each end of the car and a yoke 21 is connected thereto, the usual coupler key 22 being provided and extending through aligned slots 23—23 of the yoke head and working in the slots 15 of the stop castings. The parts are so arranged that a certain amount of inward movement of the coupler with respect to the yoke is permitted and that the yoke will be pulled forwardly by the coupler through the medium of the key in draft. A front follower 24 is disposed within each yoke and co-operates with the stop lugs 16—16 at the corresponding end of the car.

The shock absorbing means of my improved railway draft rigging comprises, broadly, a pair of friction shock absorbing mechanisms A, the same being disposed at opposite ends of the car; a pressure-transmitting member comprising a central column B; spring casings C—C; combined spring casing and column members D—D; and four spring resistance elements E—E—E—E.

Each friction shock absorbing mechanism A comprises a shell of the usual type having friction means co-operating therewith, the friction means including a wedge block and friction shoes which are resisted by a main spring element disposed within the shell. As clearly shown in Figures 1 and 3, the wedge element of the friction shock absorbing mechanism which is indicated by 25 bears directly on the corresponding front follower 24 and the friction shell normally engages the rear end section of the yoke 21. As most clearly illustrated in Figure 1, the opposite sides of the front end portion of the friction shell of each friction shock absorbing mechanism A are cut away to provide shoulders 26—26 which co-operate with the limiting stops 17 to positively limit the outward movement of the friction shell.

As most clearly shown in Figures 1 to 4, inclusive, the pressure-transmitting member comprising the parts B, C, and D, is interposed between the friction shock absorbing mechanisms at the opposite ends of the car. The central column member B comprises spaced channel beams 27—27 connected by transverse end plates 28, which are secured thereto by angle members 29 which are fastened to the webs of the members 27 and the plates 28 in any suitable manner, the same being herein shown as secured by rivets.

The column member B slides on a wear plate member 30 which is secured to and carried by supporting saddle plates 31 fixed to the flanges of the draft sills 11. It will be evident that the column B is thus supported for sliding movement between the draft sills.

The spring casings C—C are arranged at opposite ends of the column and each casing C bears directly on one of the combined column and spring casing members D which is interposed between said casing and the inner end of the friction shell of the shock absorbing mechanism A at the same end of the car. Each casing C is in the form of a box-like member having spaced side walls and top and bottom walls and a transverse end wall bearing directly on the column member B. At the other end, the casing C is open, as clearly shown in Figures 1 and 3. The side walls of the casings C are preferably reinforced by vertical flanges at the front and rear ends thereof, and top, bottom and intermediate horizontal flanges, which also form guide means which co-operate with the center sills to guide the casings in their longitudinal movement.

Each combined spring casing and column member D comprises a substantially rectangular box-like casing member proper 32 which has spaced side, top and bottom walls and a transverse outer end wall which bears directly on the inner end of the yoke 21 at the corresponding end of the car. The side walls of the casing proper are extended outwardly and inwardly, thereby providing sets of arms 33—33 and 34—34 at the opposite ends thereof. The arms 34 are of greater length than the arms 33, as shown, and extend through the guideways 19 between the filler blocks 18 and the draft sills and engage the front end of the corresponding casing C. The relatively short arms 33 extend at opposite sides of the yoke and are of such a length as to engage the

inner end of the friction shell of the corresponding friction gear at the same time that the shell engages the inner end of the yoke. The side walls of the combined casing and column members D are also reinforced by horizontally extending ribs and vertically disposed webs or flanges which function as guide members in connection with the draft sills.

The combined spring casing and column members D and the friction shock absorbing mechanism A at each end of the car may be supported in any suitable manner and, as herein shown, saddle plates 35—35 are employed. The saddle plate 35, which is associated with the member D, is provided with a wear plate 36. The inner end of each member D is also supported on a pair of wear plates secured to the bottom bolster plate 10.

The saddle plates 35, which act as supports for the friction shock absorbing means at opposite ends of the car, directly support the yoke members 21 and the friction shock absorbing mechanisms and front followers are in turn supported by the yokes. The saddle plates 35 may be secured to the draft sills in any suitable manner and are herein shown as bolted to the bottom flanges thereof.

The four springs E are arranged in sets at opposite ends of the car, one set co-operating with each bolster filler casting 18. One of the springs E of each set is arranged within the spring casing C at the corresponding end of the car, and the other spring E is disposed within the casing of the combined spring casing and column member D at the corresponding end of the car. Both of the springs of each set have the opposite ends bearing respectively on the filler casting 18 and the end wall of the casing within which the spring is disposed. The springs are preferably of such a length that they are under an initial compression when the parts are assembled and in their normal position, as shown in Figures 1 to 4, inclusive.

The parts B, C, and D together act as a column load transmitting member which is movable with respect to the underframe structure of the car and transmits the load from the friction shock absorbing means A at one end of the car to the friction shock absorbing means A at the other end of the car during a buffing stroke of the coupler.

As will be evident, when the shock absorbing means A at one end of the car is moved inwardly, the shell of the shock absorbing means A at the other end of the car will be moved in unison therewith until the outer end of the shell engages the corresponding follower 24 and the shoulders 26 on the shell engage the corresponding stop members 17. The movement of the column is thus limited to the spacing between these parts and the combined spring casing and column members D have the casings proper thereof spaced from the filler castings 18 such a distance that the casings will not engage the walls of the filler castings when the shell of the friction shock absorbing mechanism is limited in its movement. The spacing between the filler castings 18 and the casings C is also greater than the outer movement permitted by the friction shell at each end of the mechanism so that the friction shells will be limited in their outward movement before either of the casings C engage the filler castings 18.

The operation of the improved railway draft rigging, as illustrated in Figures 1 to 4, inclusive, is as follows, assuming an inward movement of the coupler at the left-hand end of Figure 1 during a buffing action: The follower 24 at the corresponding end of the car will be moved inwardly, thereby forcing the friction shock absorbing mechanism inwardly also, and the friction shell of the friction shock absorbing mechanism which engages the combined casing and column member D at the same end of the car compels the latter to move rearwardly in unison therewith.

Inasmuch as the arms of the member D engage the casing C and the casing C in turn engages the column member B, all of these parts will be moved in unison with the friction shell referred to. The opposite end of the column is in engagement with the casing C at the other end of the car and causes the same to move outwardly, and the latter, by its engagement with the combined casing and column member D at the corresponding end of the car, forces the same outwardly also and the friction shell of the friction shock absorbing mechanism A in unison therewith until movement of the latter is limited by engagement with the front follower 24 and the stop lug castings 17. During the described action, the spring E, which is disposed within the combined casing and column member D at the end of the car to which the buffing action is applied, is compressed against the filler casting 18 of the bolster at the corresponding end of the car. The pressure which is transmitted through the column element B is communicated to the casing C at the opposite end of the car, thereby compressing the spring of this casing against the bolster 18 which is adjacent thereto. During the compression of the springs E, the two friction shock absorbing mechanisms at the opposite ends of the car will also be compressed, the inward movement of the friction shock absorbing mechanism at the end of the car which receives the buffing shock directly being resisted by the friction shock absorbing means at the other end of the car.

The friction shock absorbing mechanisms will be actuated until inward movement of the follower 24, which receives the direct buffing shock, is limited by engagement with the corresponding friction shell, and outward movement of the friction shell at the other end of the car is limited by engagement with the stop lugs or castings 17 and the front follower 24 which engages the stop castings 16. It will be evident that the entire movement of the drawbar or coupler which receives the buffing shock is thus approximately twice the distance between the followers 24 and the friction shells of the friction shock absorbing mechanisms A. The slots of the draft sills are of such a length as to permit this amount of movement without the key 22 engaging the end walls of the slots.

Assuming a pulling action being applied to the coupler at the left-hand end of Figure 1, the key 22 will be moved outwardly with the coupler, pulling the yoke 21 outwardly also and compressing the friction shock absorbing mechanism A between the yoke and the front follower 24. Inasmuch as there is no connection between the shock absorbing mechanisms at the opposite ends of the car, the shock absorbing mechanism at one end of the car only will be actuated in draft, unless the car is coupled to another car. In other words, the friction shock absorbing mechanisms at the opposite ends of the car are actuated independently in draft, but simultaneously during a buffing action.

Upon the actuating force being reduced after a buffing action, the springs E, together with the

spring resistance elements of the friction shock absorbing mechanisms A, will restore all of the parts to normal position. After a draft action, the spring resistance elements of the friction shock absorbing mechanisms will restore the parts to their normal position in the usual manner.

It is further pointed out that when one car is run against another, assuming that the rear thereof strikes the other car, the springs E in back of the front and rear body bolsters of the first-named car will partially absorb the momentum of the car and the recoil or whip back will be absorbed by the springs E in front of said body bolsters.

Referring to the embodiment of the invention illustrated in Figures 5 and 6, it is pointed out that the mechanism at opposite ends of the car immediately adjacent the coupler is substantially the same as that illustrated in Figures 1 to 4, inclusive, that is, a coupler, yoke, front follower, friction shock absorbing mechanism and coupler key of the same construction as shown in Figures 1 to 4, inclusive, are employed. The yokes of the railway draft rigging shown in Figures 5 and 6, are, however, of slightly different design from the yoke 21 illustrated in Figures 1 to 4, inclusive, the same bearing directly on the adjacent spring casing and the friction shell of the friction shock absorbing mechanism having no direct contact with said casing.

The construction of the car underframe, as shown in Figures 5 and 6, is substantially identical with that shown in Figures 1 to 4, inclusive, spaced draft sills 111—111 being employed in connection with the usual body bolsters 110 at opposite ends of the car, filler stop blocks 118 being associated with each bolster and being cut away at opposite sides to provide guideways 119 for pressure-transmitting bars hereinafter more fully described.

The column member of the railway draft rigging shown in Figures 5 and 6, is indicated by F and functions in the same manner as the central column member B of the mechanism hereinbefore described. The column F is of slightly different design than the column B, comprising a central I-beam member 140 reinforced at opposite ends by flanged and braced foot or base castings 141—141 which are riveted thereto. The end sections of the column member F are formed by plates 142 which are riveted to the transverse end portions of the castings 141. One of the yokes of the mechanisms illustrated in Figures 5 and 6 is indicated by 121 and, as shown, has the end section therof bearing directly on a spring casing G which houses a spring resistance element H bearings on a spring follower 143 which engages the outer side of the corresponding filler casting 118. A pair of pressure-transmitting beam members 144—144 are interposed between the spring casing G and the column member F.

As shown, these members are guided between the filler block 118 and the draft silis 111 working in the guideways 119. Each of the members 144 is provided with a transverse shoulder 145 on the inner side thereof, which in the normal position of the parts is in alignment with the outer end face of the corresponding filler casting 118 and co-operates with the follower 143. As shown, the casing G is normally spaced a short distance from the outer ends of the members 144, thereby permitting a certain amount of relative movement between the casing and the members 144 before the latter are forced inwardly in unison with the casing G. It will be understood that the members 144, the follower 143, the spring H, and the spring casing G are duplicated at opposite ends of the car.

In the operation of the railway draft rigging, as illustrated in Figures 5 and 6, the friction shock absorbing means at each end of the car will be actuated in the same manner as hereinbefore described in connection with the embodiment of the invention illustrated in Figures 1 to 4, inclusive, that is, the friction shock absorbing mechanism at each end of the car will be actuated upon inward movement of the corresponding coupler during buff and upon outward movement of the coupler and yoke during draft. Inasmuch as the yoke 121 at each end of the car in the embodiment of the invention shown in Figures 5 and 6 is not connected to the other parts of the shock absorbing means of the railway draft rigging, the friction shock absorbing means at opposite ends of the car will be actuated independently during a draft action.

Upon the friction shock absorbing means at one end of the car being forced inwardly in buff, the corresponding spring casing G will be forced inwardly in unison therewith until the inner end of the casing engages the outer ends of the members 144, whereupon the latter will be forced inwardly of the car. During the action just described, the spring resistance H will be compressed independently of the friction shock absorbing mechanisms. Upon movement of the members 144, the column F will be forced to move therewith, thereby moving the members 144 at the opposite end of the car outwardly in unison with the other parts. The spring follower 143 at that end of the car will be pushed outwardly by the shoulders 145 of the members 144, thereby compressing the spring resistance H at that end of the car until the members 144 engage the spring casing G. Upon engagement of the spring casing G at this end of the car, the two spring casings G, the two sets of bars 144 and the column F will be moved in unison, thereby transmitting the buffing force directly from the friction shock absorbing mechanism at one end of the car to that located at the other end of the car, the friction shock absorbing mechanism at the end of the car which receives the buffing force being compressed between the front follower and the inner end of the yoke and the friction shock absorbing mechanism at the other end of the car being compressed between the inner end of the yoke and the corresponding front follower, the shell of said mechanism being moved outwardly until limited by the stop members of the draft sills, as pointed out in connection with the description of the operation of the draft rigging disclosed in Figures 1 to 4, inclusive.

While I have herein shown and described what I consider the preferred manner of carrying out my invention, the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a draft rigging for railway cars having bolsters at the opposite ends, the combination with friction shock absorbing means at opposite ends of the car adapted to receive both draft and buffing shocks; of a pressure-transmitting column member interposed between said friction shock absorbing means at opposite ends of the car, said column member including a central member and

a pair of spring follower casings at each end of said member in abutting relation with each other and with said member, the follower casing of each pair being disposed respectively in front and in back of the corresponding bolster; and spring shock absorbing means interposed between the casings of each pair and the corresponding bolster.

2. In a draft rigging for railway cars having body bolsters at opposite ends thereof and fixed spaced draft sills provided with stops, the combination with shock absorbing means at each end of the car, including a front follower; of a yoke enclosing each shock absorbing means and front follower, outward movement of said follower being limited by the stop means on the sills; a coupler co-operating with each shock absorbing means in buff, said coupler being connected to the yoke to actuate the shock absorbing means in draft; a spring casing movable inwardly with each of said shock absorbing means; a spring interposed between said spring casing and the corresponding bolster; two additional spring casings; a movable column member interposed between said two additional casings to transmit the forces from one to the other; and spring means interposed between each bolster and the corresponding additional casings.

3. In a draft rigging, the combination with draft sills and body bolsters at opposite ends of the car; of shock absorbing means at opposite ends of the car actuated in both buff and draft; a rigid floating column member between said bolsters movable lengthwise of the car; pressure transmitting members bearing on opposite ends of the column and extending past the corresponding bolsters; a spring follower cap interposed between each shock absorbing means and the corresponding bolster and normally spaced from the pressure transmitting member at the corresponding end of the car a distance less than the full travel of the draft rigging in buff; and spring means within each spring cap and bearing on the corresponding bolster, yieldingly opposing inward movement of said spring cap.

4. In a draft rigging, the combination with draft sills and body bolsters at opposite ends of the car; of shock absorbing means at opposite ends of the car actuated in both buff and draft; a rigid floating column member between said bolsters movable lengthwise of the car; pressure transmitting members bearing on opposite ends of the column and extending past the corresponding bolsters; a shock absorbing device including a casing interposed between each shock absorbing means and the corresponding bolster, said casing being normally spaced from the pressure transmitting member at the corresponding end of the car a distance less than the full travel of the draft rigging in buff, said shock absorbing device being compressible against the corresponding bolster.

5. In a draft rigging, the combination with fixed draft sills and body bolsters at opposite ends of the car; of shock absorbing means at opposite ends of the car actuated in both buff and draft; outer fixed stops on the sills at each end of the car; follower means disposed in front of each bolster and spaced therefrom; follower means disposed in back of each bolster and spaced therefrom; means extending through each bolster for effecting movement in unison of the spring follower means disposed in front and in back of the corresponding bolster; shock absorbing means interposed between each follower means and the corresponding side of the adjacent bolster and opposing relative movement of said followers and bolster; and a rigid, floating column member.

6. In a draft rigging for railway cars provided with body bolsters at opposite ends thereof, the combination with friction shock absorbing means at each end of the car, adapted to receive both buffing and draft shocks; of pressure-transmitting means for transferring and buffing force received by the friction shock absorbing means at one end of the car to the friction shock absorbing means at the other end of the car, said pressure-transmitting means including a spring follower casing interposed between the friction shock absorbing means at one end of the car and the corresponding bolster, and spring means opposing movement of each of said casings inwardly of the corresponding bolster, each of said casings being movable with respect to the bolsters.

STACY B. HASELTINE.

CERTIFICATE OF CORRECTION.

Patent No. 1,950,609. March 13, 1934.

STACY B. HASELTINE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, line 105, claim 5, after "member" and before the period insert between said bolsters having its opposite ends bearing on the inner sides of the followers disposed in back of said bolsters; same page, line 111, claim 6, for "and" read the; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of April, A. D. 1934.

Bryan M. Battey

Acting Commissioner of Patents.

(Seal)